



DEPARTMENT OF ENGINEERING & CAPITAL PROJECTS

ENGINEERING & CONSTRUCTION STANDARDS DIRECTIVE

SUBJECT: ADOPTION AND APPROVAL OF ENGINEERING AND CONSTRUCTION STANDARDS

NUMBER: 2024-02

DATE EFFECTIVE: JANUARY 1, 2025

SUPERCEDES: 2021-02

PURPOSE:

Per Council Resolution No. 2017-209, the City Engineer or designee is authorized to adopt and approve on behalf of the City all future editions and amendments to the City of Chula Vista Standard Special Provisions and reference documents governing Engineering and Construction Standards.

The following changes are hereby adopted and approved with this Directive:

City of Chula Vista Standard Special Provisions:

- City of Chula Vista Standard Special Provisions dated May 2021 is hereby succeeded by City of Chula Vista Standard Special Provisions dated July 2024 (Attachment 1).
 - Adopting the Standard Specifications for Public Works Construction ("Greenbook"), 2021 edition.
 - Adopting the San Diego Regional Standard Drawings ("SDRSD"), 2022 edition.
 - Adopting the California Manual on Uniform Traffic Control Devices ("CAMUTCD"), 2014 Revision 8 edition.
 - Adopting the State Standard Plans, 2023 edition.
 - Adopting the State Standard Specifications, 2023 edition.

All City projects can use, and are encouraged to use, the standards outlined in this Directive starting on the execution date, however, are required to adhere to these standards no later than the effective date.

Rosina C. Constanza
Acting City Engineer/Principal Civil Engineer

07/01/2024

Date

Attachments: 1. City of Chula Vista Standard Special Provisions dated July 2024



**CITY OF CHULA VISTA
STANDARD SPECIAL PROVISIONS
JULY 2024**

**For use with the
Standard Specifications for
Public Works Construction, “Greenbook”
2021 Edition**



Acting City Engineer

July 1, 2024

Date

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**CITY OF CHULA VISTA
STANDARD SPECIAL PROVISIONS
JULY 2024**

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INTRODUCTION

The City of Chula Vista, via this Chula Vista Standard Special Provisions (“CVSSP”), shall conform to the Standard Specifications (as defined herein) and Standard Special Provisions (as defined herein) except for the following changes, substitutions, and/or additions listed in this document.

The following supplement the Standard Specifications and supersede any conflicting requirements, (“conflicting requirements” means those which cannot operate by fact or law within the Contract Documents or for which both requirements cannot be physically produced). Otherwise, the following only supplement the Standard Specifications. If any of the following sections or part of the following sections below contradict or are not in conformance with any current California law, code, or regulation at the time of bidding, the Contractor will assume that the current California law, code, or regulation supersedes that particular item unless it is specifically called out to modify or supersede the current law, code, or regulation.

DOCUMENT INFORMATION

An electronic copy of the CVSSP is available on the City’s website:

<https://www.chulavistaca.gov/departments/engineering/standard-drawings-and-special-provisions>

For comments and corrections related to the CVSSP document, contact jserrato@chulavistaca.gov.

PART 1

GENERAL PROVISIONS

SECTION 1 – GENERAL TERMS, DEFINITIONS, ABBREVIATIONS, UNITS OF MEASURE, AND SYMBOLS

1-2 TERMS AND DEFINITIONS.

ADD or SUBSTITUTE for:

Agency - the City of Chula Vista, State of California

Agreement - See Contract

Board - the City Council of the City of Chula Vista

California Manual on Uniform Traffic Control Devices – Portion of the California Manual on Uniform Traffic Control Devices (“CAMUTCD”) for the State of California, 2014 Revision 8 edition.

City – see Agency

City Engineer – See Engineer.

City Standard Plans – City of Chula Vista Design and Construction Standards (“CVSD”), as approved and adopted by the City, details for standard structures, devices or instructions referred to on the plans or in specifications by title or number.

City of Chula Vista Standard Special Provisions – The CVSSP is the Standard Special Provisions prepared and approved by the City Engineer for use with the Standard Specifications, current edition.

Contract Documents – The Contract, Addenda, Notice to Contractors, Affidavit to Accompany Bid Proposal, Contractor’s accepted Bid, Contractor’s post-bid documentation submitted prior to award of the Contract, Bonds, permits from jurisdictional regulatory agencies, Special Provisions, City of Chula Vista Standard Special Provisions, Standard Special Provisions, Plans, Standard Plans, Standard Specifications, Reference Specifications, Change Orders, Supplemental Agreements, and City standard drawings and reference documents.

Electrolier – The complete assembly of lighting standard, luminary, ballast, and lamp.

Engineer - the City Engineer of the City of Chula Vista, acting directly or through properly authorized agents, acting within the scope of the particular duties delegated to them.

Laboratory - The designated laboratory authorized by the Engineer to test materials and work involved in the Contract.

Lighting Standard – The pole and mast arm, which support the luminaire.

Luminaire – The assembly, which houses the light source and controls the light emitted from the light source. Luminaries consist of hood (including socket), reflector, and glass globe or refractor.

Notice - Shall be deemed to have been given if served personally on the Contractor or his/her authorized agent, or mailed to the Contractor postage prepaid.

Project – See Work

Regional Standard Plans – Portion of the San Diego County Regional Standard Drawings (“SDRSD”) for the County of San Diego, 2022 edition.

Regional Standard Special Provisions– Portion of the 2012 San Diego Regional Supplement to the 2012 Edition of the “Greenbook” Standard Specifications for Public Works Construction.

Special Provisions – Additions and revisions to the Standard Specifications setting forth conditions and requirements peculiar to the Work. Inclusive of Regional Standard Special Provisions, City of Chula Vista Standard Special Provisions, and Special Provisions Technical.

Special Provisions Technical – Project specific specifications included within the project contract documents setting forth conditions and requirements peculiar to the Work (See Special Provisions).

Standard Specifications - "Standard Specifications for Public Works Construction" (The "Greenbook"), 2021 edition.

State Standard Plans – Portion of the State Standard Plans, State of California, California State Transportation Agency Department of Transportation, 2023 edition.

State Standard Specifications – Portion of the State Standard Specifications, State of California, California State Transportation Agency Department of Transportation, 2023 edition.

Working Day - Any day within the period between the date of the start of the Contract time as specified in 6-1 and the date of completion of the Work as specified in 3-13.1, other than:

c) any day designated as a holiday by the City or by the Associated General Contractors, San Diego Chapter. Delete e) and f) from definition.

1-6 BIDDING AND SUBMISSION OF THE BID

ADD:

1-6.3 Subcontract Requirements.

The contractor shall require that all subcontracts for the Project incorporate the Contract Documents to the extent of the work to be performed under that subcontract.

Contractor shall require that all subcontracts for the Project require each subcontractor, with respect to the work to be performed under that subcontract, to defend, indemnify, protect, and hold harmless the Indemnified Parties (as defined below) in the same manner and to the same extent that Contractor is required to defend, indemnify, protect, and hold harmless the Indemnified Parties under the Contract.

Contractor shall require that all subcontracts for the Project require each subcontractor, with respect to the work to be performed under that subcontract, to procure and maintain insurance in the same manner and to the same extent that Contractor is required to procure and maintain insurance under the Contract, including but not limited to designating the City, its officers, officials, employees, and volunteers as additional insureds.

Contractor shall require that all subcontractors for the Project be appropriately licensed for the duration of the work performed under the subcontract. In the event that a subcontractor is not properly licensed, Contractor shall immediately cease payment to that subcontractor and Contractor shall return to the City any payment made to that subcontractor for work performed during the period for which the subcontractor was not licensed.

Contractor shall require that all subcontractors for the Project be registered with the Department of Industrial Relations to perform public works prior to executing the subcontract and at all times while performing Work on the Project. In the event that a subcontractor is not properly registered, Contractor shall immediately cease payment to that subcontractor and Contractor shall return to the City any payment made to that subcontractor for work performed during the period for which the subcontractor was not registered.

Contractor shall require each subcontractor for the Project to enter into subcontract agreements with the same material terms as those contained herein for all subcontracts of every tier.

Contractor is fully responsible for the acts and omissions of all subcontractors of every tier, and for all persons and entities either directly or indirectly employed for the Project in the same manner and to the same extent that Contractor is responsible for the acts and omissions of persons directly employed by it or under its control under the Contract.

Where the Contract Documents require that a particular product be installed or applied by an applicator approved by the manufacturer, Contractor shall ensure that the subcontractor employed for such work is approved by that manufacturer.

In any dispute between the Contractor and the Subcontractor the City shall not be made a party to any judicial or administrative proceeding to resolve the dispute.

1-7 AWARD AND EXECUTION OF THE CONTRACT.

DELETE in its entirety and SUBSTITUTE with the following:

The award of the Contract will be to the lowest responsible bidder whose proposal is responsive and complies with the requirements described in the bid documents and Contract Documents. If made at all, City will use reasonable efforts to make the award within ninety (90) days after the opening of bids. All bids will be compared on the basis of the Engineer's estimate of quantities of work to be done, unless otherwise specified in the bid solicitation.

