CITY OF LOS ALTOS

STANDARD GUIDANCE SPECIFICATIONS

January 19, 2016 Edition

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January 19, 2016

General Provisions

(To be included with all construction contracts.)

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(These guidance specifications are general city requirements. They shall be incorporated into project specific technical specifications. The city utilizes the latest edition of the California Department of Transportation Standard Specifications and the American Public Works Association Standard Specifications for Public Works for Construction (Green Book).)

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GENERAL PROVISIONS

SECTION 1
DEFINITIONS AND TERMS

1-1.01 General. Unless the context otherwise requires, wherever in the specifications and other contract documents the following abbreviations and terms, or pronouns in place of them, are used, the intent and meaning shall be interpreted as provided in this Section 1.

Working titles having a masculine gender, such as "journeyman" are utilized in the specifications for the sake of brevity, and are intended to refer to persons of either sex.

All definitions and terms in the Caltrans Specifications, latest edition, are included in these specifications, except as modified herein.

1-1.02 Abbreviations.

CF	Cubic Foot
CY	Cubic Yard
EA	Each
GAL	Gallon
LB	Pound
LF	Linear Foot
LS	Lump Sum
SQ FT	Square Foot
SQ YD	Square Yard
STA	Station

1-1.03 Acceptance. The formal written acceptance by the City Council of an entire contract which has been completed in all respects in accordance with the plans and specifications and any modifications thereof previously approved.

1-1.032 Addenda. Written modifications of the contract documents provided to holders of the contract documents prior to opening of proposals issued by the Engineer.

1-1.034 Admitted Surety, Insurer or Carrier. A surety or insurance carrier admitted to transact insurance in the State of California, as evidenced by the surety's or insurer's possession of a valid Certificate of Authority issued by the California Department of Insurance, as defined by the California Insurance Code.

1-1.036 Award. The Acceptance by the approval authority of a proposal.

1-1.075 Bidder's Bond. Form of Proposal Guaranty accompanying the Proposal submitted by the bidder.

1-1.081 Calendar Day. A calendar day shall be any day including all legal holidays, Saturdays and Sundays.

1-1.082 Caltrans. The Department of Transportation of the State of California organized to administer the affairs relating to State highways.

1-1.083 Caltrans Specifications. The standard specifications of the State of California, Department of Transportation. Caltrans Specifications are also referred herein as Standard Specifications.

1-1.0840 City Clerk. The City Clerk of the City of Los Altos.

1-1.0842 City Council. The City Council of the City of Los Altos.

1-1.0844 City of Los Altos. A general law city of the State of California, as created by law; also referred to as the "City" or "Owner".

1-1.09 Contract. The written agreement covering the performance of the work and the furnishing of labor, materials, tools, and equipment in the construction of the work. The contract shall include the Notice to Contractors, Proposal, plans, General Provisions, applicable portions of Caltrans Specifications, Special Provisions, Technical Provisions, written addenda, contract, contract bonds, and the required insurance; also any and all supplemental agreements amending or extending the work contemplated and which may be required to complete the work in a substantial and acceptable manner; also referred to as "Contract Documents." Supplemental agreements are written agreements covering alterations, amendments or extensions to the contract and include but are not limited to contract change orders.

1-1.092 Contract Change Order. A written order to the Contractor, covering changes to the contract found by the City to be necessary for the proper completion or construction for the whole work contemplated by the contract, and establishing the basis of payment and/or time adjustments for the work affected by the changes, also sometimes referred to as a "Change Order" or "Directed Change Order".

1-1.096 Contract Time. The number of working or calendar days allowed for the completion of the contract. If a calendar date of completion is shown in the Proposal in lieu of a number of working or calendar days, the contract shall be completed by that date.

1-1.10 Contractor. The person or persons, firm, partnership, corporation, or combination thereof, private or municipal, who have entered into a contract with the City or the City's legal representatives.

1-1.102 County Agencies. Whenever, in these specifications, reference is made to any County agency or officer, such reference shall be deemed made to any agency or officer succeeding in accordance with law to the powers, duties, jurisdiction and authority of the agency or officer mentioned.

1-1.113 Date of Acceptance. The date the City formally accepts the completion of the work.

1-1.12 Days. Unless expressly otherwise designated, days as used in the specifications will be understood to mean calendar days.

1-1.18 Engineer. The City Engineer of the City of Los Altos acting either directly or through properly authorized agents, such agents acting within the scope of the particular duties delegated to them.

1-1.19 Engineer's Estimate. The list of estimated quantities of work to be performed as contained in the "Proposal".

1-1.20 Federal, State or Local Agencies. Whenever, in the specifications, reference is made to any Federal, State or Local agency or officer, including but not limited to the City of Los Altos, such reference shall be deemed made to any agency or officer succeeding in accordance with law to the powers, duties, jurisdiction, and authority of the agency or officer mentioned.

1-1.225 Full Compensation. Total and complete payment including overhead and profit for furnishing all supervision, labor, materials, tools, equipment, and doing all work involved in providing the item complete and in place in accordance with the requirements of the contract.

1-1.23 General Provisions. The directions, provisions and requirements contained herein as supplemented by any special provisions and pertaining to the method and manner of performing the work or to the quantities and qualities of materials to be furnished under the contract.

1-1.245 Inspector. An authorized representative of the Engineer, acting exclusively for the benefit of the City, limited to the particular duties entrusted to them.

1-1.25 Laboratory. An established laboratory authorized by the City to test materials and work involved in the contract.

1-1.255 Legal Holidays. Those days designated as state holidays in the California Government Code.

1-1.257 Limit of Work. The area described or outlined on the project plans. This area shall constitute the extent of the Contractor's operation related to the project.

1-1.26 Liquidated Damages. The amount prescribed in the specifications to be paid to the City or to be deducted from any payments due or to become due the Contractor for each day's delay in completing the whole or any specified portion of the work beyond the time allowed in the specifications.

1-1.265 Manual of Traffic Controls. The Department of Transportation (Caltrans) publication entitled "MANUAL OF TRAFFIC CONTROLS for Construction and Maintenance Work Zones".

1-1.267 Material Storage Area. An area, if any, described or outlined on the project plans or designated in the Specifications to be used by the Contractor for material and equipment storage related to the project.

1-1.274 Notice to Contractors. The advertisement for proposals for all work on which bids are required. Such advertisement will indicate, among other things, the location of the work to be done, bonding requirements, licensing requirements, and the time and place of opening of bids.

1-1.276 Notice to Proceed. The notice issued by the Engineer authorizing the Contractor to proceed with the work, among other particulars.

1-1.277 Notice of Termination. The written notice issued by the Engineer specifying that the contract is terminated.

1-1.279 Pay Item. A specific unit of work for which a price is provided in the contract.

1-1.29 Plans. The official project plans and Standard Details, applicable Caltrans Standard Plans, profiles, typical cross sections, working drawings and supplemental drawings, or reproductions thereof, approved by the Engineer, which show the location, character, dimensions and details of the work to be performed. All such documents are to be considered as a part of the plans whether or not reproduced in the Special Provisions or Technical Provisions.

In the above definition, the following terms are defined as follows:

(A)Standard Details. The Standard Details of the City, also referred to herein as Standard Drawings or Standard Plans.

(B)Project Plans. The Project Plans are specific details and dimensions peculiar to the work and are supplemented by the Standard Drawings insofar as the same may apply.

1-1.31 Proposal. The offer of the bidder for the work when made out and submitted on the prescribed proposal forms, properly signed and guaranteed, also referred to herein as a bid.

1-1.32 Proposal Forms. The approved bid documents upon which the City requires formal bids be prepared and submitted for the work.

1-1.33 Proposal Guaranty. The cash, cashier's check, certified check, or bidder's bond accompanying the proposal submitted by the bidder, as a guaranty that the bidder will enter into a contract with the City for the performance of the work, if it is awarded to the bidder, and will provide the contract bonds and insurance required of the bidder.

1-1.35 Roadway. The whole right of way or area which is reserved for and secured for use in constructing the roadway and its appurtenances, also referred to herein as "street" or "road".

1-1.334 Right of Way. The whole right of way or area which is reserved for and secured for use in the constructing the improvement and its appurtenances.

1-1.37 **Special Provisions.** The specific clauses setting forth conditions or requirements peculiar to the work and supplementary to the General Provisions.

1-1.38 **Specifications.** The directions, provisions and requirements contained in the Contract. Whenever the term "these specifications" or "these Standard Specifications" is used herein, it means the provisions set forth herein.

1-1.420 **Subcontractor.** Any person, firm, or corporation other than an employee of the Contractor, supplying for and under agreement either with the Contractor or any other subcontractor of the Contractor, labor, materials, or both, in connection with the project.

1-1.425 **Substantial Completion.** When the work, or a designated portion thereof, is sufficiently complete in accordance with the contract documents so that the City can occupy or utilize the work, or designated portion thereof, for the use for which it was intended.

1-1.455 **Technical Provisions.** The specific clauses, in addition to the Special Provisions, setting forth conditions or requirements peculiar to the work as delineated in the Specifications. All references to requirements of the Special Provisions shall be considered to include the requirements set forth in the Technical Provisions. Whenever the term “Technical Specifications” is used herein, it means the provisions set forth herein.

1-1.49 **Working Day.** A working day is defined as any day, except as follows: (a) Saturdays, Sundays and legal holidays; (b) days on which the Contractor is prevented by inclement weather or conditions resulting immediately there from adverse to the current controlling operation or operations, as determined by the Engineer, from proceeding with at least 75 percent of the normal labor and equipment force engaged on such operation or operations for at least 60 percent of the total daily time being currently spent on the controlling operation or operations; or (c) days on which the Contractor is specifically required by the Special Provisions or Technical Provisions to suspend construction operations.

1-1.50 Where "as shown", "as indicated, "as detailed", or words of similar import are used, it shall be understood that reference to the drawings accompanying these specifications is made unless stated otherwise. Where "as directed", "as permitted", "approved" or words of similar import are used, it shall be understood that the direction, requirement, permission, approval, or acceptance of the Engineer is intended unless stated otherwise. As used herein, "provide" or "install" shall be understood to mean "provide complete in place", that is, "furnish and install". "Shall" is mandatory; "may" is permissive.

END OF SECTION

SECTION 2
PROPOSAL REQUIREMENTS AND CONDITIONS

2-1.01 Contents of Proposal Forms. Prospective bidders will be furnished with proposal forms which will refer to the plans and specifications for the work to be done and may include the approximate estimate of the various quantities and kind of work to be performed or materials to be furnished, with a schedule of items for which bid prices are asked.

2-1.02 Approximate Estimate. The quantities when given in the Proposal and the contract are approximate only, being given as a basis for the comparison of bids. The City does not, expressly or by implication, represent or agree that the actual amount of work will correspond therewith, and reserves the right to increase or decrease the amount of any class or portion of the work, or to omit portions of the work, as may be deemed necessary or advisable by the Engineer. The bidder shall verify the actual quantities necessary for the work.

2-1.03 Examination of Plans, Specifications, Contract, and Site of Work. The bidder shall examine carefully the site of the work contemplated, the plans and specifications, and the Proposal and contract forms therefore. The submission of a bid shall be conclusive evidence that the bidder has investigated and is satisfied as to the conditions to be encountered, as to the character, quality, and scope of work to be performed, the quantities of materials to be furnished, and as to the requirements of the Proposal, plans, specifications, and the contract. The failure or omission of any bidder to receive or examine any form, instrument, addendum or other document or to visit the site and acquaint themselves with conditions therein existing shall in no way relieve any bidder from obligation with respect to the bid or to the contract.

Where there has been prior construction by the City or other public agencies within the project limits, records of such prior construction that are currently in the possession of the City and which have been used by, or are known to, the designers and administrators of the project will be made available for inspection by bidders or contractors, upon written request, subject to the conditions hereinafter set forth. Inspection of project records may be made at the office of the Engineer. Project records are not a part of the contract and are available solely for the convenience of the bidder or Contractor. It is expressly understood and agreed that the City assumes no responsibility whatsoever in respect to the sufficiency or accuracy of the records. The availability or use of information described in this Section 2-1.03 is not to be construed in any way as a waiver of the provisions of the first paragraph in this Section 2-1.03 and a bidder or Contractor is cautioned to make such independent investigation and examination as they deem necessary to satisfy themselves as to conditions to be encountered in the performance of the work. No information derived from such inspection of records will in any way relieve the bidder or Contractor from any risk or from properly fulfilling the terms of the contract.

2-1.05 Proposal Forms. The City will furnish to each bidder proposal forms, which, when filled out and executed may be submitted as their bid. Bids not presented on forms so furnished, may, in the City's sole discretion, be deemed non-responsive and rejected on that basis. Copies or facsimiles of the Bidder's completed and executed proposal forms submitted as a bid will be rejected.

On all bid items for which bids are to be received on a unit price basis, the unit price for all items bid shall be shown, as well as the extended price (unit price multiplied by the number of

units shown on the proposal form) for each bid item bid. In the case of any discrepancy between the extended price for any item bid, the unit price multiplied by the number of units shall prevail. In the event of any discrepancy between the total contract amount and the sum of the extended prices of all items, the sum of the extended prices of all items shall prevail.

The proposal forms are bound in a book together with the Notice to Contractors, General Provisions, Special Provisions and Technical Provisions. The Proposal shall set forth the item prices and totals, in clearly legible figures, in the respective spaces provided, and shall be signed by the bidder, who shall fill out all blanks in the proposal form as therein required.

The proposal forms shall be removed from the bound documents and submitted as directed in the "Notice to Contractors" under sealed cover plainly marked as a proposal, and identifying the project to which the Proposal relates and the date of the bid opening therefor. Proposals which are not properly marked may be disregarded at the sole discretion of the City.

2-1.054 Required Listing of Proposed Subcontractors. Each Proposal shall have listed therein the name and address of each subcontractor to whom the bidder proposes to subcontract portions of the work in an amount in excess of 1/2 of one percent of the total bid or $10,000.00, whichever is greater, in accordance with the Subletting and Subcontracting Fair Practices Act, commencing with Section 4100 of the Public Contract Code. The bidder's attention is invited to other provisions of the Act related to the imposition of penalties for a failure to observe its provisions by using unauthorized subcontractors or by making unauthorized substitutions.

A sheet for listing the subcontractors, as required herein, is included in the Proposal.

2-1.057 Qualification of Bidders. Each bidder shall be skilled and regularly engaged in the general class or type of work called for under this contract. A sheet for listing the Contractor's experience and business standing shall be submitted by each bidder on the form provided in the Proposal.

It is the intention of the City to award a contract only to a bidder who furnishes satisfactory evidence that it has the requisite experience and ability and that the bidder has sufficient capital, facilities, and plant to enable the bidder to prosecute the work successfully and promptly, and to complete it within the time named in the contract.

To determine the degree of responsibility to be credited to a bidder, the City will weigh any evidence that the bidder or personnel guaranteed to be employed in responsible charge of the work has performed satisfactorily on other contracts of like nature and magnitude or comparable difficulty at similar rates of progress.

2-1.06 Rejection of Proposals. The City, in its sole discretion, may reject any or all bids or Proposals presented. Proposals may be rejected for reasons including but not limited to the transference of bid to another bidder, any alteration of form, additions not called for, conditional bids, incomplete bids, erasures, or irregularities of any kind, or a disproportionate amount of payment being made on any item of work during any phase of the project or, failure to provide a price on all bid items, including all alternates or Proposals submitted which are not in strict compliance with the directions in the Notice to Contractors. The City may, in its sole discretion, waive any informalities or minor irregularities in the bid or Proposal.

Proposals not submitted in strict compliance with the directions in the Notice to Contractors may, in the City's sole discretion, be deemed non-responsive and be rejected on that basis.

When Proposals are signed by an agent, other than the officer or officers of a corporation authorized to sign contracts on its behalf or a member of a co-partnership, a "Power of Attorney" must be on file with the City Clerk prior to opening bids or shall be submitted with the Proposal; otherwise, the Proposal may be rejected at the City's sole discretion as irregular and unauthorized. Proof of the authority of the person or persons signing on behalf of the bidder shall be provided to the City upon request after the bid opening.

2-1.07 Proposal Guaranty. All bids shall be presented under sealed cover and accompanied by one of the following forms of bidder's security: cash, a cashiers check or a certified check made payable to the City, or a bidder's bond executed by an admitted surety insurer naming the City as beneficiary.

The security shall be in an amount equal to at least 10 percent of the total amount bid including all alternates. A bid will not be considered unless one of the specified forms of bidder's security is enclosed with it.

2-1.08 Withdrawal of Proposals. Any Proposal may be withdrawn at any time prior to the time fixed in the Notice to Contractors for the opening of bids only by written request for the withdrawal of the bid filed with the City Clerk. The request shall be executed by the bidder or the bidder's duly authorized representative. The withdrawal of a bid does not prejudice the right of the bidder to file a new bid. Whether or not bids are opened exactly at the time fixed in the Notice to Contractors, a bid will not be received after that time, nor may any bid be withdrawn after the time fixed in the Notice to Contractors for the opening of bids.

2-1.09 Public Opening of Proposals. Proposals will be opened and read publicly at the time and place indicated in the "Notice to Contractors." Bidders or their authorized agents are invited to be present.

2-1.095 Relief of Bidders. Attention is directed to the provisions of Public Contract Code Sections 5100 to 5107, inclusive, concerning relief of bidders and in particular to the requirement therein, that if the bidder claims a mistake was made in the bid presented, the bidder shall give the City written notice within 5 days after the opening of the bids of the alleged mistake, specifying in the notice in detail how the mistake occurred.

2-1.10 Disqualification of Bidders. More than one Proposal from an individual, firm, partnership, corporation, or combination thereof under the same or different names will not be considered. Reasonable grounds for believing that any individual, firm, partnership, corporation or combination thereof is interested in more than one Proposal for the work contemplated may cause the rejection of all Proposals in which that individual, firm, partnership, corporation or combination thereof is interested. If there is reason for believing that collusion exists among the bidders any or all Proposals may be rejected. Proposals in which the prices obviously are unbalanced may be rejected.

2-1.13 Addenda and Interpretations. Written addenda by way of clarifications, amendments, changes or additions to the Contract Documents including a change to the proposed opening time, date or place may be issued by the City before the opening of Proposals. Addenda will be mailed by certified mail with return receipt requested to all prospective bidders prior to

the opening of bids. Failure of any bidder to receive any addenda shall not relieve the bidder from any obligations imposed by the addenda. All addenda issued shall become part of the contract and the price therefore, set forth in the Proposal. The Bidder shall indicate receipt of each Addendum by completing the Acknowledgement of Addenda included in the proposal forms.

Every request for interpretation should be in writing addressed to the City Engineer at 1 N. San Antonio Road, Los Altos, CA 94022, and to be given consideration, must be received at least 5 days prior to the date fixed for the opening of bids. Any and all interpretations will be in the form of writing which, if issued, will be mailed by certified mail with return receipt requested to all prospective bidders prior to the opening of bids. Failure of any bidder to receive any interpretation shall not relieve the bidder from any obligation under its bid as submitted and the bidder shall be required to perform the work as modified by the interpretation. All interpretations issued shall become part of the contract.

No oral interpretation of the meaning of the plans, specifications or other documents will be made. If any such oral interpretation is made, it shall not be considered by the bidder in preparing its Proposal.

END OF SECTION

SECTION 3
AWARD AND EXECUTION OF CONTRACT

3-1.01 Award of Contract. The City, in its sole discretion, reserves the right to reject any and all Proposals. The City reserves the right to waive informalities.

The award of the contract, if it be awarded, will be to the lowest responsible bidder whose Proposal complies with all the requirements prescribed. If two or more bids are the same and lowest, the City may accept either bid it chooses in its sole discretion. The award, if made, will be made within 60 days after the opening of the Proposals. This period of time will be subject to extension for such further period as may be agreed upon in writing between the City and the bidder concerned.

All bids will be compared on the basis of the Engineer's Estimate of the quantities of work to be done.

3-1.02 Contract Bonds. The successful bidder shall furnish, in triplicate, the two bonds required by the State Contract Act. One bond shall secure the payment of the claims of laborers, mechanics or material persons employed on the work under the contract and the other bond shall guarantee the faithful performance of the contract. The bond forms will be furnished to the successful bidder by the City. Each of the two bonds shall be in a sum equal to 100% of the contract price, including any and all alternate bids, except as otherwise provided in Section 3248 of the Civil Code.

All alterations, extensions of time, extra and additional work, and other changes authorized by these specifications or any part of the contract may be made without securing the consent of the surety or sureties on the contract bonds.

3-1.03 Execution of Contract. The contract shall be signed by the successful bidder and returned, together with the contract bonds and insurance, within 10 days, not including Saturdays, Sundays and legal holidays, after the bidder has received the contract for execution, except where a shorter period has been specified in the Notice to Contractors.

3-1.04 Failure to Execute Contract. Failure of the lowest responsible bidder, the second lowest responsible bidder, or the third lowest responsible bidder to execute and return the contract and file acceptable bonds and insurance as provided herein within 10 days, not including Saturdays, Sundays and legal holidays, after that bidder has received the contract for execution shall be just cause in the City's sole discretion for voiding the award and the forfeiture of the proposal guaranty. The successful bidder may file with the City a written notice, signed by the bidder or the bidder's authorized representative, specifying that the bidder will refuse to execute the contract if presented to the bidder. The filing of such notice shall have the same force and effects as the failure of the bidder to execute the contract and furnish acceptable bonds within the time hereinbefore prescribed.

3-1.05 Return of Proposal Guaranties. The proposal guaranties accompanying the Proposals of the first, second and third lowest responsible bidders will be retained until the contract has been finally executed, after which those proposal guaranties, except bidders' bonds and any guaranties which have been forfeited, will be returned to the respective bidders whose Proposals they accompany. The proposal guaranties, other than bidder's bonds, submitted by all

other unsuccessful bidders will be returned upon determination, by the City, of the first, second and third lowest responsible bidders.

3-1.06 Notification of Surety and Insurance Companies. The surety companies and the signers of any of the above mentioned bonds, and all insurance companies, shall familiarize themselves with all of the conditions and provisions of this contract, and they waive the right of special notification of any change or modification of this contract or of extension of time, or of decreased or increased work, or the cancellation of the contract, or any other act or acts by the City or its authorized agents, under the terms of this contract, and failure to notify the sureties or insurance companies of changes shall not relieve the sureties or insurance companies of their obligation under this contract.

3-1.07 Damages for Collusion. If at any time it is found that the person, firm, or corporation to whom the contract has been awarded, in presenting any bid or bids, colluded with any other party or parties, then the contract awarded may be declared by the City to be null and void and the Contractor and its sureties shall be liable to the City for all loss or damage which the City may have suffered as a result of such collusion, and the City may re-advertise anew for bids for said work.

END OF SECTION

SECTION 4
SCOPE OF WORK

4-1.01 Intent of Plans and Specifications. The intent of the plans and specifications is to prescribe the details for the construction and completion of the work which the Contractor undertakes to perform in accordance with the terms of the contract. Where the plans or specifications describe portions of the work in general terms, but not in complete detail, it is understood that only the best general practice is to prevail and that only materials and workmanship of the first quality are to be used. Unless otherwise specified, the Contractor shall furnish all labor, materials, tools, equipment, and incidentals, and do all the work involved in executing the contract in a satisfactory and workmanlike manner.

4-1.013 Removal of Obstructions. The Contractor shall remove, or cause to be removed, at the Contractor's expense, all trees, fences and all structures as and when required by the plans, or where the proper construction and completion of the work require their removal. The Contractor shall also remove, at the contractor's expense, all rock, stones, debris, and all obstructions of whatsoever kind or character, whether natural or artificial, encountered in the construction of the work. No trees, plants, shrubbery or ornamental vegetation shall be removed without the consent of the Engineer first being obtained. Where indicated on the drawings, or directed by Engineer, the Contractor shall replace trees, fences, and other structures to their original condition.

4-1.015 Construction Utilities. The Contractor shall be responsible for providing, for and in behalf of the Contractor's work under the contract, all necessary utilities, such as special connections to water supply, telephones, power lines, fences, roads, watch persons, suitable storage places, etc., unless otherwise specified in the Plans or Specifications.

4-1.02 Final Cleaning Up. Before final inspection of the work, the Contractor shall clean the job site, material sites, and all ground occupied by the Contractor in connection with the work of all rubbish, excess materials, false work, temporary structures, and equipment. The Contractor shall remove, haul and dispose of off the job site, all surplus and waste materials from the Contractor's operations. All parts of the work shall be left in a neat and presentable condition. Full compensation for final cleaning up will be considered as included in the prices paid for the various contract items of work and no separate payment will be made therefor.

Nothing herein, however, shall require the Contractor to remove warning, regulatory, and guide signs prior to formal acceptance by the City.

4-1.03 Changes. The City reserves the right to make such alterations, deviations, additions to or deletions from the plans and specifications, including the right to increase or decrease the quantity of any item or portion of the work or to delete any item or portion of the work, as may be deemed by the Engineer to be necessary or advisable and to require such extra work as may be determined by the Engineer to be required for the proper completion or construction of the whole work contemplated.

Those changes will be set forth in a contract change order which will specify, in addition to the work to be done in connection with the change made, adjustment of contract time, if any,

and the basis of compensation for that work. A contract change order will not become effective until approved by the Engineer.

Upon receipt of an approved contract change order, the Contractor shall proceed with the ordered work. If ordered in writing by the Engineer, the Contractor shall proceed with the work so ordered prior to actual receipt of an approved contract change order therefor. In those cases, the Engineer will, as soon as practicable, issue an approved contract change order for the ordered work and the provisions in Section 4-1.03A, "Procedure and Protest," shall be fully applicable to the subsequently issued contract change order.

If City proposes to Contractor that Contractor perform work by way of change order, and the City and Contractor cannot agree upon a price for performing such change order work, the City has the right to issue to Contractor a "Directed Change Order" requiring the Contractor to perform work at the price and on the terms which City, in its sole discretion, shall deem reasonable. Contractor will thereafter perform work for the price and on the terms set forth in such change order. The Contractor shall not have the right to terminate the contract based upon the issuance of a "Directed Change Order." Contractor may then make a claim as provided for in this contract for any additional compensation, or time extension, or both, which the Contractor believes is due and owing to the Contractor for performing such work.

4-1.03A Procedure and Protest. A contract change order approved by the Engineer may be issued to the Contractor at any time. Proposed contract change orders may be presented to the Contractor for consideration prior to approval by the Engineer. If the Contractor signifies acceptance of the terms and conditions of the proposed contract change order by executing the document and if the change order is approved by the Engineer and issued to the Contractor, payment in accordance with the provisions as to compensation therein set forth shall constitute full compensation for all work included therein or required thereby. An approved contract change order shall supersede a proposed, but unapproved, contract change order covering the same work.

Should the Contractor disagree with any terms or conditions set forth in an approved contract change order not executed by the Contractor, the Contractor shall submit a written protest to the Engineer, within 15 days after the receipt of the approved contract change order. The protest shall state the points of disagreement, and, if possible, the contract specification references, quantities, and costs involved. If a written protest is not submitted, payment will be made as set forth in the approved contract change order and that payment shall constitute full compensation for all work included therein or required thereby.

Where the protest concerning an approved contract change order relates to compensation, the Contractor shall keep full and complete records of the cost of that work and shall permit the Engineer to have access thereto as may be necessary to assist the City in the determination of the compensation payable for that work.

Where the protest concerning an approved contract change order relates to the adjustment of contract time for the completion of the work, the time to be allowed therefor will be determined as provided in Section 8-1.07, "Liquidated Damages."

4-l.03 B (Blank)

4-l.03C Changes in Character of Work. If an ordered change in the plans or specifications materially changes the character of the work of a contract item from that on which

the Contractor based the bid price, and if the change increases or decreases the actual unit cost of the changed item as compared to the actual or estimated actual unit cost of performing the work of that item in accordance with the plans and specifications originally applicable thereto, in the absence of an executed contract change order specifying the compensation payable, an adjustment in compensation therefor will be made in accordance with the following.

The basis of the adjustment in compensation will be the difference between the actual unit cost to perform the work of that item or portion thereof involved in the change as originally planned and the actual unit cost of performing the work of the item or portion thereof involved in the change, as changed. Actual unit costs will be determined by the Engineer in the same manner as if the work were to be paid for on a change order basis as provided in Section 9-1.03, "Change Order Payment"; or the adjustment will be as agreed to by the Contractor and the Engineer. The adjustment will apply only to the portion of the work of the item actually changed in character. At the option of the Engineer, the work of the item or portion of item which is changed in character will be paid for by change order as provided in Section 9-1.03, "Change Order Payment."

Failure of the Engineer to recognize a change in character of the work at the time the approved contract change order is issued shall not be construed as relieving the Contractor of the duty and responsibility of filing a written protest within the 15 day limit as provided in Section 4-1.03A, "Procedure and Protest."

4-1.03D Extra Work. New and unforeseen work will be classed as extra work when determined by the Engineer that the work is not covered by any of the various items for which there is a bid price or by combinations of those items. In the event portions of this work are determined by the Engineer to be covered by some of the various items for which there is a bid price or combinations of those items, the remaining portion of the work will be classed as extra work. Extra work also includes work specifically designated as extra work in the plans or specifications. If extra work orders are given in accordance with the provisions of the contract, such work shall be considered a part thereof and subject to each and all terms and requirements of the contract. No order for extra work, at any time or place, shall in any manner or to any extent relieve the Contractor of any of the Contractor's obligations under the contract.

The Contractor shall do the extra work and furnish labor, material, and equipment therefor upon receipt of an approved contract change order or other written order of the Engineer, and in the absence of an approved contract change order or other written order of the Engineer the Contractor shall not be entitled to payment for the extra work.

Payment for extra work required to be performed pursuant to the provisions in this Section 4-1.03D, in the absence of an executed contract change order, will be made by change order as provided in Section 9-1.03, "Change Order Payment"; or as agreed to by the Contractor and the Engineer.

4-1.04 Detours. The Contractor shall construct and remove detours for the use of public traffic as required in the Special Provisions or Technical Provisions, or as shown on the plans, or as directed by the Engineer. Full compensation for development and submittal of plans, constructing, and removing detours will be considered as included in the prices paid for the various contract items of work and no separate payment will be made therefor. Contractor's plans for a closure or restriction shall be submitted to the Engineer for approval no less than

seventy-two (72) hours in advance of such closure or restriction and shall indicate the proposed detour route and signs to be used.

The failure or refusal of the Contractor to construct and maintain detours at the proper time shall be sufficient cause for closing down the work until such detours are in satisfactory condition for use by public traffic. The Contractor shall not be allowed additional compensation or an extension of time to complete the work due to such suspension of work order.

4-1.06 Differing Site Conditions. For all excavations extending deeper than 4 feet below the surface, the Contractor shall promptly, and before the following conditions are disturbed, notify the City, in writing, of any;

1. Material that the Contractor believes may be material that is hazardous waste, as defined in Section 25117 of the California Health and Safety Code that is required to be removed to a Class I, Class II, or Class III disposal site in accordance with provisions of existing law.
2. Subsurface or latent physical conditions at the site differing from those indicated in the contract documents.
3. Unknown physical conditions at the site of any unusual nature, differing materially from those ordinarily encountered and generally recognized as inherent in work of the Contractor provided for in the contract.

The City shall promptly investigate the conditions, and if it finds that the conditions do materially so differ, or do involve hazardous waste, and cause a decrease or increase in the Contractor's cost of, or in the time required for, performance of any part of the work, City shall issue a change order under the procedures described in the contract documents.

In the event a dispute arises between the City and the Contractor as to whether or not the conditions materially differ, or involve hazardous waste, or cause a decrease or increase in the Contractor's cost of, or time required for, performance for any part of the work, the Contractor shall not be excused from any scheduled completion date provided for by the contract, but shall proceed with all work to be performed under the contract. The Contractor shall retain any and all rights provided either by the contract documents or by law which pertain to the resolution of disputes and protests between the contracting parties.

END OF SECTION

SECTION 5
CONTROL OF WORK

5-1.01 Authority of Engineer. The Engineer shall have the authority to inspect materials and workmanship for all deviations from the drawings, specifications and other contract provisions which may come to the Engineer's notice. The Engineer's inspection is for the sole benefit of the City and shall not act as a waiver of defects in the work. The Engineer shall decide all questions which may arise as to the quality or acceptability of materials furnished and work performed and as to the manner of performance and rate of progress of the work; all questions which may arise as to the interpretation of the plans and specifications; all questions as to the acceptable fulfillment of the contract on the part of the Contractor; and all questions as to compensation. The Engineer's decision shall be final and the Engineer shall have authority to enforce and make effective those decisions and orders which the Contractor fails to carry out promptly. The Engineer shall have the right to order the work stopped, if in the Engineer's opinion action becomes necessary, until the Engineer has determined and ordered that the work may proceed in due fulfillment of all contract requirements.

5-1.015 Suggestions to Contractor. Any plan or method of work suggested by the Engineer to the Contractor, but not specified or required, if adopted or followed by the Contractor in whole or in part, shall be used at the risk and responsibility of the Contractor; and the Engineer and the City shall assume no responsibility therefor.

5-1.02 Plans and Working Drawings. The contract plans furnished consist of general drawings and show details as are necessary to give a comprehensive idea of the construction contemplated. All authorized alterations affecting the requirements and information given on the contract plans shall be in writing.

The contract plans shall be supplemented by such working drawings prepared by the Contractor as are necessary to adequately control the work. No change shall be made by the Contractor in any working drawing after it has been reviewed by the Engineer without the further written approval of the Engineer.

Working drawings shall be reviewed by the Engineer before any work involving the drawings is performed. It is expressly understood that review of the Contractor's working drawings shall not relieve the Contractor of any responsibility under the contract for the successful completion of the work in conformity with the requirements of the plans and specifications. The Engineer's review of working drawings shall not operate to waive any of the requirements of the plans and specifications or relieve the Contractor of any obligation there under, and defective work, materials and equipment may be rejected notwithstanding the review.

Review by the Engineer of the Contractor's working drawings does not relieve the Contractor of any responsibility for accuracy of dimensions and details. The Contractor shall be responsible for agreement and conformity of the working drawings with the plans and specifications, Special Provisions, and Technical Provisions.

The Engineer's review of working drawings, and other submittals submitted for the Engineer's review by the Contractor shall not act as a waiver of defects subsequently discovered in those documents or in work performed by the Contractor in reliance on those documents.

Working drawings and schedules shall be submitted in the number as required by the Engineer, accompanied by letter of transmittal which shall give a list of the numbers and dates of the drawings submitted. Working drawings shall be complete in every respect and bound in sets. Unless otherwise requested, six copies of working drawings and schedules shall be submitted for approval.

The Contractor shall submit all working drawings and schedules sufficiently in advance of construction requirements to allow ample time for checking, corrections, resubmitting and rechecking. The Contractor shall have no claim for damages or extensions of time on account of any delays due to the revision of drawings or rejection of material. Fabrication or other work performed in advance of approval shall be done entirely at the Contractor's risk.

The Engineer's review of the Contractor's plans shall in no way be construed to impose tort liability on the City or any of its officers or employees by reason of any damage to property or person, including death resulting from or arising out of the use of such plan, and the Contractor shall defend, indemnify and hold harmless the City, its officers and employees from any loss or liability resulting from the use of such plans.

Full compensation for furnishing all working drawings shall be considered as included in the prices paid for the contract items of work to which the drawings relate and no additional compensation will be allowed therefor.

5-1.02A Trench Excavation Safety Plans. In accordance with Section 6705 of the California Labor Code, where the work will involve trenches five feet or more in depth and the estimated or bid cost of excavation is in excess of $25,000, this Section 5-1.02A shall apply. Attention is directed to Section 7-1.01E, "Trench Safety." The Contractor shall, before beginning any excavation or trench work, 5 feet or more in depth, secure a permit "to perform Excavation or Trench work," from the State of California Division of Industrial Safety. Excavation for any trench 5 feet or more in depth shall not begin until the Contractor has submitted to the Engineer, the Contractor's detailed plan for worker protection from the hazards of caving ground during the excavation of such trench. Such plans shall show the details of the design of shoring, bracing, sloping or other provisions to be made for worker protection during such excavation. No such plan shall allow the use of shoring, sloping or a protective system less effective than that required by the Construction Safety Orders of the Division of Occupational Safety and Health. If such plan complies with the shoring system standards established by the Construction Safety Orders, the plan shall be submitted at least 5 days before the Contractor intends to begin excavation for the trench. If such plan varies from the shoring system standards established by the Construction Safety Orders, the plan shall be prepared and signed by an engineer who is registered as a Civil Engineer in the State of California, and the plan and design calculations shall be submitted at least 3 weeks before the Contractor intends to begin excavation for the trench.

The acceptance of the copy of the permit "to perform Excavation or Trench work," or review by the Engineer of the Contractor's detailed plan for worker protection from the hazards of caving ground during the excavation of trenches, shall in no way be construed to impose tort liability on the City or any of its officers or employees by reason of any damage to person, including death or property resulting from or arising out of the use of such plan, and the Contractor shall be fully responsible for any such damage, and the Contractor shall defend,

indemnify and hold harmless the City, its officers and employees for any loss or liability resulting from the use of such plan.

The permit together with a copy of the approved plan for trench safety shall be maintained on the job site at all times.

5-1.03 Conformity With Contract Documents and Allowable Deviations. Work and materials shall conform to the lines, grades, typical cross sections, dimensions and material requirements, including tolerances, shown on the plans or indicated in the specifications. All work shown in drawings, the dimensions of which are not shown, shall be accurately followed to the scale to which the drawings are made. Although measurement, sampling and testing may be considered evidence as to such conformity, the Engineer shall be the sole judge as to whether the work or materials deviate from the plans and specifications, and the Engineer's decision as to any allowable deviations there from shall be final.

5-1.04 Coordination and Interpretation of Plans, General Provisions, Special Provisions, and Technical Provisions. These General Provisions, the Standard Drawings, project plans, Special Provisions, Technical Provisions, contract change orders, and all supplementary documents are essential parts of the contract, and a requirement occurring in one is as binding as though occurring in all. They are intended to be complementary, and to describe and provide for a complete work.

In case of conflict between these Standard Specifications, the Standard Drawings, the project plans, Special Provisions, and the Technical Provisions, the order of precedence shall be as follows:

A. Technical Provisions
B. Project Plans
C. Special Provisions
D. Standard Drawings
E. General Provisions

Should it appear that the work to be done or any of the matters relative thereto are not sufficiently detailed or explained in these specifications, the Special Provisions, the Technical Provisions, or the plans, the Contractor shall apply to the Engineer for such further explanations as may be necessary and shall conform to them as part of the contract. In the event of any doubt or question arising respecting the true meaning of these specifications, the Special Provisions, Technical Provisions or the plans, reference shall be made to the Engineer, whose decision thereon shall be final.

If the Contractor, in the course of the work, discovers any discrepancies between the plan and the conditions actually encountered at the project site, or any errors or omissions in the plans or in the layout given by stakes, points or instructions, it shall be the Contractor's duty to inform the Engineer immediately in writing; and the Engineer shall promptly investigate the same. Any work done after the discovery, until authorized, will be done at the Contractor's risk.

In the event of any discrepancy between any drawing and the figures written thereon, the figures shall be taken as correct. Detail drawings shall prevail over general drawings.

The headings and titles printed on the plans and in these general conditions, in the specifications and elsewhere in the contract documents, are inserted for the convenience of

reference only, and shall not be taken or considered as having any bearing on the interpretation thereof.

5-1.04A Record Drawings. The Contractor shall maintain a record set of drawings of all work continuously as the project progresses. A separate set of prints, for this purpose, shall be kept at the job site at all times. It shall be required that these drawings be up to date and so certified, if requested by the Engineer, at the time each progress bill is submitted.

The information submitted by the Contractor and incorporated by the Engineer into the Record Drawings will be assumed to be reliable, and the Engineer will not be responsible for the accuracy of such information, nor for any errors or omissions which may appear on the Record Drawings as a result.

Upon completion of the work, these drawings shall be turned over to the Engineer. Failure to comply with this requirement may cause retention of Final Payment.

5-1.04B Arrangement. The specifications and drawings herein referred to are arranged and numbered for convenience. Such arrangement and numbering shall not limit the work required by any separate trade. The terms and conditions of limitation are between Contractor and their sub-contractors. The General Conditions apply to all work including authorized extras.

5-1.05 Order of Work. When required by the Special Provisions, Technical Provisions or plans, the Contractor shall follow the sequence of operations as set forth therein.

Full compensation for conforming to those requirements will be considered as included in the prices paid for the various contract items of work and no additional compensation will be allowed therefor.

5-1.06 Superintendence. The Contractor shall designate in writing before starting work, an authorized representative who shall have the authority to represent and act for the Contractor.

When the Contractor is comprised of two or more persons, firms, partnerships, or corporations functioning on a joint venture basis, the Contractor shall designate in writing before starting work, the name of one authorized representative who shall have the authority to represent and act for the Contractor.

The authorized representative shall be present at the site of the work at all times while work is actually in progress on the contract. When work is not in progress and during periods when work is suspended, arrangements acceptable to the Engineer shall be made for any emergency work which may be required.

Whenever the Contractor or the Contractor's authorized representative is not present on any particular part of the work where it may be desired to give direction, orders will be given by the Engineer, which shall be received and obeyed by the superintendent or foreman who may have charge of the particular work in reference to which the orders are given.

Any order given by the Engineer, not otherwise required by the specifications to be in writing, will on request of the Contractor, be given or confirmed by the Engineer in writing.

The Engineer shall be supplied at all times with the names and telephone numbers of at least two persons in charge of or responsible for the work who can be reached for emergency work 24 hours a day, 7 days a week.

5-1.065 Status of Contractor. The City's right of supervision hereunder shall not make the Contractor an agent of the City and the liability of the Contractor for all damages to persons or to public or private property arising from the Contractor's execution of the work, shall not be lessened because of such supervision.

5-1.07 Lines and Grades. Stakes or marks will be set by the Engineer as the Engineer determines to be necessary to establish the lines and grades required for the completion of the work specified in these specifications, on the plans, in the Special Provisions, and the Technical Provisions.

When the Contractor requires the stakes or marks, the Contractor shall notify the Engineer of the requirements in writing a reasonable length of time in advance of starting operations that require the stakes or marks. In no event shall a notice of less than two working days be considered a reasonable length of time.

Stakes and marks set by the Engineer shall be carefully preserved by the Contractor. In case the stakes and marks are destroyed or damaged, they will be replaced at the Engineer's earliest convenience. The Contractor will be charged for the cost of necessary replacement or restoration of stakes and marks which in the judgment of the Engineer were carelessly or willfully destroyed or damaged by the Contractor's operations and the Contractor shall have no claim for extension of time. This charge will be deducted from any moneys due or to become due the Contractor.

The Contractor shall not disturb any monuments found within the area of the work or improvements unless they have first procured written permission from the Engineer. The Contractor shall bear the expense of resetting any monument which may be disturbed or damaged without permission, and shall be responsible for any mistakes that may be caused by their unnecessary loss or disturbance.

Any work done without lines, levels, or grades being given by the Engineer or without the supervision of an inspector, may be ordered replaced at the Contractor's sole cost and expense, except when such work is authorized by the Engineer in writing.

5-1.08 Inspection. The Engineer shall, at all times, have safe access to the work during its construction, and shall be furnished with every reasonable facility for ascertaining that the materials and the workmanship are in accordance with the requirements and intentions of these specifications, the Special Provisions, Technical Provisions, and the plans. All work done and all materials furnished shall be subject to the Engineer's inspection.

The inspection of the work or materials shall not relieve the Contractor of any of the Contractor's obligations to fulfill the contract as prescribed. Work and materials not meeting the requirements shall be made good and unsuitable work or materials may be rejected, notwithstanding that the work or materials have been previously inspected by the Engineer or that payment therefor has been included in a progress estimate.

Re-examination of any work may be ordered by the Engineer, and, if so ordered, the work must be uncovered by the Contractor. If such work is found to be in accordance with the contract documents, the City shall pay the cost of re-examination and replacement. If such work is not in accordance with the contract documents, the Contractor shall pay such cost.

Projects financed in whole or in part with Federal, State, County or Regional agency funds or otherwise subject to the jurisdiction or control by another public entity, shall be subject

to inspection at all times by the appropriate Federal, State, County, or Regional agency or other public entity involved.

The Contractor shall notify the Engineer at least 24 hours in advance of the time required for the services of the Inspector. Should the Contractor fail to notify the Engineer and proceeds with work requiring inspection, all said work shall be rejected by the Engineer. The work so rejected may be subsequently accepted by the Engineer only after receipt of the certification described below and only if the Engineer approves such certification. Should the Contractor request acceptance of such rejected work the Contractor shall, at the Contractor's sole expense, secure the services of: private materials testing laboratories, consulting engineers or licensed land surveyors, as previously approved by the City, who shall certify that the work does, in fact, conform to the requirements of the plans and these specifications.

Neither the inspection by the Engineer nor by an inspector, nor any order, measurement, approved notification, certificate, or payment of money, or acceptance of any part or whole of the work, nor any extension of time, nor any possession by the City or its agents, shall operate as a waiver of any provisions of this Contract or any of power reserved therein to the City or its agents, or any right to damage there under; nor shall any waiver by the City of any breach of this Contract be held to be a waiver of any subsequent breach of the same provision or any other provision of the contract. All remedies shall be taken and construed as cumulative.

5-1.08A Inspection for Sole Benefit of City. The Contractor is hereby advised that inspection of the Contractor's work during the contract is for the sole and exclusive benefit of the City. The City's inspection shall not relive the Contractor from any obligation to perform the work pursuant to the plans and specifications, even if defects and deficiencies in the work were noted or observed at the time of inspection and not communicated to the Contractor.

5-1.09 Removal of Rejected and Unauthorized Work. All work which has been rejected shall be remedied, or removed and replaced by the Contractor in an acceptable manner and no compensation will be allowed to the Contractor for the removal, replacement, or remedial work.

Any work done beyond the lines and grades shown on the plans or established by the Engineer, or any extra work done without written authority will be considered as unauthorized work and will not be paid for. Upon order of the Engineer unauthorized work shall be remedied, removed, or replaced at the Contractor's expense.

Upon failure of the Contractor to comply promptly with any order of the Engineer made under this Section 5-1.09, the Engineer may cause rejected or unauthorized work to be remedied, removed, or replaced, and to deduct the costs from any moneys due or to be come due the Contractor.

5-1.09A Acceptance of Defective or Nonconforming Work. If the City prefers to accept defective or nonconforming work, the City may do so in its sole discretion and without the consent of the Contractor instead of requiring its removal and correction, in which case a written Change Order will be issued to reflect a reduction in the contract amount. Such adjustment shall be effected whether or not final payment has been made. Acceptance of defective or nonconforming work may occur only upon issuance by the City of a written Change Order or as set forth above.

5-1.09B Modification of Contractor's Work. The City may modify the Contractor's work, either before or after acceptance of the project, without commencing or voiding any of the warranties or accepting, in part or in whole, the Contractor's work. Notification of the City's intent to modify the Contractor's work will be made in writing 48 hours prior to commencement of the modification. Whenever the City makes a claim against the Contractor for defective workmanship or materials, it shall be the sole obligation of the Contractor to establish that the defect being complained of was due solely to the modification, if any, made by the City.

5-1.10 Equipment and Plants. Only equipment and plants suitable to produce the quality of work and materials required will be permitted to operate on the project.

Plants shall be designed and constructed in accordance with general practice for the equipment and shall be of sufficient capacity to insure the production of sufficient material to carry the work to completion within the time limit.

The Contractor shall provide adequate and suitable equipment and plants to meet the above requirements, and when ordered by the Engineer shall remove unsuitable equipment from the work and discontinue the operation of unsatisfactory plants.

The Contractor shall identify each piece of equipment, other than hand tools, by means of an identifying number plainly stenciled or stamped on the equipment at a conspicuous location, and shall furnish to the Engineer a list giving the description of each piece of equipment and its identifying number. In addition, the make, model number and empty gross mass of each unit of compacting equipment shall be plainly stamped or stenciled in a conspicuous place on the unit. The gross mass shall be either the manufacturer's rated mass or the scale weight.

The make, model, serial number and manufacturer's rated capacity for each scale shall be clearly stamped or stenciled on the load receiving element and its indicator or indicators. All meters shall be similarly identified, rated and marked. Upon request of the Engineer, the Contractor shall furnish a statement by the manufacturer, designating sectional and weigh bridge capacities of portable vehicle scales.

5-1.11 Alternative Equipment. While certain of these specifications may provide that equipment of a particular size and type is to be used to perform portions of the work, it is to be understood that the development and use of new or improved equipment is to be encouraged.

The Contractor may request, in writing, permission from the Engineer to use equipment of a different size or type in place of the equipment specified.

The Engineer, before considering or granting the request, may require the Contractor to furnish, at the Contractor's expense, evidence satisfactory to the Engineer that the equipment proposed for use by the Contractor is capable of producing work equal to, or better than, that which can be produced by the equipment specified.

If permission is granted by the Engineer, it shall be understood that the permission is granted for the purpose of testing the quality of work actually produced by the equipment and is subject to continuous attainment of results which, in the opinion of the Engineer, are equal to, or better than, that which can be obtained with the equipment specified. The Engineer shall have the right to withdraw such permission at any time that the Engineer determines that the alternative equipment is not producing work that is equal, in all respects, to that which can be produced by the equipment specified. Upon withdrawal of the permission by the Engineer, the

Contractor will be required to use the equipment originally specified and shall, in accordance with the directions of the Engineer, remove and dispose of or otherwise remedy, at the Contractor's expense, any defective or unsatisfactory work produced with the alternative equipment.

Neither the City nor the Contractor shall have any claim against the other for either the withholding or the granting of permission to use alternative equipment, or for the withdrawal of the permission.

Permission to use alternative equipment in place of equipment specified will only be granted where the equipment is new or improved and its use is deemed by the Engineer to be in furtherance of the purposes of this Section 5-1.11. The approval for use of particular equipment on any project shall in no way be considered as an approval of the use of such equipment on any other project.

Nothing in this Section 5-1.11 shall relieve the Contractor of the responsibility for furnishing materials or producing finished work of the quality specified in these specifications, in the Special Provisions, or in the Technical Provisions.

5-1.115 Alternative Methods of Construction. Whenever the plans or specifications provide that more than one specified method of construction or more than one specified type of material or construction equipment may be used to perform portions of the work and leave the selection of the method of construction or the type of material or equipment to be used up to the Contractor, it is understood that the City does not guarantee that every such method of construction or type of material or equipment can be used successfully throughout all or any part of any project. It shall be the Contractor's responsibility to select and use the alternative or alternatives which will satisfactorily perform the work under the conditions encountered. In the event some of the alternatives are not feasible or it is necessary to use more than one of the alternatives on any project, full compensation for any additional cost involved shall be considered as included in the contract price paid for the item of work involved and no additional compensation will be allowed therefor.

5-1.12 Character of Workers. The Contractor shall employ only such foreman, mechanics and laborers as are competent and skilled in their respective lines of work. If any subcontractor or person employed by the Contractor shall appear to the Engineer to be incompetent or to act in a disorderly or improper manner, they shall be discharged immediately on the request of the Engineer, without costs to the City, and that person shall not again be employed on the work.

5-1.13 Final Inspection. When the work has been completed, the Engineer will make the final inspection.

5-1.14 Cost Reduction Incentive. The Contractor may submit to the Engineer, in writing, proposals for modifying the plans, specifications or other requirements of the contract for the sole purpose of reducing the total cost of construction. The cost reduction proposal shall not impair, in any manner, the essential functions or characteristics of the project, including but not limited to service life, economy of operation, ease of maintenance, desired appearance, or design and safety standards.

Cost reduction proposals shall contain the following information:

1. A description of both the existing contract requirements for performing the work and the proposed changes.
2. An itemization of the contract requirements that must be changed if the proposal is adopted.
3. A detailed estimate of the cost of performing the work under the existing contract and under the proposed change. The estimates of cost shall be determined in the same manner as if the work were to be paid for on a change order basis as provided in Section 9-1.03, "Change Order Payment."
4. A statement of the time within which the Engineer must make a decision thereon.
5. The contract items of work affected by the proposed changes, including any quantity variation attributable thereto.

The provisions of this Section 5-1.14 shall not be construed to require the Engineer to consider any cost reduction proposal which may be submitted hereunder; proposed changes in basic design of a bridge or of a pavement type will not be considered as an acceptable cost reduction proposal; the City will not be liable to the Contractor for failure to accept or act upon any cost reduction proposal submitted pursuant to this Section 5-1.14 nor for any delays to the work attributable to any cost reduction proposal. If a cost reduction proposal is similar to a change in the plans or specifications, under consideration by the City for the project, at the time said cost reduction proposal is submitted or if the cost reduction proposal is based upon or similar to Standard Drawings adopted by the City after the advertisement for the contract, the Engineer will not accept such cost reduction proposal and the City reserves the right to make the changes without compensation to the Contractor under the provisions of this Section 5-1.14.

The Contractor shall continue to perform the work in accordance with the requirements of the contract until an executed change order, incorporating the cost reduction proposal has been issued. If an executed change order has not been issued by the date upon which the Contractor's cost reduction proposal specifies that a decision thereon should be made, or such other date as the Contractor may subsequently have specified in writing, the cost reduction proposal shall be deemed rejected.

The Engineer shall be the sole judge of the acceptability of a cost reduction proposal and of the estimated net savings in construction costs from the adoption of all or any part of such cost reduction proposal. In determining the estimated net savings, the right is reserved to disregard the contract bid prices if in the judgment of the Engineer, those prices do not represent a fair measure of the value of work to be performed or to be deleted.

The City reserves the right where it deems such action appropriate, to require the Contractor to pay in part or whole the City's costs of investigating a cost reduction proposal submitted by the Contractor as a condition of considering the cost reduction proposal. Where this condition is imposed, the Contractor shall indicate acceptance thereof in writing, and that acceptance shall constitute full authority for the City to deduct amounts payable to the City from any monies due or that may become due to the Contractor under the contract.

If the Contractor's cost reduction proposal is accepted in whole or in part, the acceptance will be by a contract change order, which shall specifically state that it is executed pursuant to this Section 5-1.14.

The change order shall incorporate the changes in the plans and specifications which are necessary to permit the cost reduction proposal or that part of it as has been accepted to be put into effect, and shall include any conditions upon which the City's approval thereof is based if

the approval of the City is conditional. The change order shall also set forth the estimated net savings in construction costs attributable to the cost reduction proposal effectuated by the change order, and shall further provide that the Contractor be paid 50 percent of that estimated net savings amount. The Contractor's cost of preparing the cost reduction incentive proposal and the City's cost of investigating a cost reduction incentive proposal, including any portion thereof paid by the Contractor, shall be excluded from consideration in determining the estimated net savings in construction costs.

Acceptance of the cost reduction proposal and performance of the work there under shall not extend the time of completion of the contract unless specifically provided for in the contract change order authorizing the use of the cost reduction proposal.

The amount specified to be paid to the Contractor in the change order which effectuates a cost reduction proposal shall constitute full compensation to the Contractor for the cost reduction proposal and the performance of the work thereof pursuant to the change order.

The City expressly reserves the right to adopt a cost reduction proposal for general use on contracts administered by the City when it determines that the cost reduction proposal is suitable for application to other contracts. When an accepted cost reduction proposal is adopted for general use, only the Contractor who first submitted such cost reduction proposal will be eligible for compensation pursuant to this Section 5-1.14, and in that case, only as to those contracts awarded to that Contractor prior to submission of the accepted cost reduction proposal and as to which the cost reduction proposal is also submitted and accepted. Cost reduction proposals identical or similar to previously submitted cost reduction proposals will be eligible for consideration and compensation under the provisions of this Section 5-1.14 if the identical or similar previously submitted cost reduction proposals were not adopted for general application to other contracts administered by the City. Subject to the provisions contained herein, the City or any other public agency shall have the right to use all or any part of any submitted cost reduction proposal without obligation or compensation of any kind to the Contractor.

This Section 5-1.14 of the specifications shall apply only to contracts awarded to the lowest bidder pursuant to competitive bidding.

5-1.15 Project Appearance. The Contractor shall maintain a neat appearance to the work. In any area visible to the public, the following shall apply:

When practicable, broken concrete and debris developed during clearing and grubbing shall be disposed of concurrently with its removal. If stockpiling is necessary, the material shall be removed or disposed of daily unless otherwise specified in the Special Provisions, Technical Provisions, or as directed by the Engineer.

All debris shall be removed daily. Forms or false work that are to be re-used shall be stacked neatly concurrently with their removal. Forms and false work which are not to be re-used shall be disposed of concurrently with their removal.

The Contractor shall not sweep construction and other debris into the storm drainage system and shall prevent such materials from the entering the storm drains.

The Contractor is advised that disposal of dirt and other debris into the public storm drain system is prohibited under the Los Altos Municipal Code and under California State Fish & Game Code. Any fines or penalties levied against the Contractor for violation of the above and related regulations are the sole responsibility of the Contractor.

Except as otherwise provided as a separate pay item, full compensation for conforming to the provisions in this Section 5-1.15 shall be considered as included in prices paid for the various contract items of work involved and no additional compensation will allowed therefore. If the Engineer determines that cleanup has been unsatisfactory, and if the Contractor fails to make corrective measures within twenty-four (24) hours of written notice by the Engineer of this condition, the Engineer may direct City forces to do this work and the costs so incurred shall be deducted from any amounts due or to become due the Contractor.

5-1.16 Conferences. At any time during progress of the work, the Engineer shall have authority to require the Contractor and any subcontractors and/or suppliers at any tier to attend a job-site conference. Any notice of such conference shall be duly observed and complied with by the Contractor and subcontractors and suppliers.

END OF SECTION

SECTION 6
CONTROL OF MATERIALS

6-1 GENERAL

6-1.01 Source of Supply and Quality of Materials. The Contractor shall furnish all materials required to complete the work, except materials that are designated in the specifications to be furnished by the City.

Only materials conforming to the requirements of the specifications shall be incorporated in the work.

The materials furnished and used shall be new, except as may be provided elsewhere in these specifications, on the plans or in the Special Provisions or Technical Provisions. The materials shall be manufactured, handled, and used in a workmanlike manner to insure completed work in accordance with the plans and specifications.

Materials to be used in the work will be subject to inspection and tests by the Engineer or the Engineer's designated representative. The Contractor shall furnish without charge such samples as may be required.

The Contractor shall furnish the Engineer a list of the Contractor's sources of materials and the locations at which those materials will be available for inspection. The list shall be furnished to the Engineer in sufficient time to permit inspecting and testing of materials to be furnished from the listed sources in advance of their use. After testing, if it found that the proposed sources of supply do not furnish a uniform product, or if the product from any such sources proves unacceptable at any time, the Contractor shall furnish approved material from other sources subject to prior approval of the City. No material which, even after approval, has in any way become unfit for use shall be used in the work. The Engineer may inspect sample or test materials at the source of supply or other locations, but the inspection, sampling or testing will not be undertaken until the Engineer is assured by the Contractor of the cooperation and assistance of both the Contractor and the supplier of the material. The Contractor shall assure that the Engineer or the Engineer's authorized representative has free access at all times to the material to be inspected, sampled or tested. It is understood that the inspections and tests in no way shall be considered as a guaranty of acceptance of the material nor of continued acceptance of material presumed to be similar to that upon which inspections and tests have been made, and that inspection and testing performed by the City shall not relieve the Contractor or the Contractor’s suppliers of responsibility for quality control.

Manufacturers' warranties, guaranties, instruction sheets and parts lists, which are furnished with certain articles or materials incorporated in the work, shall be delivered to the Engineer before acceptance of the contract.

6-1.02 City-Furnished Materials. Materials which are listed as City-furnished materials in the Special Provisions and/or Technical Provisions will be available to the Contractor free of charge, unless otherwise specified.

The Contractor shall submit a written request to the Engineer for the delivery of City-furnished material at least 15 days in advance of the date of its intended use. The request shall state the quantity and the type of each material.

The locations at which City-furnished materials will be available to the Contractor will be designated in the Special Provisions and/or Technical Provisions. In those cases the materials shall be hauled to the site of the work by the Contractor at the Contractor's expense, including any necessary loading and unloading that may be involved. All costs of handling and placing City-furnished material shall be considered as included in the price paid for the contract item involving the City-furnished material.

The Contractor shall be responsible for all City-furnished materials furnished to the Contractor, and shall pay all demurrage and storage charges. City-furnished materials lost or damaged from any cause whatsoever shall be replaced by the Contractor at the Contractor's expense. The Contractor shall be liable to the City for the cost of replacing City-furnished material and those costs may be deducted from any monies due or to become due the Contractor. All City-furnished material that is not used on the work shall remain the property of the City and shall be delivered at the location specified by the Engineer.

6-1.03 Storage of Materials. Articles or materials to be incorporated in the work shall be stored in such a manner as to insure the preservation of their quality and fitness for the work, and to facilitate inspection.

6-1.04 Defective Materials. All materials, which the Engineer has determined, do not conform to the requirements of the plans and specifications will be rejected whether in place or not. They shall be removed immediately from the site of the work, unless otherwise permitted by the Engineer. No rejected material, the defects of which have been subsequently corrected, shall be used in the work, unless approval in writing has been given by the Engineer. Upon failure of the Contractor to comply promptly with any order of the Engineer made under the provisions in this Section 6-1.04, the Engineer shall have authority to cause the removal and replacement of rejected material and to deduct the cost thereof from any moneys due or to become due the Contractor.

6-1.05 Trade Names and Alternatives. For convenience in designation on the plans or in the specifications, certain articles or materials, to be incorporated in the work may be designated under a trade name or the name of a manufacturer and the manufacturer's catalogue information and followed by the words "or equal." The use of an alternative article or material, which is of equal quality and of the required characteristics for the purpose intended, will be permitted, subject to the following requirements:

The burden of proof as to the quality and suitability of alternatives shall be upon the Contractor and the Contractor shall furnish all information necessary as required by the Engineer. The Engineer shall be the sole judge as to the quality and suitability of alternative articles or materials and the Engineer's decision shall be final.

Whenever the specifications permit the substitution of a similar or equivalent material or article, no tests or action relating to the approval of the substitute material will be made until the request for substitution is made in writing by the Contractor accompanied by complete data as to the equality of the material or article proposed. The Contractor shall have at least 35 days from the award of the contract to submit data substantiating a request for substitution of "an equal" item. However, the request shall be made in ample time to permit approval without delaying the work.

Wherever a product, material or equipment is identified by only one trade name or manufacturer, it shall be understood that this particular product, material, or equipment is desired to match others now in use by the City, or is the only known product, material or equipment which will satisfy the requirements. In such cases, no alternates will be considered.

Wherever in the contract documents the name and address of a manufacturer or supplier is given for a material, product, or equipment, or if any other source of a material, product, or equipment is indicated therefor, such information is given for the convenience of the Contractor only, and no limit, restriction, or direction is indicated or intended thereby, nor is the accuracy or reliability of such information guaranteed. It shall be the responsibility of the Contractor to determine the accurate identity and location of any such manufacturer, supplier, or other source of any material, product, or equipment called for in the contract documents.

Approval by the Engineer of substitute items proposed by the Contractor shall not relieve Contractor of the responsibility for full compliance with the contract documents and for adequacy of the substitute item. The Contractor shall also be responsible for resultant changes and all additional costs, which the substitution requires in its work, the work of subcontractors and of other contractors and shall effect the changes without cost to the City.

The Contractor shall order special products, materials and equipment in advance of their being needed in order that the work not be delayed.

6-1.05A No Warranty for Listed Material Supplier or Equipment Manufacturer. The City does not warrant nor guarantee the ability of any material supplier or equipment manufacturer listed in the specifications to perform their work in a timely manner or in a manner acceptable to City. Furthermore, the City does not warrant that such materials or equipment installed and in place will be acceptable to the City.

6-1.06 Plant Inspection. The Engineer may inspect the production of material, or the manufacture of products at the source of supply.

Plant inspection, however, will not be undertaken until the Engineer is assured of the cooperation and assistance of both the Contractor and the material producer. The Engineer or the Engineer's authorized representative shall have free entry at all times to those parts of the plant as concerns the manufacture or production of the materials. Adequate facilities shall be furnished free of charge to make the necessary inspection. The City assumes no obligation to inspect materials at the source of supply.

6-1.07 Certificates of Compliance. A Certificate of Compliance shall be furnished prior to the use of any materials for which these specifications, the Special Provisions, or the Technical Specifications require that such a certificate be furnished. In addition, when so authorized in these specifications or in the Special Provisions or Technical Provisions, the Engineer may permit the use of certain materials or assemblies prior to sampling and testing if accompanied by a Certificate of Compliance. The certificate shall be signed by the manufacturer of the material or the manufacturer of assembled materials and shall state that the materials involved comply in all respects with the requirements of the specifications. A Certificate of Compliance shall be furnished with each lot of material delivered to the work and the lot so certified shall be clearly identified in the certificate.

All materials used on the basis of a Certificate of Compliance may be sampled and tested at any time. The fact that material is used on the basis of a Certificate of Compliance shall not relieve the Contractor of responsibility for incorporating material in the work which conforms to the requirements of the plans and specifications and any material not conforming to the requirements will be subject to rejection whether in place or not.

The City reserves the right to refuse to permit the use of material on the basis of a Certificate of Compliance.

The form of the Certificate of Compliance and its disposition shall be approved by the Engineer.

6-1.075 Proof of Compliance with Contract. In order that the Engineer may determine whether the Contractor has complied with the requirements of the contract not readily enforceable through inspection and tests of work and material, the Contractor shall, at any time when requested, submit to the Engineer properly authenticated documents or other satisfactory proofs as to the Contractor's compliance with such requirements.

6-1.08 Foreign Materials. Materials which are manufactured, produced or fabricated outside of the United States shall be delivered to a distribution point in San Francisco Bay Area, unless otherwise required in these specifications, the Special Provisions, or in the Technical Provisions where they shall be retained for a sufficient period of time to permit inspection, sampling, and testing.

Attention is directed to the provisions in Section 8-1.07, "Liquidated Damages." The Contractor shall not be entitled to an extension of time for acts or events occurring outside of the United States and it shall be the Contractor's responsibility to deliver materials obtained from outside of the United States to the point of entry into the continental United States in sufficient time to permit timely delivery to the job site.

The Contractor, at no cost to the City, shall supply the facilities and arrange for any testing required in California which the City is not equipped to perform. All testing by the Contractor shall be subject to witnessing by the Engineer.

The manufacturer, producer or fabricator of foreign material shall furnish to the Engineer a Certificate of Compliance in accordance with the provisions in Section 6-1.07, "Certificates of Compliance." In addition, certified mill test reports clearly identifiable to the lot of material shall be furnished where required in these specifications or otherwise requested by the Engineer.

6-1.10 Commencement of Warranty. Unless expressly agreed to in writing by the City, all warranties required under the contract documents shall commence upon acceptance by the City of the entire project. Use or occupancy by the City of a portion of the project either before or after completion of that portion of the work shall not commence the running of any warranty required under the contract documents.

6-1.11 Samples. All materials must be of specified quality and fully equal to samples previously submitted. The Contractor shall furnish to the Engineer for testing, free of charge, samples of all materials proposed to be used in the work, and also samples of completed Portland cement concrete or asphalt concrete work. When so required by the Engineer, the Contractor shall submit for approval samples of the various materials, together with the finish thereon, as

specified for that intended to be used in the work. All materials and workmanship shall be equal in every respect to that of the samples so submitted and approved. These samples shall be sent to the place as the Engineer may direct. In all cases, freight must be prepaid by the Contractor. These samples will be returned to the Contractor, if requested, freight collect.

Where samples are called for, 2 or more samples of materials to be used in fulfilling the requirements of the specifications shall be deposited with the Engineer as soon as possible prior to their use in the work.

No materials or equipment of which samples are required to be submitted for approval shall be used on the work until approval has been given by the Engineer, save only at the Contractor's risk and expense.

6-2 (Blank)

6-3 TESTING

6-3.01 General. Unless otherwise specified, all tests shall be performed in accordance with the methods approved by the City and shall be made by the Engineer or the Engineer's designated representative.

The City uses Caltrans and American Society for Testing and Material (ASTM) developed methods for testing the quality of materials and work. These methods are identified by number and are referred to in the specifications as California and ASTM Tests.

Whenever a reference is made in the specifications to a California Test by number, it shall mean the California Test in effect on the day the Notice to Contractors for the work is dated.

Whenever the specifications provide an option between 2 or more tests, the Engineer will determine the test to be used.

Whenever a reference is made in the specifications to a specification, manual, or test designation either of the American Society for Testing and Materials, the American Association of State Highway and Transportation Officials, Federal Specifications, or any other recognized national organization, and the number or other identification representing the year of adoption or latest revision is omitted, it shall mean the specification, manual, or test designation in effect on the day the Notice to Contractors for the work is dated.

Whenever said specification manual or test designation provides for test reports (such as certified mill test reports) from the manufacturer, copies of such reports, identified as to the lot of material, shall be furnished to the Engineer. The manufacturer's test reports shall supplement the inspection, sampling and testing provisions in Section 6, "Control of Materials," and shall not constitute a waiver of the City's right to inspect.

When material which cannot be identified with specific test reports is proposed for use, the Engineer may, at the Engineer's discretion, select random samples from the lot for testing. Test specimens from the random samples, including those required for retest, shall be prepared in accordance with the referenced specification and furnished by the Contractor at the Contractor's expense. The number of such samples and test specimens shall be entirely at the discretion of the Engineer.

When requested by the Engineer, the Contractor shall furnish, without charge, samples of all materials entering into the work, and no material shall be used prior to approval by the

Engineer, except as provided in Section 6-1.07, "Certificates of Compliance." Samples of material from local sources shall be taken by or in the presence of the Engineer, otherwise the samples will not be considered for testing.

6-3.02 Testing by the Contractor. The Contractor shall be responsible for controlling the quality of the material entering the work and of the work performed, and shall perform testing as necessary to ensure control. The test methods used for quality control testing shall be as determined by the Contractor. The results of the testing shall be made available to the Engineer upon request. These tests are for the Contractor's use in controlling the work and will not be accepted for use as acceptance tests.

Full compensation for performing quality control tests and making the results available to the Engineer shall be considered as included in the contract prices paid for the various items of work involved and no additional compensation will be allowed therefor.

6-3.03 Soils and concrete tests. Soils and concrete tests shall be made by a qualified testing laboratory selected by the Engineer. The Contractor shall notify the Engineer when the Contractor is ready for tests. The Engineer will determine the locations at which tests are to be made. Costs for tests of samples meeting the requirements of the specifications will be borne by the City whereas costs for tests of samples failing to meet the requirements of the specifications will be borne by the Contractor.

END OF SECTION

SECTION 7
LEGAL RELATIONS AND RESPONSIBILITY

7-1.01 Laws to be Observed. The Contractor shall keep fully informed of all existing and future State and Federal laws and county and municipal ordinances and regulations which in any way affect those engaged or employed in the work, or the materials used in the work, or which in any manner affect the conduct of the work, and of all orders and decrees of bodies or tribunals having any jurisdiction or authority over the same. The Contractor shall at all times observe and comply with, and shall cause all the Contractor's agents and employees to observe and comply with all existing and future laws, ordinances, regulations, orders and decrees of bodies or tribunals having any jurisdiction or authority over the work; and shall protect and indemnify the City of Los Altos, its elected and appointed boards, officers, employees and agents thereof connected with the work, including but not limited to the Engineer, against any claim or liability arising from or based on the violation of any work performed under the contract, or based on the violation of any law, ordinance, regulation, order, or decree, whether by the Contractor or the Contractor's employees. If any discrepancy or inconsistency is discovered in the plans, drawings, specifications, or contract for the work in relation to any law, ordinance, regulation, order or decree the Contractor shall forthwith report the same to the Engineer in writing.

7-1.01A Labor Code Requirements. Attention is directed to the following requirements of the Labor Code:

7-1.01A(1) Hours of Labor. Eight hours labor constitutes a legal day's work. The Contractor shall forfeit, as a penalty to the City, $50 for each worker employed in the execution of the contract by the Contractor or any subcontractor under the Contractor for each calendar day during which that worker is required or permitted to work more than 8 hours in any one calendar day and 40 hours in any one calendar week in violation of the provisions of the Labor Code, and in particular, Section 1810 to Section 1815, thereof, inclusive, except that work performed by employees of Contractor in excess of 8 hours per day, and 40 hours during any one week, shall be permitted upon compensation for all hours worked in excess of 8 hours per day at not less than one and one-half times the basic rate of pay, as provided in Section 1815 thereof.

7-1.01A(2) Prevailing Wage. The Contractor shall comply with Labor Code Sections 1774 and 1775. Pursuant to said Section 1775 the Contractor shall forfeit to the City a penalty of not more than fifty dollars ($50) for each calendar day, or portion thereof, for each worker paid less than the prevailing rates as determined by the Director of Industrial Relations for the work or craft in which the worker is employed for any public work done under the contract by the Contractor or by any subcontractor under the Contractor in violation of the provisions of the Labor Code and in particular, Labor Code Sections 1770 to 1780, inclusive. The amount of this forfeiture shall be determined by the Labor Commissioner and shall be based on consideration of the Contractor's mistake, inadvertence, or neglect in failing to pay the correct rate of prevailing wages, or the previous record of the Contractor in meeting the Contractor's prevailing wage obligations, or a Contractor's willful failure to pay the correct rates of prevailing wages. A mistake, inadvertence, or neglect in failing to pay the correct rate of prevailing wages is not

excusable if the Contractor had knowledge of the obligations under the Labor Code. In addition to the penalty and pursuant to said Labor Code Section 1775, the difference between the prevailing wage rates and the amount paid to each worker for each calendar day or portion thereof for which each worker was paid less than the prevailing wage rate shall be paid to each worker by the Contractor.

Pursuant to the provisions of Section 1773 of the Labor Code of the State of California, the City has obtained the general prevailing rate of wages (which rate includes employer payments for health and welfare, pension, vacation, travel time, and subsistence pay as provided for in Section 1773.8 of the Labor Code, apprenticeship or other training programs authorized by Section 3093 of the Labor Code, and similar purposes) applicable to the work to be done, for straight time, overtime, Saturday, Sunday and holiday work. The holiday wage rate listed shall be applicable to all holidays recognized in the collective bargaining agreement of the particular craft, classification or type of workers concerned. These wage rates are on file in the office of the City Clerk at the City of Los Altos.

The wage rates determined by the Director of Industrial Relations refer to expiration dates. If the published wage rate does not refer to a predetermined wage rate to be paid after the expiration date, said published rate of wage shall be in effect for the life of the contract. If the published wage rate refers to a predetermined wage rate to become effective upon expiration of the published wage rate and the predetermined wage rate is on file with the Department of Industrial relations, such predetermined wage rate shall become effective on the date following the expiration date and shall apply to the contract in the same manner as if it had been published in said publication. If the predetermined wage rate refers to one or more additional expiration dates with additional predetermined wage rates, which expiration dates occur during the life of the contract, each successive predetermined wage rate shall apply to the contract on the date following the expiration date of the previous wage rate. If the last of such predetermined wage rates expires during the life of the contract, such wage rate shall apply to the balance of the contract.

Pursuant to Section 1773.2 of the Labor Code, general prevailing wage rates shall be posted by the Contractor at a prominent place at the site of the work.

The City will not recognize any claim for additional compensation because of the payment by the Contractor of any wage rate in excess of the prevailing wage rate set forth in the contract. The possibility of wage increases is one of the elements to be considered by the Contractor in determining the bid, and will not under any circumstances be considered as the basis of a claim against the City on the contract.

7-1.01A(2)(a) Travel and Subsistence Payments. Attention is directed to the requirements of Section 1773.8 of the Labor Code. The Contractor shall make travel and subsistence payments to each worker, needed to execute the work, in accordance with the requirements in Labor Code Section 1773.8.

7-1.01A(3) Payroll Records. The Contractor is responsible for complying with Labor Code Section 1776, and regulations implementing that code. The Contractor shall be responsible for compliance by the Contractor's subcontractors.

7-1.01A(4) Labor Nondiscrimination. Attention is directed to Section 1735 of the Labor Code, which reads as follows:

"No discrimination shall be made in the employment of persons upon public works because of the race, religious creed, color, national origin, ancestry, physical disability, medical disability, medical condition, marital status, or sex of such persons, except as provided in Section 12940 of the Government Code, and every contractor for public works violating this section is subject to all the penalties imposed for a violation of this chapter."

7-1.01A(5) Apprentices. Attention is directed to Sections 1777.5, 1777.6 and 1777.7 of the California Labor Code and Title 8, California Administrative Code Section 200 et seq. To insure compliance and complete understanding of the law regarding apprentices, and specifically the required ratio there under, each contractor or subcontractor should, where some question exists, contact the Division of Apprenticeship Standards, State of California, 455 Golden Gate Avenue, San Francisco, CA 94102, or one of its branch offices, prior to commencement of work on the public works contract. Responsibility for compliance with this Section 7-1.01A(5) lies with the Contractor.

7-1.01A(6) Workers' Compensation. Pursuant to the requirements of Section 1860 of the Labor Code, the Contractor will be required to secure the payment of workers' compensation to the Contractor's employees in accordance with the provisions of Section 3700 of the Labor Code. Before beginning the work, the Contractor shall furnish to the City, in triplicate, satisfactory proof that the Contractor has taken out, for the period covered by the work under the contract, full compensation insurance for all persons whom the Contractor may employ directly or through subcontractors, in carrying out the work contemplated under the contract, in accordance with the Workers' Compensation and Insurance Act", Division IV of the Labor Code of the State of California and any acts amendatory thereof. Such insurance shall be maintained in full force and effect during the period covered by the contract.

If the Contractor fails to maintain such insurance, the City may take out compensation insurance covering any claims which the City might be liable to pay under the provisions of the Act by reason of any employee of the Contractor being injured or killed, and deduct and retain the amount of the premiums for such insurance from any sums due the Contractor.

Prior to performing the work of the contract, the Contractor shall also sign and file with the City the certification required by Section 1860 of the Labor Code.

If any injury occurs to any employee of the Contractor for which the employee, or the employee's dependents, in the event of the employees death, is entitled to compensation from the City under the provisions of said Act, or for which compensation is claimed from the City, the City may retain from the sums due the Contractor under the contract and amount sufficient to cover such compensation as fixed by said Act, until such compensation is paid, or until it is determined that no compensation is due, and if the City is compelled to pay such compensation, it will deduct and retain from such sums the amount so paid.

7-1.01A(7) Suits to Recover Penalties and Forfeitures. Attention is directed to Sections 1730 to 1733, inclusive, of the Labor Code concerning suits to recover amounts withheld from payment for failure to comply with requirements of the Labor Code or contract provisions based on those laws.

Those sections provide that a suit on the contract for alleged breach thereof in not making the payment is the exclusive remedy of the Contractor or the Contractor's assignees with reference to amounts withheld for such penalties or forfeitures; and that the suit must be commenced and actual notice thereof received by the awarding authority prior to 90 days after completion of the contract and the formal acceptance of the job.

Submission of a claim under Section 9-1.07B, "Final Payment and Claims," for the amounts withheld from payment for those penalties and forfeitures is not a prerequisite for those suits and those claims will not be considered.

7-1.01B (Blank)

7-1.01C Contractors' Licensing Laws. Attention is directed to the provisions of Chapter 9 of Division 3 of the Business and Professions Code concerning the licensing of contractors.

All bidders and contractors shall be licensed in accordance with the laws of this State at the time of the bid in the classification set forth in these contract documents and any bidder or contractor not so licensed is subject to the penalties imposed by those laws and rejection of their bid.

Attention is also directed to the provisions of Public Contract Code Section 10164.

In all projects where federal funds are involved, the Contractor shall be properly licensed at the time the Contract is awarded.

7-1.01D Vehicle Code. Pursuant to the authority contained in Vehicle Code Section 591, the City has determined that within those areas that are within the limits of the project and are open to public traffic, the Contractor shall comply with all the requirements set forth in Divisions 11, 12, 13, 14 and 15 of the Vehicle Code. The Contractor may submit in writing to the City a request for exception to any of the requirements set forth in Divisions 11, 12, 13, 14, and 15 of the Vehicle Code. This request shall be submitted prior to the start of work.

Attention is directed to the statement in said Section 591 that this Section 7-1.01D shall not relieve the Contractor or any person from the duty of exercising due care. The Contractor shall take all necessary precautions for safe operation of their equipment and the protection of the public from injury and damage from such equipment.

7-1.01E Trench Safety. Attention is directed to the provisions of Section 6705 of the Labor Code concerning trench excavation safety plans.

7-1.01F Air Pollution Control. The Contractor shall comply with all air pollution control rules, regulations, ordinances and statutes which apply to any work performed pursuant to the contract.

Unless otherwise provided in the Special Provisions or Technical Provisions, material to be disposed of shall not be burned, either inside or outside the project right of way.

7-1.01G Water Pollution. The Contractor shall exercise every reasonable precaution to protect the storm drain system, creeks, and bay, from pollution and shall conduct and schedule operations so as to prevent polluting of storm drain system, creeks, and bay. Care shall be exercised to preserve vegetation beyond the limits of construction. The storm drain system is

herein defined as the system of gutters, catch basin inlets, pipes and channels used to collect and convey storm water.

Water pollution control work is intended to provide prevention, control, and abatement of water pollution to the storm drain system, creeks, bay, and other bodies of water, and shall consist of constructing those facilities which may be shown on the plans, specified herein or in the Special Provisions or Technical Provisions, or directed by the Engineer.

In order to provide effective and continuous control of water pollution, it may be necessary for the Contractor to perform the contract work in small or multiple units, on an out of phase schedule, and with modified construction procedures. The Contractor shall provide temporary water pollution control measures, including but not limited to, dikes, basins, ditches, and applying straw and seed, which become necessary as a result of the Contractor's operations. The Contractor shall coordinate water pollution control work with all other work done on the contract.

Before starting any work on the project, the Contractor shall prepare and implement a program to control water pollution effectively during construction of the project. The document shall be made available to the Engineer upon request. The program shall include a schedule for the erosion control work included in the contract and for all water pollution control measures which the Contractor proposes to take in connection with construction of the project to minimize the effects of the operations upon adjacent storm drain system, creeks, and bay. The Contractor shall not perform any clearing and grubbing or earthwork on the project, other than that specifically authorized in writing by the Engineer, until the program has been implemented.

If the measures being taken by the Contractor are inadequate to control water pollution effectively, the Engineer may direct the Contractor to revise the operations and the water pollution control program. These directions will be in writing and will specify the items of work for which the Contractor's water pollution control measures are inadequate. No further work shall be performed on these items until the water pollution control measures are adequate and, if also required, a revised water pollution control program has been implemented.

The City will not be liable to the Contractor for any delays to the work due to the Contractor's failure to implement an acceptable water pollution control program.

Nothing shall relieve the Contractor from responsibility for compliance with the provisions of this Section 7-1.01G. Waiver of the requirement for a written program for control of water pollution will not preclude requiring submittal of a written program at a later time if the Engineer deems it necessary because of the effect of the Contractor's operations.

Where erosion which will cause water pollution is probable due to the nature of the material or the season of the year, the Contractor's operations shall be so scheduled that permanent erosion control features will be installed concurrently with or immediately following grading operations.

Nothing in the terms of the contract nor in the provisions of this Section 7-1.01G shall relieve the Contractor of the responsibility for compliance with Sections 5650 and 12015 of the Fish and Game Code, or other applicable statutes relating to prevention or abatement of water pollution.

The requirements of this Section 7-1.01G shall apply to all work performed under the contract.

The Contractor shall also conform to the following provisions:

A. Where working areas encroach on live streams, barriers adequate to prevent the flow of muddy water into streams shall be constructed and maintained between working areas and creeks, and during construction of the barriers, muddying of streams shall be held to a minimum.

B. Removal of material from beneath a flowing stream shall not be commenced until adequate means, such as a bypass channel, are provided to carry the creek free from mud or silt around the removal operations.

C. Should the Contractor's operations require transportation of materials across live creeks, the operations shall be conducted without muddying the creek. Mechanized equipment shall not be operated in the creek channels of the live creeks except as may be necessary to construct crossings or barriers and fills at channel changes.

D. Water containing mud or silt from aggregate washing or other operations shall be treated by filtration, or retention in a settling pond, or ponds, adequate to prevent muddy water from entering the storm drain system or creeks.

E. Oily or greasy substances originating from the Contractor's operations shall not be allowed to enter or be placed where they will later enter the storm drain system or creeks.

F. Portland cement or fresh portland cement concrete shall not be allowed to enter the storm drain system or creeks.

G. When operations are completed, the flow of streams shall be returned as nearly as possible to a meandering thread without creating possible future bank erosion, and settling pond sites shall be graded so they will drain and will blend in with the surrounding terrain.

H. Material shall not be deposited in a live stream channel where it could be washed away by high stream flows.

I. Where there is possible migration of anadromous fish in streams affected by construction on the project, the Contractor shall conduct work operations so as to allow free passage of the migratory fish.

Compliance with the requirements of this Section 7-1.01G shall in no way relieve the Contractor from their responsibility to comply with the other provisions of the contract, in particular the responsibility for damage and for preservation of property.

Full compensation for conforming to the requirements of this Section 7-1.01G shall be considered as included in the prices paid for the various items of work and no additional compensation will be allowed therefor.

7-1.01H Use of Pesticides. The Contractor shall comply with all rules and regulations of the State of California, Department of Food and Agriculture, the State of California, Department of Health, the State of California, Department of Industrial Relations and all other agencies which govern the use of pesticides required in the performance of the work on the contract.

Pesticides shall include but shall not be limited to herbicides, insecticides, fungicides, rodenticides, germicides, nematocides, bactericides, inhibitors, fumigants, defoliants, desiccants, soil sterilants, and repellents.

Any substance or mixture of substances intended for preventing, repelling, mitigating, or destroying weeds, insects, diseases, rodents, or nematodes and any substance or mixture of substances intended for use as a plant regulator, defoliant or desiccant shall be considered a pesticide.

7-1.01I Sound Control Requirements. The Contractor shall minimize noise and comply with all local sound control and noise level rules, regulations and ordinances which apply to any work performed pursuant to the contract.

Each internal combustion engine, used for any purpose on the job or related to the job, shall be equipped with a muffler of a type recommended by the manufacturer. No internal combustion engine shall be operated on the project without the muffler.

7-1.01J Assignment of Antitrust Actions. The Contractor's attention is directed to the following provisions of Public Contract Code 7103.5, which shall be applicable to the Contractor and the Contractor's subcontractors:

"In entering into a public works contract or a subcontract to supply goods, services, or materials pursuant to a public works contract, the contractor or subcontractor offers and agrees to assign to the awarding body all rights, title, and interest in and to all causes of action it may have under Section 4 of the Clayton Act (15 U.S.C. Sect. 15) or under the Cartwright Act (Chapter 2 (commencing with Section 16700) of Part 2 of Division 7 of the Business and Professions Code), arising from purchases of goods, services, or materials pursuant to the public works contract or the subcontract. This assignment shall be made and become effective at the time the awarding body tenders final payment to the contractor, without further acknowledgement by the parties.