The Contract shall be signed by the successful bidder, and returned together with the Contract bonds, within ten (10) working days after the bidder has received notice that the Contract has been awarded. No proposal shall be considered binding upon the City until the execution of the Contract.

Failure to execute a Contract and file acceptable bonds as provided herein within ten (10) working days after the bidder has received notice that the Contract has been awarded, shall be just cause for the annulment of the award and the forfeiture of the bidder's proposal guaranty.

ADD:

1-7.1 Return of Bidder's Guaranty.

Within ten (10) working days after the award of the Contract, the City will use reasonable efforts to return the cash or checks accompanying the proposals which are not to be considered in making the award. All other proposal guaranty will be held until the Contract has been finally executed, after which the cash or checks will be returned. Bid bonds will be returned upon request.

1-7.2 Non-Collusion Provision:

The Contractor to whom this Contract is to be awarded shall file a sworn Non-Collusion affidavit executed by, or on behalf of, the person, firm, association, or corporation to whom the Contract is awarded. This affidavit shall be executed and sworn to by the successful bidder before such persons as are authorized by the laws of the State of California to administer oaths, on the form included in the Contract Documents. The original of such sworn statement shall be filed with the City Clerk.

1-7.3 No Waiver.

The failure of the City to insist, in any one or more instances, upon the performance of any provision of the Contract Documents, or to exercise any right in the Contract, shall not be construed as a waiver or relinquishment of such provisions or rights. Any waiver of any breach of this Contract shall not be held to be a waiver of any other or subsequent breach. Any waiver issued by the City of any provision of the Contract Documents shall only be effective if issued in writing by the City and shall be specific and shall apply only to the particular matter concerned and not to other similar or dissimilar matters.

1-7.4 Requests for Information (RFI).

If the work to be done is not sufficiently detailed or explained in the Contract Documents, the Contractor shall submit in writing a request-for-information (RFI) to the Engineer for further explanation. RFIs related to the Work shall be addressed to the Engineer for the Engineer's decision pursuant to section 2-10, "AUTHORITY OF THE BOARD AND THE ENGINEER."

1-7.5 Severability.

If any term, provision, or portion of any term or provision of the Contract Documents is declared invalid or unenforceable by any court of lawful jurisdiction, then the remaining terms and provisions or portions of terms or provisions will not be affected thereby and will remain in full force and effect.

1-7.6 Cumulative Remedies.

The duties and obligations imposed by the Contract Documents and the rights and remedies available to the parties thereto, and, in particular but without limitation, the warranties, guarantees, and obligations imposed upon the Contractor by the Contract Documents and all of the rights and remedies available to City thereunder, are in addition to, and are not to be construed in any way as a limitation of any rights and remedies imposed or available by laws, regulations, or codes, by special warranty or guarantee or by other provisions of the Contract Documents.

SECTION 2 SCOPE OF THE WORK

2-2 PERMITS

ADD:

Except as specified elsewhere in the Contract Documents, compliance with the provisions of Section 2-2, shall be considered as included in the various contract items of work to which such regulations are applicable and no additional compensation shall be made to Contractor therefor. Further, the enforcement of any requirements of the permits required for the performance of the Work shall not be the basis for any additional compensation to Contractor.

2-3 RIGHT-OF-WAY

ADD the following sentence after the first sentence:

The Contractor shall be responsible for coordinating with property owners as to timing, when access is provided through rights of entry, and shall protect private improvements.

2-7 CHANGES INITIATED BY THE AGENCY.

DELETE in its entirety and SUBSTITUTE with the following:

The City agrees to make payment for line item work under the Contract solely at the Contract Unit Price and solely for line item units actually performed and approved by the City and other applicable agencies with jurisdiction. The City shall have the option of increasing or decreasing the unit quantity for all bid items in the proposal by any amount without a change in the Contract Unit Price. There will be no adjustment in compensation as permitted in Section 7-3.5 of the Standard Specifications or otherwise, unless explicitly agreed to by means of executed Change Order between City and Contractor. Nothing in this section shall be construed to limit City's right to increase or decrease any quantities of work in the Contract as allowed by the Standard Specifications or pertinent law.

In the event that Contractor believes Contractor is entitled to a change order increasing the Contract Price or the time to complete the Work, or for Extra Work, Contractor shall give notice to the City in accordance with Section 2-9 or, if Section 2-9 is not applicable, within seven (7) Days of Contractor's discovery of the conditions giving rise to the change. Contractor shall then submit a change order request prior to proceeding with the Work and within fourteen (14) Days of Contractor's discovery of the conditions given rise to the change, which request shall include a description of the basis for the change, the proposed cost of the change, the impacts to the construction schedule and any increase to the Contract Time. To the extent any of the information required in a change order request is not capable of being known at the time of the request, Contractor shall provide such information to City within three (3) Days of when the information may become known to Contractor. Contractor shall proceed with all Work while a change order request is pending or if a Change Order request is pending, or if a Change Order request is denied in whole or in part, subject to the dispute resolution procedures in Section 2-10 and 2-11.

2-10 DISPUTED WORK.

ADD:

2-10.1 Administrative Claims Requirements and Procedures.

No suit shall be brought arising out of this Contract, against the City, unless a claim has first been presented in writing and filed with the City of Chula Vista and acted upon by the City of Chula Vista in accordance with the procedures set forth in Chapter 1.34 of the Chula Vista Municipal Code, as same may be from time to time be amended, the provisions of which are incorporated by this reference as if fully set forth herein, and such policies

and procedures used by the City in the implementation of same.

A claim presented under Chapter 1.34 of the Municipal Code (a “Municipal Code Claim”) must be filed no earlier than the date the Work is completed or the date the Contractor last performs Work on the Project, whichever occurs first. A Municipal Code Claim shall be inclusive of all unresolved claims known to Contractor or that should reasonably be known to Contractor excepting only new unrelated claims that arise after the Municipal Code Claim is submitted.

Municipal Code Claims shall accrue upon completion of the dispute resolution procedure contained in Section 2-11, or the earliest time for presenting a claim, whichever occurs last. Claims presented prior to the time for presenting a claim, or prior to exhaustion of contractual remedies (including but not limited to exhaustion of the dispute resolution procedure in Section 2-11), shall be deemed ineffective and shall not require any action by the City.

2-11 DISPUTE RESOLUTION.

Contractor acknowledges and agrees that the provisions of California Public Contract Code section 9204 are incorporated into this Contract as though fully set forth herein. However, to the extent that this Contract and section 9204 are inconsistent, this Contract shall control. Contractor shall not be entitled to any remedy against City unless it complies with this contractual dispute resolution procedure, which shall apply to all “claims” as defined in Section 9204 of the Public Contract Code.

As a condition precedent to initiating dispute resolution, Contractor shall first exhaust all contractual procedures pertaining to Change Orders, Disputed Work, Extra Work, extensions of time, and any other notices or requests that the Contract Documents require for changes to the Contract Price or time. The failure to timely submit a notice, or to timely request a Change Order or extension of time, or to timely provide any other notice or request required herein, shall constitute a waiver of Contractor’s right to further pursue dispute resolution.

Contractor must initiate dispute resolution prior to its application for final payment and no later than thirty (30) Days after the event giving rise to the claim. The event giving rise to the claim is *either* the occurrence that entitles Contractor to additional compensation, an extension of time, or other resolution of a dispute between the parties; *or* Contractor’s timely completion of all contractual prerequisites (if any) to filing the claim, whichever occurs last. Failure to timely initiate dispute resolution shall be deemed to be Contractor’s waiver of its right to pursue the claim and shall bar any subsequent proceedings for compensation or payment thereon or for an extension of time.

Provided that Contractor has first complied with all preliminary requirements, Contractor may present a claim in strict accordance with Section 9204 of the Public Contract Code. Contractor shall furnish such reasonable and necessary documentation to support the claim and to permit the Director of Public Works or City Engineer, in their sole discretion, to make a determination regarding the claim. Contractor acknowledges and agrees that any documentation required by the Contract, including but not limited to Daily Reports for Extra Work pursuant to Section 7-4.4, a schedule analysis pursuant to Section 6-4.5, and records of disputed work pursuant to Section 2-10 are reasonable and necessary documentation to support a claim. The Director of Public Works or City Engineer may in their respective discretion specify how the documentation shall be submitted. If the Director of Public Works or City Engineer requests additional documentation to support the claim, Contractor shall provide the documentation within the time requested, not to exceed thirty (30) Days. Contractor’s failure or refusal to provide supporting documentation may be a basis to deny the claim and shall be a bar to Contractor’s further use of that documentation in pursuing its claim. Contractor’s failure to provide supporting documentation shall be considered a failure to exhaust its remedies under this dispute resolution procedure.

Upon satisfactory receipt of a complete claim, including reasonable and necessary documentation to support the claim, the Director of Public Works or City Engineer shall conduct a review of the claim based on the documentation submitted and, within a period not to exceed forty five (45) days, shall provide Contractor with a written statement identifying which portion of the claim is disputed and which portion is undisputed. Upon receipt of a claim, the Director of Public Works or City Engineer and Contractor may, by mutual agreement, extend the time period for the Director of Public Works or City Engineer to review and provide a written statement in response to the claim. After the Director of Public Works or City Engineer issues their written statement, any

payment due on an undisputed portion of the claim shall be processed and made within sixty (60) days thereafter.