"If an awarding body or public purchasing body receives, either through judgment or settlement, a monetary recovery for a cause of action assigned under this chapter, the assignor shall be entitled to receive reimbursement for actual legal costs incurred and may, upon demand, recover from the public body any portion of the recovery, including treble damages, attributable to overcharges that were paid by the assignor but were not paid by the public body as part of the bid price, less the expenses incurred in obtaining that portion of the recovery.

"Upon demand in writing by the assignor, the assignee shall, within one year from such demand, reassign the cause of action assigned under this part if the assignor has been or may have been injured by the violation of law for which the cause of action arose and (a) the assignee has not been injured thereby, or (b) the assignee declines to file a court action for the cause of action."

7-1.01K Time for Giving of Notice. The terms of Code of Civil Procedure Section 1013 shall not apply to any notices given by City under this contract.

7-1.01L Compliance with the Underground Notification System. To the extent they apply to the Contractor's work, the Contractor shall comply with the requirements of California Government Code Sections 4216 through 4216.9, inclusive.

7-1.02 Weight Limitations. Unless expressly permitted in the Special Provisions or Technical Provisions, construction equipment or vehicles of any kind which, laden or unladen, exceed the maximum weight limitations set forth in Division 15 of the Vehicle Code, shall not be operated over completed or existing treated bases, surfacing, pavement or structures in any areas within the limits of the project, whether or not the area is subject to weight limitations under Section 7-1.01D, "Vehicle Code." The Contractor may submit in writing to the City a request for exception to any of the requirements set forth in Divisions 11, 12, 13, 14, and 15 of the Vehicle Code. This request shall be submitted prior to the start of work.

7-1.03 Payment of Taxes. The contract prices paid for the work shall include full compensation for all taxes which the Contractor is required to pay, whether imposed by Federal, State or local government, including, without being limited to, Federal excise tax. No tax exemption certificate or any document designed to exempt the Contractor from payment of any tax will be furnished to the Contractor by the City, as to any tax on labor, services, materials, transportation, or any other items furnished pursuant to the contract.

7-1.04 Permits and Licenses. The Contractor shall procure all permits and licenses, pay all charges and fees, and give all notices necessary and incident to the due and lawful prosecution of the work in sufficient time to prevent delays to the work. The Contractor will be required to obtain a City Business License prior to the issuance of the Notice to Proceed. City permitting costs (from the Building Department) will be paid by the City.

The Environmental Quality Act (Public Resources Code, Sections 21000 to 21176, inclusive) may be applicable to permits, licenses and other authorizations which the Contractor must obtain from local agencies in connection with performing the work of the contract. The Contractor shall comply with the provisions of those statutes in obtaining such permits, licenses and other authorizations and they shall be obtained in sufficient time to prevent delays to the work.

In the event that the City has obtained permits, licenses or other authorizations, applicable to the work, the Contractor shall comply with the provisions of those permits, licenses and other authorizations.

7-1.045 Copeland (Anti-Kickback Act). The regulations of the Secretary of Labor applicable to contractors and subcontractors (29 CFR, Part 3), made pursuant to the Copeland Act, as amended (40 U.S.C.276c) and to aid in the enforcement of the Anti-Kickback Act (18 U.S.C.874) are made a part of the contract by reference. The Contractor will comply with these regulations and any amendments or modifications thereof and the Contractor will be responsible for the submission of affidavits required of subcontractors there under. The foregoing shall apply except as the Secretary of Labor may specifically provide for reasonable limitations, variations, tolerances, and exemptions.

7-1.05 Patents. The Contractor shall assume all costs arising from the use of patented materials, equipment, devices, or processes used on or incorporated in the work, and agrees to indemnify and hold harmless the City, its employees, duly authorized agents, officers, servants, and duly authorized representatives, from all suits at law, or actions of every nature for, or on account of the use of any patented materials, equipment, devices, or processes. All fees, royalties, or claims for any patented invention, article, or method that may be used upon or in any manner connected with the work under the contract shall be included in the price bid for the work. Before the final payment is made on account of the contract, the Contractor shall, if requested by the Engineer, furnish acceptable proof of a proper release of all such fees or claims for any patented invention, article, or method used in the project.

Should the Contractor, the Contractor's agents, servants or employees, or any of them, be enjoined from furnishing or using any invention, article, material or appliance supplied or required to be supplied or used under the contract, the Contractor shall promptly substitute other

articles, materials or appliances, in lieu thereof, of equal efficiency, quality, finish, suitability and market value, and satisfactory in all respects to the Engineer. Or in the event that the Engineer elects, in lieu of such substitution, to have supplied, and to retain and use, any such invention, article, material or appliance, as may by the contract be required to be supplied, in that event the Contractor shall pay such royalties and secure such valid licenses as may be requisite and necessary for the City, its officer, agents, servants and employees, or any of them to use such invention, article, material or appliance without being disturbed or in any way interfered with by any proceeding in law or equity on account thereof. Should the Contractor neglect or refuse to make the substitution promptly, or to pay such royalties and secure such licenses as may be necessary, then in that event, the Engineer shall have the right to make such substitution or the City may pay such royalties and secure such licenses and charge the cost thereof against any money due the Contractor from the City or recover the amount thereof from the Contractor or the Contractor's sureties notwithstanding final payment under the contract may have been made.

7-1.06 Safety and Health Provisions. The Contractor shall conform to all applicable occupational safety and health standards, rules, regulations and orders established by the Federal Government, State of California, County of Santa Clara and the City of Los Altos or any other government agency of competent jurisdiction.

All working areas utilized by the Contractor to perform work during the hours of darkness, shall be lighted to conform to the minimum illumination intensities established by California Division of Occupational Safety and Health Construction Safety Orders.

All lighting fixtures shall be mounted and directed in a manner precluding glare to approaching traffic.

Full compensation for conforming to the requirements of this Section 7-1.06 shall be considered as included in the contract prices paid for the various items of work involved and no separate payment will be made therefor.

7-1.08 Public Convenience. This Section 7-1.08 defines the Contractor's responsibility with regard to convenience of the public and public traffic in connection with the Contractor's operations.

Attention is directed to Section 4-1.04, "Detours," for provisions relating to the passage of traffic around the work over detours.

Attention is directed to Section 7-1.09, "Public Safety," for provisions relating to the Contractor's responsibility for the safety of the public. The requirements in Section 7-1.09, "Public Safety," are in addition to the requirements of this Section 7-1.08 and the Contractor will not be relieved of any responsibilities as set forth in Section 7-1.09, "Public Safety," by reason of conformance with any of the provisions in this Section 7-1.08.

Attention is directed to Caltrans Specifications Section 12, "Construction Area Traffic Control Devices," for requirements concerning flagging and traffic-handling equipment and devices used in carrying out the provisions of this Section 7-1.08 and said Section 7-1.09, "Public Safety;" delete the first paragraph of Caltrans Specifications Section 12-2.02 "Flagging Costs."

In the event of a suspension of the work, attention is directed to Section 8-1.05, "Temporary Suspension of Work."

The Contractor shall so conduct operations as to offer the least possible obstruction and inconvenience to the public and shall have under construction no greater length or amount of work than can be prosecuted properly with due regard to the rights of the public.

Unless otherwise provided in the Special Provisions or Technical Provisions, all public traffic shall be permitted to pass through the work with as little inconvenience and delay as possible. Where possible, public traffic shall be routed on new or existing paved surfaces.

Spillage resulting from hauling operations along or across any public traveled way shall be removed immediately by the Contractor at the Contractor's expense.

Existing traffic signals and street lighting shall be kept in operation for the benefit of the traveling public during progress of the work, and other forces will continue routine maintenance of existing systems.

Construction operations shall be conducted in such a manner as to cause as little inconvenience as possible to abutting property owners.

Convenient access to driveways, houses, and buildings along the line of the work shall be maintained and temporary approaches to crossings or intersecting streets shall be provided and kept in good condition. When the abutting property owner's access across the right of way line is to be eliminated, or to be replaced under the contract by other access facilities, the existing access shall not be closed until the replacement access facilities are usable.

The Contractor may be required to cover certain signs which regulate or direct public traffic to roadways that are not open to traffic. The Engineer will determine which signs shall be covered.

Upon completion of rough grading at the grading plane, or placing any subsequent layer thereon, the surface of the roadbed shall be brought to a smooth, even condition free of humps and depressions, satisfactory for the use of public traffic.

Water or dust palliative shall be applied if ordered by the Engineer for the alleviation or prevention of dust nuisance as provided in Caltrans Specifications Section 10, "Dust Control."

In order to expedite the passage of public traffic through or around the work and where ordered by the Engineer, the Contractor shall install signs, lights, flares, temporary railing (Type K), barricades, and other facilities for the sole convenience and direction of public traffic. Also where directed by the Engineer, the Contractor shall furnish competent flaggers whose sole duties shall consist of directing the movement of public traffic through or around the work.

Whenever a section of surfacing, pavement, or the deck of a structure has been completed, the Contractor shall open it to use by public traffic if the Engineer so orders or may open it to use by public traffic if the Engineer so consents. In either case the Contractor will not be allowed any compensation due to any delay, hindrance, or inconvenience to the Contractor's operations caused by such public traffic, but will thereupon be relieved of responsibility for damage to completed permanent facilities caused by public traffic, within the limits of such use. The Contractor will not be relieved of any other responsibility under the contract nor will the Contractor be relieved of cleanup and finishing operations.

Except as other wise provided in the Special Provisions or Technical Provisions, full compensation for conforming to the requirements in this Section 7-1.08 and in the Special Provisions and Technical Provisions shall be considered as included in the prices paid for the various contract items of work and no additional compensation will be allowed therefor.

7-1.09 Public Safety. It is the Contractor's responsibility to provide for the safety of traffic and the public during construction.

Attention is directed to Section 7-1.12, "Responsibility for Damage."

Attention is directed to Section 7-1.08, "Public Convenience," for provisions relating to the Contractor's responsibility for providing for the convenience of the public in connection with the Contractor's operations.

Attention is directed to Caltrans Specifications Section 12, "Construction Area Traffic Control Devices," for requirements concerning flagging and traffic-handling equipment and devices used in carrying out the provisions of Section 7-1.08, "Public Convenience," and this Section 7-1.09; delete the first paragraph of Caltrans Specifications Section 12-2.02 "Flagging Costs."

Whenever the Contractor's operations create a condition hazardous to traffic or to the public, the Contractor shall, at the Contractor's expense and without cost to the City, furnish, erect and maintain those fences, temporary railing (Type K), barricades, lights, signs and other devices and take such other protective measures as are necessary to prevent accidents or damage or injury to the public.

The Contractor shall also furnish such flaggers as are necessary to give adequate warning to traffic or to the public of any dangerous conditions to be encountered.

Signs, lights, flags, and other warning and safety devices and their use shall conform to the requirements set forth in the current Caltrans Manual of Traffic Controls. Signs or other protective devices furnished and erected by the Contractor shall not obscure the visibility of, nor conflict in intent, meaning and function of either existing signs, lights and traffic control devices or any construction area signs and traffic control devices. Signs furnished and erected by the Contractor shall be approved by the Engineer as to size, wording and location.

The installation of general roadway illumination shall not relieve the Contractor of any responsibility for furnishing and maintaining any of the protective facilities hereinbefore specified.

Construction equipment entering and leaving roadways shall move in the direction of public traffic. All movements of workers and construction equipment on or across lanes open to public traffic shall be performed in a manner that will not endanger public traffic.

When leaving a work area and entering a roadway carrying public traffic, the Contractor's equipment, whether empty or loaded, shall in all cases yield to public traffic.

Lanes and shoulders shall be closed in accordance with the details shown on the plans, the provisions of Caltrans Specifications Section 12, "Construction Area Traffic Control Devices," and as provided in the Special Provisions and Technical Provisions; delete the first paragraph of Caltrans Specifications Section 12-2.02 "Flagging Costs.".

No material or equipment shall be stored where it will interfere with the free and safe passage of public traffic, and at the end of each day's work and at other times when construction operations are suspended for any reason, the Contractor shall remove all equipment and other obstructions from that portion of the roadway open for use by public traffic.

Temporary facilities which the Contractor uses to perform the work shall not be installed or placed where they will interfere with the free and safe passage of public traffic.

Except as otherwise provided in this Section 7-1.09 or in the Special Provisions or Technical Provisions, full compensation for conforming to all of the provisions in this Section 7-1.09 and in the Special Provisions and Technical Provisions shall be considered as included in

the prices paid for the various contract items of work or in the lump sum bid and no additional compensation will be allowed therefor.

Should the Contractor be negligent or fail to furnish and/or maintain warning and protective facilities as required herein, the City may furnish and/or maintain such facilities and charge Contractor therefore by deducting the cost thereof from periodic progress payments due the Contractor as such costs are incurred by City.

In the event the Contractor does not provide such flaggers and guards as are required by this Section 7-1.09, the Engineer may request that the Los Altos Police Department provide for public safety and that the costs related thereto shall be deducted from any periodic progress payments due the Contractor.

7-1.10 Use of Explosives. The use of explosives is expressly prohibited unless specifically provided for in the Special Provisions and Technical Provisions.

7-1.11 Preservation of Property. Attention is directed to Section 7-1.12, "Responsibility for Damage," and to Section 8-1.10, "Utility and Non-Highway Facilities." Due care shall be exercised to avoid injury to existing improvements or facilities, utility facilities, adjacent property, and roadside trees, shrubs, and other plants that are not to be removed.

Trees, shrubs, and other plants that are not to be removed, and pole lines, fences, signs, markers and monuments, buildings and structures, conduits, pipelines under or above ground, sewer and water lines, all facilities, and any other improvements or facilities within or adjacent to the work site shall be protected from injury or damage, and if ordered by the Engineer, the Contractor shall provide and install suitable safeguards, approved by the Engineer, to protect the objects from injury or damage. If the objects are injured or damaged by reason of the Contractor's operations, they shall be replaced or restored at the Contractor's expense. The facilities shall be replaced or restored to a condition as good as when the Contractor entered upon the work, or as good as required by the specifications accompanying the contract, if any of the objects are a part of the work being performed under the contract. The Engineer may make or cause to be made the temporary repairs that are necessary to restore to service any damaged facility. The cost of the repairs shall be borne by the Contractor and may be deducted from any monies due or to become due to the Contractor under the contract.

The fact that any underground facility is not shown upon the plans shall not relieve the Contractor of any responsibility under Section 8-1.10, "Utility and Non-Highway Facilities." It shall be the Contractor's responsibility, pursuant thereto, to ascertain the location of those underground improvements or facilities which may be subject to damage by reason of the Contractor's operations.

Full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in protecting or repairing property as specified in this Section 7-1.11, shall be considered as included in the prices paid for the various contract items of work and no additional compensation will be allowed therefor.

7-1.115 Liability of Contractor. The Contractor shall do all of the work and furnish all labor, materials, tools, and appliances, except as otherwise herein expressly stipulated, necessary or proper for performing and completing the work required in the manner and within the time herein specified. The mention of any specific duty or liability imposed upon the Contractor shall

not be construed as a limitation or restriction of any general liability or duty imposed upon the Contractor by the contract, said reference to any specific duty or liability being made herein merely for the purpose of explanation.

7-1.12 Responsibility for Damage. The City and all agents, officers and employees thereof, including but not limited to the Engineer, shall not be answerable or accountable in any manner: for any loss or damage that may happen to the work or any part thereof; for any loss or damage to any of the materials or other things used or employed in performing the work; for injury to or death of any person, either workers or the public; or for damage to property from any cause which might have been prevented by the Contractor, or the Contractor's workers, or anyone employed by the Contractor.

The Contractor shall be responsible for any liability imposed by law and for injuries to or death of any person including but not limited to the workers and the public, or damage to property resulting from defects or obstructions or from any cause whatsoever during the progress of the work or at any time before its completion and final acceptance.

The Contractor shall be responsible for repair and replacement of damage due to any vandalism prior to acceptance of the work.

The Contractor shall protect, indemnify, defend and hold harmless the City and all agents, officers and employees thereof, including but not limited to the Engineer, from all claims, suits or actions of every name, kind and description, including attorneys fees, brought forth, or on account of, injuries to or death of any person including but not limited to workers and the public, or damage to property resulting from the performance of a contract, except as otherwise provided by statute. The duty of the Contractor to indemnify and hold harmless includes the duties to defend as set forth in Section 2778 of the Civil Code.

With respect to third party claims against the Contractor, the Contractor waives any and all rights to any type of express or implied indemnity against the City, its agents, officers or employees.

It is the intent of the parties that the Contractor will indemnify, defend, and hold harmless the City, its agents, officers and employees from any and all claims, suits or actions as set forth above regardless of the existence or degree of fault or negligence on the part of the City, the Contractor, the subcontractor or subcontractor at any tier or employee of any of these, other than the negligence of the City, its agents, officers, and employees.

7-1.121 Protection of Contractor's Work and Property. The Contractor shall protect its work, supplies and materials from damage due to the nature of the work, the action of the elements, trespassers, or any cause whatsoever which is under the Contractor's control, until the completion and acceptance of the work. Neither the City nor any of its agents assumes any responsibility for collecting indemnity from any person or persons causing damage to the work of the Contractor.

7-1.122 Insurance Requirements. Contractor shall procure and maintain for the duration of the contract insurance against claims for injuries to persons or damage to property as set forth in the Special Provisions and Technical Provisions which may arise from or in connection with the performance of the work hereunder by the Contractor, the Contractor's agents, representative,

employees or subcontractors, including work performed pursuant to Section 8-1.05, "Temporary Suspension of Work." The cost of such insurance shall be included in the Contractor's bid.

7-1.122A Insurance During Termination and/or Suspension. If the City elects to suspend the contract work as provided for in these Specifications, it shall be the Contractor's obligation to keep all insurance policies required under the contract documents in place and effective during the period of such suspension.

If the City should elect to terminate the contract, it shall be the Contractor's obligation to keep all insurance required under the contract documents in place and in effect until the acceptance of the project by the Engineer.

7-1.125 Legal Actions Against the City. In the event litigation is brought against the City concerning compliance by the City with State, Federal, regional, or local laws, ordinances, rules or regulations applicable to the work, the provisions of this Section 7-1.125 shall apply.

(A) If, pursuant to court order, the City prohibits the Contractor from performing all or any portion of the work, the delay will be considered a right of way delay within the meaning of Section 8-1.09, "Right of Way Delays," unless the contract is terminated as hereinafter provided.

(B) If, pursuant to court order (other than an order to show cause) the City is prohibited from requiring the Contractor to perform all or any portion of the work, the City may, if it so elects, eliminate the enjoined work pursuant to Section 4-1.03, "Changes," or terminate the contract.

(C) If the final judgment in the action prohibits the City from requiring the Contractor to perform all or any portion of the work, the City will either eliminate the enjoined work pursuant to Section 4-1.03, "Changes," or terminate the contract.

(D) If the contract is to be terminated, the termination and the determination of the total compensation payable to the Contractor shall be governed by the provisions of Section 8-1.11, "Termination of Contract."

(E) If any legal action is filed involving the project, the City may, in its sole discretion, elect to terminate the contract for convenience or suspend the contract, as provided elsewhere in these specifications.

7-1.13 Disposal of Material Outside the Project Limits. If the Contractor elects to dispose of materials the Contractor shall make arrangements for disposing of the materials outside the project limits and the Contractor shall pay all costs involved. Arrangements shall include, but not be limited to, entering into agreements with property owners and obtaining necessary permits, licenses, complying with truck routes, and environmental clearances. Before disposing of any material outside of the project limits, the Contractor shall furnish to the Engineer satisfactory evidence that the Contractor has entered into agreements with the property owners of the site involved and has obtained the permits, licenses and clearances.

Any arrangements for disposal of materials are not a part of the contract and it is expressly understood and agreed that the City assumes no responsibility to the bidder or Contractor whatsoever in respect to the arrangements made with the property owner to dispose of materials thereon and that the Contractor shall assume all risks in connection with the use of the property, the terms upon which the use shall be made, and there is no warranty or guaranty,

either express or implied, as to the quantity or types of materials that can be disposed of on the property.

Before acceptance of the contract, the Engineer may require the Contractor to submit written evidence that the property owner of the disposal site is satisfied that the Contractor has satisfactorily complied with the provisions of either - (1), the arrangement between the City and the owner, or (2) the agreement between the property owner and the Contractor, as the case may be.

Full compensation for all costs involved in disposing of materials as specified in this Section 7-1.13, including all costs of hauling, shall be considered as included in the prices paid for the contract items of work involving the materials and no additional compensation will be allowed therefor.

7-1.14 Cooperation. Should construction be under way by other forces or by other contractors within or adjacent to the limits of the work specified or should work of any other nature be under way by other forces within or adjacent to those limits, the Contractor shall cooperate with all the other contractors or other forces to the end that any delay or hindrance to other contractors or other forces work will be avoided. The right is reserved to perform other or additional work at or near the site (including material sources) at any time, by the use of other forces.

When two or more contractors are employed on related or adjacent work, or obtain materials from the same material source, each shall conduct their operations in such a manner as not to cause any unnecessary delay or hindrance to the other.

Each contractor shall be responsible to the other for all damage to work, to persons or property caused by the other by their operations, and for loss caused the other due to their unnecessary delays or failure to finish the work within the time specified for completion. The Contractor shall conduct, adjust, correct and coordinate its work with the work of others so that no discrepancies shall result in the whole work and shall defend, indemnify and hold the City harmless against any claims arising therefrom. The Contractor, including sub-contractors at any tier, shall keep informed of the progress and the detail work of other contractors and shall notify the Engineer immediately of lack of progress or defective workmanship on the part of other contractors, where such delay or such defective workmanship will interfere with the Contractor's own operations. Failure of a Contractor to keep informed of the work progressing on the site and failure to give notice of lack of progress or defective workmanship by others shall be construed as acceptance by the Contractor of the status of the work as being satisfactory for proper coordination with the Contractor's work. If the work of the Contractor is delayed because of any acts or omissions of any other contractor, the Contractor shall on that account have no claim against the City other than for an extension of time.

7-1.145 Mutual Responsibility of Contractors. If the Contractor or any of the Contractor's subcontractors or employees cause loss or damage to any other contractor, and if such other contractor makes a claim against the City, its employees or agents, on account of any loss so sustained, the City shall notify the Contractor, who shall defend, indemnify and save harmless the City, its employees and agents against any such claims, expense or judgment arising there from.

7-1.15 Acceptance of Portions of Work. Upon the request of the Contractor, the City may accept certain portions of the work as described below, which have been completed in all respects in accordance with the requirements of the contract and to the satisfaction of the Engineer, and thereafter except with the Contractor's consent, the Contractor will not be required to do further work thereon. In addition, the action by the Engineer will relieve the Contractor of responsibility for injury or damage to the completed portions of the work resulting from the use by public traffic or from the action of the elements or from any other cause but not from injury or damage resulting from the Contractor's own operations or from the Contractor's negligence.

Portions of the work accepted by the City as provided in the above paragraph include but are not limited to the following:

A. The completion of a section of roadway including the traveled way, shoulders, drainage control facilities, planned roadway protection work, lighting, and any required traffic control and access facilities.

B. A bridge or other structure of major importance.

C. A complete unit of a traffic control signal system or of a lighting system.

D. Facilities constructed for other agencies.

E. Storm or sanitary sewer facilities as designated by the Engineer.

However, nothing in this Section 7-1.15 shall relieve the Contractor from providing the Maintenance Bond as required by Section 7-1.245, "Maintenance Bond" or for making good any defective work or materials found at any time before or after the formal written acceptance of the entire contract by the City.

The Contractor hereby agrees to provide reasonable access for the City's maintenance forces to properly maintain those areas accepted by the City.

7-1.16 Contractor's Responsibility for the Work and Materials. Until the acceptance of the contract, the Contractor shall have the charge and care of the work and of the materials to be used therein (including materials which have been furnished by the City) and shall bear the risk of injury, loss, or damage to any part thereof by the action of the elements or from any other cause, whether arising from the execution or from the non-execution of the work, except as provided in Sections 7-1.08, "Public Convenience," and 7-1.15, "Acceptance of Portions of Work." The Contractor shall rebuild, repair, restore, and make good all injuries, losses, or damages to any portion of the work or the materials occasioned by any cause before its completion and acceptance and shall bear the expense thereof, except as otherwise expressly provided in Section 7-1.165, "Damage by Storm, Flood, Earthquake, Firestorm, Mud Slide or Debris Flows," and in Caltrans Specifications Section 19-2.04, "Slides and Slipouts," and except for those injuries, losses, or damages that are directly and proximately caused by acts of the Federal, State, regional, or local Government or the public enemy. Where necessary to protect the work or materials from damage, the Contractor shall, at the Contractor's expense, provide suitable drainage of the work and erect those temporary structures that are necessary to protect the work or materials from damage. The suspension of the work from any cause whatever shall not relieve the Contractor of any responsibility for the work and materials as herein specified. If ordered by the Engineer, the Contractor shall, at the Contractor's expense, properly store materials which have been furnished by the City. Storage by the Contractor shall be on behalf of the City and the City shall at all times be entitled to the possession of the materials, and the Contractor shall promptly return the material to the site of the work when requested. The

Contractor shall not dispose of any of the materials so stored except upon written authorization from the Engineer.

The City reserves the right to use or occupy any portion or all of the work prior to completion. Upon occupying or commencing use of that portion or all of the work prior to completion, the Contractor shall not be relieved of any duty for maintaining and protecting said work and the Contractor shall be required thereafter to complete said work. The Contractor shall be fully responsible for coordinating with the City for the completion of that work such that said work will cause the least interference with the City's use and/or occupancy.

7-1.165 Damage by Storm, Flood, Earthquake, Firestorm, Mud Slide, or Debris Flows. Attention is directed to Section 7-1.16, "Contractor's Responsibility for the Work and Materials." In the event damage to the work is caused by a storm, flood, earthquake, firestorm, mud slide or debris flow, or other natural disaster which constitutes an "Occurrence," as hereinafter defined, the provisions of this Section 7-1.165 shall be applicable and the Contractor may apply in writing to the Engineer for the City to pay or participate in the cost of repairing damage to the work from that cause or, in lieu thereof, and at the sole discretion of the City, terminate the contract and relieve the Contractor of further obligation to perform the work, subject to the following:

A. Occurrences--"Occurrence" shall include earthquakes in excess of a magnitude of 3.5 on the Richter Scale, storms, floods, firestorms, mud slides, or debris flows and other natural disasters as to which the Governor has proclaimed a state of emergency when the damaged work is located within the territorial limits to which the proclamation is applicable or, which were, in the opinion of the Engineer, of a magnitude at the site of the work sufficient to have caused such a proclamation had they occurred in a populated area or in an area in which such a proclamation was not already in effect.

B. Application by Contractor--The Contractor's written request for the City to pay or to participate in the cost of rebuilding, repairing, restoring or otherwise remedying the damage to the work caused by the Occurrence shall be submitted to the Engineer before performing any work other than emergency work, including emergency work necessary to provide for the passage of public traffic.

C. Protecting the Work from Damage--Nothing in this Section 7-1.165 shall be construed to relieve the Contractor of the responsibility to protect the work from damage. The Contractor shall bear the entire cost of repairing damage to the work caused by the Occurrence which the Engineer determines was due to the failure of the Contractor to comply with the requirements of the Plans and Specifications, take reasonable and adequate measures to protect the work or exercise sound engineering and construction practices in the conduct of the work, and those repair costs shall be excluded from consideration under the provisions of this Section 7-1.165.

D. Repair Work--Repair of damaged work under the provisions of this Section 7-1.165 shall be pursuant to a contract change order issued hereunder and specifying the repair work to be performed on the damaged facility. The repair work shall consist of restoring the in-place construction (for the purposes of this Section 7-1.165 erected falsework and formwork shall be considered in-place construction) to the same state of completion to which the work had advanced prior to the Occurrence. Emergency work which the Engineer determines would have

been part of the repair work if it had not previously been performed, will be considered to be part of the repair work.

The City reserves the right to make changes in the plans and specifications applicable to the portions of the work to be repaired, and if those changes will increase the cost of repairing the damage over the Engineer's estimate of the cost of repair without the changes, the Contractor will be paid for the increased costs in accordance with Subsection E and the increased costs amount shall not be considered in determining the cost of the repair to be borne by the Contractor under Subsection F.

Nothing in this Section 7-1.165 shall be construed to relieve the Contractor of full responsibility for the risk of injury, loss or damage to materials not yet incorporated in the work and to materials, tools and equipment (except erected falsework and formwork) used to perform the work, or to relieve the Contractor of any responsibility under Section 7-1.12, "Responsibility for Damage." The provisions of this Section 7-1.165 shall not be applicable to the repair of damage caused by an Occurrence to any portion of the work as to which the Contractor has been granted relief from maintenance and responsibility pursuant to Section 7-1.15, "Acceptance of Portions of Work," or to the removal of slides and slipouts or the repair and restoration of damage to the work resulting from slides and slipouts pursuant to Caltrans Specifications Section 19-2.04, "Slides and Slipouts."

E. Determination of Costs--Unless otherwise agreed between the Engineer and the Contractor, the cost of the work performed pursuant to this Section 7-1.165 will be determined in accordance with the provisions in Section 9-1.03, "Change Order Payment," except there shall be no markup allowance pursuant to Section 9-1.03A, "Work Performed by Contractor," unless the Occurrence that caused the damage was a earthquake. The cost of emergency work, which the Engineer determines would have been part of the repair work if it had not previously been performed, will be determined in the same manner as the authorized repair work. The cost of repairing damaged work which was not in compliance with the requirements of the plans and specifications shall be borne solely by the Contractor, and those costs shall not be considered in determining the cost of repair under this Subsection E.

F. Payment for Repair Work--When the Occurrence that caused the damage was an earthquake, the City will pay the cost of repair determined as provided in Subsection E, that exceeds 5 percent of the amount of the Contractor's bid for bid comparison purposes.

When the Occurrence that caused the damage was a storm, flood, firestorm, mud slide, debris flow, or other natural disaster, the City will participate in the cost of the repair determined as provided in Subsection E in accordance with the following:

1. On projects for which the amount of the Contractor's bid for bid comparison purposes is $2,000,000 or less, the City will pay 90 percent of the cost of the repair that exceeds 5 percent of the amount of the Contractor's bid for bid comparison purposes.

2. On projects for which the Contractor's bid for bid comparison purposes is greater than $2,000,000, the City will pay 90 percent of the cost of repair that exceeds $100,000.

G. Termination of Contract--If the City elects to terminate the contract, the termination and the determination of the total compensation payable to the Contractor shall be governed by the provisions of Section 8-1.11, "Termination of Contract."

7-1.166 Substantial Completion. When the Contractor considers the work or a designated portion thereof substantially complete as defined in Section 1-1.425, "Substantial

Completion." the Engineer shall prepare for the Contractor a list of items to be completed or corrected. The failure to include any items on such list does not alter the responsibility of the Contractor to complete all work in accordance with the contract documents. The Contractor shall obtain and submit to the City, prior to the date of acceptance, all necessary permits for occupancy. If desired by the City, portions of the work, as completed, may be placed in service. The Contractor shall give proper access to the work for this purpose. Such use and operation shall not constitute an acceptance of the work or that portion placed in service. The Contractor shall be liable for defects due to faulty construction.

Upon acceptance of the contract, or designated portion thereof, the City shall make payment, reflecting adjustment in retainage, if any, for such work or portion thereof as provided in the contract.

Liquidated damages shall continue to accrue until the date of acceptance. Warranties shall begin to run upon acceptance of the contract by the City.

7-1.17 Acceptance of Contract Work. When the Engineer has made the final inspection as provided in Section 5-1.13, "Final Inspection," and determines that the contract work has been completed in all respects and in its entirety, including punch list work, and in accordance with the plans and specifications, the Engineer will recommend that the City formally accept the contract, and immediately upon and after such acceptance by the City, and recordation of the Notice of Completion and Acceptance by the County Recorder's office, the Contractor will be relieved of the duty of maintaining and protecting the work as a whole, and except for warranty, the Contractor will not be required to perform any further work thereon.

Before the acceptance can be made, the Contractor shall also submit to the Engineer all record drawings, catalogue data, warranties and guarantees, including maintenance bonds described in Section 7-1.245, "Maintenance Bond" operation and maintenance instruction sheets, and other items as required by the contract documents.

7-1.18 Property Rights in Materials. Nothing in the contract shall be construed as vesting in the Contractor any right of property in the materials used after they have been installed for their intended use. All such material shall become the property of the City upon being so attached or affixed.

7-1.19 Rights in Land and Improvements. Nothing in these specifications shall be construed as allowing the Contractor to make any arrangements with any person to permit occupancy or use of any land, structure, or building within the limits of the contract for any purpose whatsoever, either with or without compensation, in conflict with any agreement between the City and any owner, former owner, or tenant of the land, structure, or building.

The Contractor shall not occupy City-owned property outside the right of way as shown on the plans or outside the expressly designated areas in the contract documents unless the Contractor enters into a rental agreement with the City. The agreement will be based on fair rental values.

7-1.20 Personal Liability. Neither the Engineer, nor any other officer or authorized employee of the City nor any officer or employee of any county, city or district shall be personally responsible for any liability arising under or by virtue of the contract.

7-1.21 Repair of Equipment. The work of installing, assembling, repairing or reconditioning, or other work of any nature on machinery, equipment, or tools used in or upon the work shall be considered a part of the work to be performed under the contract and any laborers, workers, or mechanics working on the machinery, equipment, or tools, unless employed by bona fide commercial repair shops, garages, blacksmith shops, or machine shops, which have been established and operating on a commercial basis for a period of at least two months prior to the award of the contract, shall be subject to all the requirements relating to labor set forth in these specifications and in the Special Provisions and Technical Provisions.

7-1.22 Material Plants. The construction, erection, and operation of material production, proportioning, or mixing plants from which material is used wholly on the contract or on contracts under the supervision of the City shall be considered a part of the work to be performed under the contract and any laborers, workers, or mechanics working on the plants shall be subject to all of the requirements relating to labor set forth in these specifications and in the Special Provisions and Technical Provisions.

7-1.23 Provisions of Law and Venue. It is specifically provided that this contract is to be interpreted pursuant to California Law and subject to all the provisions of law regulating and controlling the performance of work for the City, and that the rules of law shall prevail over any provision contained in any of the contract documents which may be in conflict or inconsistent therewith.

Each and every provision of law and clause required by law to be inserted in these contract documents shall be deemed to be inserted herein and the contract documents shall be read and enforced as though it were included herein, and if through mistake or otherwise, any such provisions is not inserted, or is not correctly inserted, then upon application of either party, the contract documents shall forthwith be physically amended to make such insertion or correction at no additional cost to the City.

The parties to this contract hereby expressly agree that any contrary provisions of this contract notwithstanding, any action to interpret the terms of the Contract or resolve any dispute arising under this Contract by the Contractor, subcontractors at any tier, and material suppliers at any tier, shall be filed exclusively in the Superior Court of Santa Clara County or where otherwise appropriate in the United States District Court for the Northern District of California located in San Jose, California, having proper jurisdiction. There is no express or implied agreement between the parties to mediate and/or arbitrate in any forum any matter arising under this Contract.

The Contractor is hereby advised that these contract documents, including the Contractor's Proposal, are subject to the California Public Records Act and become documents available to the general public.

In the event that a particular City public works contract is funded or required to be approved in whole or in part by the state or federal government and any provision contained herein is inconsistent with any applicable state or federal statutes, rules or regulations, orders or controlling policies pertaining to such funding or approval, such provisions to the extent that it is inconsistent shall not apply to said City public works contract.

7-1.24 Final Guarantee. Unless otherwise specified, all work shall be guaranteed by the Contractor against defects resulting from the use of inferior materials, equipment, or workmanship for one year from the date of final acceptance of the contract. The Contractor unqualifiedly guarantees the first-class quality of all workmanship and of all material, apparatus, and equipment used or installed by Contractor or by any subcontractor or supplier in the project which is the subject of this work, unless a lesser quality is expressly authorized in the Plans and Specifications, in which event the Contractor unqualifiedly guarantees such lesser quality; and that the work as performed by the Contractor will conform with the Plans and Specifications or any written authorized deviations therefrom.

If, within any guarantee period, repairs or changes are required in connection with guaranteed work, which, in the opinion of the Engineer, is rendered necessary as the result of the use of materials, equipment, or workmanship which are inferior, defective, or not in accordance with the terms of the contract, the Contractor shall, promptly upon receipt of notice from the Engineer, and without expense to the City, (1) place in satisfactory condition in every particular all of such guaranteed work, correcting all defects therein; (2) make good all damage to the structure, site or work, or equipment or contents thereof, which, in the opinion of the Engineer, is the result of the use of materials, equipment, or workmanship which are inferior, defective, or not in accordance with the terms of the contract; and (3) make good any work or material, or the equipment and contents of said structures, site or work disturbed in fulfilling any such guarantee. If the Contractor, after notice, fails to proceed promptly to comply with the terms of the guarantee, the City may have the defects corrected and the Contractor and the Contractor's surety shall be liable for all expense incurred.

7-1.245 Maintenance Bond. As a condition precedent to the completion of the contract, the Contractor shall furnish, in triplicate, a bond of a surety company acceptable to the City in an amount equal to 10% of the total contract price to hold good for one year after the completion and acceptance of the work, to protect the City against the results of defective materials, workmanship and the equipment during that time. This bond shall be delivered to the City before final payment under the contract will be made.

7-1.25 Legal Address of Contractor. Both the address given in the Proposal and the Contractor's office in the vicinity of the work, if any, are hereby designated as places to either of which drawings, samples, notices, letters or other articles or communications to the Contractor may be mailed or delivered. The delivery at either or these places of any such thing from the City or its agents to the Contractor shall be deemed sufficient service thereof upon the Contractor, and the date of such service shall be the date of such delivery; any thing given to Contractor's representative at the job site, at City Hall, or at the Contractor's office, or delivered to the Contractor's office in the Contractor's absence shall be deemed to have been given to the Contractor. The address set forth in the Proposal may be changed at any time by notice in writing from the Contractor to the City. Nothing herein contained shall be deemed to preclude or render inoperative the service of any drawings, sample, notice, letter or other article or communication to or upon the Contractor personally.

7-1.26 Material Storage. The Contractor shall store materials only within the limit of work and Material Storage Areas designated in the plans. Should these areas prove inadequate,

the Contractor shall make arrangements for and pay all fees in connection with the use of property other than the site for storage of materials or other purpose.

7-1.27 Waiver by the City. The Contractor hereby agrees that waiver by the City of any breach or violation or any term or condition of this contract agreement shall not be deemed to be a waiver or any other term or condition contained herein or a waiver of any subsequent breach or violation of the same term or condition of the contract. Payment for or acceptance by City of any work or services by Contractor performed under this contract shall not be deemed to be a waiver of any term or condition of this contract even if at the time of such payment or acceptance the City was aware of the Contractor's failure to comply with any term or condition of the contract.

7-1.28 Archeological and Paleontological Rights. Notwithstanding any other provisions of this contract, in the event any archeological or paleontological objects within the project are discovered during the course of the work, the Contractor shall halt the work within the area affected, and the City shall have and retain all right, title and interest to such objects and shall have the further right, during the course of the contract, to examine or cause to have examined, the site of the work for any such objects and to perform or have performed archeological or paleontological excavations and all other related work to explore for, discover, recover and remove such objects from the site of the work.

In the event the work of archeological or paleontological examination and related work delays the Contractor's work, the Contractor shall be entitled to an extension of time to complete the work equal to the number of days thus delayed. Any such delays will be considered right-of-way delays within the meaning of Section 8-1.09, "Right of Way Delays." The Contractor shall be entitled to no other compensation for any Archeological and Paleontological delays.

7-1.29 Emergencies. In an emergency affecting the safety of persons or property the Contractor shall act reasonably to prevent threatened damage, injury or loss. The Contractor shall immediately notify the City in writing of such actions. Any additional compensation or extension of time claimed by the Contractor on account of emergency work shall be determined as provided in Section 4-1.03, "Changes."

7-1.30 Integration Clause. The contract, including these general and any special or technical specifications as defined herein, constitutes the entire agreement between the parties. There are no prior or contemporaneous oral agreements between the parties not set forth in the contract. Any modification to the contract or these specifications must be in writing in order to be effective and binding on the parties to the contract.

END OF SECTION

SECTION 8
PROSECUTION AND PROGRESS

8-1.01 Subcontracting. The Contractor shall give personal attention to the fulfillment of the contract and shall keep the work under the Contractor's control.

No subcontractor will be recognized by City as such and all persons engaged in the work of construction will be considered by City as employees of the Contractor and the Contractor will be held responsible for their work, which shall be subject to the provisions of the contract and specifications.

Subcontracts shall include provisions that the contract between the City and the Contractor is part of the subcontract, and that all terms and provisions of said contract are incorporated in the subcontract. Subcontracts shall also contain certification by the subcontractor that said subcontractor is experienced in and qualified to do, and knowledgeable about, the subcontracted work. Copies of subcontracts shall be available to the Engineer upon written request, and shall be provided to the Engineer at the time any litigation against the City concerning the project is filed.

The Contractor shall submit with the bidding documents a written statement showing the work to be subcontracted, the names of the subcontractors and the description of each portion of the work to be so subcontracted in excess of one-half of 1 percent of the prime contractor's total bid, or ten thousand dollars ($10,000), whichever is greater.

When a portion of the work which has been subcontracted by the Contractor is not being prosecuted in a manner satisfactory to the City, the subcontractor shall be removed immediately on the request of the Engineer and shall not again be employed on the work.

Nothing contained in the specifications or plans shall be construed as creating any contractual relationship between any subcontractor and the City. The divisions or sections of the specifications are not intended to control the Contractor in dividing the work among subcontractors or to limit the work performed by any trade.

The Contractor shall be fully responsible to the City for the acts and omissions of subcontractors, and of persons employed by the Contractor.

The Contractor shall be responsible for the coordination of trades, subcontractors, and suppliers engaged upon this work.

Any and all subcontractors or material suppliers at any tier shall be bound by the provisions of these specifications.

8-1.02 Assignment. The performance of the contract may not be assigned, except upon the written consent of the City. Consent will not be given to any proposed assignment which would relieve the Contractor or the original Contractor's surety of their responsibilities under the contract nor will the City consent to any assignment of a part of the work under the contract.

The Contractor may assign moneys due or to become due the Contractor under the contract and the assignment will be recognized by the City, if given proper notice thereof, to the extent permitted by law, but any assignment of moneys shall be subject to all proper set-offs in favor of the City and to all deductions provided for in the contract and particularly all money withheld, whether assigned or not, shall be subject to being used by the City for the completion of the work in the event that the Contractor should be in default therein.

8-1.03 Beginning of Work. Upon written notification to the Contractor by the Engineer, the Contractor shall promptly begin the work under the contract and all portions of the project delineated in the plans and specifications. The work shall be begun and so prosecuted that it shall be completed and ready for full use within the number of working days specified in the Special Provisions and Technical Provisions, the first day of which shall be the date specified in the Engineer's "Notice to Proceed".

The Contractor shall notify the Engineer, in writing, of the Contractor's intent to begin work at least 72 hours before work is begun. The notice shall be delivered to the Engineer and shall specify the date the Contractor intends to start. Under no circumstances shall the Contractor enter the site of the work until the first date of work specified in the Notice to Proceed.