If Contractor disputes the written statement provided in response to its claim, or if the Director of Public Works or City Engineer fail to respond to a claim within the time prescribed, Contractor may make a demand, in writing and sent by registered mail or certified mail, return receipt requested, for an informal conference to meet and confer for settlement of the issues in dispute. Upon satisfactory receipt of a sufficient and complete written demand from Contractor, the Director of Public Works or City Engineer shall schedule an informal conference to meet and confer within thirty (30) days of actual receipt of the written demand for the purpose of settlement of the disputed portion of the claim.

Within ten (10) business days following the conclusion of the meet and confer conference, if the claim or any portion of the claim remains in dispute, the Director of Public Works or City Engineer shall provide the Contractor with a written statement identifying the portion of the claim that remains in dispute and the portion that is undisputed. After the Director of Public Works or City Engineer issues their written statement, any payment due on an undisputed portion of the claim shall be processed and made within sixty (60) days. Any disputed portion of the claim, as identified by the Contractor in writing, shall be submitted to nonbinding mediation in accordance with Section 9204 of the California Public Contract Code, unless the parties mutually agree, in writing, to waive, submission of the claim to nonbinding mediation. The City and Contractor shall share the associated mediation costs equally. The City and Contractor shall each pay their respective costs for attorneys' fees and/or expert fees in connection with the mediation. If mediation is waived or unsuccessful, the parts of the claim remaining in dispute shall be subject to the procedures set forth in Chapter 1.34 of the Chula Vista Municipal Code.

Failure by the Director of Public Works or City Engineer to respond to a claim within the time requirements of section 9204 of the California Public Contract Code shall result in the claim being deemed rejected in its entirety. A claim that is denied by reason of the failure of the Director of Public Works or City Engineer to have responded to a claim, or the failure to otherwise meet the time requirements of section 9204 of the California Public Contract Code, shall not constitute an adverse finding with regard to the merits of the claim or the responsibility or qualifications of the Contractor, nor shall it waive any obligations of the Contractor pursuant to Chapter 1.34 of the Chula Vista Municipal Code.

Contractor may present a claim on behalf of a subcontractor or lower tier subcontractor only as allowed by and in strict accordance with Section 9204 of the California Public Contract Code.

SECTION 3 – CONTROL OF THE WORK

3-4 AUTHORITY OF THE BOARD AND THE ENGINEER.

ADD:

Whenever the Contractor varies the period during which work is carried on each day, Contractor shall give due notice to the Engineer, so that proper inspection may be provided. The Contractor shall pay a fee established by the City for inspection services, required outside of regular working hours, and on Saturdays, Sundays, and holidays recognized by the City. Any work done in the absence of the Engineer will be subject to rejection.

3-7 CONTRACT DOCUMENTS

3-7.1 General.

ADD:

If Contractor discovers any conflict or discrepancy between the Contract Documents and the Site conditions, or in the layout given by stakes, points, or instructions, Contractor shall immediately notify the Agency of such conflict or discrepancy by formal written notice. Any work completed and/or cost incurred by Contractor after notifying the Agency of a claimed conflict or discrepancy but before receiving written direction from Agency regarding the conflict or discrepancy, will be at Contractor's sole risk and cost.

In general, specifications indicate qualities of materials and workmanship and plans indicate dimensions,

locations, quantities, and details of construction. In interpreting the Contract Documents, the following shall apply: figured dimensions shall take precedence over scaled measurements; detailed drawings and specifications shall take precedence over general drawings and specifications; and Agency-approved supplementary documents (including without limitation details and instructions), information, and revisions shall take precedence over prior documents, information, and addenda.

3-7.2 Precedence of the Contract Documents.

DELETE in its entirety and SUBSTITUTE with the following:

If there is a conflict, inconsistency, or ambiguity in or between any of the Contract Documents, the document highest in the order of precedence shall control. The order of precedence, from highest to lowest, will be as follows:

- a) Permits issued by jurisdictional regulatory agencies
- b) Change Orders and Supplemental Agreements; whichever occurs last
- c) Contract/Agreement
- d) Addenda
- e) Bid/Proposal and post-bid documentation submitted by Contractor
- f) Special Provisions Technical
- g) Plans
- h) City of Chula Vista Standard Special Provisions
- i) City Standard Plans
- j) Regional Standard Plans
- k) Standard Specifications
- l) Reference Specifications
- m) State Standard Plans
- n) State Standard Specifications

Notwithstanding the above order of precedence, in the event of a conflict, inconsistency, or ambiguity in the indicated quantity or quality in the Contract Documents, the greater quantity and the better quality shall govern.

If a claimed conflict, inconsistency, or ambiguity cannot be resolved through the order of precedence, the City Engineer shall have the sole authority to decide which document or provision shall govern.

3-8 SUBMITTALS.

3-8.1 General.

ADD:

In no event shall the City be obligated to return a submittal within fifteen (15) working days where, in the City's sole discretion, Contractor has unnecessarily delayed delivery of a submittal, delivered an excessive number of submittals, or delivered submittals containing excessive errors or other deficiencies. Further, in no event shall the City be obligated to return a submittal within fifteen (15) working days where, in the City's sole discretion, changed conditions or circumstances have arisen that affect or are connected with a particular submittal.

3-10 SURVEYING.

3-10.4 Private Engineers.

ADD:

For work done under private contracts, (i.e. permits and land development), the Contractor shall provide surveying services under the following conditions:

- a) All provisions of Section 8771(b) of the Professional Land Surveyors' Act (Business and Professions Code) shall be adhered to.
- b) Contractor shall retain the services of a Land Surveyor or Civil Engineer licensed to practice land

surveying in the State of California to perform all work under this section.

- c) All existing surveying monuments in and around the work area shall be clearly identified prior to the beginning of construction. A list of the monuments identified must be made available to the City for verification. Monuments may exist which are not shown on the plans. The contractor must make every effort to preserve existing surveying monuments. Where this is not possible, or where any monuments are destroyed by the contractor's negligence, they must be replaced by the Land Surveyor or Civil Engineer and a Record of Survey in conformance with the Land Surveyor's Act filed in the office of the San Diego County Recorder. A Corner Record may be filed at the discretion of the City Surveying Group. A copy of the record of Survey or Corner Record must be made available to the City Surveying Group for review, correction and approval prior to being sent for recording.

ADD:

3-12.5.3 Spill Prevention and Emergency Response Plan

ADD the following sentence at the end of the first paragraph:

At a minimum Spill Prevention and Emergency Response Plan shall include the components of the City's Sewer System Management Plan Appendix E Spill Emergency Response Plan (SERP) (posted on the City's website).

3-13 COMPLETION, ACCEPTANCE, AND WARRANTY

3-13.3 Warranty.

DELETE in its entirety and SUBSTITUTE with the following:

1. Contractor shall warranty and repair all defective materials and workmanship for a period of one (1) year. The warranty period shall commence on the date the Project was accepted by City. The warranty period for specific items covered under any manufacturer or supplier warranty shall commence on the date they are placed into service at the direction of or as approved by the Engineer in writing. In addition, Contractor shall warranty the Work against all latent and patent defects for a period of 10 years.
2. Contractor shall assign to City, in writing, all warranties, express or implied, from any subcontractors, manufacturers, or suppliers, of any tier, for materials furnished for the Project or Work performed, and such warranties shall be delivered to the Engineer prior to the acceptance of the Contractor's performance of the Contract.
3. Contractor shall replace or repair defective materials and workmanship in a manner satisfactory to the Engineer after notice to do so from the Engineer and within the time specified in the notice. If Contractor fails to make such replacements or repairs within the time specified in the notice, the City may perform the replacement or repairs at Contractor's expense. If Contractor fails to reimburse the City for the actual costs, Contractor's Surety shall be liable for such cost.
4. Contractor shall involve the manufacturer in the installation and startup as needed to secure any extended warranty required.
5. Nothing herein is intended to limit any manufacturer's warranty which provides the City with greater warranty rights than set forth in this section or the Contract Documents.
6. These specifications are not intended to constitute a period of limitations or waiver of any other rights or remedies City may have regarding Contractor's other obligations under the Contract Documents or applicable law.
7. The warranty shall include all components. The form of the warranty shall be subject to the approval of the Engineer in their sole discretion.
8. Contractor shall respond and initiate corrective action in accordance with OSHA and within 24 hours of the notice of the nonconforming Work that poses an imminent threat to person or property.
9. If within one (1) year (or a longer applicable warranty period) after the date for commencement of warranties under the Contract Documents, any item of the Work is determined to be defective by the Engineer, in their sole discretion, Contractor shall promptly correct the defective items of the Work.

SECTION 4 – CONTROL OF MATERIALS

4-3 INSPECTION.

4-3.2 Inspection by the Agency.

ADD:

For private contracts, all costs of inspection at the source, including salaries and mileage costs, shall be paid by the Permittee.