Should the Contractor begin work in advance of the first date of work specified in the Notice to Proceed, any such work shall be considered as having been done by the Contractor's own risk and expense and as a volunteer. Should any work be performed prior to the date specified in the Notice to Proceed, the work shall be subject to inspection and acceptance by City as provided for elsewhere in these contract documents.

8-1.04 Progress Schedule. Immediately after execution and delivery of the contract, and before commencing work, the Contractor shall deliver to the City a construction progress schedule in a form satisfactory to the City, showing the proposed dates of commencement and completion of each of the various subdivisions of work required under the contract.

The progress schedules submitted shall be consistent in all respects with the time and order of work requirements of the contract.

The City retains the right to reject any and all construction schedules submitted by the Contractor, in the City's sole discretion, or when the City determines that the Contractor has too many items on the critical path or the logic of the schedule is in error.

Subject to the above provisions, nothing herein shall preclude the Contractor from early completion of the project.

8-1.05 Temporary Suspension of Work. The Engineer shall have the authority to suspend the work wholly or in part, for any time period as the Engineer deems necessary, due to unsuitable weather, or to such other conditions considered unfavorable for the suitable prosecution of the work, or for any time period as the Engineer deems necessary due to the failure on the part of the Contractor to carry out orders given, or to perform any provision of the contract. The Contractor shall immediately comply with the written order of the Engineer to suspend the work wholly or in part. The suspended work shall be resumed when conditions are favorable and methods are corrected, as ordered or approved in writing by the Engineer.

In the event that a suspension of work is ordered as provided above, and should that suspension be ordered by reason of the failure of the Contractor to carry out orders or to perform any provisions of the contract; or by reason of weather conditions being unsuitable for performing any item or items of work, which work, in the sole opinion of the Engineer, could have been performed prior to the occurrence of the unsuitable weather conditions had the Contractor diligently prosecuted the work when weather conditions were suitable; the Contractor, at the Contractor's expense, shall do all the work necessary to provide a safe, smooth, and unobstructed passageway through construction for use by public traffic; and provide for

proper and efficient operations of sewer, drainage, and other facilities within the site of the work during the period of such suspension as provided in Sections 7-1.08, "Public Convenience," and 7-1.09, "Public Safety," and as specified in the Special Provisions and Technical Provisions for the work. In the event that the Contractor fails to perform the work above specified, the City will perform such work and the cost thereof will be deducted from moneys due or to become due to the Contractor.

If the Engineer orders a suspension of all of the work or a portion of the work which is the current controlling operation or operations, due to unsuitable weather or to such other conditions as are considered unfavorable to the suitable prosecution of the work, the days on which the suspension is in effect shall not be considered working days as defined in Section 8-1.06, "Time of Completion." If a portion of work at the time of such suspension is not a current controlling operation or operations, but subsequently does become the current controlling operation or operations, the determination of working days will be made on the basis of the then current controlling operation or operations.

If a suspension of work is ordered by the Engineer, due to the failure on the part of the Contractor to carry out orders given or to perform any provision of the contract, the days on which the suspension order is in effect shall be considered working days if such days are working days within the meaning of the definition set forth in Section 8-1.06, "Time of Completion."

In the event of a suspension of work under any of the conditions set forth in this Section 8-1.15, such suspension of work shall not relieve the Contractor of the Contractor's responsibilities as set forth in Section 7, "Legal Relations and Responsibility" the specifications including but not limited to the Contractor's maintenance of the project site in a safe condition.

8-1.06 Time of Completion. The Contractor shall complete all or any designated portion of the work called for under the contract in all parts and requirements within the time set forth in the Special Provisions and Technical Provisions.

A work day is defined in Section 1-1.49, "Working Day," of these specifications.

Should the Contractor prepare to begin work at the regular starting time of any day on which inclement weather, or the conditions resulting from the weather, or the condition of the work, prevents the work from beginning at the usual starting time and the crew is dismissed as a result thereof and the Contractor does not proceed with at least 75 percent of the normal labor and equipment force engaged in the current controlling operation or operations for at least 60 percent of the total daily time being currently spent on the controlling operation or operations, the Contractor will not be charged for a working day whether or not conditions should change thereafter during that day and the major portion of the day could be considered to be suitable for those construction operations.

The current controlling operation or operations is to be construed to include any feature of the work (e.g., an operation or activity, or a settlement or curing period) considered at the time by the Engineer and the Contractor, which, if delayed or prolonged, will delay the time of completion of the contract.

Determination that a day is a non-working day by reason of inclement weather or conditions resulting immediately therefrom, shall be made by the Engineer. The Contractor will be allowed 15 days from the issuance of the weekly statement of working days in which to file a written protest setting forth in what respects the Contractor differs from the Engineer, otherwise

the decision of the Engineer shall be deemed to have been accepted by the Contractor as correct. The Engineer will furnish the Contractor a weekly statement showing the number of working days charged to the contract for the preceding week, the number of working days of time extensions approved, the number of working days originally specified for the completion of the contract and the number of working days remaining to complete the contract, except when working days are not being charged in accordance with the provisions in Section 8-1.05, "Temporary Suspension of Work."

8-1.06A Saturday, Sunday, Holiday and Night Work. Unless otherwise provided in the Special Provisions or Technical Provisions, work shall not be done between the hours of 6:00 P.M. and 7:00 A.M. nor on Saturdays, Sundays or legal holidays except such work as is necessary for the proper care and protection of work already performed, or except in case of an emergency, and in any case, only with the prior permission of the Engineer.

It is understood, however, that night work may be established as a regular procedure by the Contractor if it first obtains the written permission of the Engineer, and that such permission may be revoked at any time by the Engineer if the Contractor fails to maintain at night, adequate force and equipment for reasonable prosecution and to justify inspection of the work.

In the event that the Contractor must work Saturdays, Sundays, holidays and/or nights, expenses incurred by the City resulting from such work shall be borne by the Contractor unless stated otherwise in the Special Provisions or Technical Provisions.

8-1.07 Liquidated Damages. It is agreed by the parties to the contract that in case all the work called for under the contract in all parts and requirements is not finished or completed within the number of working days as set forth in the Special Provisions or Technical Provisions, damage will be sustained by the City, and that it is and will be impracticable and extremely difficult to ascertain and determine the actual damage which the City will sustain in the event of and by reason of the delay; and it is therefore agreed that the Contractor will pay to the City, the sum set forth in the Special Provisions or Technical Provisions per day for each and every calendar day's delay in finishing the work in excess of the number of working days prescribed; and the Contractor agrees to pay the liquidated damages herein provided for, and further agrees that the City may deduct the amount thereof from any moneys due or that may become due the Contractor under the contract.

It is further agreed that in case the work called for under the contract is not finished and completed in all parts and requirements within the number of working days specified, the Engineer shall have the right to increase the number of working days or not, as the Engineer may deem best to serve the interest of the City, and if the Engineer decides to increase the said number of working days, the Engineer shall further have the right to charge to the Contractor, or the Contractor's heirs, assigns or sureties and to deduct from the final payment for the work all or any part, as the Engineer may deem proper, of the actual cost of engineering, inspection, superintendence, and other overhead expenses which are directly chargeable to the contract, and which accrue during the period of the extension, except that cost of final surveys and preparation of final estimate shall not be included in the charges.

The Contractor will be granted an extension of time and will not be assessed with liquidated damages or the costs of engineering and inspection for any portion of the delay in completion of the work beyond the time named in the Special Provisions or Technical Provisions

for the completion of the work caused by acts of God, or of the public enemy, fire, floods, firestorms, mud slides, debris flows, earthquakes, epidemics, quarantine restrictions, strikes, labor disputes, shortage of materials and freight embargoes, provided, that the Contractor shall notify the Engineer in writing of the causes of delay within 15 days from the beginning of any that delay. The Engineer shall ascertain the facts and the extent of the delay, and the Engineer's findings thereon shall be final and conclusive.

No extension of time will be granted for a delay caused by a shortage of materials unless the Contractor furnishes to the Engineer documentary proof that the Contractor has made every effort to obtain the materials from all known sources within reasonable reach of the work in a diligent and timely manner, and further proof in the form of supplementary progress schedules, as required in Section 8-1.04, "Progress Schedule," that the inability to obtain the materials when originally planned, did in fact cause a delay in final completion of the entire work which could not be compensated for by revising the sequence of the Contractor's operations. The term "shortage of materials," as used in this Section 8-1.07, shall apply only to materials, articles, parts or equipment which are standard items and are to be incorporated in the work. The term "shortage of materials," shall not apply to materials, parts, articles or equipment which are processed, made, constructed, fabricated or manufactured to meet the specific requirements of the contract. Only the physical shortage of material will be considered under these provisions as a cause for extension of time. Delays in obtaining materials due to priority in filling orders will not constitute a shortage of materials.

If the Contractor is delayed in completion of the work by reason of changes made under Section 4-1.03, "Changes," or by failure of the City to acquire or clear right of way, or by any act of the Engineer or of the City, not contemplated by the contract, an extension of time commensurate with the delay in completion of the work thus caused will be granted and the Contractor shall be relieved from any claim for liquidated damages, or engineering and inspection charges or other penalties for the period covered by that extension of time; provided that the Contractor shall notify the Engineer in writing of the causes of delay within 15 days from the beginning of the delay. The Engineer shall ascertain the facts and the extent of the delay, and the Engineer's findings thereon shall be final and conclusive.

It is the intention of the above provisions that the Contractor shall not be relieved of liability for liquidated damages or engineering and inspection charges for any period of delay in completion of the work in excess of that expressly provided for in this Section 8-1.07.

8-1.07A No Pay for Delay. Except as provided in Section 7-1.28 "Archeological and Paleontological Rights", Section 8-1.10 "Utility and Non-Highway Facilities", and except as provided in Section 7102 of the Public Contract Code, the Contractor shall receive no additional compensation for any delay to the Contractor's work. Such delays are expressly contemplated by the parties hereto. The Contractor's sole remedy for such delay will be an appropriate extension of time to the contract completion of the project.

8-1.09 Right of Way Delays. If the performance of the Contractor's work is delayed as the result of the failure of the City to acquire or clear right of way, an extension of time determined pursuant to the provisions in Section 8-1.07, "Liquidated Damages," will be granted.

8-1.095 Easement Construction. Rights-of way and easements will be provided in accordance with Section 8-1.09, "Right of Way Delays," of these specifications. The Contractor shall make every effort to restrict operations to areas within the easements provided. The Contractor shall caution all employees not to trespass or operate equipment outside the easements provided without first obtaining written permission from adjacent property owners. A copy of the written permission is to be submitted to the Engineer prior to any such encroachment.

8-1.10 Utility and Non-Highway Facilities. Attention is directed to Section 7-1.11, "Preservation of Property," Section 7-1.12, "Responsibility for Damage," and Section 7-1.01L, "Compliance with the Underground Notification System." To the extent they apply to the Contractor's work, the Contractor shall comply with the requirements of Government Code Sections 4216 through 4216.9, inclusive.

The Contractor shall protect from damage utility and other non-highway facilities that are to remain in place, be installed, relocated or otherwise rearranged.

The right is reserved to the City and the owners of facilities, or their authorized agents, to enter upon the work site for the purpose of making such changes as are necessary for the rearrangement (as used herein, rearrangement includes installation, relocation, alteration, or removal) of their facilities or for making necessary connections or repairs to their properties. The Contractor shall cooperate with forces engaged in such work and shall conduct operations in such a manner as to avoid any unnecessary delay or hindrance to the work being performed by such other forces. Wherever necessary, the work of the Contractor shall be coordinated with the rearrangement of utility or other non-highway facilities, and the Contractor shall make arrangements with the owner of such facilities for the coordination of the work.

Attention is directed to the possible existence of underground main or trunk line facilities not indicated on the plans or in the Special Provisions or Technical Provisions and to the possibility that underground main or trunk lines may be in a location different from that which is indicated on the plans or in the Special Provisions or Technical Provisions. The Contractor shall ascertain the exact location of underground main or trunk lines whose presence is indicated on the plans or in the Special Provisions or Technical Provisions, the location of their service laterals or other appurtenances, and of existing service lateral or appurtenances of any other underground facilities which can be inferred from the presence of visible facilities such as buildings, meters and junction boxes prior to doing work that may damage any of such facilities or interfere with their service.

If the Contractor discovers underground main or trunk lines not indicated on the plans or in the Special Provisions or Technical Provisions, the Contractor shall immediately give the Engineer and the Utility Company written notification of the existence of such facilities. Such main or trunk lines shall be located and protected from damage as directed by the Engineer.

Where it is determined by the Engineer that the rearrangement of an underground facility is essential in order to accommodate the improvement and the plans and specifications do not provide that such facility is to be rearranged, the Engineer will provide for the rearrangement of such facility by the City or the owner of the facility.

Should the Contractor desire to have any rearrangement made in any utility facility, or other improvement, for the Contractor's convenience in order to facilitate construction operations, which rearrangement is in addition to, or different from, the rearrangements indicated

on the plans or in the Special Provisions or Technical Provisions, the Contractor shall make whatever arrangements are necessary with the owners of such utility or other non-highway facility for such rearrangement and bear all expenses in connection therewith.

The Contractor shall immediately notify the Engineer of any delays to operations as a direct result of underground main or trunk line facilities which were not indicated on the plans or in the Special Provisions or Technical Provisions or were located in a position substantially different from that indicated on the plans or in the Special Provisions or Technical Provisions, or as a direct result of utility or other non-highway facilities not being rearranged as herein provided (other than delays in connection with rearrangements made to facilitate construction operations or delays due to a strike or labor dispute). Any such delays will be considered right of way delays within the meaning of Section 8-1.09, "Right of Way Delays." The Contractor shall be entitled to no compensation for any such delay.

Notwithstanding any other provisions of the contract, plans, specifications, Special Provisions or Technical Provisions, the City shall, as between the City and Contractor, assume the responsibility and the cost therefor for the location, repair of damage not due to the Contractor's failure to exercise reasonable care, removal, or relocation of existing main and trunk line utility facilities located on the site of the work, if such facilities are not identified in the plans or specifications made a part of the Notice to Contractors inviting bids for the work, and for equipment on the project necessarily idled during such location, repair, removal or relocation. If the Contractor, while performing the contract, discovers utility facilities not identified by the City in the plans or specifications, the Contractor shall immediately notify the Engineer and the utility in writing. The public utility, where it is the owner of an affected utility, shall have the sole discretion to perform repairs, removal or relocation work or permit the Contractor to do such repairs, removal or relocation work on the affected utility at a reasonable price.

The Contractor shall not be assessed liquidated damages for delay in completion of the project when such delay was caused by the failure of the City to provide for removal or relocation of such utility facilities.

Nothing herein shall be deemed to require the City to indicate the presence of existing service laterals or appurtenances whenever the presence of such utilities on the site of the construction project can be inferred from the presence of other visible facilities, such as buildings, meter and junction boxes, on or adjacent to the site of the construction.

Nothing herein shall preclude the City from pursuing any appropriate remedy against the utility for delays which are the responsibility of the utility.

Nothing herein shall be construed to relieve the utility from any obligation as required either by law or by contract to pay the costs of removal or relocation of existing utility facilities.

8-1.105 Treatment of Trees. When directed by the Engineer, the contractor shall employ a certified arborist to advise in the care of trees to avoid damage. Contractors must be made aware of the potential long term results from work done improperly today. Prior to the start of work, contractors shall record all trees with a diameter greater than 2" on the site map. Contractors should tag each tree with a numbered tag; identify the species; measure the trunk diameter; evaluate the tree health; note any significant structural characteristics; and assess the trees suitability for preservation. Contractors shall install protective fencing in a circle that is a minimum of 2/3 of the tree's canopy to prevent soil compaction and damage to the tree's structure. Operating or parking equipment or storing materials under a tree's canopy shall not be

allowed. When heavy equipment is to operate within 6' of the trees canopy, the contractor shall place a layer of mulch or wood chips to a depth of at least 6" to prevent soil compaction or root damage. Where practical, trenching or digging under trees shall be done by hand to prevent damage to roots. Grade cuts or fills around the base of trees should not occur within 6' of the trunk and be a maximum of 6" beyond that point. All tree roots encountered in the process of excavating or trenching shall be trimmed with a clean cut at the edge of the excavation or trench. Also, construction water run off shall be controlled in such a way as to avoid disturbing the soil of the trees to be preserved. Tree limbs overhanging the line of work shall be trimmed by a certified arborist or tree worker in accordance with ANSI A300 tree trimming standards. At the end of construction, fertilizer/water soil injections treatments should be completed around the drip line of the trees to allow air, water, and fertilizer back into the soil to reduce the effects of construction.

8-1.11 Termination of Contract. The contract may be terminated by the Engineer when termination is authorized by Section 7-1.125, "Legal Actions Against the City," Section 7-1.165, "Damage by Storm, Flood, Earthquake, Firestorm, Mud Slide or Debris Flows," or by other provisions of the contract which authorize termination. The City also reserves the right to terminate the contract at any time upon a determination by the Engineer, in the Engineer's sole discretion, that termination of the contract is in the best interest of the City.

If the City elects to terminate the contract, the termination of the contract and the total compensation payable to the Contractor shall be governed by the following:

A. The City will issue the Contractor a written notice signed by the Engineer, specifying that the contract is terminated. Upon receipt of the written notice, the Contractor will be relieved of further responsibility for damage to the work (excluding materials) as specified in Section 7-1.16, "Contractor's Responsibility for the Work and Materials," and, except as otherwise directed in writing by the Engineer, the Contractor shall:

1. Immediately, stop all work under the contract except that specifically directed to be completed prior to acceptance.
2. Immediately, perform work the Engineer deems necessary to secure the project for termination.
3. Immediately, remove equipment and plant from the site of the work.
4. Immediately, take such action that is necessary to protect materials from damage.
5. Within 24 hours, notify all subcontractors and suppliers that the contract is being terminated and that their contracts or orders are not to be further performed unless otherwise authorized in writing by the Engineer.
6. Provide the Engineer with an inventory list of all materials previously produced, purchased or ordered from suppliers for use in the work and not yet used in the work, including its storage location, and such other information as the Engineer may request.
7. Dispose of materials not yet used in the work as directed by the Engineer. It shall be the Contractor's responsibility to provide the City with good title to all materials purchased by the City hereunder and with bills of sale or other documents of title for those materials.
8. Subject to the prior written approval of the Engineer, settle all outstanding liabilities and all claims arising out of subcontracts or orders for materials terminated hereunder.

To the extent directed by the Engineer, the Contractor shall assign to the City all the right, title and interest of the Contractor under subcontracts or orders for materials terminated hereunder.

9. Furnish the Engineer with the documentation required to be furnished by the Contractor under the provisions of the contract including, on projects as to which Federal and State funds are involved, all documentation required under the Federal and State requirements included in the contract.

10. Take such other actions as directed by the Engineer.

B. Acceptance of the contract as hereinafter specified shall not relieve the Contractor of responsibility for damage to materials. The Contractor shall continue to be responsible for damage to materials after issuance of the Notice of Termination, except as follows:

1. The Contractor's responsibility for damage to materials for which payment has been made and for materials furnished by the City for use in the work and unused shall terminate when the Engineer certifies that those materials have been stored in the manner and at the locations the Engineer has directed.

2. The Contractor's responsibility for damage to materials purchased by the City subsequent to the issuance of the notice that the contract is to be terminated shall terminate when title and delivery of those materials has been taken by the City.

When the Engineer determines that the Contractor has completed the work under the contract directed to be completed prior to termination and such other work as may have been ordered to secure the project for termination, the Engineer will recommend that the City formally accept the contract to the extent performed, and immediately upon and after the acceptance by the City, the Contractor will not be required to perform any further work thereon and shall be relieved of the Contractor's contractual responsibilities for injury to persons or property which occurs after the formal acceptance of the project by the City.

C. Termination of the contract shall not relieve the surety of its obligation for any just claims arising out of the work performed.

D. The total compensation to be paid to the Contractor shall be determined by the Engineer on the basis of the following:

1. The reasonable cost to the Contractor, without profit, for all work performed under the contract, including mobilization, demobilization and work done to secure the project for termination. In determining the reasonable cost, deductions will be made for the cost of materials to be retained by the Contractor, amounts realized by the sale of materials, and for other appropriate credits against the cost of the work. Deductions will also be made, when the contract is terminated under the authority of Section 7-1.165, "Damage by Storm, Flood, Earthquake, Firestorm, Mud Slide, or Debris Flows," for the cost of materials damaged by the "occurrence."

When, in the opinion of the Engineer, the cost of a contract item of work is excessively high due to costs incurred to remedy or replace defective or rejected work, the reasonable cost to be allowed will be the estimated reasonable cost of performing that work in compliance with the requirements of the plans and specifications and the excessive actual cost shall be disallowed.

2. A reasonable allowance for profit on the cost of the work performed as determined under Subsection 1, provided the Contractor establishes to the satisfaction of the Engineer that it is reasonably probable that the Contractor would have made a profit had the contract been completed and provided further, that the profit allowed shall in no event exceed 4 percent of the cost.

3. The reasonable cost to the Contractor of handling material returned to the vendor, delivered to the City or otherwise disposed of as directed by the Engineer.

4. A reasonable allowance for the Contractor's administrative costs in determining the amount payable due to termination of the contract.

5. A reasonable credit to the City for defective or incomplete work not corrected.

All records of the Contractor and the Contractor's subcontractors necessary to determine compensation in accordance with the provisions of this Section 8-1.11, shall be open to inspection or audit by representatives of the City at all times after issuance of the notice that the contract is to be terminated and for a period of 3 years, thereafter, and those records shall be retained for that period.

After acceptance of the work by the City, the Engineer may make payments on the basis of interim estimates pending issuance of the Final Estimate in accordance with Section 9-1.07B, "Final Payment and Claims," when, in the Engineer's opinion, the amount thus paid, together with all amounts previously paid or allowed, will not result in total compensation in excess of that to which the Contractor will be entitled. All payments, including payment upon the Final Estimate shall be subject to deduction for prior payments and amounts, if any, to be kept or retained under the provisions of the contract.

8-1.11A Continuation of Contract. If a dispute should arise between the Contractor and the City regarding work performed or to be performed or payment therefor, the Contractor hereby agrees that it will continue to perform the work called for under this contract and hereby expressly waives its rights, if any, to terminate or suspend work pending resolution of said dispute.

8-1.12 Concurrent Delays. Where there are concurrent delays to a controlling item of work no extension of time or additional compensation shall be granted to the Contractor where at least one of the delays is due, in part of in whole, to the Contractor's own acts.

8-1.13 City's Right to Carry Out the Work. If the Contractor defaults or neglects to carry out the work in accordance with the contract documents, and fails within seven days after receipt of written notice from the City to commence and continue correction of such default or neglect with diligence and promptness, the City may, after 7 days following receipt by the Contractor of an additional written notice and without prejudice to any other remedy the City may have, make good such deficiencies. In such case an appropriate Change Order shall be issued deducting from the payments then or thereafter due the Contractor the cost of correcting such deficiencies, including compensation for the Engineer's additional services made necessary by such default, neglect or failure. Such action by the City and the amount charged to the Contractor are both subject to the prior approval of the Engineer. If the payments then or thereafter due the Contractor are not sufficient to cover such amount, the Contractor shall pay the difference to the City.

END OF SECTION

SECTION 9
MEASUREMENT AND PAYMENT

9-1.01 Measurement of Quantities. All work to be paid for at a contract price per unit of measurement will be measured by the Engineer in accordance with United States Standard Measures. A ton shall consist of 2,000 pounds avoirdupois.

At a time designated by the Engineer after the completion of construction and before the issuance of a final payment estimate, a representative of the Contractor and of the City shall measure and determine the final quantities. Quantities shall be measured in the units shown in the Contract.

When material is to be measured and paid for on a volume basis and it is impractical to determine the volume by the specified method of measurement, or when requested by the Contractor in writing and approved by the Engineer in writing, the material will be weighed and such weights will be converted to volume measurement for payment purposes. Factors for conversion from weight measurement to volume measurement will be determined by the Engineer and shall be agreed to by the Contractor before such method of measurement of pay quantities will be adopted.

Quantities of material wasted or disposed of in a manner not called for under the contract, or rejected loads of material, including material rejected after it has been placed by reason of the failure of the Contractor to conform to the provisions of the contract, or material not unloaded from the transporting vehicle, or material placed outside of the lines indicated on the plans or established by the Engineer, or material remaining on hand after completion of the work; will not be paid for. No compensation will be allowed for hauling and disposing of rejected material.

Full compensation for all expense involved in conforming to the requirements specified in this Section 9-1.01 shall be considered as included in the unit prices paid for the materials being measured or weighed and no additional compensation will be allowed therefor.

9-1.02 Scope of Payment. The Contractor shall accept the compensation provided in the contract as full payment for furnishing all labor, materials, tools, equipment, and incidentals necessary to the completed work and for performing all work contemplated and embraced under the contract; also for loss or damage arising from the nature of the work, or from the action of the elements, or from any unforeseen difficulties which may be encountered during the prosecution of the work until the acceptance by the City and for all risks of every description connected with the prosecution of the work, also for all expenses incurred in consequence of the suspension or discontinuance of the work as provided in the contract; and for completing the work according to the plans and specifications. Neither the payment of any estimate nor of any retained percentage shall relieve the Contractor of any obligation to make good any defective work or material.

No compensation will be made in any case for loss of anticipated profits.

Any payment to the Contractor for work performed under this contract, whether a partial progress payment or final payment, shall not waive City's right to demand that the Contractor correct defects in the Contractor's work, whether or not defects were known to the Engineer, the City, its agents or employees at the time such payment was made.

Whenever it is specified or indicated in the contract documents, that the Contractor is to do work, or furnish materials for which no price is fixed in the contract, it is understood and agreed, that there is included in each lump sum or unit price bid, the entire cost of all work,

incidental to the completion of that part of the work covered by each lump sum or unit price bid, or if not directly incidental to any specific bid items, the cost thereof has been distributed among those bid items deemed most appropriate by the Contractor.

9-1.03 Change Order Payment. When extra work is to be paid for on basis of change order, the labor, materials and equipment used in the performance of such work shall be subject to the approval of the Engineer and compensation will be determined as follows:

9-1.03A Work Performed by Contractor. The Contractor will be paid as follows: a price may be agreed upon, or, failing such an agreement in price, an amount equal to the sum of the following five items shall be used as the full and proper compensation therefore; and such amount shall be added to or subtracted from, as the case may be, the price fixed by the terms of the contract for the part of the work affected:

A. The necessary reasonable cost to the Contractor of the material required for the work as furnished by the Contractor and delivered by him at the site of the work.

B. The necessary cost to the Contractor of the labor (including foremen devoting their exclusive attention to the work in question) required to incorporate all of said material into the work and to finish the work in accordance with directions.

C. The necessary reasonable cost to the Contractor of equipment used for the work.

D. The cost of worker's compensation insurance premiums, State Unemployment and Federal Social Security payments on the labor included in Item b.

E. Fifteen per cent (15%) of the sums of Items A., B., C., and D., which shall be considered as covering all other expenses and profits, with the exception that all work performed by subcontractors shall be paid for by an increase of 5% above the Contractor's cost.

The compensation provided for in each and every change order shall include all costs and taxes applicable thereto, and the City shall not be liable for any increase in taxes during the term of change order work.

The overhead and profit markup on each and every change order shall include full compensation for all costs incurred by the contractor for any additional time required to complete change order.

In order that a proper estimate may be made by the Engineer of the net cost of labor and materials entering into extra work, in accordance with the procedure just stated, the Contractor shall furnish daily an itemized statement of materials and labor supplied, together with the cost of such material and the wages paid, and shall furnish vouchers for quantities and prices of such labor, material or work. In case the Contractor fails to comply with the above provisions, the Contractor shall have no claim for compensation against the City.

This method of determining the price of work shall not apply to the performance of any work which is required or reasonably implied to be performed or furnished under the contract.

9-1.03B Work Performed by Special Forces or Other Special Services. When the Engineer and the Contractor, by agreement, determine that a special service or an item of extra work cannot be performed by the forces of the Contractor or those of any of the Contractor's subcontractors, that service or extra work item may be performed by a specialist. Invoices for the service or item of extra work on the basis of the current market price thereof may be accepted without complete itemization of labor, material, and equipment rental costs when it is

impracticable and not in accordance with the established practice of the special service industry to provide a complete itemization.

In those instances wherein the Contractor is required to perform extra work necessitating a fabrication or machining process in a fabrication or machine shop facility away from the job site, the charges for that portion of the extra work performed in the facility may, by agreement, be accepted as a specialist billing.

To the specialist invoice price, less a credit to the City for any cash or trade discount offered or available, whether or not the discount may have been taken, will be added 5 percent in lieu of the percentages provided in Section 9-1.03A, "Work Performed by Contractor."

9-1.03C Records. The Contractor shall maintain records in such a manner as to provide a clear distinction between the direct costs of extra work paid for on a change order basis and the costs of other operations.

From the above records, the Contractor shall furnish the Engineer completed daily extra work reports, on forms acceptable to the Engineer, for each day's extra work to be paid on a change order basis. The daily extra work reports shall itemize the materials used, and shall cover the direct cost of labor and the charges for equipment rental, whether furnished by the Contractor, subcontractor, or other forces, except for charges described in Section 9-1.03B, "Work Performed by Special Forces or Other Special Services." The daily extra work reports shall provide names or identifications and classifications of workers, the hourly rate of pay and hours worked, and also the size, type and identification number of equipment, and hours operated.

Material charges shall be substantiated by valid copies of vendor's invoices. The invoices shall be submitted with the daily extra work reports, or if not available, they shall be submitted with subsequent daily extra work reports. Should the vendor's invoices not be submitted within 60 days after the date of delivery of the material or within 15 days after the acceptance of the contract, whichever occurs first, the City reserves the right to establish the cost of the materials at the lowest current wholesale prices at which those materials were available in the quantities concerned delivered to the location of work less any discounts as provided in Section 9-1.03A(2a).

Daily extra work reports shall be signed by the Contractor or the Contractor's authorized representative.

9-1.03D Payment. Payment as provided in Sections 9-1.03A, "Work Performed by Contractor," and 9-1.03B, "Work Performed by Special Forces or Other Special Services," shall constitute full compensation to the Contractor for performance of work paid for on a change order basis and no additional compensation will be allowed therefor. Such payment will be made in accordance with the provisions in Section 9-1.06, "Partial Payments."

9-1.04 Notice of Potential Claim. The Contractor shall not be entitled to the payment of any additional compensation for any act, or failure to act, by the Engineer, including failure or refusal to issue a change order, or for the happening of any event, thing, occurrence, or other cause, unless the Contractor shall have given the Engineer due written notice of potential claim as hereinafter specified.

The written notice of potential claim shall set forth the reasons for which the Contractor believes additional compensation will or may be due, the nature of the costs involved, and insofar as possible, the amount of the potential claim. The said notice as above required must have been given to the Engineer prior to the time that the Contractor shall have performed the work giving rise to the potential claim for additional compensation, if based on an act or failure to act by the Engineer, or in all other cases within 15 days after the happening of the event, thing, occurrence, or other cause, giving rise to the potential claim. City may request additional information from Contractor regarding the Contractor's claim which shall be provided to City within 10 days of the request.

It is the intention of this Section 9-1.04 that differences between the parties arising under and by virtue of the contract be brought to the attention of the Engineer at the earliest possible time in order that such matters may be settled, if possible, or other appropriate action promptly taken. The Contractor hereby agrees that they shall have no right to additional compensation for any claim that may be based on any such act, failure to act, event, thing or occurrence for which no written notice of potential claim as herein required was filed.

9-1.05 Stop Payment Notices. The City may at its option and at any time retain out of any amounts due the Contractor, sums sufficient to cover claims filed pursuant to Section 3179 et seq of the Civil Code.

9-1.06 Partial Payments. The City, once in each month, shall cause an estimate in writing to be made by the Engineer. The estimate shall include the total amount of work done to the time of such estimate, and the value thereof. The estimate shall also include any amounts payable for mobilization.

The City shall retain 5 percent of such estimated value of the work done.

The City 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.

No such estimate or payment shall be construed to be an acceptance of any defective work or improper materials.

Attention is directed to the express prohibition against payment to unlicensed contractors contained in Public Contract Code Section 10164, the provisions of which are set forth in Section 7-1.01C, "Contractor's Licensing Laws."

The estimates of the Engineer shall be final and conclusive evidence of the amount of work performed by the Contractor under this contract, and shall be taken as full measure of compensation to be received by the Contractor.

Before any partial payment or the final payment is made, the Contractor may be required to submit satisfactory evidence that the Contractor is not delinquent in payments to employees or creditors for labor and materials incorporated into the work.

The Contractor shall maintain and provide to the City, upon request, with each partial payment request, certified payrolls for all of its employees and those employees of Contractor's subcontractors.

9-1.065 Payment of Withheld Funds. The Contractor may substitute securities for any moneys withheld by the City to ensure performance under this contract except where federal statutes, regulations or policies, or both, do not allow the substitution of securities. At the request and expense of the Contractor, securities equivalent to the amount withheld shall be deposited with the City, or with a state or federally chartered bank as the escrow agent. The City shall then pay such withheld moneys to the Contractor.

Securities eligible for investment under this Section 9-1.065 shall include those listed in Section 16430 of the California Government Code, bank or savings and loans certificated of deposits, interest bearing demand deposit accounts, standby letters of credit, or any other security mutually agreed to by the Contractor and the City.

The Contractor shall be the beneficial owner of any securities substituted for monies withheld and shall receive any interest thereon.

The escrow agreement used to implement this Section 9-1.065 shall be in a form satisfactory to the City.

9-1.07 Payment After Final Inspection. After the work has been accepted by the Engineer the final payment will be made to the Contractor subject to the provisions in this Section 9-1.07.

9-1.07A Payment of Final Estimate. Prior to acceptance of the work by the City, the Engineer will make a proposed final estimate in writing of the total amount payable to the Contractor, including therein an itemization of said amount, segregated as to contract item quantities, extra work and any other basis for payment, and shall also show therein all deductions made or to be made for prior payments and amounts to be kept or retained under the provisions of the contract. All prior estimates and payments shall be subject to correction in the proposed final estimate. The City will make a final monthly payment based upon that estimate. The City will pay the balance thereon found to be due after deduction of all previous payments, all amounts to be kept or retained under the provisions of the contract, and such further amounts as the Engineer determines to be necessary.

9-1.07B Final Payment and Claims. Within 30 days after said proposed final estimate has been submitted to the Contractor, the Contractor shall submit to the Engineer written approval of said proposed final estimate or a written statement of all claims the Contractor has arising under or by virtue of the contract. No claim will be considered that was not included in said written statement of claims, nor will any claim be allowed as to which a notice of protest is required under the provisions in Sections 4-1.03, "Changes," 8-1.06, "Time of Completion," 8-1.07, "Liquidated Damages," 8-1.10, "Utility and Non-Highway Facilities," and 9-1.04, "Notice of Potential Claim," unless the Contractor has complied with the notice of protest requirements in said sections.

On the Contractor's approval, or if the Contractor files no claim within said period of 30 days, the Engineer will issue a final estimate in writing in accordance with the proposed final estimate submitted to the Contractor and within 30 days thereafter the City will pay the entire sum so found to be due. Such final estimate and payment thereon shall be conclusive and binding against both parties to the contract on all questions relating to the amount of work done

and the compensation payable therefor, except as otherwise provided in Sections 9-1.03C, "Records."

If the Contractor within said period of 30 days files claims, the Engineer will issue a semifinal estimate in accordance with the proposed final estimate submitted to the Contractor and within 30 days thereafter the City will pay the sum so found to be due. Such semifinal estimate and payment thereon shall be conclusive and binding against both parties to the contract on all questions relating to the amount of work done and the compensation payable therefor, except insofar as affected by the claims filed within the time and in the manner required hereunder and except as otherwise provided in Sections 9-1.03C, "Records."

The claims filed by the Contractor shall be in sufficient detail to enable the Engineer to ascertain the basis and amount of said claims. The Engineer will consider and determine the Contractor's claims and it will be the responsibility of the Contractor to furnish within a reasonable time such further information and details as may be required by the Engineer to determine the facts or contentions involved in the Contractor's claims. Failure to submit such information and details will be sufficient cause for denying the claims and shall constitute a waiver of such claims.

The Engineer will make the final written determination of any claims which remain in dispute after completion of claim review. The Engineer will review such claims and make a written recommendation thereon. The Contractor may meet with the City Manager to make a presentation in support of such claims.

Upon final determination of the claims, the Engineer shall then make and issue the Engineer's final estimate in writing and within 30 days thereafter the City will pay the entire sum, less all amounts to be kept or retained under provisions of the contract. Such final estimate shall be conclusive and binding against both parties to the contract on all questions relating to the amount of work done and the compensation payable therefor, except as otherwise provided in Sections 9-1.03C, "Records."

9-1.10 No Arbitration of Disputes. All disputes will be resolved by litigation, unless both parties agree to arbitration.

END OF SECTION

SECTION 10
CALTRANS SPECIFICATIONS

Section 10 of these specifications incorporates by reference Sections 10 through Section 95 of the Caltrans Specifications, latest edition (The standard specifications of the State of California, Department of Transportation).

Whenever references are made in Section 10 through Section 95 of the Caltrans Specifications to any provisions in Sections 1 through 9 of the Caltrans Specifications, such references shall apply to the appropriate corresponding provisions in the Specifications, and not the Caltrans Specifications.

Wherever, throughout Sections 10 through 95 of the Caltrans Specifications, and the context so requires, terms such as "State" shall mean "City"; “Director of Transportation" shall mean "Engineer;" and other terms shall be converted to their proper meaning as defined the Specifications.

END OF SECTION

GUIDANCE TECHNICAL SPECIFICATION

These guidance specifications are general city requirements. They shall be incorporated into project specific technical specifications. The city utilizes the latest edition of the California Department of Transportation Standard Specifications and the American Public Works Association Standard Specifications for Public Works for Construction (Green Book).

SECTION 1 CLEARING AND GRUBBING

1-01 GENERAL

This work shall consist of clearing and grubbing the area within the limits of work of all rubbish, debris, vegetative material and objectionable material as deemed necessary to perform the work or as otherwise specified on the plans. Clearing and grubbing shall conform to the requirements of Section 15, "Existing Highway Facilities," and Section 16, "Clearing and Grubbing," of the Caltrans Specifications, except as modified herein.

1-02 MATERIALS

None.

1-03 CONSTRUCTION

The Contractor should examine the work site and verify existing conditions prior to commencement of work.

The areas requiring clearing and grubbing shall be graded to a relatively smooth final grade. All deleterious material, rocks, paper and other objectionable material shall be removed. The Contractor shall separate asphalt concrete and portland cement concrete improvements which are to remain from those to be removed by sawcutting along the conform line.

Spoils resulting from clearing and grubbing shall be removed from the site and properly disposed of, by the Contractor.

SECTION 2 EARTHWORK AND GRADING

2-01 GENERAL

This work shall consist of all grading, earthwork, roadway excavation and/or fill, including subgrade preparation. Roadway excavation and grading shall conform to Section 19, "Earthwork," of the Caltrans Specifications, except as modified herein.

2-02 MATERIALS

2-02.01 Site Fill and Backfill

Site fill shall be native material free of deleterious substances, large rocks, garbage, rubbish, wood or organic debris.

2-02.02 Import Material for Fill

Material for fill shall consist of inert, granular soil and rock fragments supplied from previously tested and approved sources, and shall conform to the following specifications and requirements:

All material shall be free of organic materials, trash and debris, expansive clays or any other deleterious materials, and shall be subject to the approval and acceptance of the Engineer.

The Contractor shall designate his proposed import sources in advance and shall provide the source samples of material proposed to be furnished for evaluation.

Minimum “R” value for import material shall be 25 as determined by the procedure set forth in California Test Method No. 301, and the material shall meet the following gradation requirements:

A. Maximum particle size of 4 inches,

B. Percent passing 1-1/2” screen 50-100%,

C. Percent passing No. 4 screen 20-100%,

D. Percent passing No. 200 screen 10-30%.

Plasticity Index for acceptable import material shall be less than twelve (12) when determined by the procedure set forth in ASTM D424.

Sand Equivalent for acceptable import material shall be not less than twenty-five (25) when determined by the procedure set forth in ASTM Designation D2419.

2-02.03 Structural Fill

Suitable materials for fill beneath or adjacent to roadways and for structural backfill shall be non-organic, native soil. Expansive silt and clay with L.L. greater than 50 is unsuitable fill material and shall not be used.

2-03 CONSTRUCTION

Earthwork shall consist of excavating to the lines and grades called for on the Plans.

Spread fill material in uniform lifts not exceeding eight inches (8”) in uncompacted thickness. If suitable compaction can be demonstrated, thickness of fill placement may be increased, subject to written approval of the Engineer.

Any fill that does not meet the specification requirements shall be removed and/or recompacted until the requirements are satisfied.

The Contractor shall exhaust the usable onsite resources prior to importing fill material.

2-03.01 Subgrade Preparation

Unless noted otherwise by the Engineer, the basement material shall be scarified to a depth of six inches (6") below subgrade and recompacted in place. The compacted subgrade material shall have a relative compaction of not less than ninety-five percent (95%). Immediately prior to placing subsequent layers of material thereon, the surface of the grading plane at any point shall not vary more than 0.05 foot above the grade established by the Engineer. No material shall be placed on the subgrade until the subgrade is in a condition satisfactory to the Engineer.

2-04 TESTING

The Contractor is responsible for quality control testing of all materials entering the site. The results of this testing shall be made available to the Engineer, upon request.

The Contractor shall conduct the compaction testing program laid out by the Engineer. It is the responsibility of the Contractor to notify the Engineer when the Contractor is ready for tests. The Engineer shall inspect and approve subgrades before further construction is allowed. Testing shall be conducted by the Contractor on each lift according to Test Method No. California 216. If tests indicate that the required compaction densities have not been obtained, it is the responsibility of the Contractor to provide additional compaction with subsequent testing until the affected subgrade or fill is approved by the Engineer at no additional cost to the City.

The Contractor shall be responsible for protecting the subgrade after it has been graded and compacted. The Contractor will not be allowed any additional compensation for the recompaction or retesting of the subgrade due to the Contractor's failure to provide adequate subgrade protection or failure to place the successive aggregate subbase, aggregate base, asphalt concrete pavement or other materials within a reasonable time period as determined by the Engineer.

SECTION 3 AGGREGATE BASE AND SUBBASE

3-01 GENERAL

This work shall consist of spreading and compacting of aggregate base and subbase and shall conform to the requirements of Section 25, "Aggregate Subbases," and Section 26, “Aggregate Bases,” of the Caltrans Specifications, except as modified herein.

3-02 MATERIALS

Aggregate subbase and aggregate base shall conform to the requirements of Section 25, "Aggregate Subbases," and Section 26, "Aggregate Bases," of the Caltrans Specifications, except as modified herein.

The aggregate subbase and base shall be three-quarters of an inch (¾”) maximum and Class 2 (R-value 78 minimum) and shall be of the thickness as shown on the Plans. No waiver of R-value will be allowed. The aggregate subbase and base shall be untreated material.

3-03 CONSTRUCTION

The aggregate base and subbase may be spread by the use of motor graders as long as segregation of large or fine particles of aggregate is avoided and the material, as spread, is free from pockets of large or fine materials. Subgrade preparation for roadway as specified in Section 4, "Earthwork and Grading," of these Standard Specifications is required prior to placing aggregate subbase material and when placing aggregate base on native material.