4-3.3 Inspection of Items Not Locally Produced.

ADD:

When required by the Special Provisions or as noted on the Project Plans, the Engineer may elect to perform inspection of an out-of-town manufacturer. The Contractor shall incur all inspection costs. These costs shall include travel expenses, a per diem allowance for lodging, meals, car rental, and ten (10) minutes of long-distance phone calls to the Agency's area per day. If the manufacturing plant operates a double shift, a double shift shall be figured in the inspection costs. At the option of the Engineer, full-time inspection will continue for the length of the manufacturing period. If the manufacturing period exceeds three (3) consecutive weeks, the expenses of the Engineer's supervisor will be included in the figures for one 2-day trip to the site per month. Inspection costs paid by the Contractor will not include the wages of the Engineer and their supervisor if employed by the Agency, when required by the Special Provisions or as shown on Project Plans.

4-4 TESTING.

ADD:

4-4.1 Testing - Private Contracts and Permittee

When required by the Engineer, tests shall be made to determine compliance with the plans and specifications. The tests shall be performed by a laboratory approved by the Engineer and the number of tests shall be determined by the Engineer. The costs of these tests shall be borne by the Contractor.

SECTION 5 – LEGAL RELATIONS AND RESPONSIBILITIES

5-1 LAWS AND REGULATIONS

ADD:

5-1.1 Taxes.

All applicable State or Federal taxes shall be considered as included in the amount paid for the various items of work. The Contractor shall be responsible for payment of such taxes to the proper governmental authority.

The Contractor shall keep fully informed and comply with all existing Federal and State laws and all Municipal Ordinances and Regulations of the City which in any manner affect those engaged or employed in the work, or the material used in the work, or which in any way affect the conduct of the work, and all such orders and decrees of bodies or tribunals having any jurisdiction or authority over the same. City of Chula Vista Resolution 3077 requires that all underground work be completed prior to the street being surfaced.

5-1.2 Contractors' License.

Contractors and all subcontractors shall be licensed in accordance with the provisions of Chapter 9 of Division III of the Business and Professions Code, State of California.

5-1.3 City Business License.

The Contractor and subcontractors shall procure and maintain a valid City of Chula Vista Business License.

5-4 INSURANCE.

DELETE in its entirety and SUBSTITUTE with the following:

Contractor shall procure and maintain for the duration of the Contract, *and for 10 years thereafter*, insurance against claims for injuries to persons or damages to property which may arise from or in connection with the performance of the Work by the Contractor, or its agents, representatives, employees, material suppliers, or subcontractors of every tier.

Minimum Scope and limit of Insurance

Coverage shall be at least as broad as:

1. **Commercial General Liability (CGL):** Insurance Services Office Form CG 00 01 covering CGL on an “occurrence” basis, including products and completed operations, property damage, bodily injury and personal and advertising injury with limits of no less than **\$5,000,000** per occurrence. If a general aggregate limit applies, either the general aggregate limit shall apply separately to this Project/location (ISO CG 25 03 or 25 04) or the general aggregate limit shall be twice (2x) the required occurrence limit.
2. **Automobile Liability:** Insurance Services Office Form Number CA 0001 covering Code 1 (any auto), with limits no less than **\$5,000,000** per accident for bodily injury and property damage.
3. **Workers’ Compensation** insurance as required by the State of California, with Statutory Limits, and Employers’ Liability insurance with a limit of no less than \$1,000,000 per accident for bodily injury or disease.
4. **Builder’s Risk** (Course of Construction) insurance utilizing an “All Risk” (Special Perils) coverage form, with limits equal to the completed value of the project and no coinsurance penalty provisions.
5. **Surety Bonds** as described below.
6. **Professional Liability** (if Design/Build), with limits no less than \$2,000,000 per occurrence or claim, and \$2,000,000 policy aggregate.
7. **Contractors’ Pollution Legal Liability** and/or Asbestos Legal Liability and/or Errors and Omissions (if Project involves environmental hazards) with limits no less than \$1,000,000 per occurrence or claim, and \$2,000,000 policy aggregate.

If Contractor maintains broader coverage and/or higher limits than the minimums shown above, the City requires and shall be entitled to coverage for the broader coverage and/or higher limits maintained by Contractor. Any available insurance proceeds in excess of the specified minimum limits of insurance and coverage shall be available to City.

Self-Insured Retentions

Self-insured retentions must be declared to and approved by the City. City may require the Contractor to purchase coverage with a lower retention or provide proof of ability to pay losses and related investigations, claim administration, and defense expenses within the retention. The policy language shall provide, or be endorsed to provide, that the self-insured retention may be satisfied by either the named insured or City.

Other Insurance Provisions

The insurance policies are to contain, or be endorsed to contain, the following provisions:

1. The City, its officers, officials, employees, and volunteers are to be covered as additional insureds on the CGL policy with respect to liability arising out of with respect to liability arising out of work or operations performed by or on behalf of the Contractor including materials, parts, or equipment furnished in connection with such work or operations and automobiles owned, leased, hired, or borrowed by or on behalf of the Contractor. General liability coverage can be provided in the form of an endorsement to the Contractor’s insurance (at least as broad as ISO Form CG 20 10, 11 85 or both CG 20 10, CG 20 26, CG 20 33, or CG 20 38 and CG 23 37 forms if later revisions used). The Endorsement must not exclude Products / Completed Operations.
2. For any claims related to this Project, the Contractor’s insurance coverage shall be primary insurance coverage at least as broad as ISO CG 20 01 04 13 as respects the City, its officers, officials, employees, and volunteers. Any insurance or self-insurance maintained by the City, its officers, officials, employees,

or volunteers shall be excess of the Contractor's insurance and shall not contribute with it.

3. Each insurance policy required by this clause shall provide that coverage shall not be canceled, except with notice to the City.

Builder's Risk (Course of Construction) Insurance

Contractor may submit evidence of Builder's Risk insurance in the form of Course of Construction coverage. Such coverage shall name the City as a loss payee as their interest may appear.

If the Project does not involve new or major reconstruction, at the option of the City, an Installation Floater may be acceptable. For such projects, a Property Installation Floater shall be obtained that provides for the improvement, remodel, modification, alteration, conversion or adjustment to existing buildings, structures, processes, machinery and equipment. The Property Installation Floater shall provide property damage coverage for any building, structure, machinery or equipment damaged, impaired, broken, or destroyed during the performance of the Work, including during transit, installation, and testing at the City's site.

Claims Made Policies

If any coverage required is written on a claims-made coverage form:

1. The retroactive date must be shown, and this date must be before the execution date of the Contract or the beginning of contract work.
2. Insurance must be maintained and evidence of insurance must be provided for at least five (5) years after completion of contract work.
3. If coverage is canceled or non-renewed, and not replaced with another claims-made policy form with a retroactive date prior to the contract effective, or start of work date, the Contractor must purchase extended reporting period coverage for a minimum of five (5) years after completion of contract work.
4. A copy of the claims reporting requirements must be submitted to the City for review.
5. If the services involve lead-based paint or asbestos identification/remediation, the Contractors Pollution Liability policy shall not contain lead-based paint or asbestos exclusions. If the services involve mold identification/remediation, the Contractors Pollution Liability policy shall not contain a mold exclusion, and the definition of Pollution shall include microbial matter, including mold.

Acceptability of Insurers

Insurance is to be placed with insurers with a current A.M. Best rating of no less than A: VII, unless otherwise acceptable to the City.

Waiver of Subrogation

Contractor hereby agrees to waive rights of subrogation which any insurer of Contractor may acquire from Contractor by virtue of the payment of any loss. Contractor agrees to obtain any endorsement that may be necessary to affect this waiver of subrogation. The Workers' Compensation policy shall be endorsed with a waiver of subrogation in favor of the City for all work performed by the Contractor, its employees, agents and subcontractors.

Verification of Coverage

Contractor shall furnish the City with original Certificates of Insurance including all required amendatory endorsements (or copies of the applicable insurance language, effecting coverage required by this clause), and a copy of the Declarations and Endorsement Page of the CGL policy listing all policy endorsements to City before work begins. However, failure to obtain the required documents prior to the work beginning shall not waive the Contractor's obligation to provide them. The City reserves the right to require complete, certified copies of all required insurance policies, including endorsements, required by these specifications, at any time.

Subcontractors

Contractor shall require and verify that all subcontractors maintain insurance meeting all the requirements stated herein, and Contractor shall ensure that City is an additional insured on insurance required from subcontractors. For CGL coverage, subcontractors shall provide coverage with a form at least as broad as CG 20 38 04 13.

Surety Bonds

Contractor shall provide the following Surety Bonds:

1. Bid bond
2. Performance bond
3. Payment bond
4. Maintenance bond

The Payment Bond and the Performance Bond shall be in a sum equal to the Contract price. If the Performance Bond provides for a one-year warranty a separate Maintenance Bond is not necessary. If the warranty period specified in the contract is for longer than one year a Maintenance Bond equal to 10% of the contract price is required. Bonds shall be duly executed by a responsible corporate surety, authorized to issue such bonds in the State of California and secured through an authorized agent with an office in California. The Payment Bond shall satisfy all requirements of Civil Code sections 9550 et seq.

Special Risks or Circumstances

City reserves the right to modify these requirements, including limits, based on the nature of the risk, prior experience, insurer, coverage, or other circumstances.

5-7 SAFETY.

5-7.8 Steel Plate Covers

5-7.8.1 General.

ADD:

The Contractor shall submit to the Agency for approval, working drawings prepared on 24" x 36" 'D' size sheets. For temporary steel plate cover spans greater than 5'-3" (63"), a structural design including a shoring system shall be prepared by a California registered civil or structural engineer and approved by the Agency. Calculations need not accompany working drawings previously approved for the same project except as required by the Agency.

Steel plate covers used in the traveled way shall have a skid-resistant surface that was manufactured with a nominal Coefficient of Friction (COF) of 0.35 as determined by California Test Method 342 (also see Appendix H of the most current Caltrans Encroachment Manual).

The dimensions of the steel plate covers; size and locations of the connections; and size and spacing of the members shall be detailed on the working drawings.

The bearing pad shall be on firm ground or pavement for support of the steel plate covers.

Subsequent plates are butted to each other, and tack welded as directed by the local governing Agency. Fine graded asphalt concrete shall be placed and compacted to form a minimum twelve inch (12") tapered transition ramp with a maximum slope of 8.5% to cover all edges of the steel plate covers. Alternatively, Contractor may use pre-fabricated neoprene rubber mats manufactured by American Highway Products, or equivalent (if approved by local governing Agency).

When the steel plate covers are removed the pavement shall be restored and dowel holes in the pavement shall be backfilled with either graded fines of asphalt concrete mix, concrete slurry, epoxy or an equivalent that is satisfactory and as required by the local governing Agency.

The type of steel plate cover installation shall be evaluated on a case-by-case basis since, in some cases; a particular type of steel plate cover installation may be required (e.g. near a school, weather conditions, traffic speed, volume and composition, duration and dimensions of plates, etc.).

All steel plate covers shall provide complete coverage to prevent any person, bicycle, motorcycle or motor vehicle from being endangered due to steel plate cover movement causing separations or gaps.

Unless specifically noted or granted in the Agency's Special Provisions, or approved by the Agency's Inspector:

- a) The installation of steel plate covers SHALL NOT exceed four (4) consecutive working days in any given week.
- b) The installation of steel plate covers SHALL NOT exceed fifty lineal feet (50') in length.

The Contractor is responsible for maintaining the steel plate covers, shoring system, asphalt concrete tapered transition ramps and ensuring they meet minimum specifications. All steel plate covers within the right-of-way whether used in or out of the traveled way shall be without deformation. The trueness of a steel plate cover can be determined by using a straight edge. Any steel plate cover found to be permanently deformed shall be rejected and removed from the right-of-way.

The Contractor shall immediately mobilize necessary personnel and equipment after being notified by the Inspector, the Agency's emergency service section, or a member of the public of a repair need. This includes, but is not limited to, plate movement, noise, plate anchors, cold-mix, asphalt concrete transition ramp between the steel plate cover surface and the existing roadway or sidewalk.

Failure to respond to the emergency request within two (2) hours of Agency's initial attempt to contact the Contractor shall be grounds for the Agency to perform necessary repairs that will be invoiced at actual cost including overhead or \$500 per incident, whichever is greater. All Traffic Control Plans currently require prompt repairs of steel plate covers by the Contractor.

Lack of Contractor conformance shall be automatic grounds for suspension of their permit/contract.

If payment provisions for performing all work necessary to provide Steel Plate Covers or Traffic Plate Bridging are not included in the bid items, then payment for such work will be deemed to be included in the other various items of work that required the steel plate covers and no additional payment will be allowed.

ADD:

5-8 RECORD RETENTION AND AVAILABILITY.

1. The Contractor shall allow access by the City, the federal grantor agency, the Comptroller General of the United States, or any of their duly authorized representatives to any books, documents, papers and records of the Contractor pertinent to that specific Contract.
2. The Contractor shall retain all required records for three years after final payments are made and all other pending matters are closed.

ADD:

5-9 DUTY TO DEFEND, INDEMNIFY, PROTECT, AND HOLD HARMLESS.

1. To the maximum extent permitted by law, Contractor shall defend, indemnify, protect, and hold harmless the City and its officials, officers, employees, agents, and volunteers (each an "Indemnified Party", collectively the "Indemnified Parties") from and against any and all claims, demands, actions, causes of action, suits, legal actions, legal proceedings, administrative proceedings, costs, expenses, liabilities, losses, judgments, injuries, and damages of any kind or nature whatsoever, in law or equity, to property or persons, including wrongful death (collectively, "Claims" or "Damages"), in any manner arising out of, resulting from, or connected with, either directly or indirectly, any act, omission, negligence, or willful misconduct of Contractor or any of its officials, officers, employees, agents, volunteers, consultants, sureties, subcontractors, or suppliers (individually a "Contractor Party", collectively the "Contractor Parties") concerning, regarding, or related to: (1) the failure to perform the Work; (2) the failure to comply with any obligation under the Contract Documents; (3) the performance, condition, or existence of the Work or improvements for the Project; (4) the maintenance of the Project until final acceptance by City and other agencies with jurisdiction; or (5) any violation of any Federal, state, or local law, regulation, or code, except for those Claims arising from the established active negligence, sole negligence, or willful misconduct of an Indemnified Party.
2. To the maximum extent permitted by law, Contractor's defense obligations under section 7-16 include but are not limited immediately accepting all tenders for defense and defending all Indemnified Parties from and against any Claims concerning, regarding, or related to: (1) the failure to perform the Work; (2) the failure to comply with any obligation under the Contract Documents; (3) the performance, condition, or existence of the Work or improvements for the Project; (4) the maintenance of the Project until final acceptance by City and other agencies with jurisdiction; or (5) any violation of any Federal, state, or local

law, regulation, or code. City reserves the right to either (a) approve any and all attorneys that Contractor selects, hires, or otherwise engages to defend any Indemnified Party, or (b) in the City's sole discretion, conduct the defense of any Indemnified Party, in which case Contractor agrees to reimburse City for all attorneys' fees and litigation costs incurred for such defense.

3. To the maximum extent permitted by law, Contractor's obligations under section 7-16 include, without limitation, any and all Claims and Damages caused or alleged to be caused by the negligent acts or omissions of any City Party which may be in combination with the acts or omissions of any Contractor Party or any third party.
4. Contractor's obligations under section 7-16 include but are not limited to any and all Claims between Contractor and any other Contractor Party if an Indemnified Party is made a party or participant to any such Claims.
5. Contractor's obligations under section 7-16 shall not be restricted to or limited in any way by insurance proceeds, if any, received by an Indemnified Party.
6. Contractor's obligations under section 7-16 shall not be limited by any restriction on the amount or type of damages, compensation, or benefits payable by or for the Contractor or any Contractor Party under workers' or workmen's compensation acts, disability benefit acts, or other employee benefit acts.
7. Contractor's obligations under section 7-16 shall require it to pay all related expenses and costs incurred by any Indemnified Party enforcing the indemnity, defense, or hold harmless provisions of section 7-16.
8. Contractor's obligations under section 7-16 shall survive the termination, expiration, and completion of the Contract.

SECTION 6 – PROSECUTION, PROGRESS, AND ACCEPTANCE OF THE WORK

6-3 TIME OF COMPLETION.

6-3.2 Contract Time Accounting.

DELETE "... a periodic statement..." and SUBSTITUTE with "... at least a monthly statement..." in the second sentence.

6-4 DELAYS AND EXTENSIONS OF TIME.

6-4.3 Payment for Delays.

DELETE: in its entirety and SUBSTITUTE with the following:

6-4.3 Payment for Delays. Pursuant to Section 7102 of the Public Contract Code, the Contractor will be compensated for damages incurred due to delays for which the Agency is responsible. Such actual costs will be determined by the Engineer. The Agency will not be liable for damages the Contractor could have avoided by any reasonable means, such as judicious handling of forces, equipment, or plant. The determination of what damages the Contractor could have avoided will be made by the Engineer. Damages for delays shall be limited to those actual necessary costs of idle time of construction equipment, idle time of workers, moving of construction equipment, and hauling of materials and equipment which are incurred solely by reason of the delay and which could not have been avoided by the judicious handling of forces, construction equipment and plant, and costs incurred, with the written approval of the Engineer, to mitigate the foregoing costs. Contractor shall not be entitled to any overhead, profit or home office costs but may instead take a reasonable allowance for overhead and profit, in an amount not to exceed fifteen percent (15%) of the allowable delay costs. Contractor shall maintain complete and accurate daily records of all delay costs, clearly distinguishing them from the costs of other portions of the work, and shall submit a detailed written report of such costs to the Engineer. Contractor will not be entitled to any delay costs related to work that is paid at unit prices, related to work that is paid for in a lump sum, or where there is a concurrent delay for which the Agency is not responsible for.