3-04 TESTING

Aggregate subbase shall have a relative compaction of not less than ninety-five percent (95%). Aggregate base shall have a relative compaction of not less than ninety-five percent (95%) as determined by Test Method No. California 216.

Testing shall be done per Caltrans Construction Manual 6-109, one test for every 2500 tons or every 1500 cubic yards and shall be conducted on each lift.

The Contractor shall be responsible for protecting the aggregate subbase and base after they have been placed and compacted. The Contractor will not be allowed any additional compensation for the recompaction or retesting of the aggregate subbase or base due to the Contractor's failure to place the successive asphalt concrete pavement or other materials within a reasonable time period as determined by the Engineer.

SECTION 4 ASPHALT PAVING AND SURFACING

4-01 GENERAL

This work shall consist of spreading and compacting of asphalt concrete, pavement fabric, prime coat and paint binder (tack coat). Asphalt concrete shall conform to the requirements of Section 39, "Asphalt Concrete," of the Caltrans Specifications, except as modified herein.

4-02 MATERIALS

4-02.01 Asphalt Binder

The asphalt binder to be mixed with aggregate shall be a steam-refined paving asphalt conforming to the provisions in the current Caltrans Specifications Section 92, “Asphalts,” and shall be of the grade PG 64-10. The amount of asphalt binder to be mixed with the aggregate will be determined in accordance with California Test 367 and approved by the Engineer using the samples of aggregates furnished by the Contractor in conformance with current Caltrans Specifications Section 39-3.03, “Proportioning.”

A Certificate of Compliance shall be required for all grades of asphalt.

4-02.02 Aggregate for Asphalt Concrete

Asphalt concrete shall be Type B (medium) and shall be of the thickness as shown on the Plans or as specified in the Special Provisions or Technical Provisions.

Unless otherwise specified herein or on the plans, the aggregate grading shall conform to Caltrans Specifications Section 39-2.02, “Aggregate”. Maximum aggregate size shall be as follows:

Min. Thickness AC	Max. Agg.
1-1/2" Surface Course / Top Lift	1/2"
Base Course / Initial Lift	3/4"

A Certificate of Compliance shall be required for all grades of aggregate.

4-02.03 Pavement Fabric

Pavement fabric shall conform to Section 88, “Engineering Fabrics,” of the Caltrans Specifications, except as modified herein.

Pavement fabric shall be nonwoven, needle-punched polyester or polypropylene material and shall be *Petromat 4599* or approved equal.

4-02.04 Liquid Asphalt (prime coat)

The liquid asphalt used for prime coat shall conform to the provisions of current Caltrans Specifications Section 93, “Liquid Asphalt,” and shall be Grade SC-70 unless otherwise directed by the Engineer.

4-02.05 Paint Binder (tack coat)

Paint binder (tack coat) shall be asphaltic emulsion Grade SS-1h, and shall conform to the requirements of Section 94, "Asphaltic Emulsions," of the Caltrans Specifications. The rate of application shall be approximately 0.05 to 0.15 gallon per square yard. The exact rate of application will be determined by the Engineer. A one-to-one (1:1) dilution of SS-1h in water shall be used. It is important that the water be added to the emulsion, NOT the emulsion to the water, to prevent premature breaking.

4-03 CONSTRUCTION

At the request of the Engineer, as much liquid asphalt shall be applied to the prepared base as will soak in during a twenty-four (24) hour period without puddling. Sand cover shall be applied at driveways, intersections and to the roadbed surface where continuous traffic access must be maintained.

Pavement fabric shall be placed at locations indicated on the plans or as directed by the Engineer, and conform to Sections 39-4.03, “Pavement Reinforcing Fabric,” of the Caltrans Specifications.

All asphalt concrete shall be placed in lifts not to exceed three inches (3”). Cold joints shall be tack coated prior to the adjacent overlay placement. Before compacting joints, all coarse aggregate in the overlapped material that has dislodged through raking shall be removed from the pavement surface and discarded. Compaction shall be a minimum of ninety-five percent (95%) of the laboratory maximum density of the asphalt concrete.

The Contractor shall assure that connections to existing or previously placed asphalt or concrete surfacing shall conform to the requirements of surface smoothness or the Contractor shall correct all these deficiencies to the satisfaction of the Engineer. The Engineer’s decision whether the Contractor has met the requirements of surface smoothness shall be final.

The Contractor is required to provide adequate protection of the subgrade, aggregate subbase, aggregate base and other materials if the asphalt concrete pavement is not placed within a specified time as determined by the Engineer. Retesting of the subgrade, aggregate subbase, aggregate base or other material will be required and will be paid for by the Contractor, if the asphalt concrete pavement is not placed within a specified time as determined by the Engineer.

4-03.01 Conforms

Where back of walk, depressed curb or new pavement elevation is above adjacent existing asphalt concrete; asphalt concrete shall be placed on the existing to limits specified by the Engineer so as to provide a smooth conform. The existing asphalt concrete shall be thoroughly cleaned and a paint binder (tack coat) shall be applied to

vertical surfaces of Portland cement concrete or existing asphalt surfacing that will come in contact with the asphalt concrete conform.

Where back of walk, depressed curb or new pavement elevation is below adjacent existing asphalt concrete, the existing pavement shall be sawcut back to a point as specified on the drawings or by the Engineer so as to provide a smooth transition between existing asphalt and new construction. The areas so cut back shall be excavated and graded so as to provide for the placing of six inches (6") of aggregate base and two inches (2") of asphalt concrete. A prime coat of liquid asphalt SC-70 shall be applied to the aggregate base and a paint binder shall be applied to vertical surfaces of portland cement concrete and to cleaned surfaces of existing asphalt surfacing that will come in contact with the asphalt concrete conform. The asphalt concrete conform will be laid over the prime aggregate base and feathered over the existing asphalt concrete as required by the Engineer.

Headerboards shall be permanently installed along any unbordered edges of asphalt concrete driveway conforms. Headerboards shall conform to the requirements of Section 15, "Barricades, Guardrails and Headerboards," of these Standard Specifications.

4-03.02 Asphalt Berms

Asphalt berms, located as shown on the plans or as directed by the Engineer, shall conform to the details and dimensions shown on the plans and the Standard Plans.

The material used in constructing the asphalt berm shall have a maximum aggregate grading of ½ inch.

Asphalt berms shall be constructed using a self-propelled mechanical berm machine. The machine must be approved by the Engineer.

4-04 TESTING

4-04.01 General

The Contractor in the presence of the Engineer or his designated representative shall conduct all testing. Cost for the testing shall be included in the unit price for the asphalt concrete. Any work that requires testing will not be accepted until the results have been reviewed and approved by the Engineer. The Contractor, at the Contractor’s expense, shall perform any required retesting or material replacement because of test failure.

4-04.02 Testing of Pavement Course

The Contractor’s shall provide continued testing of the compaction with the use of a nuclear gauge using test method ASTM D2950 to analyze the compaction operation of the new asphalt concrete. One test shall be conducted for each 5,000 square feet of patch and on each lift, at a location directed by the Engineer.

Any final density results between 93% and 98%, the City will pay 100% of the unit price for asphalt concrete patch. Any density results between 89% and 92.9% or over 98%, the City will reduce the payment to 80% of the unit price for the asphalt concrete patch. Any paved areas with density test results less than 89% will be rejected and the pavement must be replaced at the Contractor's expense.

SECTION 5 SLURRY SEAL

5-01 GENERAL

This work shall consist of mixing and spreading of slurry seal on existing pavement or surface. Slurry seal shall conform to the requirements of Section 37-2, "Slurry Seal," of the Caltrans Specifications, except as modified herein.

5-02 MATERIALS

Slurry seal shall be State Standard Type II.

5-02.01 Asphalt Emulsion

Asphalt emulsion shall be cationic "quick setting" CQS1h grade and conform to Section 94, "Asphaltic Emulsions," of the Caltrans Specifications.

5-02.02 Aggregate

Aggregate shall meet the requirements of a Type II grading and conform to Section 37-2.02C, "Aggregate," of the Caltrans Specifications except as modified herein. Aggregate shall be of sound, durable crushed stone with no round particles, and shall be of volcanic in origin. The percentage composition by weight of the aggregate shall conform to the following gradings:

Sieve Sizes	Percentage Passing
3/8”	100
No. 4	90-100
No. 8	65-90
No. 16	40-70
No. 30	25-50
No. 200	5-15

The composition of dry aggregate in the slurry seal shall be 13% to 18% by weight of the theoretical asphalt content. Rate of application shall be 14 lb. to 16 lb. per square yard.

5-02.03 Additive

Slurry seal shall contain carboxilated polymer latex such as poly-chloroprene-methacrylic acid latex with polyvinyl alcohol or approved equivalent. The amount of latex shall be between two percent (2%) and three percent (3%) by weight of the asphalt residue content. Poly-chloroprene-methacrylic acid latex shall meet the following requirements:

Test	Requirement
Total Solid, % Min.	47
Average Particle Size, µm	0.30
pH at 77°F (25°C)	7
Brookfield Viscosity at 77°F (25°C)	350-500
Mechanical Stability, Min	650

5-03 CONSTRUCTION

5-03.01 Mixing and Spreading Equipment

Mixing and spreading equipment shall be in accordance with Section 37-2.05, “Mixing and Spreading Equipment,” of the Caltrans Specifications, and as specified herein.

The slurry seal spreading and mixing equipment shall be equipped with the following:

A burlap drag not shorter than 18 inches or longer than 24 inches in length. The drag shall be replaced when it loses its flexibility.

A calibrated emulsion tank with a stick gauge or other measuring device that allows for quick accurate measurement of the volume.

Gauges or approved means of measurement shall be provided on the equipment so that the proportional rates of aggregate, water and asphalt emulsion can be checked at intervals determined by the Engineer.

5-03.02 Calibration/Demonstration

The Contractor shall calibrate the spreader vehicle(s) to be used on the project to the approved mix design prior to their arrival at the job site, and shall furnish the Engineer a copy of the calibration settings for each vehicle. Thereafter, no adjustments in the aggregate and emulsion settings shall be made without the approval of the Engineer.

The Contractor shall demonstrate the ability to mix and apply slurry in a satisfactory manner and to the approved mix design with each spreader vehicle. The Contractor may not begin work until the ability to apply slurry as specified is demonstrated to the Engineer.

5-03.03 Surface Preparation

Surface to receive slurry seal shall be prepared in accordance with the requirements specified for preparing surfaces to receive asphaltic emulsion as specified in Section 37-2.06, “Placing,” of the Caltrans Specifications.

Power sweepers shall be required to sweep from face of curb to face of curb or, for those streets without curbs, between the edges of street pavement. This shall involve a minimum of three passes with a power broom street sweeper (Mobile or equivalent).

Pavement missed by or inaccessible to broom sweepers shall be swept clean by other approved methods. Contractor shall provide whatever compressed air or other approved cleaning methods necessary to remove all dirt and loose material from the pavement.

All existing raised pavement markers and thermoplastic markings shall be removed and disposed of by the Contractor. Said removal shall not occur sooner than 2 days prior to the day that the sealing is performed.

5-03.04 Application and Workmanship

The slurry seal shall be mixed, spread, and placed in accordance with the provisions of Section 37-2, "Slurry Seal," of the Caltrans Specifications, with the following exceptions and additions:

A. The slurry seal shall not be applied when either atmospheric or pavement temperature is 55 degrees Fahrenheit and falling but may be applied when either the atmospheric or pavement is 45 degrees Fahrenheit and rising. The slurry seal shall not be applied during periods of abnormally high relative humidity. Slurry seal shall not be applied when raining or foggy.

B. The slurry seal mixture shall not be applied prior to 8:00 A.M. Also, the slurry seal mixture shall not be applied after 1:00 P.M. unless approved by the Engineer. Approval of applications after 1:00 P.M. will only be for the purpose of completing the section of work then underway. Beginning a new section of work after 1:00 P.M. will not be permitted.

C. The surface shall be fogged with water directly preceding the spreader. The slurry mixture shall be of the desired consistency when deposited on the surface. Total time of mixing shall not exceed four (4) minutes. A sufficient amount of slurry shall be carried in all parts of the spreader at all times so that complete coverage is obtained. No lumping, balling or unmixed aggregate shall be permitted. No segregation of the emulsion and aggregate fines from the coarse aggregate will be permitted. If coarse aggregate settles to the bottom of the mix, the slurry will be removed from the pavement. No excessive breaking of the emulsion will be allowed in the spreader box. No streaks such as caused by oversize aggregate will be left in the finished pavement. Ridges (especially at existing raised pavement markers) and wash-boarding in the finished product will not be allowed.

D. The slurry seal shall be placed at a rate to produce 14 to 16 pounds of aggregate per square yard for Type II slurry, unless approved by the Engineer prior to start of work. The completed mixture shall be such that the slurry seal mixture has proper workability and will permit traffic flow within one hour after placement without the occurrence of bleeding, raveling, polishing, separation or other distress, and prevent the development of bleeding, raveling, polishing, separation, or other distress within 30 days after its placement.

E. Asphaltic emulsion shall be added at a rate of between 13 to 18 percent by weight of the dry aggregate. The quality of asphaltic emulsion to be used in the slurry seal mixture will be determined from the design asphalt binder content, as approved by the Engineer, and the asphalt solids content of the asphaltic emulsion finished.

F. The slurry seal mixture shall be applied to overlap the lip of gutter; this overlap is not to exceed beyond two inches (2") from the lip of gutter toward the face of curb. On streets that have no concrete curb and gutter, the slurry seal shall extend to the edge of street as designated by the Engineer. Any application or spillage beyond this two-inch limit shall be removed or cleaned up by the Contractor to the satisfaction of the Engineer. Gutter spills shall be cleaned immediately.

G. Longitudinal joints shall be at the crown of the street or at the edge of travel lanes.

H. Neither excessive buildup nor unsightly appearance shall be permitted on longitudinal or transverse joints. Burlap drags shall be used.

I. Approved squeegees shall be used to spread slurry in non-accessible areas to the slurry mixer. Care shall be exercised in leaving no unsightly appearance from handwork.

J. At any time the quality of the mix or workmanship is not to the satisfaction of the Engineer, the job shall be discontinued until a correction is made which is satisfactory to the Engineer.

K. A sand blotter shall be spread at selected intersections and where required by the Engineer, to accommodate pedestrian or vehicular traffic until slurry sets. Sand blotter shall be placed by broadcasting slurry aggregate lightly so not to cause any displacement of wet slurry seal. Sand blotters at intersections shall be swept within 24 hours of placement or sooner if directed by the Engineer.

L. Any traffic control devices (barricades, cones, or signs), which are moved in the process of applying the slurry, are to be returned to a proper position by the Contractor as soon as possible.

M. All areas shall be rolled by a self-propelled, 10-ton pneumatic roller with a tire pressure of 50 psi, equipped with a water spray system. The surfaced areas shall be subjected to a minimum of two (2) full coverage passes by the roller. Rolling should not commence until the slurry has cured enough so that it will not pick up on the tires of the roller but before the slurry has set up.

N. Wheel tracks, footprints, and other undesired markings in the slurry seal shall be repaired to the satisfaction of the Engineer.

O. Treated areas will be allowed to cure until such time as the Engineer permits their opening to traffic.

5-03.05 Finishing and Sweeping

Loose aggregate remaining after the slurry seal has set shall be swept up and disposed of the day after it was placed. All streets shall be reswept two weeks and again six weeks after the completion of the slurry seal to remove any loose aggregate.

5-03.06 Preservation of Property

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 and gas valve box covers, monuments, monument boxes, etc.; and remove all existing raised pavement markers, thermoplastic pavement markings.

Drainage inlets shall be uncovered and cleaned to the satisfaction of the Engineer as soon as the slurry seal sets. The other surface utilities shall be uncovered and cleaned the following day after completion of the slurry seal at each location. If they are not uncovered within this time frame, no additional seal shall be placed until they are uncovered.

Gutters, curbs, sidewalks, driveways, shoulders and other structures adjacent to the pavement to be slurry sealed shall be cleaned of excess seal to the satisfaction of the Engineer.

5-04 TESTING

Samples of the slurry seal will be taken directly from the slurry unit(s) at a minimum rate of one sample per mixing unit per each day's use. Consistency and residual asphalt content tests shall be made on the samples and compared to the specifications. Tests will be run by the Contractor and at the expense of the Contractor. If any two successive tests on the mix from the same machine fail, the use of the machine shall be suspended. It will be the responsibility of the Contractor, at his own expense, to prove to the Engineer that the problems have been corrected and that the machine is working properly.

When tests for an area indicate that the application is outside the specified limits, then one of the following remedies shall be applied unless approved otherwise by the Engineer:

A. A deduction shall be made from the bid amount paid per foot yard for the area, or;

B. The area shall receive an additional slurry seal at the Contractor's expense.

SECTION 6 SEAL COAT

6-01 GENERAL

This work shall consist of spreading of seal coat materials to existing pavement or surface. Seal coat shall conform to the requirements of Section 37-1, "Seal Coats," of the Caltrans Specifications, except as modified herein.

6-02 MATERIALS

6-02.01 Asphaltic Emulsion

Asphaltic emulsion shall be a quick-setting type, Grade CQS1h, conforming to the requirements in Section 94, “Asphaltic Emulsions,” of the Caltrans Specifications.

6-02.02 Water

Water shall be potable, free from harmful salts and of such quality that the asphalt will not separate from the emulsion before the seal coat is in place. No reclaimed water shall be used for seal coats.

6-02.03 Seal Coat Materials

Seal coat materials, undiluted except as noted, shall conform to the following:

TEST	REQUIREMENT
Weight (lbs. per gallon)	9.5 minimum
Nonvolatile component (%)	60 minimum, by weight
Mineral aggregate component	100% passing No. 20 sieve
Working viscosity, diluted 4 parts product to 1 part water – ASTM D562	75 KREBS minimum
Dried film color	Black
Asphalt Content	25-35% of nonvolatiles, by weight

6-03 CONSTRUCTION

Contractor shall remove all weeds and vegetation growing through the pavement surface to be sealed and spray the areas with suitable sterilant chemical. All surface cracks one-half inch (1/2") or wider in width shall be cleaned and filled with asphalt concrete. Cracks one-eighth inch (1/8") to one-half inch (1/2") wide shall be cleaned and filled with crack filler. Cracks smaller than one-eighth inch (1/8") in width shall be cleaned and filled with multiple coats of sealer. The pavement surface shall be clean and free from dirt, oil and grease deposits.

No seal coating work shall be performed when the ambient temperature is below 55 degrees Fahrenheit or above 110 degrees Fahrenheit or within 24 hours of a rainfall, prior or post.

When ambient temperatures are over 80 degrees Fahrenheit or the pavement is excessively aged or porous, the surface shall be sprayed with a mist of water in an amount that will leave the surface damp, but with no visible puddles of water. This procedure is not required if a tack coat is applied. See Section 6, “Asphalt Paving and Surfacing,” of these specifications for tack coat requirements.

The seal coat material shall be applied in two applications at a rate of 50 gallons per 1,000 square feet. The seal coat material shall be diluted using water in an amount not to exceed 20 percent of the total volume. Seal coat material shall be homogeneous prior to spreading, with no visible separation of solids and liquids.

Seal coat material shall be applied using a truck-mounted tank or wheeled container in continuous parallel lines and spread by means of brooms or rubber-faced squeegees either by hand or machine and in such a manner as to eliminate all ridges, lap marks, and air pockets. Any valve boxes, manhole covers, etc. shall be protected and kept free of seal coat material.

The surface after the primary application shall be uniformly smooth and show no evidence of coarse or uneven texture. As soon as the primary application is dry to the touch and will not scuff when walked on, another application shall be made. After the second application, the surface shall be allowed at least twenty-four (24) hours for complete curing.

The Contractor shall exercise care to prevent seal coat material from being deposited on other than specified surfaces and shall remove seal coat material from surfaces not designated to be sealed.

SECTION 7 CONCRETE

7-01 GENERAL

Portland cement concrete improvements shall be constructed as shown on the Standard Plans at the locations and to the dimensions shown on the Plans and specified herein.

7-02 MATERIALS

7-02.01 Concrete

Concrete shall conform to Section 90, "Portland Cement Concrete," of the Caltrans Specifications except as modified herein.

The classes of concrete and the combined aggregate grading shall be dependent upon the purpose for which the concrete is intended and shall conform to the table below:

Types of Concrete Work	Concrete Class	Combined Aggregate Grading	Min. Cement (Sks/cy)	Max. w/c Ratio (Gal/Sack)	Max. Slump (Inches)	Min. Str. Test Cyl. 28 Days (PSI)
Curb, Gutter, Sidewalk, Driveway, Island Cap, Barricade Base, Monument, Street Sign Footing, Grill & Picnic Table Base, Bollards	B	3/4" Max.	5	7.0	3	2,500
Valley Gutters, Light Pole Base and any unspecified concrete	A	3/4" Max.	6	6.0	3	3,300

7-02.02 Adhesives

Adhesives shall conform to Section 95, "Epoxy," of the Caltrans Specifications.

7-02.03 Lampblack

At the discretion of the Engineer, lampblack shall be of approved quality mixed at the rate of one-half (1/2) pound (1 pint) per cubic yard of concrete. In the case of island curb, gutter and cap, the lampblack shall be omitted.

7-02.04 Subgrade

Subgrade shall be 4 inches minimum thickness and comprised of non-expansive material. The thickness shall be increased as determined by the Engineer or geotechnical report.

7-02.05 Joint Filler

Premolded joint fillers shall conform to specifications of ASTM Designation D1751, and shall be at least three-eighths of an inch (3/8") wide.

7-02.06 Dowels

Steel dowels shall conform to ASTM Designation A615.

7-02.07 Bar Reinforcement

Bar reinforcement shall 60 ksi and conform to Section 52, "Reinforcement," of the Caltrans Specifications.

7-02.08 Curing Compound

Curing compound shall conform to the specifications of AASHTO Designation M148, Type II, clear, and shall consist of a practically colorless impervious liquid which will thoroughly seal the surface of the concrete and will not impart a slippery surface thereto. The quality and the quantity to be used shall be approved by the Engineer. The use of any membraned material which would impart a slippery surface to the concrete or alter its natural color will not be permitted. The colorless, impervious liquid shall contain not less than twenty-five percent (25%) solids.

7-03 CONSTRUCTION

7-03.01 Subgrade Preparation

The subgrade shall be constructed true to grade and cross- sectioned, as shown on the Plans. The required thickness of aggregate subbase shall be placed in accordance with the Standard Plans, and compacted to ninety-five percent (95%) relative compaction under the curb, gutter, driveway and sidewalk areas as tested in conformance with Test Method No. California 216.

7-03.02 Existing Construction

Where the Plans provide for the reconstruction of a portion of an existing curb, gutter, sidewalk or driveway, the existing section shall be cut to a minimum depth of one and one-half inches (1-1/2") with an abrasive-type saw at the first scoring line at or beyond the planned joint and the entire section to be reconstructed shall be removed. The new work shall adjoin the old work at this line except when the new concrete work butts up against existing AC pavement. If this is the case a one foot (1’) wide AC strip will be

removed. This will allow for the placement of the forms. If the old work is damaged beyond this line in removing the old concrete, a new line shall be cut at the next score line beyond the line of damage and the damaged concrete shall be removed and replaced at no additional cost. Where new concrete work conforms to existing concrete work, steel dowels consisting of No. 4 reinforcement bars shall be placed in existing curb, sidewalk and driveway sections in accordance with Paragraph 7-03.09, "Sidewalks, Driveways, Island Caps and Valley Gutters" of these Standard Specifications.

7-03.03 Forms

Forms shall be true and shall have a smooth, straight upper edge. Metal forms may be used upon approval by the Engineer.

Timber forms shall be surfaced on the side placed next to the concrete and shall not be less than one and one-half inches (1-1/2") thick after being surfaced except on curb returns, horizontal curves and vertical curves where laminated timber forms, benders or thin plank forms may be used.

The form boards of the exposed face of curb shall be milled to the proper radius at the lower inside corner.

Front face forms shall not be removed in less than two (2) hours after the concrete has been placed. In no event shall forms be removed while the concrete is sufficiently plastic to slump. Side forms for sidewalks, island caps, valley gutters and driveways shall not be removed in less than thirty-six (36) hours after the concrete has been placed.

7-03.04 Placing Concrete

No concrete shall be placed until the forms have been inspected by the Engineer and unless the Engineer is present. No concrete shall be placed when the air temperature is below forty degrees Fahrenheit (40°F) or during rain. During weather when frosts may be expected, the Contractor shall carefully cover recently deposited concrete with burlap, straw or provide for other approved curing method. No concrete shall be placed within three (3) hours of sunset. Before placing concrete, the aggregate base or subbase shall be properly moistened with water, and the form faces shall be oiled. A 3 inch high “S” shall be stamped in the top side of concrete curb over sewer laterals (see standard plans.)

Concrete shall be placed and compacted in forms without segregation. After placing, the concrete shall be consolidated sufficiently to produce a dense mass, struck off and floated. Final finishing operations shall not proceed until all bleed water has evaporated from the surface. Sprinkling of dry cement to absorb excessive surface moisture shall not be allowed.

The area around utility poles, electroliers, wooden street sign posts, drop inlets and hydrants shall be blocked out during the initial placing of concrete.

7-03.05 Expansion Joints, Control Joints and Score Marks

Expansion joints shall be placed in the concrete curbs, gutters, sidewalks at not more than twenty-five foot (25') intervals or more than 100 square feet, whichever is smaller, and at each side of the driveways and in all returns. Expansion joints shall be placed at right angles to the curb or sidewalk line and extend through the entire thickness of the concrete. Where sidewalk is constructed against concrete curbs, the joints shall be in line with the joints through the curb. Concrete adjacent to expansion joints shall be finished with an edger tool.

Half inch (1/2”) preformed expansion joints shall be placed around utility poles, drop inlets and hydrants so that no concrete is in contact with the appurtenance.

Where existing sidewalks and/or curb and gutter are to be removed and replaced with a driveway, expansion joints will be required at the cold joints.

Where electroliers are located back of sidewalk, expansion joint material shall be placed at the back of walk between the sidewalk and the electrolier base.

Bases for electroliers within the sidewalk shall be completely separated from the sidewalk by felt roofing paper.

Control joints, scored at least one-fifth (1/5) the depth of concrete being placed shall be constructed at intervals not to exceed eight feet (8') in concrete curbs, gutters, sidewalks, centerline of driveways and island caps. The width of the control joints shall not exceed one-fourth inch (1/4") and the edges of control joints shall be finished with a "T" bar. All joints shall be scored at right angles to the curb or sidewalk line.

The sidewalk between control joints shall be divided by transverse score marks placed at nominal thirty-inch (30") intervals and longitudinal score marks placed at uniform intervals not to exceed thirty-six inches (36"), unless otherwise shown on the Plans or directed by the Engineer. All score marks shall be straight, uniformly spaced, one-fourth inch (1/4") in depth and left in a cleanly rounded condition.

Maximum delay between successive pours shall not exceed the time of initial set unless a construction joint is installed.

7-03.06 Curing

As soon as the concrete is set, it shall be cured for a period of at least seventy-two (72) hours by applying a suitable cover that will keep all exposed surfaces continually damp or by spraying with an approved impervious membrane curing compound.

The Contractor shall protect from damage, including graffiti marks, all completed Work. Special emphasis shall be placed on protecting the edge of gutter from being damaged or gouged during grading operations. The Contractor shall keep all equipment off new or existing sidewalks. Repairs shall be made by removing and replacing the entire unit

between score lines or joints. All discolored concrete shall be cleaned to a uniform color. Repairs and cleaning of new concrete shall be at the expense of the Contractor.

7-03.07 Curb and Gutter (Also Curb Only)

Where new curb and new gutter are shown on the Plans adjacent to new sidewalk, the curb, gutter and sidewalk (monolithic pour) shall be constructed together as a unit.

Where new curb and new gutter are shown on the Plans, they shall be constructed together as a unit.

Immediately after removing the front curb forms, the face of the curb shall be troweled smooth and then finished with a steel trowel until a dense, hard, smooth surface has been obtained.

The top surfaces of the curb and gutter shall be finished with a steel trowel to a dense, hard, smooth surface and a straight edge ten feet (10') long is laid on the top or face of the curb or on the surface of gutters; the surface shall not vary more than 0.01 foot from the edge of the straight edge except at grade changes or curves. After the top surface of the curb has been finished to a dense, hard, smooth surface, it shall be given a final brushed finish using a fine, dry brush with brush strokes parallel to the line of the curb.

Where the grade is one-half percent (0.5%), a water flow test will be required to detect depressions in the gutter.

Concrete curbs to be constructed directly over an existing pavement shall be anchored to the pavement by three quarters of an inch (3/4") (minimum) round steel dowels ten inches (10") long on four-foot (4') centers set in cement grout in the existing pavement prior to constructing the curb.

Where new curb and gutter is installed adjacent to existing pavement, the existing pavement within twelve inches (12") of the edge of gutter shall be neatly sawcut, removed and replaced with new pavement. The new pavement shall be installed after the curb and gutter has been constructed and shall be full depth asphalt concrete place in 3” lifts (maximum). Asphalt shall conform to Section 6, “Asphalt Paving and Surfacing,” of these specifications.

“G”, "S" or "W" shall be stamped in the face of curb where gas laterals, sewer laterals and water services pass under the curb.

7-03.08 Extruded Curb

Extruded curb construction shall conform to Section 73-1.05B, "Extruded or Slip-Formed Curb Construction," of the Caltrans Specifications and Paragraph 7-03.07 above. Extruded curb will only be allowed when specified. The extrusion of monolithic curb, gutter and sidewalk shall not be permitted.

7-03.09 Sidewalks, Driveways, Island Caps and Valley Gutters

Sidewalks, driveways, island caps and valley gutters shall be formed in place. The fresh concrete shall be struck off and compacted until a layer of mortar has been brought to the surface. The surface shall be finished to grade and cross-section with a wood or aluminum float, troweled to a dense, hard, smooth finish with a steel trowel, and finished with a fine, wet and soft brush with brush strokes transverse to the line of traffic.

The finished surface shall not vary more than 0.01 foot from a ten-foot (10') straight edge, except at grade changes, and the finished surface shall be free from blemishes.

When existing sidewalk is to be removed and replaced, the new concrete is to be tied to the remaining concrete curb, sidewalk and driveway sections with dowels. The dowels shall be No. 4's with a minimum length of nine inches (9") and shall be installed at eighteen inches (18") on center along the back of the remaining walk and/or three feet (3') on center on the back of the remaining curb. The dowels are to be inserted to a minimum penetration of four inches (4") into the remaining sidewalk and/or curb and shall fit tightly into the existing concrete.

No. 4 steel reinforcing bars shall be placed as longitudinal reinforcement in all concrete valley gutters. For all sidewalk curb ramps and island passageways ADA requirements and details refer to Caltrans Specifications.

7-03.10 Conforms

Existing concrete driveways or walks shall be cut with a concrete saw to provide a neat line for conforming to new concrete driveway approach or walk. Where necessary, the existing concrete driveway or walk shall be removed to a point sufficiently behind the back of walk line to provide a smooth transition.

All concrete driveway conforms shall be six-inch (6") Portland cement concrete laid on six-inch (6") Class 2 aggregate subbase and concrete walk conforms shall be four-inch (4") Portland cement concrete laid on four-inch (4") Class 2 aggregate subbase conforming to Section 4, "Asphalt Paving and Surfacing," of these Standard Specifications.

Concrete conforms shall match existing concrete as to scoring pattern, color and texture.

7-04 Testing

7-04.01 Compression Test. The Portland cement concrete shall be sampled by the Contractor in accordance with ASTM C 172. Cylinders shall be tested for compressive strength by the Contractor in accordance with ASTM C 78. Concrete compressive strength tests representing concrete that has been placed shall attain the 28-day strength as specified. Concrete represented by compressive strength that fails to meet the compressive strength requirements shall be replaced at the Contractor’s expense.

7-04.01 Slump Test. Slump tests shall be conducted by the Contractor in accordance with ASTM C 173 or C 231 and as directed by the Engineer.

SECTION 8 TRENCH EXCAVATION, BACKFILL AND RESURFACING

8-01 GENERAL

This work shall consist of trench excavation, backfill and resurfacing, all as required for the installation of underground utilities and shall be in accordance with the Standard Plans.

8-02 MATERIALS

8-02.01 Select Backfill Material

Select backfill material shall be sand or granular material of the quality herein specified. Select backfill material shall have a size and gradation falling within the following limits:

Sieve Size	Percentage Passing Sieve
1/2"	100
No. 4	50-100
No. 200	15 Maximum

The portion of the material passing the No. 200 sieve expressed as a percentage multiplied by the Plasticity Index shall not exceed one hundred (100). The material shall be compacted to a relative compaction of ninety percent (90%) as determined by Test Method No. California 216.

8-02.02 Aggregate Base (AB)

Aggregate base shall be Class 2 as specified in Section 3, "Aggregate Base and Subbase," of these Standard Specifications.

8-02.03 Asphalt Concrete (AC)

Asphalt concrete shall be Type B of the one-half inch (1/2") maximum (medium) grading as specified in Section 6, "Asphalt Paving and Surfacing," of these Standard Specifications.

8-02.04 Coldmixed Asphalt (Cutback)

The percentage composition by weight of the aggregate shall conform to the following gradings:

Sieve Sizes	Percentage Passing
3/8”	100
No. 4	90-100
No. 8	71-83
No. 30	30-44
No. 200	3-12

The asphalt binder to be mixed with aggregate shall conform to the provisions in the Caltrans Specifications Section 92, “Asphalts,” and shall be of the grade SC-650, unless otherwise specified by the Engineer. The amount of asphalt binder to be mixed with the aggregate shall be seven percent (7%), based on dry weight of aggregate.

8-02.05 Controlled Density Fill (CDF)

Controlled density fill (CDF) shall consist of a fluid, workable mixture of aggregate, cement and water. CDF may be accepted in lieu of sand or granular fill as a nonstructural backfill material only upon written approval by the Engineer, unless otherwise specified in these Standard Specifications. In no case shall CDF be used for structural backfill.

Cement shall meet the standards as set forth in ASTM C-150 for Type II Cement.

Fly ash shall meet the standards as set forth in ASTM C-618 for Class F Pozzolans, except the maximum allowable loss on ignition shall be 6 percent. The fly ash shall not inhibit the entrainment of air and shall be added with the cement.

Air entrainment agent shall meet the standards as set forth in ASTM C-260.

Coarse aggregate shall be no larger than three-eighths inch (3/8") (pea gravel), nor shall the three-eighths inch (3/8") aggregate comprise more than forty percent (40%) of the total aggregate content. Fine aggregate shall be commercial quality concrete sand and not comprise more than seventy percent (70%) of the total aggregate content.

Water shall be fresh, clean and potable; free from oil, salts and other impurities which would have an adverse effect on the quality of the backfill material.

The aggregate, cement and water shall be proportioned either by weight or by volume. Not less than ninety (90) pounds (1-sack) nor more than one hundred eighty (180) pounds (2-sacks) of cement shall be used for each cubic yard of material produced. The water content shall be sufficient to produce a fluid, workable mix that will flow and can be pumped without segregation of the aggregate while being placed. Entrained air content shall be a minimum of 8.0 percent. The material produced shall reach unconfined compressive strengths from 50 psi to a maximum of 150 psi at 28 days.

Materials for CDF shall be thoroughly machine mixed at a batch plant and delivered to the job site by means of transit mixing trucks. Material tags from the CDF supplier shall be provided to the City Engineer’s Inspector by the end of each working day. CDF shall be placed in the work within one hour after mixing.

8-03 CONSTRUCTION

TRENCH EXCAVATION

8-03.01 Existing Paving

Prior to excavation, the existing pavement shall be neatly sawcut along the limits of the proposed excavation. Existing pavement over the trench shall be removed and hauled away from the job site. If a longitudinal pavement joint or edge of pavement is located within three feet (3') of the limit of the excavation, the Contractor shall remove and replace all intervening pavement after completing the trench backfill and prior to the installing permanent trench surfacing. All utilities shall be laid in open trench and/or tunnels as indicated on the Plans or as directed by the Engineer.

8-03.02 Trench Width

The allowable trench width at the top of pipe shall conform to the following:

Pipe Type (Abbreviation)	Trench Width (Maximum)
Vitrified Clay Pipe (VCP)	Outside Diameter of Barrel + 18"
Polyvinylchloride Pipe (PVC)	
Concrete Cylinder Pipe (CCP)	
Ductile Iron Pipe (DIP)	
Welded Steel Pipe (WSP)	
Corrugated Metal Pipe (CMP)	Outside Diameter of Barrel + 24"
Reinforced Concrete Pipe (RCP)	

The maximum trench width shall be inclusive of all shoring.

Whenever the maximum allowable trench width is exceeded for any reason, the Contractor shall, at his expense, embed or cradle the pipe in concrete in a manner satisfactory to the Engineer. In no case shall the free working space on each side of the barrel be less than six inches (6").

8-03.03 Pipe Bedding

The trench shall be excavated below the grade of the pipe bottom for the following minimum depths:

Pipe Type (Abbreviation)	Depth
Vitrified Clay Pipe (VCP)	6"
Polyvinylchloride Pipe (PVC)	6"
Ductile Iron Pipe (DIP)	6"
Welded Steel Pipe (WSP)	6"
Concrete Cylinder Pipe (CCP)	6"
Corrugated Metal Pipe (CMP)	6"
Reinforced Concrete Pipe (RCP)	6"

Sufficient "Select Backfill Material" as specified above shall be placed in the trench and tamped to bring the trench bottom up to the grade of the bottom of the pipe. The relative compaction of the tamped material shall not be less than ninety percent (90%) as determined by Test Method No. California 216. The "Select Material" shall be shaped by hand. Holes for bells and fittings shall be excavated by hand. It is the intention of these requirements to provide uniform bearing under the full length of pipe to a width of at least sixty percent (60%) of the external diameter.

When the trench bottom is unstable due to a wet or spongy foundation, the trench bottom must be stabilized with gravel or crushed rock. If the unstable condition was caused by the operations of the Contractor, such gravel or crushed rock shall be furnished at the Contractor's expense. The Engineer shall be the sole judge of the suitability of the trench bottom and as to the amount of gravel or crushed rock needed to stabilize a soft foundation. The Contractor shall remove any soft material and replace it with gravel or crushed rock when ordered to do so by the Engineer. Payment for removal of any soft material not caused by operations of the Contractor, and replacement with gravel or crushed rock, shall be paid for as extra work.

8-03.04 Excavated Material

Material excavated in streets and roadways shall be laid alongside the trench and kept trimmed so as to cause as little inconvenience as possible to public traffic. All material excavated in streets or roadways and not required for backfill shall be immediately removed and properly disposed of by the Contractor. No surplus material shall be placed on private property unless written permission, signed by the owner of the property, is furnished to and approved by the Engineer.

8-03.05 Open Trench

No more than three hundred feet (300') of trench shall be open at any one time. No trenches shall be left open during non-working hours. All open trenches at

the end of the work day shall be completely covered using steel plates and as directed by the Engineer.

At all street crossings, existing driveways, water gate valves and fire hydrants, the Contractor shall make provisions for trench crossings and for free access either by backfill or temporary bridges, as the Engineer may direct.

Provisions shall be made whereby all surface runoff water can flow uninterrupted in gutters or drainage channels.

8-03.06 Bracing and Shoring

Excavation and trenches shall be supported and excavation operations conducted in accordance with Article 6, "Excavations, Trenches and Earthwork," of the State Division of Industrial Safety Construction Safety Orders, as amended.

During backfilling, the bottom of the shoring shall be kept above the level of the backfill at all times.

8-03.07 Finishing Trench Excavation

Prior to pipe laying and trench backfill, the Engineer shall inspect and approve the condition of the trench.

TRENCH BACKFILL

8-03.08 Initial Backfill

"Select Backfill Material" as specified in Paragraph 8-02.01 of these Standard Specifications shall be used for initial backfill unless CDF has been approved by the Engineer as a backfill material or as otherwise specified in these Standard Specifications. When CDF has been approved as a backfill material, steel dowel stakes (rebar), or other material approved by the Engineer, may be used to secure the pipes to the bottom of the trench to prevent the pipes from floating in the CDF. After the pipe has been properly laid and inspected, select backfill material shall be placed on both sides of the pipe to such a depth that after thorough consolidation hand-tamping, the final depth of select backfill material shall be as follows:

Pipe Type (Abbreviation)	Depth
Vitrified Clay Pipe (VCP)	12" Above Top of Pipe
Polyvinylchloride Pipe (PVC)	
Ductile Iron Pipe (DIP)	
Welded Steel Pipe (WSP)	
Concrete Cylinder Pipe (CCP)	
Corrugated Metal Pipe (CMP)	1/2 Outside Diameter of Pipe (Pipe Springline)
Reinforced Concrete Pipe (RCP)	

8-03.09 Initial Backfill Compaction

The initial backfill shall be compacted by hand-tamping. The use of machine tampers will not be permitted. The initial backfill material shall be hand-tamped in layers not exceeding four inches (4") in uncompacted depth. The final depth of compacted initial backfill shall be as noted above. After hand-tamping, the relative compaction of the initial backfill material shall be not less than ninety percent (90%) as determined by Test Method No. California 216.

8-03.10 Subsequent Backfill

A. Above the level of initial backfill, the trench shall be backfilled with select backfill material. Subsequent backfill within two and one-half feet (2-1/2') of the finished surface grade or one and one-half feet (1-1/2') of the finished subgrade, whichever is lowest in elevation, shall be mechanically compacted by tamping or rolling. Subsequent backfill, below two and one-half feet (2-1/2') of the finished surface grade or one and one-half feet (1-1/2') of the finished subgrade, whichever is lowest in elevation, shall be compacted by mechanical compaction.

The backfill material shall be placed in layers not exceeding eight inches (8") in loose depth, each layer being thoroughly compacted before succeeding layers are placed. The use, setup and operation of free-fall hammers, vibratory plates and mini-sheep's foot mechanical compactors are subject to the Engineer's approval. The use of double acting mechanical compactors will NOT be permitted. Compaction test shall be conducted by the contractor on each lift every 100 feet of trench.

B. Subsequent backfill placed by tamping or rolling shall be free from stones or lumps exceeding three inches (3") in greatest dimension, vegetable matter or other unsatisfactory material, and shall be compacted to a relative compaction of not less than ninety percent (90%) as determined by Test Method No. California 216, except that the relative compaction shall not be less than ninety-five percent (95%) within two and one-half feet (2-1/2') of finished permanent surfacing grade or one and one-half feet (1-1/2') below the finished subgrade, whichever is greater.

C. Where CDF has been approved by the Engineer as a backfill material; it shall be placed in a uniform manner that will prevent voids in, or segregation of, the backfill. Foreign material which falls into the trench prior to or during placing of the CDF shall be immediately removed. Backfilling over or placing any material over the CDF shall not commence until it has sufficiently self-consolidated and the surface water is gone so that the surface will withstand the process of subsequent backfilling without displacement or disruption.

TRENCH SURFACING

8-03.11 General

In unimproved areas not in a traveled way, the trench shall be restored to its original surface.

Where a gravel surface is encountered, surfacing shall be replaced over the width of the trench with Class 2 aggregate base as specified in Section 3, "Aggregate Base and Subbase," of these Standard Specifications to a minimum depth of six inches (6").

Where the existing surface is some type of paving, surfacing shall be restored with a temporary surface followed by a permanent surface specified herein.