Payment for delay may only be approved through a Change Order. To be entitled to payment, Contractor

shall give notice and make a Change Order Request in accordance with Section 2-7. Contractor's failure to give notice and request a Change Order pursuant to Section 2-7 shall constitute a waiver of Contractor's right to payment for delay.

ADD:

6-4.5 Contract Time Extension and Schedule Analysis.

A claim for extension in Contract time will not be granted unless the Contractor can demonstrate through a Critical Path Method (CPM) analysis of the Schedule's critical path(s) that the increases in the time to perform or complete the Work, or specified part of the Work, beyond the corresponding Contract time arise from unforeseeable causes beyond the control and without the fault or negligence of Contractor, and that such causes in fact affected the performance or completion of the Work, or specified part of the Work in question, beyond the corresponding Contract time, despite the Contractor's reasonable and diligent actions to protect against those effects. If requested by the Agency, Contractor shall submit its schedule and schedule analysis in native format of the software used to develop the schedule.

6-9 LIQUIDATED DAMAGES

DELETE in its entirety and SUBSTITUTE with the following:

Contractor's failure to complete the Work within the time allowed will result in damages being sustained by City. Such damages are, and will continue to be, impracticable and extremely difficult to determine. For each consecutive calendar day in excess of the time specified for completion of the Work plus additional days duly authorized and approved in writing by the Engineer, Contractor shall pay City, or have withheld monies due it, the sums described below:

Contract Value	Liquidated Amount	Damage	Daily
Less than \$100,000		\$250	
\$100,000 or greater		\$1,000	

Execution of the Contract shall constitute agreement by City and Contractor that the liquidated damage amount specified in the table above is the minimum value of the costs and actual damage caused by the failure of Contractor to complete the Work within the allotted time. Such sum is liquidated damages and shall not be construed as a penalty, and may be deducted from payments due the Contractor if such delay occurs.

SECTION 7 – MEASUREMENT AND PAYMENT

7-1 MEASUREMENT OF QUANTITIES FOR UNIT PRICE WORK.

7-1.1 General.

ADD:

The estimate of the quantities of work to be done and materials to be furnished are approximate only, being given as a basis for the comparison of bids, and the City of Chula Vista does not expressly or by implication agree that the actual amount of work will correspond therewith, but reserves the right to increase or decrease the amount of any class or portion of the Work or to omit portions of the Work that may be deemed necessary or expedient by the Engineer.

7-4 PAYMENT FOR EXTRA WORK.

7-4.2 Basis of Establishing Costs.

7-4.2.1 Labor

DELETE in its entirety and SUBSTITUTE with the following:

The cost of labor shall be the actual cost for wages of workers performing the Extra Work at the time the Extra Work is performed. The cost of labor shall be determined by direct cost of labor plus labor surcharge. The direct cost of labor shall be the basic hourly wage rate plus employer payments for health and welfare, pension, vacation, training, dues, and other direct costs as documented on certified payrolls. Labor surcharge shall be the applicable rate listed in the State of California Department of Transportation (Caltrans) "Labor Surcharge and Equipment Rental Rates" publication in effect at the time the Extra Work is performed. Labor Surcharge accounts for all employer payments related to labor including workers compensation insurance, Social Security, Medicare, Federal unemployment insurance, State unemployment insurance, State training taxes, and other costs resulting from Federal, State, or local laws, as well as assessments or benefits required by lawful collective bargaining agreements.

The labor cost for foremen shall be proportioned to all of their assigned work and only that applicable to the Extra Work will be paid. Nondirect labor costs, including superintendence, quality control, and safety-related costs, shall be considered part of the markup specified in 7-4.3

7-4.2.3 Tool and Equipment Rental

DELETE the second paragraph in its entirety and SUBSTITUTE with the following:

Regardless of ownership, the rates to be used in determining equipment rental costs shall not exceed listed rates in the State of California Department of Transportation (Caltrans) "Labor Surcharge and Equipment Rental Rates" publication in effect at the time the Extra Work is performed. For equipment not listed in the Caltrans publication, the rate for the nearest equivalent equipment listed in the Caltrans publication shall be used. Where rental equipment is utilized for the exclusive performance of Extra Work, the invoiced cost may be used. Where rental equipment is utilized for the performance of both Extra Work and Contract Work, the invoiced cost - prorated for the Extra Work portion only - may be used. The decision to assess equipment rental costs from either Caltrans listed rates or from invoiced costs, from local equipment rental agencies, or distributors, shall be at the sole discretion of the Engineer.

7-4.3 Markup.

7-4.3.1 Work by Contractor.

DELETE in its entirety and SUBSTITUTE with the following:

Markup percentages to be added to the cost of extra work performed by contractor are as follows:

- 1) Labor 15%
- 2) Material 15%
- 3) Equipment 15%
- 4) Bonds Premiums 1%

7-4.3.2 Work by Subcontractor.

DELETE in its entirety and SUBSTITUTE with the following:

A markup of 5% on the first \$25,000 and 2 1/2% on work added in excess of \$25,000 of the subcontracted portion of the extra work.

PART 2

CONSTRUCTION MATERIALS

SECTION 200 – ROCK MATERIALS

200-1 ROCK PRODUCTS

200-1.4 Coarse Aggregate.

ADD the following after TABLE 200-1.4(B):

(ASTM C13 1 Test Grading C or Alternate California Test 211)

SECTION 201 – CONCRETE, MORTAR, AND RELATED MATERIALS

201-1 PORTLAND CEMENT CONCRETE

201-1.1 Requirements.

201-1.1.2 Concrete Specified by Class and Alternate Class.

Modify Table 201-1.1.2 as follows:

TABLE 201-1.1.2 (A)

Type of Construction	Concrete Class U.S. Standard Measures
<i>Street Surface Improvements</i>	
Revise: Concrete Pavement (not integral with curb) To Read: Concrete Pavement (not integral with curb) Cross Gutter and Alley Aprons	Revise: 520-A-2500 (310-A-17) To Read: 520-C-2500 560-C-3250
Revise: Curb, Integral Curb and Pavement, Gutter, Walk, Alley Aprons To Read: Curb and Gutter (separate or combined) And Walks	Revise: 520-C-2500 (310-C-17) 520-C-2500P ¹ (310-C-17P ¹) To Read: 520-C-2500 520-C-2500P ¹
<i>Sewer & Storm Drainage Facilities</i>	
Side hill Surface Drainage Facilities	Revise: 500-C-2500 (295-C-17) To Read: 520-C-2500
Pipe Bedding and Encasement, Anchors and Thrust Blocks, Wall Support for Pipe	Revise: 450-C-2000 ² (265-C-14 ²) To Read: 480-C-2000 ²
<i>Miscellaneous</i>	
Fence and Guardrail Post Foundations	Revise: 500-C-2500 (295-C-17) To Read: 520-C-2500

201-1.2.3 Water.

DELETE "... 1,000 mg/L of sulfates..." and SUBSTITUTE with "... 1,300 mg/L of sulfates..." in the second paragraph.

DELETE "... 800 mg/L of sulfates..." and SUBSTITUTE with "... 1,300 mg/L of sulfates..." in the third

paragraph.

201-1.3 Proportioning.

201-1.3.1 General.

ADD the following phrase after "or less" in the first paragraph:

"... or when using continuous mobile volumetric mixers, ... "

ADD the following paragraphs:

When proportioning by continuous mobile volumetric mixer, the mixing auger shall be charged by calibrated conveyer belts which are interlocked between the feeds for cement, course aggregate, and the fine aggregate.

The amount of water to be added to the mixture shall be measured into the mixing auger through a valve with a positive cut off and interlocked with the feeds for cement and aggregate.

Calibrated belt feeds shall not vary from the designated volume by more than one percent (1%) for cement, one percent (1%) for water, one and one-half percent (1-1/2%) for any size of aggregate, nor one percent (1%) for the total aggregate in any batch.

201-1.3.2 Combined Aggregate Gradings.

DELETE Grading Class C and SUBSTITUTE with the following in TABLE 201-1.3.2:

Sieve Size	Percentage Passing
	Sieves Grading C
2" (50 mm)	----
1-1/2" (37.5 mm)	100
1" (25.0 mm)	85-100
3/4" (19.0 mm)	75-95
3/8" (9.5 mm)	45-75
No. 4 (4.75 mm)	35-60
No. 8 (2.36 mm)	25-45
No. 16 (1.18 mm)	20-35
No. 30 (600 μm)	10-25
No. 50 (300 μm)	5-15
No. 100 (150 μm)	1-5
No. 200 (75 μm)	0-2

201-1.3.3 Concrete Consistency.

DELETE the following from the second paragraph:

“ ... and shall not exceed amounts shown in the following: ”

ADD:

201-1.4.5 Continuous Mobile Volumetric Mixer.

The type, capacity, and manner of operation of the mixing and transporting equipment for continuous mobile volumetric mixers shall conform to the current "Standard Specifications for Concrete Made by Continuous Mobile Volumetric Mixing ASTM C685,11 and the manufacturer's recommendations.

Continuous mobile volumetric mixers shall be calibrated at least every six months or less by the Engineer, or a laboratory recognized by the Engineer. Copies of the calibration charts shall be maintained on the mobile mixer and be available to the Engineer.

All changes between mix designs will require the mixing auger to be emptied and cleaned unless changing to a concrete mixture of a lower strength and approved by the Engineer.

Moisture content of the aggregate shall not vary by more than one-half percent (1/2%) for coarse aggregate and one and one-half percent (1-1/2%) for fine aggregate in the truck.

When concrete is being placed for pavement or concrete structures, all changes in the concrete consistency shall take place in one-quarter cubic yard (1/4 yd³) of concrete or less.

The Engineer shall be provided with a legible delivery ticket signed by the driver certifying to the concrete mixture delivered. When mix portions have been designated for the project and are identified by number, the Engineer may accept a legible certificate, which shall contain the following information:

- a) Name of Vendor,
- b) Name of Contractor,
- c) Project Location,
- d) Number of cubic yards delivered,
- e) Mix designation number,
- f) Maximum Slump,
- g) Maximum allowable water,
- h) Time and date of starting mixing.

When number does not designate the mix portions, or when required by the Engineer, the certificate shall contain the following additional information:

- 1) Actual weights of cement and of each size of aggregate,
- 2) Brand and type of cement,
- 3) Brand, type and amount of admixture.

ADD:

201-3.8.1 Water Stops.

Water stops to be placed in joints in concrete during construction to prevent the passage of water through them, shall be either fabricated from a plastic compound, the basic resin of which shall be polyvinyl chloride or sheet metal. Metal may be copper, lead, or zinc. The metal water stops shall be folded to a U shape longitudinally, with extensions or flanges embedded in the concrete two inches (2") or more, sometimes perforated for better bond with the concrete. Sheet copper water stops shall conform to AASHO M138 or ASTM B152; lead & zinc sheets with ASTM B29 and ASTM B69. Plasticized-polyvinyl chloride resin water stops shall conform to ASTM D412 62T. The following are minimum physical requirements:

Shore durometer "A" hardness (plus or minus 5)	68
Tensile strength, psi	1000
Elongation, percent	300
Specific Gravity (plus or minus 0.03)	1.48
Brittleness Temp. (ASTM D736), Pass	-22°F

Prior to supplying any water stops, the Contractor shall advise the Engineer and obtain approval for the proposed product to be provided. Splicing of water stops shall be done in accordance with manufacturer's specifications and Engineer's instructions.

201-3.9 Test Report and Certification.

ADD the following to the first sentence:

"... including water stops."

SECTION 207 - PIPE

207-2 REINFORCED CONCRETE PIPE (RCP)

207-2.1 General.

ADD:

Unless otherwise specified, the "D" load rating of all concrete pipe used within the street right of way shall be equal to a "D" loading of at least 1500.

207-11 CORRUGATED STEEL PIPE AND PIPE ARCHES

207-11.1 General.

ADD:

All corrugated steel pipe shall be coated and paved per Sections 207-11.5.2, Coatings, and 207-11.5.4, Paving.

207-11.2 Materials.

207-11.2.1 General.

ADD:

The gauge of sheets, unless otherwise specified, shall conform to the following:

Pipe Diameter	Gauge No.
8" to 21" inclusive	16
24" to 30" inclusive	14
36" to 54" inclusive	12
60" to 72" inclusive	10
78" to 96" inclusive	8

207-13 CORRUGATED ALUMINUM PIPE AND PIPE ARCHES.

207-13.2 Materials.

207-13.2.1 General.

ADD:

The gauge of sheets, unless otherwise specified, shall conform to the following:

Pipe Diameter	Gauge No.
8" to 21" inclusive	16
24" to 30" inclusive	14
36" to 54" inclusive	12
60" to 72" inclusive	10
78" to 96" inclusive	8

SECTION 211 – MATERIAL TESTS

211-1 COMPACTION TESTS

211-1.1 Laboratory Maximum Density.

REVISE second and third paragraphs as follows:

After "ASTM D1557" add "or Calif. Test Method No. 216".

211-1.2 Field Density.

DELETE in its entirety and SUBSTITUTE with the following:

Field density of soils shall be determined by ASTM D1556, ASTM D2922, Calif. Test Method No. 216, or Calif. Test Method No. 231 or as directed by the Engineer.

The minimum test hole volume shall be 0.075 cubic feet (ft³). The minimum test hole depth shall be five inches (5"). If the compacted layer of soil/material is less than five inches (5") deep, then the full depth of the layer shall be tested, and the minimum test volume waived.

The following tests are similar and may be alternated with one another when allowed by the Agency:

ASTM	Calif. Test Method No.
C31	540
C39	521
C40	213
C88	214
C127	206
C131	211
C136	202
C143	533
C1188	308
C2419	217

SECTION 217 – BEDDING AND BACKFILL MATERIALS

217-2 TRENCH BACKFILL.

217-2.1 General.

ADD:

Native material will be found not acceptable for trench backfill when:

- 1) the Contractor has attempted compaction and demonstrates through testing that the soil is not compactable in the native state and
- 2) is not dryable, as further required, by finding of a sand equivalent of less than fifteen (15), or more than fifteen percent (15%) passing through a No. 200 sieve; and
- 3) when either of the following values are exceeded:
Liquid Limit 50
Plasticity Index 20

The Engineer shall have the authority to require further testing when, in the opinion of the Engineer, the nature of the native material has changed in either moisture content or ability to be dried.

The Contractor will be compensated for import material and for export of unacceptable material on the basis of unit prices .bid. If no bid item is provided, the Contractor shall be compensated for import material and for export of unacceptable material in accordance with Section 2.

PART 3

CONSTRUCTION METHODS

SECTION 300 – EARTHWORK

300-3 STRUCTURE EXCAVATION AND BACKFILL.

300-3.5 Structure Backfill.

DELETE the third sentence in its entirety and SUBSTITUTE with the following:

No backfill material shall be deposited against the back of concrete abutments, concrete or masonry retaining walls, until the concrete or grout has developed not less than the specified 28-day compressive strength.

ADD the following to the end of the second paragraph:

Except that the backfill for bridge abutments and box culverts shall have a relative compaction of not less than ninety-five percent (95%). The thickness of each layer of backfill shall not exceed 0.67 foot (0.67') before compaction except when compaction is done by ponding and jetting.

300-8 GEOTEXTILES FOR DRAINAGE.

300-8.1 Trench Drains.

ADD the following before the first sentence:

Geotextile fabric for use with rock slope protection shall be either woven or non-woven and conform to Subsection 213-5 Geotextiles and Geogrids. In addition, fabric weight shall be not less than six ounces per square yard (6 oz./sq. yd.) in accordance with ASTM Designation D1910.

300-9.1 Bank and Shore Protection.

ADD the following before the first sentence:

Geotextile fabric for use with rock slope protection shall be either woven or nonwoven and shall conform to Subsection 213-5 Geotextiles and Geogrids. In addition, fabric weight shall be no less than 6 ounces per square yard (6 oz./sq. yd.) in accordance with ASTM Designation D1910.

300-9.1.1 Placement.

ADD the following before the first sentence of the first paragraph:

Surfaces upon or against which filter fabric is to be placed, shall be free of loose or extraneous material and sharp objects that may damage the fabric during installation. Filter Fabric shall additionally conform to the ground surface without stretching when outer stone cover or bedding layer of aggregate particles is laid.

DELETE the third sentence of the second paragraph and SUBSTITUTE with the following:

The size and composition of the stitching material and stitching pattern shall be approved by the Engineer.

ADD the following to the end of the sixth paragraph:

For filter fabric which, in the opinion of the Engineer, is not resistant to ultraviolet rays, the seven (7) calendar day period shall be reduced to twenty-four (24) hours.

ADD:

Except as otherwise specified in these Standard Specifications, special provisions and contract Plans, filter fabric shall be handled and placed in accordance with the manufacturer's recommendations.

SECTION 301 – SUBGRADE PREPARATION, TREATED MATERIALS, AND PLACEMENT OF BASE MATERIALS

301-1 SUBGRADE PREPARATION.

300-1.3 Relative Compaction.

DELETE the first paragraph and SUBSTITUTE with the following:

When pavement, base, subbase, or cross gutter is to be placed directly on subgrade material, the top twelve inches (12") of subgrade material in streets and the top six inches (6") of subgrade material in alleys shall be compacted to a minimum density of ninety-five percent (95%) relative compaction. When curb, gutter, driveways, or sidewalks are to be placed on the subgrade material, the top six inches (6") of such subgrade material shall be compacted to a relative compaction of ninety percent (90%).

ADD:

When in the opinion of the Engineer, the Contractor has employed satisfactory construction methods in accordance with the Standard Specifications, and the subgrade is at or greater than optimum moisture content, the following additional test may be required by the Engineer:

The subgrade shall be tested with a loaded truck of ten-ton capacity or greater, and having a load of seventy-five pounds or more per square inch (75+ psi) of the tire contact area. The subgrade shall support this load without perceptible indentation or movement. The base, surfacing or pavement shall not be scheduled for construction until the subgrade has been tested as described above and approved by the Engineer.

301-1.7 Payment.