8-03.12 Temporary Surfacing

The temporary surfacing shall consist of two and one-half inches (2-1/2") of asphalt concrete (Type B, 3/4" maximum aggregate) on twelve inches (12") of Class 2 aggregate base. As noted in Paragraph 8-03.13, "Permanent Surfacing," of these Standard Specifications, asphalt concrete (Type B) in excess of two and one-half inches (2-1/2") and aggregate base in excess of twelve inches (12") may be required in order to use the temporary surfacing as part of the permanent surfacing.

Cold mixed asphalt (cutback) may be used as temporary surfacing with approval from the Engineer.

All temporary surfacing shall be laid within one (1) day after backfilling or as specified. Before the trenching area is opened for traffic, all excess dirt, rock and debris shall be removed and the street surface shall be swept clean. Temporary surfacing shall be constantly maintained so that at no time will there be any mudholes, nor shall the surface settle below one inch (1") or be raised more than one inch (1") from the existing pavement grade.

8-03.13 Permanent Surfacing

Permanent surfacing shall not be constructed until the compaction requirements for backfill and subgrade of these Standard Specifications are satisfied.

All trenches shall be permanently surfaced within thirty (30) calendar days after compacting backfill.

Prior to installing permanent surfacing, any irregularities in the original wheelcut along the limits of the excavation shall be corrected by wheelcutting and removing the jagged pavement. Also, adjacent pavement noted to be removed per Paragraph 8-03.01, "Existing Paving," of these Standard Specifications shall be removed.

The base rock for permanent surfacing shall be Class 2 aggregate base as specified in Section 3, "Aggregate Base and Subbase," of these Standard Specifications. The aggregate base shall be equal in depth to the existing pavement structural section but not less than twelve inches (12") in depth.

The wearing surface for permanent surfacing on improved streets shall be asphalt concrete equal in thickness to the existing pavement but not less than three inches (3") in depth. The asphalt concrete shall be Type B asphalt concrete conforming to the requirements of Section 4, "Asphalt Paving and Surfacing," of these Standard Specifications. Asphalt concrete shall be placed by a paving machine unless otherwise approved by the Engineer.

At the option of the Contractor, the temporary surfacing may be used as an integral part of the permanent pavement section provided that the following requirements are satisfied:

1. The compaction requirements for backfill and subgrade are met, as determined by testing. The Contractor shall bear the cost of exposing the aggregate base, subgrade or backfill as necessary for the Engineer to conduct tests.

2. The existing pavement along the limits of the excavation is neatly sawcut.

3. The base rock is installed as part of the temporary surfacing and is equal in depth to the existing pavement structural section, but is not less than twelve inches (12") in depth.

4. Cut-back asphalt shall not be used in the temporary surfacing.

5. A one and one half inch (1 1/2") minimum asphalt concrete overlay (Type B, medium, 1/2" maximum aggregate) shall be installed over the existing temporary surfacing in no less than thirty (30) days and no more than sixty (60) days.

6. The combined depth of the asphalt concrete installed as part of the temporary surfacing and the one-inch (1") minimum overlay for permanent surfacing shall be equal to or greater in depth than the existing asphalt concrete pavement.

If any of the above requirements are not met, the Contractor shall remove the temporary surfacing to limits specified by the Engineer and replace it with permanent surfacing as necessary to fulfill the above-stated permanent surfacing specifications.

Permanent surfacing shall extend twelve inches (12") beyond neatly cut lines in the existing pavement as shown in the Standard Plans.

8-03.14 Utility Easements and Rights of Ways

Whenever the trench lies within property controlled by agencies such as the Southern Pacific Railroad, State of California, Santa Clara County, San Francisco Water Department, AT&T, Caltrans, Comcast or Pacific Gas and Electric Company, the trench backfill and resurfacing shall comply with the requirements of these agencies as well as with the requirements of these Standard Specifications. If permits must be obtained or bonds posted before entering these right-of-ways, the Contractor shall obtain and pay for such permits and bonds.

3-04 TESTING

Backfill shall have a relative compaction as specified and as determined by Test Method No. California 216.

Testing shall be done per Caltrans Construction Manual 6-109, one test for every 2500 tons or every 1500 cubic yards and shall be conducted on each lift.

The Contractor shall be responsible for protecting the aggregate subbase and base after they have been placed and compacted. The Contractor will not be allowed any additional compensation for the recompaction or retesting of the aggregate subbase or base due to the Contractor's failure to place the successive asphalt concrete pavement or other materials within a reasonable time period as determined by the Engineer.

SECTION 9 STORM DRAINAGE

9-01 GENERAL

This work shall consist of furnishing and installing storm drain pipes, structures, underdrains, fittings and all other materials and appurtenances in accordance with the Plans and these Standard Specifications.

9-02 MATERIALS

9-02.01 Reinforced Concrete Pipe

Reinforced concrete pipe shall conform to the requirements of ASTM C76, as amended to date. The wall design shall be at the option of the manufacturer. The manufacturer shall furnish to the City certificates showing that the pipe conforms to the specified ASTM designation. All pipe shall be Class III unless otherwise shown on the Plans. Nonreinforced concrete pipe meeting all requirements of reinforced concrete pipe may be substituted for all sizes twenty-four inches (24") in diameter and smaller.

Pipe designated by D-Load shall be marked as described in the ASTM Specifications except that the D-Load shall be marked on the pipe. The D-Load shall be determined during tests as described in the ASTM Specifications.

9-02.02 Reinforced Concrete Pipe Joints

Concrete pipe joints shall be bell and spigot type with rubber gaskets. Upon request from the Engineer, the Contractor shall supply a test sample of the type of gasket.

9-02.03 Polyvinylchloride Pipe (PVC)

Polyvinylchloride pipe and fittings shall be bell and spigot, conforming to ASTM D3034 (SDR 26) for diameters from four inches (4") through fifteen inches (15") and ASTM F679 (PS 115) for diameters from eighteen inches (18") through thirty inches (30"), as amended to date.

9-02.04 Polyvinylchloride Pipe Joints

Polyvinylchloride pipe joints shall be bell gasketed joints. Gaskets shall meet the requirements of ASTM F477. The joints shall meet the requirements of ASTM D3212.

9-02.05 High Density Polyethelene Pipe (HDPE)

High density polyethelene pipe and fittings shall conform to AASHTO M252, Type S; AASHTO M294, Type S; and AASHTO MP7 requirements.

9-02.06 High Density Polyethelene Pipe Joints

High density polyethelene pipe joints shall be bell and spigot type and conform to Section 64-1.04, “Joints,” of the Caltrans Specifications.

9-02.07 Precast Manhole Sections

Precast manhole sections shall conform to size, shape and details shown on the Plans and Standard Plans. Precast reinforced concrete manhole risers, cones and grade rings shall conform to ASTM Designation C478 as amended to date.

9-02.08 Castings

Castings for manhole rings, cover and other purposes shall conform accurately to the form and dimensions shown on the Plans and Standard Plans. The surface of casting shall be reasonably smooth, free from defects of any kind and the castings shall conform to the requirements of ASTM A48, Class 30B as amended to date. Bottom rim of cover and seat of frames shall be machined to form a close fit free from wobble. The combined weight of cover and frame shall exceed two hundred sixty-five (415) pounds.

Before leaving the foundry, all castings shall be thoroughly cleaned and coated by dipping in asphalt applied at a temperature of three hundred degrees Fahrenheit (300° F) in such a manner as to provide a firm, durable, tenacious coating.

9-02.09 Inlets

All inlets shall conform to size, shape and details as shown on the Plans and Standard Plans. The type of inlet shall be as specified on the Plans or in the Special Provisions or Technical Provisions.

9-02.10 Inlet Grates and Grate Frames

Inlet grates and grate frames shall conform to size, shape and details as shown on the Plans and Standard Plans. Rectangular frames shall be fabricated from structural steel conforming to the requirements of ASTM A36. The bar portion of the frames may be fabricated from special quality, hot rolled steel bars conforming to the American Iron and Steel Institute Designation No. C1021. Frames and grates shall be match marked in pairs before delivery to the job site and the grates shall fit into their frames without rocking.

9-02.11 Reinforcing Bars

Reinforcing bars shall be deformed billet steel bars conforming to the specifications of ASTM A615, Grade 60, including Supplementary Requirement S1 and shall be of the size shown on the Plans and Standard Plans. Bars shall be of the round deformed type; free from injurious seams, flaws or cracks; and shall be cleaned of all rust, dirt, grease, loose scale and any other coating of any character that would destroy or reduce the bond.

9-02.12 Portland Cement Concrete

Portland cement concrete for manhole bases, inlets and other concrete structures shall conform to the requirements of Section 90, "Portland Cement Concrete," of the Caltrans Specifications and specified herein.

The concrete shall be Class "A" containing six (6) sacks of Portland cement per cubic yard of concrete. The grading of the combined aggregate shall conform to the requirements of one and one-half inch (1-1/2") maximum. The consistency of the fresh concrete shall be such that the slump does not exceed four inches (4") as determined by Test Method No. California 520. The concrete shall have a minimum compressive strength of 3,300 PSI after twenty-eight (28) days.

9-02.13 Mortar

Mortar shall conform to the requirements of Section 65, "Reinforced Concrete Pipe," of the Caltrans Specifications.

9-03 CONSTRUCTION

9-03.01 Trenching

Trench excavation, shoring, grade control, backfill and resurfacing shall conform to the requirements of Section 8, "Trench Excavation, Backfill and Resurfacing," of these Standard Specifications.

9-03.02 Handling of Material

Storm drain pipe, precast concrete manhole sections, inlet frames, grates and fittings must be carefully handled at all times. Only suitable and proper equipment and appliances shall be used for the safe loading, hauling, unloading, handling and placing of materials. Any material which is checked, spalled, out of round or damaged shall not be installed and such material must be permanently removed from the job site within twenty-four (24) hours after notification.

9-03.03 Pipe Laying

No pipe shall be laid until the Engineer inspects and approves the condition of the bottom of the trench. Pipe laying shall proceed upgrade with the tongue section of tongue-and-groove pipe pointed in the direction of flow.

Split pipe shall be used through a manhole except for changes in pipe grade, size, type or direction.

Each section of pipe shall be laid true to line and grade and in such a manner as to form a close, concentric joint with the adjoining pipe and to prevent sudden offsets in the flow line. As the work progresses, the interior of the storm drain shall be cleaned of all dirt and debris. Where clearing after laying is difficult because of small pipe size, a suitable swab or squeegee shall be kept in the pipe and pulled forward past every joint immediately after jointing has been

completed. Pipe shall not be laid when the condition of the trench or the weather is unsuitable.

Concrete pipe with elliptical reinforcement shall be laid with the minor axis of the reinforcement cage in a vertical position.

9-03.04 Grade Control

All storm drains shall be accurately laid to grade. An offset string line (or other acceptable method) should be stretched between accurately surveyed grade stakes set at intervals not to exceed twenty-five feet (25'). The Contractor shall make available to the inspector adequate equipment to check both the grade of the string line prior to excavation and the grade of the pipe prior to backfilling. Any deviation from the proposed grade shall be approved by the Engineer and the Contractor shall make the necessary corrections before any pipe is laid.

9-03.05 Concrete Joints

The joints shall be completely filled and compacted with mortar so as to make a strong joint. No mortar will be required in the outside joint recesses of self-centering pipe. Unless otherwise approved by the Engineer, all joints shall be finished smooth on the inside of pipe.

In concrete pipe sizes twenty-one inches (21") and larger, inside joint recesses shall be hand-pointed. In concrete pipe sizes eighteen inches (18") and smaller, inside joint recesses shall be buttered prior to closure. After the closure is made, the joint shall be pointed inside the pipe and excess mortar removed by means of a long-handled brush, an inflated swab or squeegee.

9-03.06 Structures

Structures and appurtenances shall be located as shown on the Plans and installed in accordance with the Standard Plans.

Structures shall be constructed and/or installed in conformance with applicable requirements of Section 51, “Concrete Structures,“ of the Caltrans Specifications. All the inside and exposed surfaces of concrete shall be smooth and uniform when finished and the concrete shall be thoroughly compacted around all reinforcing bars. Frames for manholes and tops of inlets and other structures in paved areas shall be accurately placed flush with and in the plane of the finish pavement. Inlets installed in curb returns shall have angle anchors curved to conform to the curb return radius. Precast inlets will be permitted when meeting the above requirements and when approved by the Engineer.

9-03.07 Television Inspection

After completion of the pipe installation and cleaning, the storm drain line shall be televised with a color closed-circuit television with tilt-head camera recorded in the latest electronic format approved by the Engineer. The original DVD and log sheets shall be provided to the Engineer.

SECTION 10 SANITARY SEWERS

10-01 GENERAL

The Work shall consist of furnishing and installing sewer mains, manholes, laterals, cleanout fittings and appurtenances; and testing, flushing and cleaning the same in accordance with the Plans and these Standard Specifications.

10-02 MATERIALS

10-02.01 Vitrified Clay Pipe

Vitrified clay pipe and fittings shall be bell and spigot, unglazed, extra strength, conforming to ASTM C700, as amended to date.

10-02.02 Polyvinylchloride Pipe

Polyvinylchloride pipe and fittings shall be bell and spigot, conforming to ASTM D3034 (SDR 26) for diameters from four inches (4") through fifteen inches (15") and ASTM F679 (PS 115) for diameters from eighteen inches (18") through thirty inches (30"), as amended to date.

10-02.03 Vitrified Clay Pipe Joints

Vitrified clay pipe joints shall be of the resilient preformed type conforming to ASTM C425, as amended to date, except that rubber sleeve (Band-Seal) couplings will not be allowed in new main or new lateral installation.

10-02.04 Polyvinylchloride Pipe Joints

Polyvinylchloride pipe joints shall be bell gasketed joints. Gaskets shall meet the requirements of ASTM F477. The joints shall meet the requirements of ASTM D3212.

10-02.05 Precast Manhole Sections and Castings

These items shall conform to Section 9, "Storm Drainage," of these Standard Specifications.

10-02.06 Standard Sewer Main Cleanouts

Standard sewer main cleanouts built in accordance with the Standard Plans shall be installed where shown on the Plans.

10-02.07 Sewer Laterals and Cleanouts

Sewer laterals and cleanouts shall be constructed of materials specified in the Standard Plans. Sewer lateral cleanouts shall be the same size as the sewer lateral.

10-02.08 Portland Cement, Portland Cement Concrete and Mortar

These items shall conform to Sections 9-02.12 and 9-02.13 of these Standard Specifications.

10-03 CONSTRUCTION

10-03.01 Handling of Materials

Vitrified clay pipe, polyvinylchloride pipe, fittings, precast concrete manhole sections, and cast iron frames and manhole covers must be carefully handled at all times. Only suitable and proper equipment and appliances shall be used for the safe loading, hauling, unloading, handling and placing of all materials. Special care shall be exercised so that the preformed resilient joints on pipe and fittings will not be damaged. Any pipe or fitting with a joint damaged or flattened will be rejected.

10-03.02 Trenching

Trench excavation, shoring, grade control, backfill and resurfacing shall conform to Section 8, "Trench Excavation, Backfill and Resurfacing," of these Standard Specifications.

10-03.03 Pipe Laying

Pipe laying shall proceed upgrade with the spigot end of bell and spigot pipe pointing in the direction of flow. Each pipe shall be laid true to line and grade and in such a manner as to form a close, concentric joint with the adjoining pipe and to prevent sudden offsets in the flow line. As the work progresses, the interior of the sewer shall be cleaned of all dirt and debris. Pipe shall not be laid when the condition of the trench or the weather is unsuitable. When Work is not in progress, open ends of pipe and fittings shall be plugged. As pipe laying proceeds, bell holes shall then be excavated at each joint to facilitate the jointing operations and shall be only of sufficient size for that purpose.

10-03.04 Grade Control

All sanitary sewer pipes shall be accurately laid to grade. An offset string line (or other acceptable method) should be stretched between accurately surveyed grade stakes set at intervals not to exceed twenty-five feet (25’). The Contractor shall make available to the inspector adequate equipment to check both the grade of the string line prior to excavation and the grade of the pipe prior to backfilling. Any deviation from the proposed grade shall be approved by the Engineer and the Contractor shall make the necessary corrections before any pipe is laid.

10-03.05 Manholes

Manholes shall be located as shown on the Plans and installed in accordance with the Standard Plans. When a manhole is constructed over an existing sewer

main, City Inspector shall be present when the Contractor makes the cut into the existing main.

10-03.06 Cleanouts

Cleanouts on mains and laterals shall be located as shown on the Plans and installed in accordance with the Standard Plans.

10-03.07 Sewer Laterals

Sewer laterals shall be located as shown on the Plans and installed in accordance with the Standard Plans. All taps into existing sewer mains shall be made by machine taps ("Tap Tite"), or, for VCP only, utilize Mission Clay insertion wye with Band-Seal fittings. Stamp or grind an "S" on the curb face where a sewer lateral crosses under the curb.

10-03.08 Flushing and Cleaning Sewer Lines

After all backfilling and pavement restoring operations have been completed, the Contractor shall flush and clean all sanitary sewer lines in the following manner, under the supervision of the Engineer or Inspector:

A heavy rubber ball, such as "MacWane Ball," manufactured by Sidu Company, Long Beach, California, or approved equal, inflated with air, and having an outside diameter equal to the interior diameter of the pipe to be cleaned, shall be furnished by the Contractor. The ball shall be inflated so that it will fit snugly into the sewer line. The ball shall be placed in the last (upper) manhole on the line and water introduced into the manhole back of the ball. The ball shall pass through the pipe with only the pressure of the water behind it. The rate at which the ball is allowed to pass through the pipe shall be controlled by a rope at all times. Debris flushed ahead with the ball shall be removed at the lower manhole where its presence is evident. This cleaning shall be conducted on each section of pipe installed. Care shall be exercised not to feed the ball too rapidly in order that all debris can be removed at each manhole.

During the flushing and cleaning operation, a wire screen with a one-quarter of an inch (1/4") mesh or smaller shall be placed over the downstream outlet of the lower manhole to prevent any debris from being washed into the existing sewer system.

10-03.09 Television Inspection

After completion of the pipe installation, service connections, flushing and cleaning, the sewer line shall be televised with a color closed-circuit television with tilt-head camera recorded in the latest electronic format approved by the Engineer. The original DVD and log sheets shall be provided to the Engineer.

10-03.10 Abandoning Existing Sewer Mains

The existing sewer main to be abandoned shall be cut a minimum of twelve inches (12") clear of the manhole and abandoned in place at the location shown

on the Plans after the new sewer is installed. The main shall be filled with sand and ends plugged with a minimum of six inches (6") of Portland cement concrete at each required cut.

10-04 TESTING

10-04.01 Exfiltration/Infiltration Testing

Sewer pipe joints and manholes shall be so watertight that leaking into the sewer by groundwater infiltration shall not exceed 0.039 gallons per minute, per inch diameter, per one thousand feet (1,000') of main line sewer and sewer laterals being tested. Prior to testing for leakage, backfill trench up to at least lower half of the pipe. When necessary to prevent pipeline movement during testing, place additional backfill around pipe sufficient to prevent movement but leaving joints uncovered to permit inspection. The measure of the infiltration shall be defined as the exfiltration out of the pipeline when the lower end is plugged at the manhole and the upper end is filled at a manhole so as to create a hydrostatic head in the line of a minimum four feet (4') and a maximum five feet (5') above the invert at the upper end of the line. If groundwater is encountered, the head above the invert of the pipe at the upper end of the line shall be increased so that the net hydrostatic head shall be a minimum of four feet (4') and a maximum of five feet (5'). The amount of exfiltration in one (1) hour measured through a water meter or other convenient device by bringing the water level back up to the starting level at the upper manhole shall determine the rate of exfiltration. The Contractor shall furnish and install the necessary and required plugs for the tests. The length of the laterals entering the section of main line being tested shall be included.

10-04.02 Air Testing

Air testing of sewer mains may be allowed in lieu of exfiltration/ infiltration testing.

Air testing of vitrified clay pipe shall be in accordance with ASTM C-828, "Standard Test Methods for Low-Pressure Air Test of Vitrified Clay Pipe Lines." Air testing of PVC pipe shall be in accordance with the requirements specified in the most current Uni-B-6 pamphlet, "Recommended Practice for Low-Pressure Air Testing of Installed Sewer Pipe" issued by the Uni-Bell PVC Pipe Association or as per the pipe manufacturer's specifications. At the approval of the Engineer, air testing of HDPE pipe installed by pipe-bursting method may be in accordance with the most current Installation Test Standard IS-16 issued by the International Association of Plumbing and Mechanical Officials.

10-04.03 Acceptance

During the testing and flushing operation, a wire screen with a one-quarter of an inch (1/4") mesh or smaller shall be placed over the downstream outlet of the lower manhole to prevent any debris from being washed into the existing sewer system.

In no case shall the Contractor place the newly constructed sewer in operation without the approval of the Engineer.

In the event that infiltration or leakage exceeds the limits indicated above, the Contractor shall, at his own expense, immediately proceed to make necessary repairs, and no further payment shall be allowed, nor shall the project be finally accepted, until the tests indicate that the entire project meets the above requirements.

The Contractor shall furnish the necessary pumps, water, labor, equipment and materials and shall assist the Engineer in making tests of the completed sewerage project before the system is placed in operation or connected to other lines.

The Engineer shall designate the length or section of the sewer to be tested and may approve portions or the entire project without testing.

SECTION 11 ADJUSTING MANHOLE, VALVE COVERS AND OTHER SURFACE FACILITIES

11-01 GENERAL

Where shown on the Plans, or as directed by the Engineer, existing manholes, manhole covers, valve covers, sanitary sewer and/or storm drain covers or utility service structures shall be adjusted to grade in accordance with the provisions of Section 15-2.05A, "Frames, Covers, Grates and Manholes," of the Caltrans Specifications except as herein modified.

11-02 MATERIALS

None.

11-03 CONSTRUCTION

Unless otherwise directed by the Engineer, the Contractor has the option of constructing a structure located in the pavement area to final grade before or after the final lift of pavement or surfacing has been completed.

When manhole adjustment work is undertaken, dirt, rocks or debris will not be permitted to enter sewer or storm drain lines and a temporary cover shall be placed over the bottom of the manhole to prevent entry of material from the manhole to the pipe. Manhole adjustment shall include modification of existing manhole cones, precast sections, barrel or risers, as necessary, in order to adjust manhole covers to final grade. When valve covers are raised to grade, backfill shall be sand to the grading plane. During sealing or paving operations, all surface structures shall be preserved from coverings and no adhesive materials shall be permitted to seal or fill the joint between the frame and cover of any existing utility structure.

11-03.01 Utility-Owned Facilities

Unless noted otherwise on the Plans or in the Special Provisions or Technical Provisions, existing surface and subsurface utility structures owned by California Water Service Company, AT&T, TV cable, Pacific Gas and Electric Company or Pacific Bell shall be raised to grade by the owning utility at the utility's expense.

SECTION 12 ROADWAY MARKINGS

12-01 GENERAL

This work shall consist of furnishing and applying thermoplastic traffic stripes (traffic lines) and pavement markings, including glass beads, and pavement markers. Traffic stripes and pavement markings shall conform to the requirements of Section 84, "Traffic Stripes and Pavement Markings," and Section 85, “Pavement Markers,” of the Caltrans Specifications, except as modified herein.

For the purposes of this section traffic stripes (traffic lines) are defined as longitudinal centerlines and lane lines which separate traffic lanes in the same or opposing direction of travel, and longitudinal edge lines which mark the edge of the traveled way or the edge of the lanes at gore areas separating traffic. Pavement markings are defined as transverse markings which include, but are not limited to, word and symbol markings, limit lines (stop lines), crosswalk lines, shoulder or edge markings, and parking stall markings.

12-02 MATERIALS

12-02.01 General

All traffic stripes, pavement markings, and pavement markers (reflectors) shall be consistent with the latest Caltrans Standard Plans. The Contractor shall be responsible for providing all stencils for the work.

Copies of Caltrans Specifications for traffic paint may be obtained from the Transportation Laboratory, P.O. Box 19128, Sacramento, CA 95819, telephone number (916) 227-7000.

Painted traffic stripes and markings shall be Rapid Dry Water Borne paint and conform to the Caltrans Specification 8010-91D-30.

Thinning of paint will not be allowed.

The manufacturer shall provide the Engineer with a Certificate of Compliance. The certificate shall certify that the paint complies with the specifications and that paint manufactured to the same formulation and process has previously passed State testing. A list of manufacturers that have produced paint meeting Caltrans Specifications is available from the Transportation Laboratory. Material supplied by manufacturers other than those that have manufactured approved paint will require complete testing at the expense of the Contractor.

12-02.02 Thermoplastic Stripes and Markings

Stripes and markings shall be hot applied markings conforming to Section 84, “Traffic Stripes and Pavement Markings,” of the Caltrans Specifications and shall be Cataphote-Catatherm brand, Pavemark Thermoplastic brand or approved equal. All paint used in thermoplastic shall be certified lead-free paint.

Thermoplastic stripes and markings shall have a minimum skid friction value of BPN = 35. Submit Caltrans inspection tags with each load of material delivered to the job site. Glass beads to be applied to the surface of the molten thermoplastic material shall conform to the requirements of Caltrans Specification 8010-21C-22 (Type II).

12-02.03 Permanent Pavement Markers and Adhesives

Pavement markers shall be Type D 2-way yellow reflective markers and 2-way blue reflective markers and shall be of the prismatic reflector type consisting of methyl methacrylate or suitably compounded acrylonitrile-butadiene-styrene (ABS) shell filled with a mixture of an inert thermosetting compound and filler material. Adhesive for pavement markers shall be either rapid set epoxy or hot melt bituminous adhesive. Submit Caltrans inspection tags with each load of pavement markers delivered to the job site.

12-02.04 Traffic Island Bars

Raised traffic island bars shall conform to the requirements of Section 84, “Traffic Stripes and Pavement Markings,” of the Caltrans Specifications.

12-03 CONSTRUCTION METHODS

12-03.01 General

Existing surfacing which is to receive the paint shall be mechanically wire brushed to remove all dirt and contaminants immediately prior to the application. Paint and pavement markers shall be applied only to dry pavement surfaces and only when the pavement surface temperature is above fifty degrees Fahrenheit (50° F). The pavement surface to which the paint is applied shall be completely coated and the voids of the pavement surface shall be filled. Pavement markers shall not be placed on slurry seal coat until the surfacing or seal coat has been opened to public traffic for a period of not less than 7 days when hot melt bituminous adhesive is used, and not less than 14 days when epoxy adhesive is used.

Water borne paint shall not be heated to a temperature greater than one hundred fifty degrees Fahrenheit (150°F).

Pavement markings shall be applied in two coats. The first coat of paint shall be dry to the Engineer’s satisfaction before application of the second coat.

Each coat of paint shall be applied approximately at a rate of 215 square feet per gallon.

The volume of paint applied shall be measured by stabbing the paint tank with a calibrated rod. At the option of the Engineer, if the striping machine is provided with paint gauges, the volume of paint may be determined by using the gauges.

12-03.02 Codes and Standards

The standards, recommended methods and tests contained in the publications cited below shall determine the standards for the work to be done hereunder unless otherwise specifically designated on the plans:

A. The State of California Maintenance Manual, latest edition.

B. The State of California Traffic Manual, latest edition.

C. The regulations, standards, and tests of the State of California Department of Transportation Materials and Research Division.

D. The State of California (Caltrans) Standard Plans and Specifications.

Reference by manufacturers, brands or models is to establish type and quality of materials desired. Substitutions of materials of equal quality will be permitted upon the prior written approval of the Engineer.

12-03.03 Equipment

Mechanical mixers shall be used to mix paint. Prior to applying, the paint shall be mixed a sufficient length of time to thoroughly mix the pigment and vehicle together, and shall be kept thoroughly agitated during its application.

Mechanical means shall be used to paint pavement markings.

All equipment used in the application of pavement markings shall produce pavement markings of uniform quality that conform to the specified requirements.

All spray equipment shall be of a proper type and of adequate capacity for the work. Air atomized spray equipment shall be equipped with oil and water extractors and pressure regulators and shall have adequate air volume and compressor recovery capacity. Spray gun tip needle assemblies and orifices shall be of the proper sizes.

12-03.04 Timing of Application

If permanent pavement markers cannot be installed immediately, short term, temporary pavement markers shall be installed on new roadways before the street will be opened for traffic.

12-03.05 Control of Alignment and Layout

All work necessary to establish satisfactory alignment for stripes and all layout work required for pavement stripes and markings and pavement markers shall be performed by the Contractor with any device or method that will not damage the pavement or conflict with other traffic control devices.

12-03.06 Control Points & Premarking

The Contractor shall, prior to placing new slurry seal, tie out all existing striping and pavement markings, unless locations are otherwise modified in these specifications. Premarking (cat-tracking) shall be required for painting all items on newly placed slurry seal surfaces. Tape or temporary paint striping shall be installed for all crosswalks and stop bars. The cat-tracking and temporary paint shall be white or the color of the final striping and shall be maintained until placement of the final striping. The Contractor shall notify the Engineer twenty-four (24) hours in advance for inspection and approval of the premarking.

The Contractor concurrently with the final striping and pavement marking application shall remove all temporary tape, paint striping, and tabs placed prior to slurry seal.

12-03.07 Tolerances and Appearance

Completed traffic stripes shall have clean and well-defined edges without running or deformation, shall be uniform, shall be straight on tangent alignment, and shall be on a true arc on curved alignment. The widths of completed traffic stripes shall not deviate more than ¼-inch on tangent or more than ½-inch on curves from the widths specified in these Standard Specifications or shown on the plans. Broken traffic stripes shall also conform to the following requirements:

A. The lengths of the gaps and individual stripes that form broken traffic stripes shall not deviate more than 2 inches from the lengths specified in these Standard Specifications.

B. The lengths of the gaps and individual stripes shall be of such uniformity throughout the entire length of each broken traffic stripe that a normal striping machine will be able to repeat the pattern and superimpose additional stripes upon the traffic stripe being applied.

The completed pavement markings shall have clean and well-defined edges without running or deformation and shall conform to the dimensions specified in these Standard Specifications or shown on the plans, except that the Engineer may accept minor variations.

Drips, overspray, improper markings, and paint and thermoplastic material tracked by traffic shall be immediately removed from the pavement surface by methods approved by the Engineer. All such removal work shall be at the Contractor's expense.

12-03.08 Protection from Damage

The Contractor shall provide suitable barriers, warning signs, traffic control, and other arrangements to keep both pedestrian and vehicular traffic away from the freshly applied surfaces until the thermoplastic material has sufficiently hardened. Damage to the newly applied traffic stripes or pavement marking or pavement markers because the Contractor fails to protect the work shall be removed and re-applied by, and at the expense of, the Contractor. Any overspray or tracking

of paint shall be removed to the satisfaction of the Engineer. No additional compensation will be made for this work.

12-03.09 Thermoplastic Stripes and Markings

Thermoplastic stripes and markings shall be applied hot in conformance with the manufacturer's recommended instructions and the applicable requirements of Section 84-2.04, “Application,” of the Caltrans Specifications. Glass beads shall be applied immediately to the surface of the molten thermoplastic material, at a rate of not less than 8 pounds per 100 square feet. The amount of glass beads applied shall be measured by stabbing the glass bead tank with a calibrated rod.

12-03.10 Pavement Markers

Pavement markers shall be installed in conformance with the requirements of Section 85-1.06, “Placement,” of the Caltrans Specifications. Markers shall be installed accurately to the line established by the Engineer. No markers shall be installed until the Engineer has approved the surface.

12-03.11 Reflectorized Pavement Markers

Reflectorized markers shall be installed accurately at the locations specified and in the positions specified on the detail drawings or called for in the State of California Maintenance Manual.

The portion of the roadway surface to which the marker is to be bonded shall be free of dirt, curing compound, grease, oil, moisture, loose or unsound layers, paint, and any other material that would adversely affect the bond of the adhesive. Cleaning shall be done by blast cleaning on all surfaces regardless of age or type, except that blast cleaning of clean, new asphalt concrete and clean, new seal coat surfaces will not be required when hot melt bituminous adhesive is used. Adhesive shall be placed uniformly on the pavement surface or on the bottom of the marker in a quantity sufficient to result in complete coverage of the area of contact of the marker with no voids present and with slight excess after the marker has been pressed in place. The marker shall be placed in position and pressure applied until firm contact is made with the pavement. When hot melt bituminous adhesive is used, the markers shall be placed immediately after application of the adhesive. Excess adhesive around the edge of the marker, excess adhesive on the pavement, and adhesive on the exposed surfaces of the markers shall be immediately removed. Soft rags moistened with mineral spirits conforming to Federal Specification TT-T-291 or kerosene may be used, if necessary, to remove adhesive from exposed faces of pavement markers. No other solvent shall be used. The marker shall be protected against impact until the adhesive has hardened to the degree designated by the Engineer.

The Engineer shall be the judge as to when adhesive has set sufficiently to bear traffic.

Blue reflective markers shall be placed adjacent to fire hydrant on all the streets that are being slurry sealed.

SECTION 13 BARRICADES, GUARDRAILS AND HEADERBOARDS

13-01 GENERAL

This work shall consist of furnishing and installing barricades, guardrails and headerboards and all other materials and appurtenances in accordance with the Plans and these Standard Specifications.

13-02 MATERIALS

13-02.01 Barricades

Barricade posts shall be construction grade heart redwood, S4S. Barricade rails shall be construction grade Douglas fir, S4S. Both posts and rails shall be graded in accordance with Section 57-2.02, "Grading Rules and Requirements," of the Caltrans Specifications.

13-02.02 Guardrails

Metal beam guardrails shall conform to the requirements of Section 83, "Railings and Barriers," of the Caltrans Specifications.

13-02.03 Headerboards

Headerboards and stakes shall be construction grade heart redwood, S4S, graded in accordance with Section 57-2.02, "Grading Rules and Requirements," of the Caltrans Specifications. Nails shall be hot-dipped galvanized.

13-03 CONSTRUCTION

13-03.01 Barricades

Barricades shall be installed at locations shown on the Plans and in conformance with the Standard Plans.

13-03.02 Guardrails

Metal beam guardrails shall be installed at locations shown on the Plans and in conformance with the requirements of Section 83, "Railings and Barriers," of the Caltrans Specifications.

13-03.03 Headerboards

Headerboards shall be installed at locations shown on the plans.

When headerboards are installed along unprotected edges of pavement, the top edges of the headerboard shall conform to the line and grade of pavement.

Headerboards shall be 2" x 6", unless otherwise noted, and shall be held in place with 2" x 3" stakes of lengths necessary to extend twelve inches (12") into solid ground.

Stakes shall be of sound material, neatly pointed, driven vertically, located at butt joints and elsewhere, spaced not over four feet (4') on centers, and securely nailed to the headerboards. Headerboards shall have a continuous bearing on undisturbed earth or compacted earth or base rock.

SECTION 14 MONUMENTS

14-01 GENERAL

This work shall consist of furnishing and installing monuments in accordance with the Plans and these Standard Specifications.

14-02 MATERIALS

Concrete shall be Class B conforming to the requirements of Section 90, "Portland Cement Concrete," of the Caltrans Specifications. Aggregate used shall conform to the grading requirements of three-quarters of an inch (3/4") maximum combined aggregate sizes.

Castings shall be tough gray iron; free from cracks, holes and swells; shall be of workmanlike finish; and shall conform to ASTM A48, Class 30B.

14-03 CONSTRUCTION

Standard City monuments shall be constructed at the locations shown on the plans or as directed by the Engineer and specified herein. Monuments shall be constructed to the dimensions and details shown on the Standard Plans, and shall be installed after placing the asphalt concrete surface.

The solid brass monument marker, as shown in the Standard Plans, shall be set in the concrete before the concrete begins to set. The Engineer shall stamp the marker for the Contractor.

SECTION 15 SIGN INSTALLATION

15-01 GENERAL

This work shall consist of furnishing and installing street signs in accordance with the Plans and these Standard Specifications.

15-02 MATERIALS

Sign posts shall be two inch diameter, standard galvanized pipe.

Mounting hardware for signs shall conform to the applicable requirements and specifications shown and noted on Caltrans Standard Plans S41 through S49.

15-03 CONSTRUCTION

Warning and regulatory signs shall conform to Chapter 4 of the Caltrans Traffic Manual.

Signs shall be installed in accordance with the Standard Plans and at locations shown on the Plans.

All existing signs shall be maintained until they have been relocated or replacement signs are installed.

Public street name signs shall have four-inch (4") white reflective Type B letters on a brown reflective background on a six-inch (6") tall, eight-hundredths-inch (0.080") thick aluminum plate. Private Street-name signs shall have four-inch (4") white reflective Type B letters on a brown reflective background on a six-inch (6") tall, eight-hundredths-inch (0.080") thick aluminum plate. Private street name signs shall include the phrase "Private Street" (three-inch (3") white-reflective Type B letters) at the bottom and must be approved in advance by the City Engineer.

SECTION 16 IRRIGATION

16-01 GENERAL

The Work shall consist of furnishing the materials and installing an irrigation system complete in accordance with the Plans, Standard Specifications, Special Provisions and Technical Provisions.

All Work shall be in full accordance with the latest rules and regulations of the safety orders of the Division of Industrial Safety, the Uniform Plumbing Code published by the Western Plumbing Officials Association, National Electric Code, Electrical Safety Orders of the State of California Division of Industrial Safety, and other applicable State or local codes or regulations.

Nothing in the Plans, Standard Specifications, Special Provisions or Technical Provisions is to be construed to permit Work not conforming to these codes, rules and regulations. When specifications call for a material or construction of a better quality or larger size than required by the codes, rules and regulations, specifications shall take precedence over the requirements of said codes, rules and regulations.

16-02 MATERIALS

16-02.01 Plastic Pipe

All plastic pipe shall be free of blisters, internal striations, cracks, or any other defects. The pipe shall be continuously and permanently marked with the name of the manufacturer, material type, size, schedule or class, pressure rating in units of pounds per square inch (psi), and quality control identifications (for example, ASTM and SDR numbers). Individual sections of pipe to be of the same manufacturer.

A. Rigid Type. All Type 1, Grade 1 polyvinylchloride (PVC) with solvent weld connections.

1. Main line pipe shall be Schedule 40 conforming to ASTM D1784 and D1785.

2. Lateral pipe shall be Class 200 conforming to ASTM D1784 and D2241.

16-02.03 Fittings

Pipe and hose fitting shall be Schedule 40, uniformly white in color, Type 1, Grade 1 polyvinylchloride (PVC) conforming to ASTM D1784 and D2466.

16-02.04 Nipples

Nipples shall be standard weight Schedule 80 with molded threads. All threaded nipples exposed above grade shall be gray in color.

16-02.05 Solvents and Joint Compounds

Joint compound for all threaded connections shall be by Teflon seal.

Primer and solvents shall be as recommended by the pipe manufacturer.

All cans shall have labels intact and stamped with the date of manufacture. No cans dated over one (1) year old will be permitted. No solvent or primer shall be thinned in any manner whatsoever.

16-02.06 Control Wiring

All wires shall be solid copper, Type UF-AWG, UL-approved for direct burial. Wire shall be continuously and permanently marked with the manufacturer's name, wire size and identification. The size and color of control wire shall be as follows: pilot wire—No. 14 red; common wire—No. 12 white. No wire shall be smaller than the No. 14 in size.

All wire splices shall be made with a plastic heat-shrink type splice compound. All wire splices must be made in a splice box such as a Brooks 1419 heavy-duty plastic valve box with locking top or approved equal. Label splice boxes "splice" in one inch (1") letters with white enamel paint.

Install two (2) extra wires from controller to each valve cluster group.

16-02.07 Backflow Prevention Devices

The backflow unit shall be Febco 860 series with ball valves to the size shown on the Plans or an approved equal.

16-02.08 Pressure Regulating Valves

Pressure regulating valves shall be of the type and size shown on the Plans.

16-02.09 Irrigation Heads

Shrub irrigation heads shall be impact plastic, 12 inch pop-up type by Rainbird, or approved equal. Turf and ground cover irrigation heads shall be high impact plastic, 6 inch pop-up type by Rainbird, or approved equal.

16-02.10 Automatic Control Valves

Automatic control valves shall be Griswold 2030 valve or an approved equal. Control valves shall be normally closed, electrically operated and compatible for operation with the automatic controller. Control valves shall have two (2) inlets provided on each valve to enable installation in straight or angled configuration. The solenoid pilot must be corrosion proof, molded in epoxy and encased in brass housing. The valve must be constructed of brass and cast iron.

16-02.11 Automatic Controllers

The controllers shall be Rainmaster Model RME "Eagle," or an approved equal, or as noted on the Plans and shall have the number of stations specified on the Plans.

16-02.12 Controller Enclosures

Controller enclosures shall be stainless steel as manufactured by Strong Box or an approved equal.

16-02.13 Valve Boxes

Valve boxes shall be precast concrete boxes with over the rim cover with steel locking lids.

16-02.14 Ball Valves

Ball valves shall be cast steel and shall be as manufactured by Red-White Valve Corporation or an approved equal.

16-02.15 Master Valves

Master valves shall be installed downstream of reduced pressure backflow preventor and shall be as manufactured by Griswold, Clay, Watts or an approved equal.

16-03 CONSTRUCTION

16-03.01 General

The Contractor shall install all products in strict accordance with the manufacturer's printed directions. If those directions conflict with Standard Specifications, the matter shall be brought to the attention of the Engineer for clarification prior to proceeding with the Work.

Within five (5) days after notice to proceed and before any irrigation system materials have been delivered to the job site, submit to the Engineer a complete list of all irrigation system materials proposed to be installed. Show the manufacturer's name and catalog number for each item, furnish complete catalog cuts and technical data for each item, and the manufacturer's recommendations for method of installation. Upon approval by the Engineer, or his designated representative, the printed recommendations will become the basis for acceptance or rejection of actual methods of installation used in the Work. No irrigation system component shall be brought onto the job site unless it has been approved by the Engineer.

16-03.02 Superintendence

During the progress of this Work, a Contractor's Superintendent shall be on site at all times and shall be known to the Engineer. The Superintendent shall

supervise the Work constantly and shall not be changed without seven (7) calendar days notification to the Engineer. The Superintendent shall represent the Contractor in his absence, and his field decisions shall be as binding as if given by the Contractor. The Superintendent shall have a complete set of Plans on the job site at all times.

16-03.03 Layout and Verification

The Contractor shall stake out the locations, all pipes, backflow prevention equipment, valves, quick coupling valves, sprinkler heads and emitters in accordance with the Plans. The Contractor shall check and verify dimensions of layout and report any variations to the Engineer before proceeding. Lay out Work as accurately as possible to the Plans.

Layout of irrigation heads is to provide one hundred percent (100%) head to head coverage, as per manufacturer’s recommendation.

Minor changes in locations to the above from locations shown shall be made as necessary to avoid existing or proposed planting, piping, utilities, structures, at the Contractor's expense, when directed by the Engineer, providing such change is ordered before such items of Work directly connected to the same are installed, and providing no additional material are required.

The Contractor will be held responsible for the relocation of any items without first obtaining the Engineer's approval. The Contractor shall remove and relocate such items, at his expense, if so directed by the Engineer.

Before starting work on the irrigation system, the Contractor shall carefully check all grades to determine that Work may safely proceed, keeping within the specified material depths. The Contractor shall be aware of the fact that the Plans are horizontal dimensions. Actual measurements taken along the slope bank will differ from notes shown on the Plans.

No fittings shall be installed on pipe located underneath pavement or walls except where they are noted on the Plans. If such a need should occur, the Contractor shall bring it to the attention of the Engineer.

The Contractor shall verify the exact location of backflow prevention devices with the Engineer prior to installation.

All changes to the Plans shall be recorded on the record drawings.

16-03.04 Water and Electrical Points of Connections

The Contractor shall provide connections to water and electrical sources as noted on the Plans. The Contractor shall also coordinate with local utility districts for service connections and bear all costs charged by the utility companies.

16-03.05 Workmanship

The Contractor shall install all irrigation system components in accordance with the Plans, Standard Specifications, Special Provisions and Technical Provisions. The workmanship of the entire job must in every way be first class, and only experienced and competent persons will be allowed to work on the project. At least one (1) person shall be present at all times during the execution of this portion of the work who shall be thoroughly familiar with the type of materials being installed and the manufacturer's recommendations as to method of installation and who shall direct all Work performed under this section. The Contractor shall replace at his expense, at any time within one (1) year after installation is accepted, any and all defective parts.

16-03.06 Excavation and Trenching

The Contractor shall restore all surfaces, existing underground installations, etc., damaged or cut as a result of the excavations to their original condition and in a manner satisfactory to the Engineer.

The Contractor shall use all means necessary to protect planting materials before, during, and after the irrigation installation and immediately make all repairs necessary to the approval of the Engineer at no additional cost to the City. Care shall be taken to examine the existing trees that are to remain and any roots cut that are larger than three-quarters of an inch (3/4") in diameter shall be filled with a tar-base sealant immediately. Trenches for mains and laterals shall be straight and true with bottoms graded on uniform slopes to low points. Trenches shall be made wide enough to allow a minimum of six inches (6") between parallel pipelines of other trades. Maintain four inch (4") minimum vertical clearance between irrigation lines at a minimum transverse angle of forty-five degrees (45°). Trenches for pipelines shall be made of sufficient depth to provide the minimum cover from finished grade as follows:

A. Main Lines: Minimum twenty-four inches (24") of cover over main line pipes 2-1/2" to 4" outside diameter; eighteen-inches (18") of cover over main line pipes 1" to 2" outside diameter.

B. Lateral Lines: Minimum fourteen inches (14") of cover over laterals; except for a minimum eighteen inches (18") of cover over remote control valve control lines (laterals) to sprinkler heads. Minimum eight inches (8") of cover over emitter lines.

C. All lines under driveway or roadway pavement shall be located a minimum twenty-four inches (24”) below subgrade except for a minimum eighteen inches (18”) below subgrade for control lines.

16-03.07 Pipe Installation

The Contractor is cautioned to exercise care in handling, loading and unloading, and storing plastic pipe and fittings. All plastic pipe and fittings will be stored under cover before using, and will be transported in a vehicle with a bed long enough to allow the length of pipe to lay flat so as not be subject to undue

bending or concentrated external load at any point. Any section of pipe that has been dented or damaged will be discarded until said section of pipe is cut out and rejoined with a coupling.

The Contractor shall provide the necessary means, lines and supports to ensure installation of the pipe to line and grade. The Contractor's facilities for lowering the pipe into the trench shall be such that neither the pipe nor the trench will be damaged or disturbed.

Connections to irrigation main lines shall be made with service saddles as approved by the Engineer.

All pipes shall be assembled free from dirt and pipe scale and shall be reamed and burrs removed. The main line supply shall be flushed out and tested for leaks before backfilling and with control valves in place before lateral pipes are connected to valves. Each section of lateral pipe shall be flushed out before sprinkler heads are attached.

The Contractor shall not lay plastic pipe when there is water in the trench.

The Contractor shall not use solvent-weld pipe length sections shorter than fifteen feet (15') without the approval of the Engineer.

The Engineer shall inspect all pipes before it is laid and reject any section that is damaged by handling or is found to be defective to a degree which will materially affect function and service of the pipe.

All foreign matter and dirt shall be removed from the inside of the pipe before it is lowered into position in the trench, and it shall be kept clean by approved means during and after laying the pipe.

16-03.08 Solvent Weld Joints

The Contractor shall use only the solvent recommended by the manufacturer to make plastic pipe joints. All connections shall be made as per manufacturer's recommendations for solvent-weld type.

All solvent weld joints shall be first primed.

The pipe and fittings shall be thoroughly cleaned of dirt, dust, and moisture before applying solvent.

The Contractor shall make solvent weld joints with a nonsynthetic bristle brush in the following sequence:

A. Apply a liberal, even coat of solvent to the inside of the fitting.

B. Apply a liberal, even coat of solvent to the outside of the pipe, making sure the coated area is equal to the depth of the fitting socket.

C. Insert the pipe quickly into the fitting and turn the pipe approximately one-quarter (1/4) turn to distribute the solvent and remove air bubbles. Hold the joint for approximately fifteen (15) seconds so the fitting does not push off the pipe.

D. Use a clean rag and wipe off all excess solvent. This is to prevent weakening at the joint.

E. Allow at least fifteen (15) minutes set-up time for each welded joint before moving it.

16-03.09 Closing Pipe

Open ends of the laterals and mains shall be capped or plugged, leaving caps and plugs in place until removal is necessary for completion of installation. Contractor shall take other precautions as necessary to prevent dirt and debris from entering pipe or equipment. Do not allow or cause any of the Work of this section to be closed until it has been inspected, tested and approved by the Engineer.

16-03.10 Flushing Lines

Lines shall be thoroughly flushed out before installing valves and sprinkler heads. After flushing, main line pipe may be partially backfilled, but joints, fittings and connections shall remain free and visible. Secure emitter line "N" caps.

16-03.11 Backfilling and Compaction

Initial backfill on all lines shall be of sand with no foreign matter larger than one-half inch (1/2") in size from an approved source. Backfill material shall be tamped in four-inch (4") layers, under the pipe and uniformly on both sides for the full width of the trench and the full length of the pipe. Material shall be sufficiently damp to permit thorough compaction under and on each side of the pipe, to provide support free of voids. Backfill for trenching shall be compacted to dry density equal to ninety percent (90%) of adjacent undisturbed soil, and shall conform to adjacent grades without dips, sunken areas, humps or other irregularities.

16-03.12 Sprinkler Heads

Sprinkler heads shall be installed where indicated and as detailed on the Plans.

16-03.13 Remote Control Valves

Install one (1) assembly per box where indicated and as detailed. Install no closer than six inches (6") to curb.

16-03.14 Valve Boxes

Install the top of the box level and flush with the finished grade and in a neat and orderly manner. Boxes shall be aligned parallel to paving or curbs. The number

of the circuit shall be stenciled on the top of the box in two-inch (2") letters with white enamel. Valve boxes shall not rest or come in contact with RCV.

16-03.15 Automatic Control Wiring

Install control wires, main line and laterals in common trenches wherever possible. Install control wires alongside pipe with a minimum of twenty-four inches (24") of cover. Wires shall be a minimum of one inch (1") from any pipe or fitting, except at terminal points. Provide looped slack twelve inches (12") at valves, and snake wires in trench to allow for contraction of wire. Control wires shall be routed from the controllers in tight groupings. Tie wires and trench in bundles at ten foot (10') intervals with plastic electrical tape at a minimum of six (6) turns. All pilot and common wires shall be permanently marked at terminal points. Wherever wire is routed under concrete paving, walls, stairs or curbs, it shall be installed in a rigid PVC control wire sleeve. Refer to the materials section of these Standard Specifications for color coding of wiring.

Control wires shall be connected to each controller in accordance with the sequence indicated on the Plans. The Contractor shall be responsible for the coordination of hookups and connections, and for the installation of any materials and equipment necessary; all to facilitate the proper and complete operation of the controllers and electrical system.

16-03.16 Percentage Control Adapter (PCA)

Percentage Control Adapters (PCA's) (12 or 24), including antennae shall be installed at each irrigation controller as indicated on the Plans.

16-03.17 Automatic Controllers

Automatic controllers shall be installed as required in the Plans, Special Provisions and Technical Provisions and specified herein.

All control wires shall be labeled at the controller terminal points with preprinted vinyl-impregnated, self-adhesive number markers. The Contractor shall be responsible for the coordination of hookups and connections, and for the installation of any materials and equipment necessary; all to facilitate the proper and complete operation of the controllers and electrical system. Install irrigation controller cabinet as detailed on the Plans.

The Contractor shall provide one (1) controller chart for each automatic controller supplied, showing the area covered by the controller. The chart shall be a reduced drawing of the actual as-built system. However, the controller sequence must be legible when a drawing is reduced.

Charts shall be a black-line print with a different color use to show area of coverage for each station. When completed and approved, the chart shall be inserted between two (2) pieces of plastic, each piece being a minimum of twenty millimeter (20-mil.) thick. The chart must be completed and approved prior to final inspection of the irrigation system.

16-03.18 Adjusting System

Adjust valves, align and adjust head coverage. If the Engineer determines that adjustments in the irrigation equipment will provide more adequate coverage, the Contractor shall make necessary changes or make arrangements with the manufacturer to have the adjustments made, prior to any planting. These changes or adjustments shall be made without additional cost. The entire system shall be operating properly before any planting operations commence.

16-03.19 Cleanup

Upon completion of the Work, make the ground surface level, remove excess materials, rubbish, and debris and remove construction and installation equipment from the premises.

16-03.20 Manuals

The Contractor shall furnish individually bound service manuals to the Engineer. The manuals shall contain complete exploded drawings, diagrams and spare part list of all equipment installed, showing components and catalog number together with the manufacturer's name and address. In addition, each service manual shall contain the following:

A. Index sheet indicating the Contractor's name, address and phone number.

B. Copies of equipment warranties and certificates.

C. Complete operating and maintenance instructions and sufficient detail to permit operating personnel to understand, operate and maintain all equipment.

16-03.21 As-Built Drawings

The Contractor shall prepare as-built drawings on a print of the irrigation plans showing deviations and changes in the layouts. Reproducible as-built drawings shall be delivered to the City for approval before final acceptance of the Work.

As-built drawings shall be maintained on the site at all times. Dimension the revised locations from a permanent point of reference (for example, building, sidewalk, curb, pavement, monuments and so forth). All dimensions shall be taken prior to backfill. All such changes shall be indicated in red.

16-04 TESTING

16-04.01 Hydrostatic Tests—Open Trench

A. Test to be accomplished at the expense of the Contractor and in the presence of the Engineer.

B. Set up piping with small amount of backfill to prevent arching or slipping under pressure. Do not cover any joints.

C. While the joints are exposed, all piping shall be subjected to a hydrostatic test. The Contractor shall supply all caps, belts, pumps and accurately calibrate recording gauges to be installed in a minimum of two (2) places. All piping shall meet the following requirements.

1. Supply lines must hold at 150 PSI for a minimum of four (4) hours with an allowable loss of 5 PSI.

2. Lateral lines must hold at 100 PSI for a minimum of one (1) hour with an allowable loss of 5 PSI.

D. During the test, all detectable leaks, regardless of the amount of leakage, should be stopped and all defects corrected. Materials and installation procedure used for making corrections shall be identical to those specified herein.

E. No pipe shall be backfilled until it has been inspected and approved in writing by the Engineer.

SECTION 17 LIGHTING AND ELECTRICAL SYSTEMS

17-01 GENERAL

The Work shall consist of furnishing, installing and testing luminaires containing an integral ballast system, clear high-pressure sodium lamps; photoelectric cells; pull boxes; pole numbers; electrolier standards, mast arms and foundations; in-line fuses; conduit and cable and all other materials and appurtenances in accordance with the Plans and these Standard Specifications. The end result shall be a system complete and in operation to the satisfaction of the Engineer.

17-02 MATERIALS

17-02.01 General

All materials delivered to the job shall be new, best quality of their respective grades, in accordance with these Standard Specifications and packed in their original sealed containers. All materials to be installed shall bear the Underwriters Laboratories, Inc., UL Label.

The Contractor shall use materials mentioned in these Standard Specifications as standard, or an approved equal from the latest edition of the City's Approved Material List, and in no case will a substitute be allowed without written approval of the Engineer.

17-02.02 Foundations

Foundations shall conform to Section 86-2.03, "Foundations," of the Caltrans Specifications and with the Standard Plans except as modified herein. The top four inches (4") of the foundation shall not be placed until the standard is erected and leveled.

17-02.03 Electrolier Standards

Electrolier standards shall conform to Section 86-2.04, "Standards, Steel Pedestals and Posts," of the Caltrans Specifications and with the Standard Plans except as modified herein. See Section 17-02.08, "Painting," of these Standard Specifications for painting requirements. Allen head screws shall be used in all electrolier hand holes covers.

A. Type "15" Standard Electrolier

The light pole shall be all aluminum, one-piece construction, with a classic tapered design with a minimum 8” outside diameter at the base and a minimum 3-7/8” outside diameter at the top, with a minimum thickness of 0.1196”.

The luminaire arm shall have a minimum thickness of 0.1196” and shall conform to the Standard Plans.

B. Downtown Decorative Electrolier

The downtown decorative electrolier shall be Sternberg #1130A 508BD4 3810FP4 electrolier or approved equal.

The light pole shall be a 4” diameter, fluted pole with a wall thickness of 0.125”, constructed of 6061-T6 structural grade aluminum. The pole shall be welded for single unit construction with a black polyurethane powdercoat finish.

The acorn styled luminaire shall consist of a decorative luminaire base with an integral globe holder/ballast housing and an acorn shaped globe with a spun aluminum hinged roof. Globe material shall be polycarbonate. Internal refractors shall be glass and have an IES Type 3 distribution. The ballast compartment shall have a minimum 0.25” wall thickness.

The base shall be 15” in diameter with a 0.875” minimum floor thickness. It shall be secured with 4 anchor bolts and one ground lug. An access door shall be provided with stainless steel allen head screws.

C. Park Electrolier

The park electrolier shall be Cooper Lighting fixture Traditionaire UTR70SWW55U4, or approved equal. The light pole shall be 8 feet tall, 4” in diameter aluminum with a black anodized finish, Cooper Lighting catalog no. RSA4T08AD, or approved equal.

D. Bollard

The bollard light shall be Cooper Lighting fixture type BSC-36-35-HPS-120-BK-F-PL-L or approved equal. The light shall be square and 36 inches tall. It shall have a 35 watt high pressure sodium, 120 volt light. Color shall be black with polycarbonate lens.

17-02.04 Conduit

Conduits shall conform to Section 86-2.05, "Conduit," of the Caltrans Specifications except as modified herein.

Conduits to be installed under street pavement shall be one and one-half inch (1-1/2") rigid steel conduit conforming to the requirements in Publication UL 6 for Rigid Metallic Conduit. The zinc coating shall be in accordance with ASTM Designation A239 unless otherwise specified.

Conduits to be installed other than under street pavement shall be one and one-half inch (1-1/2") rigid steel conduit or Schedule 40 rigid plastic (nonmetallic) conduit conforming to the requirements in the Underwriters Laboratories Standard for Rigid Nonmetallic Conduit (Publication UL 651). Rigid plastic conduit connections shall be of the solvent weld type. See Paragraph 19-02.07,

"Bonding and Grounding," of these Standard Specifications for grounding in plastic conduit.

17-02.05 Pull Boxes

Pull boxes shall conform to Section 86-2.06, "Pull boxes," of the Caltrans Specifications and with the Standard Plans.

A pull box shall be installed adjacent to all electrolier standards. The pull box shall be a No. 3-1/2 or as otherwise noted on the Plans.

17-02.06 Conductors and Wiring

Conductors and wiring shall conform to Section 86-2.08, "Conductors," and Section 86-2.09, "Wiring," of the Caltrans Specifications. The insulation for No. 10 and larger conductors shall be one of the following:

A. Type TW polyvinylchloride conforming to the requirements of ASTM Designation D2219.

B. Type THW or THWN polyvinylchloride.

A standard C-shaped compression connector shall be insulated per method B or the "Wiring Details and Fuse Rating," Detail ES-13, of the Caltrans Standard Plans.

Street light cable shall be stranded copper conductor of sizes as specified on the Plans or in the Special Provisions or Technical Provisions. Minimum conductor sizes shall be No. 8 AWG and No. 10 AWG within the standard. Conductors shall be of consistent wire gauge and insulation unless otherwise specified. Conductors shall have a minimum of two feet (2') of slack in all pull boxes that are located next to the base of each electrolier and at each splice.

A 10-amp in-line fuse shall be installed in the base of each electrolier and be accessible through the hand hole. Fuse holders shall conform to Section 86-2.095, "Fused Splice Connectors," of the Caltrans Specifications.

17-02.07 Bonding and Grounding

Bonding and grounding shall conform to Section 86-2.10, "Bonding and Grounding," of the Caltrans Specifications except as modified herein. Bonding connections shall be made with No. 4 AWG bare copper wire or with copper ground straps of equal cross-sectional area.

The ground electrode for the electrolier standards shall be as shown on the Standard Plans.

Where conductors and wires are installed in nonmetallic conduits, a properly sized, green insulated, No. 8 AWG minimum, copper wire (equipment grounding wire) shall be installed continuously in all circuits from the point of service to each pull box and light standard. The ground wire shall be properly grounded in the

pull box located closest to the service point in accordance with Section 86-2.10, "Bonding and Grounding," of the Caltrans Specifications and Paragraph 17-03.05, "Service Connection," of these Standard Specifications.

17-02.08 Painting

Painting shall conform to Section 86-2.16, "Painting," of the Caltrans Specifications except as modified herein. The prime coats, two required, shall be red iron oxide type primer or approved equal.

The finish coats shall be dark olive black Tnemec paint or approved equal. The finish coat shall be applied in not less than two (2) applications.

Factory finish on new equipment will be acceptable if of proper color, and if equal in quality to the specified finish. The final finish coat on standards and mast arms may be applied in the field.

17-02.09 Luminaires

Luminaires shall conform to Section 86-6.01, "High-Intensity-Discharge Luminaires," of the Caltrans Specifications except as modified herein.

Luminaires shall consist basically of an aluminum housing, photoelectric control receptacle, reflector, prismatic refractor, integral ballast and an adjustable socket capable of producing IES Types II or III. Type IV shall be provided only when required. Glare shields shall not be installed. Distribution type shall be medium, semi-cutoff or as specified on the Plans or Special Provisions or Technical Provisions. Luminaires, complete with lamps, shall be installed on the mast arms in the proper orientation to produce the desired light pattern and shall be completely assembled and connected to the conductor. Each refractor shall be acrylic unless noted otherwise. The integral ballast need not be mounted on a down-opening door.

A. Multiple Circuits

Luminaires for multiple circuits shall have Mogul multiple sockets and internal ballast of the regulator type capable of operating from a multiple 120- or 240-volt circuit as noted on the Plans. The high-pressure sodium luminaires shall be as listed below or an approved equal from the latest edition of the City's Approved Material List.

Lamp Wattage	Primary Voltage	Thomas & Betts	General Electric
Standard Electrolier – Type 15			
70	120	113-562E2-6000A0	M2AR07S1H2AMS21
70	240	113-563E2-6000A0	M2AR07S3H2AMS21
100	120	113-56213-6000A0	M2AR10S1M2AMS31
100	240	113-56313-6000A0	M2AR10S3M2AMS31
150	120	113-56263-6000A0	M2AR15S1M2AMS31
150	240	113-56363-6000A0	M2AR15S3M2AMS31
200	120	125-062J3-0000A0	M2AR20S1A2GMS31
200	240	125-063J3-0000A0	M2AR20S3A2GMS31

Lamp Wattage	Primary Voltage	Thomas & Betts	General Electric
Park Type Electrolier			
70	120	Cooper UTR70SR2554	
Decorative Electrolier			
70	120	Sternberg (medium base socket)	

B. Lamps

Each luminaire shall be equipped with a clear high-pressure sodium lamp of the following ANSI Code Number:

Lamp Wattage	ANSI Code No.
70	S62-ME-70
100	S54-SB-100
150	S55-SC-150
200	S66-MN-200

C. Photoelectric Control

Photoelectric control shall conform to Section 86-6.07, "Photoelectric Controls," of the Caltrans Specifications except as modified herein.

All photoelectric control shall be Type IV. A photoelectric unit shall be supplied for each luminaire, connected to the same voltage as the luminaire.

17-03 CONSTRUCTION

17-03.01 General

All Work shall be in compliance with the requirements of the applicable sections of the Caltrans Specifications and the Standard Plans. In case of conflict, the higher requirement shall govern.

All Work and material shall be protected at all times. Pipe openings shall be closed with protective caps during installation and all materials shall be covered and protected against dirt, water and mechanical or other injury. All materials damaged during the course of construction shall be replaced or repaired to original condition by the Contractor.

The Contractor shall not allow or cause any of his Work to be covered up or enclosed until it has been inspected and approved by the Engineer. Should any of the Work be enclosed or covered up before such inspection, the Contractor shall, at his own expense, uncover the Work and, after it has been inspected and approved, make all repairs with such material as may be necessary to restore all Work to its original and proper condition.

17-03.02 Conduits

Excavating and backfilling shall conform to Section 86-2.01, "Excavating and Backfilling," and Section 86-2.02, "Removing and Replacing Improvements," of the Caltrans Specifications except as modified herein. The maximum width of trench shall be eight inches (8"). Trenching shall not occur in street pavement unless otherwise specified. "Initial Backfill" shall be sand. "Subsequent Backfill" shall be native material free of stones, hard pan lumps, broken concrete or paving material. The backfill material shall be brought to the elevation of the bottom of the subbase material of the sidewalk or pavement. Backfill shall be placed in layers not exceeding eight inches (8") in depth and shall be thoroughly tamped in such a manner as to prevent future settlement. Should the Contractor elect to use all sand backfill, the eight-inch (8") layer construction may be omitted and compaction may be obtained by pounding.

A run of conduit installed without conductors and having a bend of ninety degrees (90°) or more shall have installed within the entire run a No. 12 AWG copper pull wire. The ends of all empty conduits shall be capped.

Connections from metal conduit to nonmetallic conduit shall be made at pull boxes or a minimum of four inches (4") inside electrolier foundations so that the connection will be completely covered by concrete.

Cutting and machining of conduit shall be in accordance with manufacturer's recommendations. Preassembly of sections of conduit shall not be permitted except where jacking is required.

When jacking is required, a galvanized metal pipe sleeve conforming to Section 86-2.05, "Conduit," of the Caltrans Specifications of sufficient diameter to contain the conduit shall be jacked across the required distance. The conduit shall then be threaded through the pipe and connected to the conduit system.

Trench-laid conduit installed outside of street pavement shall be placed not less than eighteen inches (18") below the surface of the ground or sidewalk. The conduit shall be laid over two inches (2") of uniformly spread sand. Native material may be used for backfill around and above the conduit.

Trench-laid conduit installed under street pavement shall be placed not less than thirty inches (30") below the pavement surface. The conduit shall be laid over two inches (2") of uniformly spread sand. A minimum of four inches (4") of the same type of material shall be placed over the conduit. The remaining trench may be backfilled with native material up to subgrade.

The minimum cover requirements for trench-laid conduit installed under street pavement may be reduced to eighteen inches (18") if the conduit is backfilled with controlled density fill (CDF). The CDF shall meet the requirements as specified in Section 10, “Trench Excavation, Backfill and Resurfacing,” of these Standard Specifications. CDF shall be placed to three inches (3") below the pavement surface. The top three inches (3") of the trench shall be backfilled with asphalt concrete produced from commercial quality paving asphalt and aggregates. Prior to spreading asphalt concrete, paint binder (tack coat) shall be

applied as specified in these Standard Specifications. Spreading and compacting of asphalt concrete shall be performed by any method which will produce an asphalt concrete surface of uniform smoothness, texture and density.

Conduit installed under street pavement by means of pushing, jacking or boring shall be placed not less than thirty inches (30") below the pavement surface.

17-03.03 Conductors and Wiring

Splicing shall conform to the following methods as specified in Section 86-2.09, "Wiring," of the Caltrans Specifications or approved equal.

Multiple lighting conductors shall only be spliced in pull boxes.

17-03.04 Painting

Failure to comply with any part of the painting specifications shall be sufficient cause for the Engineer to require the Contractor to completely remove all applied coats and reapply required prime and finish coats in accordance with these Standard Specifications.

The Contractor shall provide protective devices such as tarps, screens or covers, as necessary, to protect curb and gutters, glassware, adjacent buildings, parked automobiles, and other property or persons from all cleaning and painting operations. Paint or paint stains, which result in an unsightly appearance on surfaces not designated to be painted, shall be removed or obliterated by the Contractor at his expense and to the satisfaction of the Engineer.

When pole painting is complete, the Contractor shall furnish and install pole identification plates, except on Type "B" streetlight poles. On Type "B" streetlight poles, the Contractor shall furnish and install self-adhesive reflective numbers (white on black) sized two and one-half inch (2-1/2") by one and one-half inch (1-1/2") with one-quarter inch (1/4") spacing between letters/numbers and approved by the Engineer. The Engineer will assign pole identification numbers.

17-03.05 Service Connection

Electrical service installation and materials shall conform to the requirements of the serving utility. Service equipment shall be installed as soon as possible to enable the utility to schedule work well in advance of the completion of the project. Service connections for electroliers served by underground electrical systems will be made at the nearest Pacific Gas and Electric Company secondary box. The Contractor shall provide conduit and wire from the secondary box to the electrolier.

When a circuit serviced from an underground secondary box serves more than one electrolier, the circuit shall be fused at the first pull box from the secondary box. Pull box shall be sized No. 31/2 unless otherwise noted.

The circuit fuse shall be 40-amp for No. 8 AWG wire and shall be installed in an in-line, waterproof holder. Fuses for larger wires will be sized by the Engineer. Both hot legs of 240-volt circuits shall be fused.

Only the one hot leg of 120-volt circuits shall be fused. A ground electrode and ground clamp conforming to Section 86-2.10, "Bonding and Grounding," of the Caltrans Specifications shall be installed in the pull box in which the circuit is fused. The purpose of the ground electrode is to facilitate grounding the circuit when the fuse holder is disconnected, thus eliminating the possibility of energizing the circuit while it is being repaired.

Service connections for electroliers served by overhead electrical systems will be made at a junction box at the base of the service riser pole. The Contractor shall provide the junction box and conduit and wire from the junction box to the nearest electrolier. In all cases where the service is from a riser pole, the Contractor shall install a ground electrode and shall fuse the circuit in this adjacent junction box in accordance with the above requirements. Junction box shall be sized No. 31/2 or larger.

All service connections will be made by Pacific Gas and Electric Company. The Contractor shall bear all costs charged by Pacific Gas and Electric Company for the service connection.

17-03.06 Field Tests

Field tests shall conform to Section 86-2.14, "Testing," of the Caltrans Specifications except as modified herein.

The Contractor shall be responsible for maintaining the lighting system during the functional test period.

17-03.07 Pole Identification Plates

The Engineer will assign pole identification numbers. The Contractor shall furnish and install pole identification plates. The letters/numbers shall be white reflective, Highway Gothic "B", 1-3/4" tall, spaced 5/8" apart. The letters/numbers shall be mounted vertically on 3" x 12" x 0.080 aluminum plates with 1/2" radius corners and 5/16" holes punched 1/2" in from the top and bottom. The color of the plates shall be Bottle Green 3M #7725-276 pressure sensitive for installation on green poles; and black pressure sensitive for installation on black poles.

SECTION 18 STANDARD PARKING STALLS AND REQUIREMENTS

18-01 GENERAL

Standard perpendicular parking space shall be nine feet (9') in width and eighteen (18') feet in length.

Parking spaces shall have a vertical clearance of at least seven feet over the entire area.

The minimum width of a one-way drive aisle shall be twelve (12) feet.

The minimum width of a two-way drive aisle shall be eighteen (18) feet.

Parallel and acute angle parking shall be designed for one-way traffic only, unless otherwise specified by the planning commission.

The following table summarizes parking stall design requirements:

Parking and Drive Aisle Minimum Design Standards for One-Way Drive Aisle				
	Standard Size Stalls (9.00' x 18.00')			
			Bay Width	
Stall Angle	Row Width	Drive Aisle Width	Single Loaded	Double Loaded
0	9.00'	12.00'	21.00'	30.00'
30	16.79'	12.00'	28.79'	45.58'
45	19.09'	12.00'	31.09'	50.18'
60	20.09'	18.00'	38.09'	58.18'
90	18.00'	26.00'	44.00'	62.00'

18-02 MATERIALS

All materials shall be in conformance with sections of these Standard Specifications.

18-03 CONSTRUCTION

18-03.01 Duck-outs

Duck-outs shall be constructed at the locations and to the dimensions shown on the Plans and specified herein.

Contractor shall saw cut existing pavement in a neat line, allowing for approximately two (2) feet of asphalt conform area between existing pavement and concrete gutter. Asphalt conform shall have a minimum section of 4" Class II base course with 2" AC surface course.

Install two foot (2') wide (or match existing) concrete gutter for the length of the duck-out and dowel into existing at each end using two #4 rebars. Concrete gutter shall have a minimum thickness of eight inches (8").

Duck-out slab shall be 6 inches thick with reinforcement, on dobie blocks. The slab shall have a minimum cross slope of 1% towards the concrete gutter.

Width of duck-out shall be approximately six and one half feet (6-1/2').

Length of duck-out shall be a maximum of twenty-four (24) linear feet per car.

Install concrete curb according to Standard Plans.

Root pruning of existing trees shall be as directed by City Arborist or the Engineer.

SECTION 19 ADA PARKING STALLS AND REQUIREMENTS

19-01 GENERAL

Parking stalls for the use of the physically handicapped shall comply with the requirements set forth in Part 2 of Title 24 of the California Administrative Code and Chapter 9 of Division 11 of the Vehicle Code of the state.

The number of handicapped parking stalls shall be provided according to the following, unless drawings or City requirements indicate otherwise:

Total Parking in Lot	Required Accessible Spaces
1 to 25	1
26 to 50	2
51 to 75	3
76 to 100	4
101 to 150	5
151 to 200	6
201 to 300	7
301 to 400	8
401 to 500	9
501 to 1000	2 percent of total
1001 and over	20 plus 1 for each 100 over 1000

Accessible stalls shall be a minimum of nine feet (9') in width and eighteen feet (18') in length. Single stalls shall have an access aisle of eighteen feet (18') long by five feet (5') wide (minimum). Stalls shall conform to the Standard Plans.

One in every eight stalls, and no less than one, shall be designated as Van-Accessible. These stalls shall be served by an access aisle of eighteen feet (18') long by eight feet (8') wide placed opposite the driver's side.

Surface slopes within the accessible parking stalls and access aisles shall be minimized with a maximum allowable slope of two percent (2%), in any direction.

Signage for accessible parking spaces shall conform to Part 2 of Title 24 of the California Administrative Code.

SECTION 20 STORMWATER POLLUTION PREVENTION

20-01 GENERAL

The work shall consist of implementation of measures to achieve conformance with requirements of the municipal stormwater permit. In general, the following goals should be met:

Prohibition of illicit discharge (non-rainwater) into the storm drain system.

Construction of any and all necessary systems to eliminate contaminants from entering the storm water system.

Clean up and control of work site materials, spoils and debris.

Removal of contaminants produced by the project.

The work shall include the provision of all labor, materials, equipment and apparatus not specifically mentioned herein or noted on the plans, but which are incidental and necessary to complete the work specified.

20-01.01 Applicable Publications

National Pollution Discharge Elimination system (NPDES) Permit No. CA0029921.

California Storm Water Best Management Practice Handbooks: Municipal, Industrial/Commercial, Construction Activity.

20-01.02 Quality Assurance

All work performed under contract and all contractors and their associates and/or employees are required to comply with all applicable storm water regulations and to implement Best Management Practices (BMP's) at all times.

A plan shall be submitted for the proposed control of contaminants entering the storm water system. The plan must be approved by the Engineer prior to the commencement of work.

All employees and subcontractors shall be trained on the storm water pollution prevention requirements contained in these specifications.

A supply of spill clean-up materials such as rags or absorbents shall be kept readily accessible on-site.

20-02 MATERIALS

None.

20-03 CONSTRUCTION

20-03.01 Job Site Responsibility

At the end of each working day, all scrap, debris and waste material shall be collected and materials disposed of properly.

Dry, empty paint cans/buckets, old brushes, rollers, rags and drop cloths shall be disposed of in approved waste collection.

Dumpsters shall be inspected for leaks. As leaks are detected, the trash hauling contractor shall be contacted to replace of repair dumpsters that leak.

Water from cleaning dumpsters shall not be discharged on-site.

Regular waste collection shall be arranged for before dumpsters overflow.

20-03.02 Hazardous Material/Waste Management

Designated areas of the project site shall be proposed by the Contractor for approval by the Engineer suitable for material delivery, storage and waste collection as far from catch basins, gutters, drainage courses and creeks as possible.

All hazardous materials such as pesticides, paints, thinners, solvents and fuels; and all hazardous wastes such as waste oil and antifreeze shall be labeled and stored in accordance with State and Federal regulations, on a paved impervious surface within a secondary containment.

All hazardous materials and all hazardous wastes shall be stored in accordance with secondary containment regulations. These materials and wastes shall be covered to avoid potential management of collected rain water as a hazardous waste.

The Contractor shall dispose of all excess thinners, solvents, chemicals, oil-based and water-based paint as hazardous waste.

Regular hazardous waste collection shall be arranged to comply with time limits on the storage of hazardous wastes.

Granular materials shall be stored a minimum of ten feet from the closest catch basin and curb return. They are not allowed to be stockpiled on the roadway. The Contractor shall not allow these granular materials to enter any storm drain or creek. Stockpiles of raw material must be covered and contained in a manner that will prevent stormwater from running into the covered piles. The covers must be in place at all times when work with the stockpiles is not occurring.

Warning signs shall be posted in areas containing or treated with chemicals.

An accurate up-to-date inventory, including Material Safety Data Sheets (MSDS) of hazardous wastes stored on site shall be kept and available to assist emergency response personnel in the event of a hazardous materials incident.

Maintenance and fueling of vehicles and equipment shall be performed in a designated, bermed area, or over a drip pan that will not allow run-off of spills. Vehicles and equipment shall be regularly checked and have leaks repaired promptly. Secondary containment shall be used to catch leaks or spills any time that vehicle or equipment fluids are dispensed, changed or poured.

20-03.03 Chemical Usage

When rain is forecast within 24 hours, or during wet weather, the Engineer may prevent the Contractor from applying chemicals in outside areas.

Pesticides or fertilizers shall not be over-applied and material manufacturer's instructions shall be followed regarding uses, protective equipment, ventilation, flammability and mixing of chemicals. Over-application of a pesticide constitutes a "label violation" subject to an enforcement action by the San Mateo County Agriculture Commissioner.

20-03.04 Dust Control

Reclaimed water shall be used to control dust on a daily basis as directed by the Engineer.

At the end of each working day, or as directed by the Engineer, the roadways and on-site paved areas shall be cleaned and swept of all materials attributed to or involved in the work. Streets shall not be washed down into a storm drain or creek in lieu of street sweeping. Water wash may be picked up by a vacuum unit in lieu of sweeping.

20-03.05 Sawcutting

The Contractor shall cover or barricade catch basins using control measures such as filter fabric, straw bales, sand bags and fine earthen dams to keep slurry out of the storm drain system. The Contractor shall ensure that the entire opening is sealed.

Sawcutting debris and spoils be removed by shovel, absorption, vacuum or pick up of waste prior to moving to the next location or at the end of each working day, whichever is sooner.

If slurry enters a catch basin, the slurry shall be removed from the storm drain immediately.

20-03.06 Watering Operations

Water shall be routed through a control measure as determined and approved by the Engineer such as a sediment trap, sediment basin or Baker tank to remove

settleable solids prior to discharge to the storm drain system. Filtration of the water following the control measure may be required on a case-by-case basis.

The filtered water shall be reused for other purposes such as dust control or irrigation to the extent possible.

If the project is within an area of known groundwater contamination, the water from dewatering operations shall be tested prior to discharge. If the water meets the Regional Water Quality Control Board standards, it may be discharged into the storm drain. With South Bay System Authority (SBSA) permit, water may be discharged into the sanitary sewer. Otherwise, the water shall be treated and hauled off-site for proper disposal.

20-03.07 Concrete Grout and Mortar Waste Management

Concrete, grout and mortar shall be stored away from the drainage areas and ensure that these materials do not enter the storm drain system.

Concrete trucks shall not be washed out into streets, gutters, storm drains, drainage channels or creeks.

Concrete trucks and equipment shall be washed out off-site or in a designated area on-site where the water will flow onto dirt or into a temporary pit or bermed area. The water shall percolate into the soil and the hardened concrete placed in a waste container for disposal. If a suitable soil or bermed area is not available on-site, the wash water shall be collected and removed off-site and disposed of properly.

Water created by the washing of exposed aggregate concrete finish shall be collected in a suitable dirt area or filtered through straw bales or equivalent material before entering the storm drain system. Sweepings from exposed aggregate finish shall be collected and disposed of in a waste container or removed off-site and disposed of properly.

20-03.08 Paving Operations

Catch basins and manholes shall be covered when paving or applying seal coat, tack coat or slurry seal.

The Engineer may direct the Contractor to protect drainage courses by using control measures such as earth dike, straw bale and sand bag to divert run-off or trap filter sediment.

Excess sand (placed as part of a sand seal or to absorb excess oil) shall not be swept or washed down into gutters, storm drains or creeks. The sand shall be collected and returned to the stockpile or disposed of in a trash container or hauled to an approved dump site. Water shall not be used to wash down fresh asphalt concrete.

20-03.09 Painting

The cleaning of painting equipment and tools shall be performed in a designated area that will not enter the gutters, storm drains or creeks.

Excess paint shall be removed from brushes, rollers and equipment prior to cleanup.

Wash water from aqueous cleaning of water-based paint tools and equipment shall be disposed of in a sanitary sewer or onto a designated dirt area.

Paint thinners and solvents from oil-based paints shall be filtered and re-used when possible. Waste sludge, thinner and solvent from cleaning tools and equipment shall be disposed of as a hazardous waste.

20-03.10 Site Cleanup

The cleaning of equipment of materials shall not be performed on-site or in the street using soaps, solvents, degreasers, steam cleaning or equivalent methods.

All cleanup must be performed in a designated area that will not allow the cleaning rinse to flow off-site or into streets, gutters, storm drains, or creeks.

SECTION 21 STREET TREES

21-01 GENERAL

This work shall consist of furnishing and installing street trees in accordance with the Plans and these Standard Specifications.

21-02 MATERIALS

21-02.01 Trees

Trees shall be well-established, fifteen (15) gallon size, nursery stock, measuring a minimum of six feet (6') in height. The type of tree shall be shown on the Plans. In the event the trees specified are not available, it shall be the Contractor's responsibility to obtain a substitute that has been approved by the Engineer.

All trees shall have a growth habit that is normal to the species, have straight trunks with a single leader intact, be uniform in size, be sound, healthy, vigorous and free from insect pests, plant disease, sun scald, fresh abrasions of the bark, excessive healed abrasions, broken branches and other objectionable disfigurements. Tree trunks shall be sturdy and well hardened off. All trees shall have normally well developed branch systems, where applicable. All trees shall have vigorous and fibrous root systems that are neither root nor container bound, nor so recently canned that the root system is not developed throughout the container.

Random samples of the trees will be closely inspected upon delivery before being accepted. All trees not meeting the above standards will be rejected. If any rootbound trees are found, the Contractor will be required to open all cans for inspection or the entire lot will be rejected. It is the Contractor's responsibility to schedule this inspection prior to planting.

21-02.02 Stakes

Stakes shall be Lodge-Pole pine, clear redwood, or equivalent, 2" x 2" x 10' or two inch (2") diameter by ten foot (10') pressure-treated C.C.A.

21-02.03 Tree Ties

Tree ties shall be one and one-half inch (1-1/2") rubber tree straps with a No. 14 gauge wire tied to both ends, or equivalent approved by the Engineer.

21-02.04 Backfill Mix

Backfill mix shall consist of one-third (1/3) Nitrohumus, one-third (1/3) Olympia bend sand and one-third (1/3) native soil. Contractor shall furnish vendor's tags or invoices as to material.

21-02.05 Slow-Release Fertilizer

Agriform tree pellets, Osmocote 18-6-12, or approved equivalent.

21-02.06 Root Barriers and Root Shields

Deep root control planter, or approved equivalent.

21-03 CONSTRUCTION

21-03.01 Installation of New Trees

Dig holes twice as large in diameter and one and one-fourth (1-1/4) times as deep as container in which plant was delivered and scarify sides of holes. Build six inch (6") berm of native soil.

Fill hole with one hundred percent (100%) backfill mix to level appropriate to allow the plant's soil level to be slightly above finished grade.

Install root barrier, drain pipe, or both, as necessary.

Remove root ball carefully from container by supporting it from below. Sever any circling roots (3/16" diameter or greater) with sharp shears or knife, rootbound trees shall be rejected. Do not pull root ball apart. The severing of large roots will encourage new growth at cuts.

Fill half way with backfill and put slow release fertilizer on this surface, use three (3) Agriform tree pellets, one-quarter (1/4) pound Osmocote 18-6-12, or approved equivalent per 15-gallon tree. Continue to fill hole with backfill and tamp.

Water tree thoroughly, fill basin and allow water to settle; repeat this process two (2) more times.

Install stakes. Secure tree using specified tree ties.

Attach "Tree Care" tag provided by City.

Add a two-inch (2") layer of medium-size redwood chips.

21-03.02 Protection of Existing Trees During Construction Activities

All existing significant trees and designated trees on the job site require protection from construction activities within the drip lines. Temporary chain-link fencing and plastic construction fence are acceptable as protective barriers for tree protection purposes. Fencing shall be minimum five feet (5') high. Tree protection shall remain in place until all construction is complete. The City reserves the right to issue a stop-work notice if the tree protection devices are not installed of if the devices are not maintained.

No excavations within the tree protection area are allowed unless approved by the City and under the supervision of a licensed arborist. Any filling within the tree protection area shall be done in accordance with a detailed improvement plan approved by the City. No trimming, cutting or pruning of designated trees can occur without approval by the City and supervision of a licensed arborist.

No storage of materials; disposal of paints, solvents or other noxious materials; operation of equipment, parked cars, unnecessary trenching, grading or compaction shall be allowed within the drip line of any trees.

21-03.03 Removal of Tree Roots Encountered During Construction Activities

Cutting and removal of roots smaller than two inches (2") in diameter shall be done by chain saw or hand saw to provide a flat and smooth cut and cause the least damage possible to the root and tree's health. Cutting roots by means of tractor-type equipment or other than chain saws and hand saws will not be permitted. Proper pruning technique shall encourage callusing of the roots. Root cutting and removal shall not exceed thirty-five percent (35%) of total root surface. The Contractor shall remove any wood chips or debris that may be left over from root removal that may affect the construction of improvements as directed by the Engineer.

If any roots over two inches (2") in diameter are severed during any excavation, the following procedure shall be followed:

1. Tree roots shall be shaded by immediately covering the entire trench with plywood, or by covering the sides of the trench with burlap sheeting that is kept moist with twice-a-day wettings.

2. When ready to backfill, each root shall be severed cleanly with a handsaw. Where practical, they should be cut back to a side root. Immediately, a plastic bag shall be placed over the fresh cut, and secured with a rubber band or electrical tape. Shading should immediately be placed until backfilling occurs.

3. Plastic bags shall be removed prior to backfilling. Backfill shall be clean, native material free of debris, gravel or wood chips.

If roots three inches (3") in diameter, or larger, are encountered during excavation, Contractor shall contact the Engineer’s inspector immediately and request a field inspection by the Engineer and the City Tree Supervisor, or their designated representatives, and obtain instruction as to how the roots should be treated. No roots three inches (3") in diameter, or larger, shall be cut and removed without prior approval from the Engineer or designated representatives. Failure to notify the Engineer for root inspection will result in the Contractor paying for damages and/or replacing the damaged tree as determined by the Engineer.

21-03.04 Maintenance

All new trees installed shall be maintained for a minimum period of ninety (90) days after the last tree is planted and installation is approved by the Engineer. Said period shall not be shortened by the acceptance by the City of the balance of the street improvement construction. Should this period expire before final acceptance of the project by the City, maintenance shall continue to said acceptance.

During the maintenance period, all trees that die or that are in an unhealthy condition will be replaced. This shall be done just as soon as it is reasonably possible after the unsatisfactory condition is evident, and shall not be postponed until the end of the maintenance period.

At the conclusion of the maintenance period, an inspection of the Work will be made to determine maintenance work needed to be done and to determine the condition of all trees. Any trees missing or not in a healthy condition will be noted and these trees are to be removed from the site and replaced. Any deficiencies in maintenance shall be corrected. Replacement of trees shall be made promptly and in the same manner as specified in the original planting and at no extra cost to the City. The maintenance period for any replacement trees will extend a full ninety (90) days.

SECTION 22 SEWER SYSTEM ROOT FOAMING

22-01 GENERAL

This section covers the work necessary to apply a chemical root control agent designed specifically to kill the root growth present in the lines and to inhibit root re-growth and sewer line intrusion without permanently damaging the vegetation producing the roots and without disrupting water treatment plant processes. These specifications represent **minimum** requirements and the Contractor shall abide by any manufacturer specifications that exceed these specifications.

22-01.01 Contractor Submittals

Submittals shall be submitted to the Engineer within 10 calendar days after issuance of the Notice to Proceed. The Engineer must approve all submittals prior to the start of construction. Required submittals are as follows:

A. Specimen/Chemical Root Control Agent labels with Material Safety Data Sheets.

B. Pollution Liability Insurance Certificate.

C. Contractor qualifications including all related pesticide licenses and certifications.

D. List of references, (minimum of 3 all from different jobs).

E. Contractor's Federal DOT number.

F. Evidence that the Contractor and all his subcontractors have obtained pollution liability coverage.

G. Traffic Control Plan including shop drawings and signage in accordance with MUTCD guidelines.

H. Written approval from Palo Alto RWPCP to use proposed root foaming material.

All submittals shall identify the specification(s) they address.

22-01.02 Water Treatment Plant Protection

The Contractor shall take all steps necessary and appropriate to prevent adverse effects on the Palo Alto Regional Water Pollution Control Plant (RWPCP). Introduction of any materials into the RWPCP must be with the written approval of the RWPCP operator. The Contractor shall obtain all necessary permits from Palo Alto RWPCP. The Engineer has the right at any time to limit or stop chemical application in order to safeguard RWPCP processes. The Contractor shall provide the date and time of all intended work, name and telephone number of the Contractor’s onsite supervisor, and provide any additional information requested by either the RWPCP operator or the Engineer.

The Contractor shall maintain daily communication with the RWPCP operator to assure that no adverse effects on RWPCP operations results from Contractor's work.

The Contractor shall be financially responsible for any adverse effect on RWPCP processes directly or indirectly caused by chemical application, including but not limited to damages to plant processes or equipment, clean-up and restoration costs, fines imposed by State or Federal agencies, pollution of receiving waters, and civil suits. The Contractor shall further indemnify and hold harmless the City, and the operator of the wastewater treatment plant, against all costs, including legal expenses, relating to treatment plant failure or other damages or pollution caused, directly or indirectly, by the applications of chemicals by the Contractor.

22-01.03 Compliance with Transportation Laws

The Contractor is directed to ensure compliance with all USDOT regulations relative to commercial vehicle numbering, place carding and registration; driver licensing, driver drug testing, and record keeping; and all other pertinent requirements contained in Federal Motor Carrier Safety Regulations. The Contractor's Federal DOT number, if required, must be submitted.

22-01.04 Pollution Liability Insurance

The Pollution Liability Insurance described herein is in addition to all other insurance required of the Contractor by the Engineer, including any insurance described in the general conditions, any insurance required by law, or any other insurance requested by the Engineer. The Contractor's commercial general liability limits must include pesticide or herbicide applicator coverage. Nothing contained in this section shall be construed as limiting the extent of the Contractor's responsibility for payment of damages resulting from his operations under the contract.

22-01.05 Contractor Qualifications

The Contractor must demonstrate a minimum level of 3 years direct experience in applying chemical sewer root control of the type specified herein. The Contractor must have performed similar jobs in size and scope to the work specified herein, and have treated in excess of 250,000 linear feet of sanitary sewer with its own personnel. Any work performed by subcontractors for the Contractor will not be considered. The Contractor must be licensed as a pesticide application business with the California Department of Pesticide Regulation prior to submitting a bid proposal. The Contractor must employ a State Certified pesticide applicator on the job site at all times.

Certified Pesticide Applicators licensed with the California Department of Pesticide Regulation shall perform all work. Certified Pesticide Applicators shall have a minimum three years experience in performing the type of work specified.

22-01.06 Project Documentation

Upon completion of the project and accompanying the final invoice, or whenever requested to by the Engineer, the Contractor shall submit log sheets and reports which show, as a minimum, the following information:

- the report date,
- the date each given sewer line was treated,
- street name for each given sewer line,
- a description (manhole numbers, house numbers, cross streets, etc.), which will enable the Engineer to accurately identify the exact location of each sewer line,
- the pipe size for each given sewer line,
- the length (manhole to manhole) for each given sewer line,
- quantity of chemicals used on each sewer line,
- special conditions found by the Contractor's crew,
- the date for each sewer line when the guarantee expires.

At the completion of the job the Contractor will submit a complete set of reports sorted by location.

22-01.07 Substitutes and Proven Equivalents

Should the Contractor wish to use any brand of material other than as specified herein, he shall submit to the Engineer for review and approval, complete descriptive literature naming the proposed substitution and manufacturer, as set forth in the Special Provision Section.

22-01.08 Access to Manholes

The Contractor shall be responsible for determining which manholes are not accessible to his vehicular equipment and shall plan his root foaming operations accordingly. No additional compensation will be allowed for pipe sections without direct vehicular access. In the event a specific pipe section is inaccessible to the extent beyond specified hose lengths for root foaming, the City will consider deleting this pipe section from the contract.

22-01.09 Notification

The Contractor shall provide 48-hour notices to the City's Maintenance Department prior to starting work on any portion of the contract. In the event that a problem arises with the root foaming operations, or there is a problem with any of the existing sewer lines, the Contractor shall notify the Maintenance Department immediately and report the problem.

22-01.10 Use of City's Municipal Service Center for Operations Base

The Contractor will not be permitted to use the City of Los Altos Municipal Service Center as a base of operations for the sewer root foaming operations.

22-02 MATERIALS

The chemical sewer root control treatment consists of root killing and root re-growth inhibition. The chemical root control agent shall be registered with the EPA and the State Pesticide Regulatory Agency, and shall be labeled for use in sewers to control tree roots. Only materials whose label instructions conform to these specifications shall be accepted. All application procedures must be in strict conformance with these specifications and label instructions. Use of any root control herbicide in a manner inconsistent with labeled instructions is a violation of Federal law. Chemicals intended, to be poured down, or blown into, the sewer lines as a dust, shall not be allowed. The active ingredient shall not adversely affect the performance of the wastewater treatment plant when applied properly in accordance with manufacturer's recommendations. Materials shall be non-volatile in order to minimize exposure to collections system workers, treatment plant operators and homeowners through inhalation. Compounds containing copper and/or other known priority pollutants, as defined by the Federal EPA, shall be disallowed.

22-02.01 Ingredients

A. Inert Ingredients

The root control material shall be formulated with foaming agents and surfactants sufficient to produce a stable, small bubble, dense foam capable of sustaining its shape and thus remaining on the treated roots. The foaming surfactants shall strip grease that typically clings to sewer root masses.

B. Root Killing Agent

The active component for destroying intruding roots in sanitary sewer lines shall be a potent, non-systemic toxin which kills contacted roots at low concentrations but which will not permanently affect parts of the plant distant from the treated roots. The active ingredient must be spontaneously detoxified by a natural chemical or biochemical process in a relatively short interval following its use.

C. Root Re-Growth Inhibitor

The active ingredient for inhibiting re-growth of root intrusions in sanitary sewer lines shall inhibit root cell growth on contact, but shall not be transported so as to damage other portions of the parent plant. The material shall bind firmly to the soil in the vicinity of openings in pipe joints so as to form a persistent chemical barrier suppressing the growth of root tips. The material shall be sufficiently stable under the conditions of use to provide protection for twelve months or longer, but shall be subject to decomposition in wastewater treatment plants without disturbing the treatment plant processes. A specimen product label(s) and Material Safety Data Sheets shall be submitted.

22-02.02 Equipment

The equipment used shall discharge foam at sufficient pressure as to force foam up connecting lateral sewers approximately 5 feet in small diameter pipe. In no case shall chemical agents reach the home or businesses.

22-03 CONSTRUCTION

Sewer pipe cannot be treated effectively when surcharging flow conditions exist. If a surcharging condition exists on a sewer to be treated (i.e., flow depth is greater than 30% of the pipe diameter), the Contractor will return to treat that sewer when the flow is normalized. The Contractor is responsible for monitoring weather to ensure that lines are not treated when the possibility of surcharging due to inflow and infiltration exist. If a sewer surcharges within a 12-hour period after a treatment has been made, the Contractor is will be required to retreat that section of sewer at the Contractor 's expense if the surcharging is a result of Contractor activities or inflow and infiltration resulting from wet weather.

22-03.01 Applications

Application of the chemical root control agent shall be by foaming in accordance with the best-recommended practice for conditions present in the line under treatment. All foaming procedures shall be in strict accordance with the instructions on the container label.

A foam discharge hose shall be inserted throughout the entire length of the sewer section to be treated. Acceptable methods of conveying the foam discharge hose through the sewer section are: 1) manually or mechanically inserting or shoving the foam discharge hose through the section, or 2) floating a rope through the sewer section and using the rope to pull the foam discharge hose into the section.

The foam shall be pumped under sufficient pressure to assure that the entire sewer section is completely filled with foam, and to assure that the foam passes through lateral pipe connections to a distance of 5 feet in small diameter pipe. Sewer service to homeowners shall not be interrupted nor shall chemical agents reach the home or business. The Contractor must beware that excessive discharge pressure, and/or excessive quantities of material may cause foam to enter houses, or travel up forward clean-outs onto lawns.

Hose retrieval rates must be timed to evenly distribute the full quantity of foam throughout the entire area of treatment.

When required to enter or work within a manhole, the Contractor’s employees and subcontractors shall in addition to abiding by the confined space regulations/ requirements of OSHA shall also abide by any requirements spelled out by either the container label or the specimen/chemical control root agent’s manufacturers requirements. This would include meeting the minimum protective clothing requirements and/or wearing air line breathing apparatus.

22-03.02 Contractor Responsibilities

Execute all work in a manner such that injury or damage to any person, animal, structure, service, property, crop or vegetation shall be avoided.

Provide all necessary equipment and barricades to prevent pets, children, and unauthorized persons from gaining access to the site of the work. Provide adequate protection for his employees engaged in the handling, mixing, and distribution of the chemicals and ensure all the employees correctly wear such protection.

Should any chemical root control agent spill on the ground, the chemical and affected soil shall be removed and safely disposed of in accordance to the State and Federal regulations pertaining thereto. The Contractor shall handle all spills in accordance with the appropriate Material Safety Data (M.S.D.) sheets and shall have on site materials and equipment to contain and handle spills. The area shall be restored to a condition equal to or better than before the spill.

Prevent all chemical agents from reaching homes and businesses along the sewers cleaning route. The Contractor shall also be accountable for any damage or death to trees, shrubs, lawns, crops and gardens that is attributable to the chemicals used in the process. Should the Contractor, or his employees or agents cause any damage to public or private property, the Contractor will be required to make repairs immediately.

Respect the rights of property owners, and inform the private property owner before entering the property.

Placing proper traffic warning devices to protect the specific job site, and to prevent accidents or personal injury to the public. The Contractor shall take safe traffic control measures as conditions dictate or when so directed by the Engineer. Some line sections may be located in heavy traffic areas.

Keep complete, accurate records of each day's operation. Records shall show date of treatment, sections of line treated, pipe size and distance, amounts of chemicals placed in the lines, and any other pertinent information. Log sheets shall be submitted with the invoice.

Ensure that chemicals are handled in accordance with manufacturer’s recommendations, standard practices and appropriate statutory requirements, and that all precautions are then taken to avoid spillages.

Be responsible for obtaining permits and meters from the local water company for water supply and paying for all water usage. See the Special Provisions Section of these specifications for the name and phone number of the local water company.

22-03.03 Guarantee

For each sewer section (manhole-to-manhole) that is treated under the Contract, the Contractor shall guarantee the work for a minimum of two years as follows. At the option of the Owner, the Contractor shall, at his own expense, **re-treat a sewer section, or refund 100% of the payment received to treat that section,** in the event that: (1) live roots are found in the section within six months after the application; or, (2) the section plugs up and floods due to tree root obstructions within a period of two years, beginning on the date of treatment, and ending two years after the date of treatment. Re-treatments, performed at no charge in honor of the guarantee, do not extend the expiration date of the guarantee.

The guarantee applies to sewer stoppages caused by live tree roots. It does not apply to stoppages caused by grease or other foreign matter; flat, collapsed or deformed pipe; or flooding caused by a surcharged or plugged sewer section downstream from a guaranteed sewer section. This guarantee applies to main line sewers only. The Contractor is not responsible for any damages caused by main line sewer stoppages, regardless of cause. The decision of the City as to the cause of a stoppage is binding.

SECTION 23 SEWER SYSTEM TV INSPECTION

23-01 GENERAL

The work to be done consists of furnishing all labor, materials, methods or processes, implements, tools, machinery and equipment required to clean and to televise various sanitary sewer lines through the City. The purpose of the sewer cleaning and television inspection is to determine needed repairs, maintenance practice, and general condition of the sewer lines.

23-01.01 Use of City's Municipal Service Center for Operations Base

The Contractor will not be permitted to use the City of Los Altos Municipal Service Center as a base of operations for the sewer TV Inspection operations.

23-01.02 Advance Work to be done by City

An inspection to locate all manholes at the work sites will be made by the City forces in advance of the sewer cleaning operations of the contractor. In the event sewer manholes are buried, covered or otherwise not visible, the city will take the necessary steps to expose the manhole for access by the contractor. In the event an individual manhole cannot be located, the contractor will be directed to work on the pipe section from other available adjacent manholes. In the event of two consecutive manholes cannot be located, the pipe section between the 2 subject manhole will be deleted from the contract. The contractor will receive no compensation for any pipe section deleted from the contract. The contractor will not be responsible for uncovering or exposing manholes

23-01.03 Access to Manholes

Some of the manholes to be used on this project may not be directly accessible by trucks or other vehicles. The contractor shall be responsible for determining which manholes are not accessible to his/her vehicular equipment and shall plan his/her cleaning and televising operations accordingly. No additional compensation will be allowed for pipe sections without direct vehicular access. In addition, some manholes are not accessible at all. These manholes are noted on the detailed maps. In the event a specific pipe section is inaccessible to the extent beyond specified hose lengths for cleaning and specified cable lengths for televising, the City will consider deleting this pipe section from the contract.

23-01.04 Notification

In the event that a problem arises with the TV Inspection operations, or there is a problem with any of the existing sewer lines, the Contractor shall notify the Engineer immediately and report the problem.

23-02 MATERIALS

None

23-03 CONSTRUCTION

23-03.01 Sewer line Cleaning

23-03.01.01 General

The designated pipe shall be cleaned using high-velocity jet (hydro-cleaning) equipment. The contractor shall submit a work plan for review and approval by the City. This work plan shall outline the equipment and methods selected for this project. The equipment shall be capable of removing dirt, grease, roots, rock, sand and other material and obstructions from the sewer lines and manholes. Other types of cleaning and/or repairs will be performed by the City and will not be the responsibility of the contractor.

The intent of sewer line cleaning is to remove foreign materials from lines and restore the sewer to a minimum of 95% of the original carrying capacity. It is recognized that there may be some conditions such as broken pipe and blockages that prevent cleaning from being accomplished, or where additional damage would result if cleaning were attempted or continued. Should such conditions be encountered, the Contractor shall discontinue cleaning operations and notify the City immediately of such problems. Contractor will not be required to work on those specific sections until repair or cleaning with other types of equipment is performed by the City or the section may be deleted from the project. If, in the course of normal cleaning operations, damage does result from pre-existing and unforeseen conditions such as broken pipe, the Contractor will not be held responsible.

The cleaning shall be accomplished with four passes with the hydroflusher. If cleaning of an entire section cannot be successfully performed from one manhole, the equipment shall be set up on the next adjacent manhole and cleaning again attempted. If, again, successful cleaning cannot be performed or the equipment fails to traverse the entire pipe section, it will be assumed that a major blockage exists and the cleaning effort shall be abandoned.

23-03.01.02 Equipment

All high-velocity sewer cleaning equipment shall be constructed for ease and safety of operation. The equipment shall have a selection of two or more high-velocity nozzles. The nozzles shall be capable of producing a scouring action from 15 to 45 degrees in all size lines designated to be cleaned. Equipment shall also include a high-velocity gun for washing and scouring manhole walls and floors. The gun shall be capable of producing flows from a fine spray to a solid stream. The equipment shall carry its own water tank, auxiliary engines, pump

and hydraulically driven hose reel. The equipment shall have an operation length of at least 600 feet.

23-03.01.03 Cleaning Precautions

During work operations, satisfactory precautions shall be taken by the contractor to prevent damage caused by flooding.

23-03.01.04 Water Use for Cleaning

The contractor shall be responsible for all cost for obtaining water. The contractor shall make necessary arrangements with California Water Service Company, 650-917-0152 for work within the City of Los Altos to rent a potable fire hydrant water meter. The contractor shall comply with all regulations of the California Water Service regarding the use of their facilities.

23-03.01.05 Material Removal

All sludge. Dirt, sand, rock, grease, and other solid or semi-solid material resulting from the cleaning operation shall be removed at the downstream manhole of the section being cleaned. Passing material from manhole section to manhole section, which could cause line stoppages or damage pumping equipment, will not be permitted.

23-03.01.06 Documentation

The contractor shall document cleaning effort on written Cleaning Records for each line cleaned. Information recorded shall include estimates of quantity of water used in the cleaning operation, type and estimated quantity of material removed from the line (i.e.; grease, roots, debris, rocks), and special circumstances encountered (such as blockages). These logs shall be submitted to the City weekly.

23-03.01.07 Disposal of Material

All solids or semi-solids resulting from the cleaning operation shall be removed from the site and disposed of at the City of Los Altos Municipal Service Center, located at 707 Fremont Ave. The contractor shall coordinate with the Engineer's inspector regarding disposal method and operations. All material shall be removed from the work site no less frequently than at the end of each workday. Under no circumstances will the Contractor be allowed to accumulate debris on the site or the work beyond the stated time.

23-03.01.08 Final Approval of Cleaning

Final approval of sewer line cleaning shall be made by the Engineer upon the successful completion of the television inspection of each pipe section and shall be to the satisfaction of the Engineer. If the television inspection shows the cleaning to be unsatisfactory (except in sections needing repairs or additional

cleaning methods), the Contractor shall be required to re-clean and to re-inspect the sewer line at no additional cost to the City.

23-03.02 Television Inspection

23-03.02.01 General

Contractor shall have certification from the Pipeline Assessment Certification Program (PACP).

23-03.02.02 Equipment

Video equipment shall include a multi-angle television camera capable of spanning 360-degrees circumference and 270-degrees on horizontal axis to televise sewer lines that are lined, 6-inch diameter or larger; the purpose of the rotating head camera is to view all service connections, upstream and downstream manhole structures, and to locate all defects, as well as questionable problem areas; focal distance shall be adjustable through a range of one (1) inch to infinity. The television camera shall be color format and specifically designed and constructed for operation in connection with sewer inspection and for operation in sewers under 100% humidity conditions. Lighting and camera quality shall produce a clear, in-focus picture of the entire periphery of the pipe for a minimum distance of six feet. Other required equipment are television monitor, cables, power sources, lights, and other equipment necessary to do the work.

23-03.02.03 Software

The Contractor shall use CCTV inspection software that is PACP certified which assure that the software can be used to export a database of all inspection and defect details that conform to the NASSCO PACP database standards. The electronic copy of the data collected shall be in a Microsoft Access format and such that the video and audio can be viewed by using Microsoft media player. Inspection recording shall be archived in a hard drive format.

The Contractor shall have all operators who are responsible for making observation and recording defects into the data collection software and databases successfully trained and certified through NASSCO's PACP. Prof of NASSCO certification will be required prior to project initiation.

23-03.02.04 Televising Procedure

Television inspection shall be performed with a closed-circuit color television system and in accordance with the National Association of Service Companies' (NASSCO'S) Pipeline Assessment Certification Program (PACP). The inspection shall be done one pipe section at a time. The intent of the television inspection is to document the condition of each sewer main. The television inspection logs and video recordings submitted to the City shall accurately describe in detail the condition and location of each pipe section inspected. The television inspection shall be made within 72 hours of the cleaning provided as part of this contract. If entrance is required into a manhole, the Contractor must obtain an entrance

permit from the City prior to entering any manhole. Contractor must follow all City and OSHA requirement for confined space when entering any manhole. If televising of an entire section cannot be successfully performed down stream from one manhole, the equipment shall be set up at the downstream manhole and televising again attempted going upstream. If, again, successful televising cannot be performed or the equipment fails to traverse the entire pipe section which can not be attributed to improper cleaning, it will be assumed that a major blockage exists and the televising effort shall be abandoned and the City shall immediately be notified.

Depth of flow shall not exceed twenty percent (20%) of the inside pipe diameter as measured in the manhole when performing video inspection. In the event the depth of flow of the reach being televised exceeds twenty percent (20%) of the inside pipe diameter, the Contractor shall provide the necessary flow control or reschedule the inspection for a time when such flow is reduced to permit proceeding with the work. If nighttime work is necessary, the Contractor shall obtain an approval from the Engineer.

The camera shall be moved through the pipeline in either direction at a uniform rate, stopping when necessary to ensure proper documentation of the sewer's condition. In no case shall the television camera be pulled or propelled at a speed greater than thirty (30) feet per minute. The camera height shall be adjusted such that the camera lens is always centered in the pipe being inspected. The equipment shall have an accurate footage counter, which shall display on the monitor the exact distance of the camera from the centerline of the starting manhole. Unless otherwise approved by the Engineer, footage measurements shall begin at the centerline of the upstream manhole.

It shall be the contractor’s responsibility to ensure that the camera and other equipment will be accessible for use in the manholes. Any modification of manhole based will be allowed only at the discretion and approval of the Engineer and manhole shall be restored to their original condition or as approved by the Engineer. It shall also be the responsibility of the Contractor to retrieve the camera unit at no additional expense to the City should it become lodged in the pipe.

When manually operated winches are used to pull the television camera through the line, telephones, two-way radios or other suitable means of communication shall be set up between the two manholes of the section being inspected to insure proper communications between members of the crew.

The importance of accurate distance measurements is emphasized. Marking on the cable, or the like which requires interpolation for depth of manhole, will not be allowed. Accuracy of the distance meter shall be checked by use of a walking meter, roll-a-tape, or other suitable device, and the accuracy shall be to the satisfaction of the City. Continuous measurement shall also be shown on the videotape.

23-03.02.05 Documentation

A sample of the video and supporting documentation matching the requirements of this contract shall be provided by the contractor for approval prior to beginning of work. Contractor is at risk if inspection work is conducted prior to approval of this submittal.

23-03.02.05.01 Video

Video recording shall supply a visual and audio record of the information contained in the inspection logs as described below. The date, identification of sewer reach(es) by upstream and downstream manhole numbers, and manhole to manhole footage shall be displayed on the video data view at all times. Each recording shall be permanently labeled with the Contractor's name, date televised, project name, street name(s), identification of the sewer reach(es) inspected, and run number. The audio portion of the recordings shall be in English and intelligible in its entirety. If the recordings have any errors or are of such poor quality that the Engineer is unable to evaluate the condition of the sewer, locate sewer service connections, or verify cleaning, the Contractor shall re-televise the sanitary sewer and provide a new recording of good quality at no cost to the City. No payment will be made for recordings that do not meet the requirements of these specifications. The contractor shall maintain copies of the written logs until the City accepts the project.

23-03.02.05.02 Digital Picture

A picture of each noted defect shall be provided. Pictures shall be in a .jpg format and a copy of the .jpg shall be print on the respective video logs. An electronic copy shall be submitted with the video.

23-03.02.05.03 Video Logs

The Contractor shall keep printed location records for each pipe section inspected. The logs will clearly show the location of points of significance, as discussed below, in the sewer line of relation to the manhole and the depth of the pipe below the ground. Distance will be measured from the center of each manhole.

Points of significance to locate in the sewer lines include: broken/cracked pipes, root intrusions, infiltration points, presence of scale and corrosion, obstructions, offset or separated pipes/joints, protruding or separated laterals, sags in the line, or any other unusual conditions. All points of significance shall be rated as to the severity of the problem (light, medium, and severe). The Contract shall use the standard PACP defect rating system for each segment. In addition, all building laterals on the logs and videotape.

Each record shall accurately describe the above ground location of the section including the sewer line location numbers (as identified in these specifications), street name (s), direction traveled (upstream, downstream), direction of flow, adjoining house numbers, any other landmarks that will clearly and quickly

identify the section, pipe line material, pipe size, pipe length, lateral connection location, and a detailed logging of defects encountered. A sketch identifying the line segment shall be included on each log. In addition, the date of inspection, operator of equipment and name of firm shall be recorded on each log.

Video inspection logs furnished by the Contractor shall be typed or printed as a computerized report and shall have NASSCO's PACP ratings for each segment of sanitary sewer pipe which must include the quick structural rating (QSR), structural pipe rating (SPR) and structural pipe rating index (SPRI). These logs shall be submitted to the City on a weekly basis. The Contractor shall submit a sample copy for approval. The Contractor shall submit a complete printed set of the logs at the conclusion of the project.

23-03.02.05.04 Final Submittal

After completion of the CCTV of all segments of pipe, the contractor shall submit a hard drive containing all the video, digital pictures and logs. Contractor shall also submit a final hard copy set of all the logs and digital pictures from the entire project. These logs with their accompanying pictures shall be submitted alphabetically based on the upstream manholes in three-ring binders.

SECTION 24 TURF RENOVATION

24-01 GENERAL

This work shall consist of all work associated with turf renovation in accordance with the Plans and these Standard Specifications.

24-02 MATERIALS

Seed mix shall be 30% “Merit” Bluegrass and 70% Celebrity Perennial Ryegrass.

Fertilizer shall be a “starter” type fertilizer (15-15-15).

24-03 CONSTRUCTION

24-03.01 Silt Fence

Plastic snow fencing is to be installed to isolate the renovation area. Signs will be provided by the City of Los Altos stating that the field is under renovation and will be closed until (date). Fenced areas shall coincide with irrigation systems in order to facilitate grow in procedures.

24-03.02 Sprinkler System

Prior to beginning renovation of the turf area, the Contractor shall inspect the existing sprinkler system. Any portion of the sprinkler system shall be repaired at no additional cost to the City. The sprinkler system shall be completely operational prior to commencement of turf renovation.

24-03.03 Weed Control

The fields shall be treated with a post emergent herbicide to eliminate broadleaf weeds.

24-03.04 Grading

Depressions greater than 1” in depth are to be filled with an approved loam to create a consistently crowned and even playing surface. Sites that have been disturbed during construction shall be regraded to provide a uniform surface that drains to adjacent catch basins or sheet flow for positive drainage.

24-03.05 Turf Aeration

All turf areas will be DOUBLE AERATED by completely aerating in one direction and then aerating crosswise (at 90 degree angles) in another direction. **All heads and quick couplers, or any other impediments will be flagged before the aerating is started.** All fields shall be aerated with a shatter tine type of machine to a depth of 8” to break up compaction. At this point the turf areas should be dragged to break up the cores.

24-03.06 Seeding

The entire area will be “Silt Seeded” in two directions. Seeding rates shall be 7 pounds of seed per 1000 square feet of field. Seed mix should be as specified herein. If the maximum discharge rate of the silt seeder does not meet the application rates, broadcast seeding will be allowed after the above procedures have been completed at the maximum rate setting. After seeding the area, it shall be rolled in two directions to set the seed in the soil and into the holes.

24-03.07 Fertilization

The area shall be fertilized using a fertilizer as specified herein. Fertilizer shall be spread evenly at a rate of 5 pounds per 1000 square feet.

24-03.08 Top Dressing

The area shall be top-dressed uniformly with a minimum of 1/4-inch layer of an approved loam top dressing material. After top dressing, the field shall be dragged in one direction to evenly distribute the top dressing material.

24-03.09 Maintenance

The Contractor shall be responsible for the grow-in of the renovated areas. The Contractor shall be responsible for irrigation scheduling and adjustments. The grow-in period shall be not less than 15 days for the preliminary germination of the rye grass. After this period, soil moisture levels will be kept sufficient for the development and germination of the blue grass seed, which is normally 25-30 days. The Contractor will mow the area. An expected germination and establishment rate of 95% of all turf seed is required. If less than 95%, the Contractor shall reseed and continue with the maintenance period at no extra cost to the City until acceptable to the Engineer.

SECTION 25 PARK AND DOWNTOWN APPURTENANCES

25-01 GENERAL

The Contractor shall refer to the drawings for locations and descriptions of site appurtenances. Types of site appurtenances include the following:

A. Picnic Tables
B. Barbeques
C. Park Benches
D. Trash Receptacles
E. Bicycle Racks
F. Bollards
G. Teak Benches (downtown)
H. Litter Receptacle (downtown)
I. Concrete Bollards (downtown, civic center)

The Contractor shall submit manufacturer's "cut-sheets", technical data and installation instructions for all site appurtenances listed in these specifications. It is the responsibility of the Contractor to obtain installation recommendation from the manufacturer.

Contractor shall protect all site furnishings from any damage or vandalism until acceptance of the project, or written acceptance of individual site furnishings.

25-02 MATERIALS

25-02.01 General

Site appurtenances shall be as specified on the plans and details. Picnic tables, barbeques, benches and trash receptacles shall be made by the same manufacturer. Any contemplation for product substitution shall be deferred after the award of a contract. When requesting to substitute a product, it is the Contractor's responsibility to provide the Engineer with a detailed "side by side" comparison of the specified item and the proposed substitution to demonstrate equality of size, style, finish, quality, and strength. The Engineer shall be the sole judge of the equivalency of the proposed substitution. The proposed substitution shall not be brought to the job site until the Contractor has received written approval of the substitution from the Engineer.

25-02.02 Picnic Tables

Picnic tables shall be Model 75 as manufactured by DuMor Site Furnishings or an approved equal. Table shall be 6 foot long and made of redwood. Seats and table shall have embedded supports and shall have a black polyester powder finish.

25-02.03 Barbeques

Barbeque grills shall be Model 21 or 27 as manufactured by DuMor Site Furnishings or an approved equal.

25-02.04 Park Benches

Park benches shall be Model 34 as manufactured by DuMor Site Furnishings or an approved equal. Bench shall be redwood and shall be a minimum of 6 feet in length. Support shall be embedded and have a black polyester powder finish.

25-02.05 Trash Receptacles

Trash receptacles shall be Model S-42 as manufactured by Victor Stanley, Inc. or an approved equal. Receptacles shall be black.

25-02.06 Bicycle Racks

Bike racks shall be made of 2-3/8" outside diameter Schedule 40 steel pipe as detailed in the Standard Plans. Bending manufacturing shall insure smooth and aesthetic curves without flattening the outer curves and crimping the inner curves. Welding shall be completely around the support bar perimeter. All welds shall have a smooth finish, free of burrs and pitting. Each baseplate shall be welded around the entire pipe perimeter. Primer or galvanizing shall be completed after fabrication. Final surface coating shall be black in color and shall be powder coating or 0.125" thick PVC coating over manufacturer's guaranteed primer. Installation hardware shall be zinc plated. Bolts shall be ½" x 4" concrete wedge anchor with hex head torque controlled breakaway tamper proof nut. Details of installation and color of bike racks to be approved by the Engineer prior to ordering bike racks.

25-02.07 Bollards

Bollards shall be furnished and installed by the Contractor as detailed on the plans.

25-02.08 Teak Benches (downtown)

Teak benches in downtown areas as called for on the plans shall be Monarch six foot (72") bench, Country Casual, model #4613 or an approved equal.

25-02.09 Litter Receptacles (downtown)

Litter receptacles in downtown areas as called for on the plans shall be Victor Stanley S-42, 36 gallon with glossy black finish or approved equal.

25-02.10 Concrete Bollards (downtown, civic center)

Concrete bollards shall be Dura Art Stone precast, exposed aggregate concrete bollard with a subterranean 'B' mount or approved equal. The bollard shall be twelve inch (12") diameter and forty-eight inch (48") high with a recessed groove approximately four inches (4") from the top of the bollard. The color shall be Mexican Tile or Limestone, as determined by the Engineer.

25-03 CONSTRUCTION

Install all park appurtenances as specified by the manufacturers and in conjunction with the Contract Documents. Notify the Engineer immediately if any conflicts or discrepancies between the two are encountered. Foundations of all equipment shall meet the recommendation of the manufacturers. Unless otherwise noted, install all site appurtenances with their concrete footings sufficiently below finish grade to allow for installation of specified finish materials above.

SECTION 26 MAZE

26-01 GENERAL

The work shall consist of, but not necessarily be limited to, the construction of wood or chain link gate mazes at locations specified, in the position, to the elevations, and conforming to the design shown on the plans and in accordance with the requirements specified in these specifications.

Wood mazes and gate mazes shall conform to the requirements of Section 57, “Timber Structures,” and Section 80, “Fences,” of the Caltrans Specifications, except as modified herein.

26-02 MATERIALS

26-02.01 Wood Maze

Wood Posts and Rails shall be redwood as shown on the plans or as specified in the specifications. All wood shall be treated with preservative.

The structural metal for the wood maze shall consist of metal shoes and plates and shall conform to Section 57-103, “Miscellaneous Bridge Metal,” of the Caltrans Specifications.

Hardware shall consist of bolts with necessary nuts and washers. Bolts and nuts shall conform to the specifications of ASTM Designation: A307. Machine bolt heads and nuts shall be Regular Square Series, and threads shall be Coarse Three Series, Class 2 tolerance all conforming to ANSI Standard.

Structural metal and hardware, unless otherwise specified or shown on the plans, and all hardware shall be hot-dip galvanized, in accordance with Section 75-105, “Galvanizing,” of the Caltrans Specifications.

26-02.02 Gate Maze

Gatepost shall be as specified in Section 80-4.01, “Chain Link Fence Materials,” of the Caltrans Specifications.

Gates, including all fittings, latches, rods and other gate hardware shall conform to Section 80-4.01D, “Gates,” of the Caltrans Specifications. All metal shall be galvanized in accordance with Section 75-1.05, “Galvanizing,” of the Caltrans Specifications.

26-03 CONSTRUCTION

Posts and stringers shall be spaced as shown on the plans. Post shall be set in depth as shown on the plans.

All chain link gates shall be hung by a least 2 steel or malleable iron hinges not less than 3 inches in width, so designed as to securely clamp to the gate post and permit the gate to be swung back at least 90 degrees. Gates shall be provided with combination steel or malleable iron catch and locking attachment of approved design, which will not rotate around. A center rest with catch shall be provided.

SECTION 27 ORNAMENTAL IRON FENCES

27-01 GENERAL

The work shall consist of, but not necessarily limited to, the construction of ornamental iron fences at the location(s) shown on the plans. Unless indicated otherwise, fence shall be constructed in accordance with manufacturer's recommendations.

27-02 MATERIALS

27-02.01 Fence

The welded steel ornamental iron picket fencing system shall be Secure-Weld Plus, Western as manufactured by Merchants Metals or approved equal. The color of the fence system shall be Black.

27-02.02 Posts, Rails, and Pickets

All posts, rails, and pickets used in the fence system shall be extruded from ASTM A500 Cold-Formed Welded and Seamless Carbon Steel Structural Tubing with minimum yield strength of 46,000 psi. Specifications and sizes shall be as shown:

Component	Size
Pickets	3/4" square x 16 gauge
Rails	1 1/2" square x 14 gauge
Standard Posts	2 1/2" square x 11 gauge
Spacing Between Pickets	3 11/16"
Post Spacing	94 5/8" on center
Height	48"
Weight Supported per Section of Fence	350+ lbs.

Panels, pickets, and flanged posts (if required) shall be of welded construction by the gas metal arc method. Pickets shall be attached to rail in the same manner. No rivets, rods or screws will be acceptable for assembly of panels. Layout and welding shall be done by an experienced craftsman. All flush welds shall be ground smooth.

27-02.03 Fasteners and Accessories

All fasteners shall be galvanized steel. Galvanized steel castings shall be used for all post caps and other miscellaneous hardware. Brackets shall be L-shaped, slide-on type brackets. Brackets shall be attached to the posts with ¼" x ¾" (¼" x 1" may be substituted) self-tapping tek-screws.

27-02.04 Footings

Portland cement concrete for ornamental iron post footings shall be produced from commercial quality aggregates and cement and shall provide a minimum compressive strength at 28 days of 3,000 psi.

27-02.05 Finish

Finish shall be an eight stage pre-treatment and a four-stage corrosion resistant powder coating process. The finish shall conform to local environmental air quality standards. Color shall be Black, unless otherwise specified.

Finish shall be applied after fabrication. All welds are to receive treatment with a zinc rich-epoxy resin primer applied at a thickness of 2 to 4 mils and over cured at 400° F. The finish coat shall be 2 to 4 mils dry film thickness and shall be a TGIC polyester powder coating that combines hardness and durability.

The 12-step process shall consist of (1) Hot alkaline cleaner, (2) Clear water rinse, (3) Hot iron phosphate application, (4) Clear water rinse, (5) Sealer application, (6) Ring rinse, (7) Deionized water rinse, (8) Drying at 425° F, (9) Zinc enriched epoxy primer powder coat at 2-4 mils, (10) Gel oven heat at 400° F, (11) Ultra polyester finish powder coat at 2-4 mils, (12) Final oven curing at 450°F.

27-03 CONSTRUCTION

Fencing indicated on the plans to be removed, shall be properly disposed off site by the Contractor at Contractor's expense. Any existing fence indicated to remain and which have been damaged by the Contractor shall be replaced by him at his expense.

All earth, trees, brush and other obstructions which interfere with the proper construction of fences shall be removed and properly disposed of off site by the Contractor.

Existing cross fences shall be connected to the new fence where indicated on the plans. Corner posts with braces for every direction of strain shall be placed at the junction with existing fences. Unless indicated otherwise, at structures an end post shall be installed and the fence connected thereto.

Install fence per manufacturer's recommendations. Fence post spacing shall be in accordance with the drawings. Footings and post cap sizes shall be as indicated on the drawings.

Space posts uniformly in accordance with panel width, unless instructed otherwise.

Set posts in concrete. Post holes shall have a diameter 4 times the nominal post size and 6" deeper than the bottom of the post. Forms are not necessary or recommended. Crown concrete at top to shed water.

Check each post for vertical and top alignment.

Attach brackets using ¼" x ¾" tek-screws; ¼" x 1" tek-screws may be used as an alternate. Attach fence panels.

Any abrasions or field welds that cause damage to the factory-applied coatings shall be thoroughly cleaned, re-primed, and touched up by the Contractor. The paint used for touch up shall be the same quality, color and gloss to provide a match to the manufacturer's finish.

Assembled sections shall support a 350 pound vertical load at the midpoint of any horizontal rail.

The entire fence system shall have a written 10 Year Warranty against rust and defects in workmanship and materials.

Line posts shall be spaced at not more than 8-foot intervals, measured from center to center of posts. In general in determining the post spacing, measurement will be made parallel to the slope of the natural ground, and all posts shall be placed in a vertical position.

All posts shall be set in concrete footings conforming to the details contained in the Caltrans Standard Plans.

SECTION 28 TENNIS AND BASKETBALL COURT RESURFACING

28-01 GENERAL

Tennis and basketball court resurfacing shall conform to the requirements of the specification contained herein.

28-02 MATERIALS

The following materials to be used are manufactured by California Products Corporation. Area Distributor: Fraser-Edwards Co., phone (515) 826-9595 or approved equal:

Crack and Expansion Joint Filler: Plexipave Crack Filler
Leveling Material: Plexipave Court Patch Binder
Filler Coating Material: Acrylic Resurfacer
Acrylic Surface Course Material:100% Acrylic Fortified Plexipave Filler Coat (Plexichrome Acrylic Filler Coat and Plexichrome Acrylic Finish Coat)

The following surface course colors shall be used:

Tennis Courts:	Green - within playing lines Red - outside playing lines
Basketball Courts:	Black

Final colors will be selected by the Engineer based on the color chart submitted by the Contractor.

Line markings shall be 100% Acrylic Plexicolor Line Paint.

Surface sealers shall be Clear Glo #3, for basketball court only.

28-03 CONSTRUCTION

No construction shall be conducted during rainfall or when rain is imminent. The air temperature must be at least 50 degrees Fahrenheit and rising. Do not apply new surface materials when the surface temperature is in excess of 140 degrees Fahrenheit.

All operations shall be performed in accordance with the manufacturer's printed instructions. The Contractor shall conform to any special limitations relating to the individual products used on this project.

Maintain the work site in a clean and rubbish-free condition. The work site shall be cleaned up at the end of each working day.

The Contractor shall protect from damage all completed work. All new work found defective or damaged prior to its acceptance shall be repaired or replaced by the Contractor at no expense to the City.

Fill cracks equal to or greater than 1/8 inch with a crack filler. Cracks shall be cleaned and free from loose dirt, dust, weeds, greases and oils. These areas shall be blown clean with an air compressor or high-pressure water prior to applying crack filler. After drying, any rough edges shall be sanded smooth and loose. Material shall be removed from the court.

Flood the entire area with the water in the presence of the Engineer to check for minor depressions. Any depressions holding water, which covers the thickness of a nickel after one hour of drying time, shall be corrected. Depressions shall be filled with the specified leveling material. After leveling, the surface shall not vary more than 1/8 inch in ten (10) feet measured in any direction.

Thoroughly clean the entire tennis court surface to remove all loose surface material, stains, weeds, gum, or other foreign material from the court prior to resurfacing.

Apply two (2) coats of black acrylic resurfacer material by a flexible rubber bladed squeegee on a clean and dry court surface in order to provide a smooth and uniform texture surface.

Apply three (3) coats of acrylic surface course material by flexible rubber bladed squeegee on a clean and dry court surface. The first coat shall be applied lengthwise along the court; the second and third coats shall be applied transversely across the court. No application shall be covered by a succeeding application until thoroughly cured. The finish surface shall have a uniform appearance and shall be free from ridges and tool marks.

Following the drying of the finished surface, two (2) inch wide white playing line markings shall be accurately located, marked, and painted with acrylic line paint. Tennis layout lines shall be in conformance with the specifications of the United States Tennis Association. Basketball layout lines shall be in accordance with NCAA specifications.

Following the drying of the paint line, apply two (2) coats of surface sealer over the entire court surface.