DELETE the last paragraph and SUBSTITUTE with the following:

If payment provisions do not provide for adjustment or reconstruction of manholes shown on Plans, payment for such work will be deemed to be included in the other items of work and no additional payment will be made therefor.

SECTION 302 – ROADWAY SURFACING

302-4 SLURRY SEAL SURFACING.

302-4.5.5 Verification Testing.

DELETE the third sentence and SUBSTITUTE with the following:

The Contractor shall provide field samples at the time of verification testing for extraction tests (ASTM D6307) and consistency tests.

302-4.9.1 Field Sampling.

DELETE in its entirety and SUBSTITUTE with the following:

Field samples shall conform to the requirements shown in Table 302-4.9.1.

TABLE 302-4.9.1

Tests	ASTM Test Method	Requirements	
		Min.	Max.
Consistency Test (mm)	D3910 ¹	20	40
Extraction Test (Calculated Emulsion Content, %)	D6307 ² ; CT 382 ²	+/- 1% of mix design for EAS +/- 3% of mix design for REAS	
Water Content (% of Dry Slurry)	See Note 3	Type I, II, and III EAS <25 Type Fine and I REAS < 40 Type II and III REAS < 31	

302-5 ASPHALT CONCRETE PAVEMENT.**302-5.3 Prime Coat.**

ADD "or MC-7011 after "Grade SC-250".

302-5.4 Tack Coat.

ADD the following sentence to the end of the last paragraph:

A 'cold pavement joint' is asphalt concrete pavement which has cooled below the lower limits of the spreading temperature prescribed in Subsection 302-5.5 "Distribution and Spreading."

302-5.5 Distribution and Spreading.

DELETE the sixth paragraph in its entirety and SUBSTITUTE with the following:

The depositing, distributing, and spreading of the asphalt concrete shall be accomplished in a single, continuous operation by means of a self-propelled mechanical spreading and finishing machine designed especially for that purpose. The machine shall be equipped with a screed capable of being accurately regulated and adjusted to distribute a layer of the material to a definite predetermined thickness. The screed shall be able to extend from 8 to 18 feet per the manufacturer's recommendations. The screed shall be equipped with a 2-foot wide cut-off shoe to allow the paver to operate between 8 feet and 18 feet wide. Hydraulic wing extensions are not considered to be a screed. All screed extensions shall be similar to a Blaw-Knox Omni screed that when extended shall consist of all screed components (screed plate, strike off plates, heater and vibrator). The Engineer shall select joint locations and pavement widths based upon the capabilities of the specified screed. When paving is of a size or in a location that use of a self-propelled machine is impractical the Engineer may waive the self-propelled requirements. The type of machine (make and model) shall be submitted to the Engineer one week prior to commencement of paving operations. The Engineer shall be given the opportunity to inspect the paving machine prior to commencement of paving operations. The manufacturer's operation manual for the machine shall be made available for review upon request of the Engineer.

Asphalt paving equipment shall be equipped with automatic screed controls, a sensing device or devices and a ski device. The minimum length of the ski device shall be 30 feet. The ski device shall be a rigid one-piece unit and the entire length shall be used in activating the sensor or sensors.

When placing asphalt to the lines and grades established by the Engineer, the automatic screed controls shall control the longitudinal grade and transverse slope of the screed. Grade and slope references shall be furnished, installed and maintained by the Contractor.

When placing the initial mat of asphalt concrete on existing pavement, the end of the screed nearest the centerline shall be controlled by a sensor activated by a ski device not less than 30 feet long. The end of the screed farthest from the centerline shall be controlled by a sensor activated by a similar apparatus or by an automatic transverse slope device set to reproduce the cross slope designated by the Engineer.

When paving contiguously with previously placed mats, the end of the screed adjacent to the previously placed mat shall be controlled by a sensor that responds to the grade of the previously placed mat and will reproduce the grade in the new mat within 0.01 ft. tolerance. The end of the screed farthest from the previously placed mat shall be controlled in the same manner as when placing the initial mat.

Should the automatic screed controls fail to operate properly during any day's work, the Contractor may use manual control of the spreading equipment for the remainder of that day, however, the equipment shall be corrected or replaced with automatically controlled equipment conforming to the requirements in this section before starting another day's work.

At the discretion of the Engineer, in locations where the use of automatic screed controls with ski device is impractical or inaccessible, automatic screed controls will not be used.

Where the pavement slopes towards a concrete gutter, asphaltic concrete shall be placed such that the pavement surface is a minimum of 3/8" above the lip of gutter elevation. Where the pavement slopes away from a concrete gutter, asphaltic concrete shall be placed such that the pavement surface is flush with the lip of gutter elevation unless otherwise directed by the Engineer.

ADD:

302-5.5.1 Asphalt Base Distribution and Spreading.

The contractor may employ distribution and spreading methods as hereinafter specified when the total thickness of asphalt concrete pavement to be constructed is four inches (4") or greater.

Asphalt concrete to be placed by asphalt base distribution and spreading methods shall be a medium coarse type as specified in Subsection 203-6.

The depositing, distribution and spreading of asphalt concrete shall be accomplished in a single, continuous operation by means of a self-propelled paving machine. In those instances in which; due to nature or location of the work, the use of said equipment would be obviously impractical, the asphalt concrete may be placed by any method approved by the Engineer. .

Asphalt concrete may be placed with no limitation in thickness, except that final grade elevation must be attained in accordance with this Greenbook Supplement Subsection 302-5.5.2 "Asphalt Concrete Pavement Distribution and Spreading."

Successive courses may be laid upon previously laid courses as soon as the previous course has cooled sufficiently to show no appreciable displacement under equipment load. The surface of the finished asphalt base at any point shall not vary more than 0.02 foot (0.02") above or below the grade established by the Engineer.

ADD:

302-5.5.2 Asphalt Concrete Pavement Distribution and Spreading.

The following distribution and spreading method shall be employed when the specified total thickness of asphalt concrete pavement is less than four inches (4") and for the final course of asphalt concrete pavement the base course of which has been constructed in accordance with this Greenbook Supplement Subsection 302-5.5.1 "Asphalt Base Distribution and Spreading."

Regardless of the method of construction employed for the lower course of asphalt concrete pavement, the final grade elevation shall be attained in a course of a minimum thickness of one inch (1") and a maximum thickness of four inches (4"), placed in accordance with this Subsection.

The depositing, distributing and spreading of the asphalt concrete shall be accomplished in a single, continuous operation by means of a self-propelled mechanical spreading and finishing machine designed especially for that purpose, except in those instances in which, due to the nature or locations of the work, it would obviously be impractical. The machine shall be equipped with a suitable full width compacting screed capable of being accurately regulated and adjusted to distribute a layer of the material to a definite predetermined thickness as noted in the Greenbook Supplement TABLE 302-5.5.2 below.

TABLE 302-5.5.2

Specified Total Thickness of Payment		Minimum Number of Courses	Type of Mixture
Greater than (inch)	But not more than (inch)		
0	1	1	Fine
1	1.5	1	Medium
1.5	4	1	Medium, or Medium-Course, as Directed
4	-	2	Medium, or Medium-Course, as Directed

Spreading, once commenced, must be continued without interruption. No greater amount of the mixture shall be delivered in any one day than can be properly distributed and rolled during that day.

Successive courses may be laid upon previously laid courses as soon as the previous course has cooled sufficiently to show no perceivable displacement under equipment or loaded material delivery trucks.

302-5.6 Rolling.

302-5.6.1 General.

DELTE Part c) of the second paragraph and SUBSTITUTE with the following:

Vibratory rollers shall be limited to breakdown, unless otherwise directed by the Engineer. The vibratory rollers shall have a compactive effort of not less than 250 PLI (pounds per linear inch) of centrifugal force at the setting indicated by the manufacturer's ID plate.

ADD:

Unless otherwise directed by the Engineer; initial breakdown rolling shall be followed by a pneumatic-tired roller as described in this Subsection. A seal coat shall be applied per this Greenbook Supplement Subsection 302-5.10 "Sealcoat."

302-5.6.2 Density and Smoothness.

DELETE the first paragraph and SUBSTITUTE with the following:

Upon completion, the pavement shall be true to grade and cross section. When a ten-foot (10') straight edge is laid on the finished surface parallel to the centerline of the roadway, the surface shall not vary from the edge of the straightedge more than one-eighth inch (1/8"); when a ten-foot (10') straight edge is laid on the finished surface traverse to the centerline of the roadway, the surface shall not vary from the edge of the straightedge more than one-quarter inch (1/4"), except at intersections or at changes of grade. Any areas that are not within this tolerance shall be brought to grade immediately following the initial rolling.

DELETE the second paragraph in its entirety and SUBSTITUTE with the following:

The compaction after rolling shall be between 92 and 96 percent of the maximum theoretical specific gravity as determined by ASTM D 2041. Asphalt concrete density is to be measured through the use of a nuclear density gauge, or core tests. Test locations shall be determined by random sampling techniques per California Test 375, Part C.

At least one density measurement shall be taken from each 50 tons or part thereof or for each 150 lineal feet of paving lane for each mix type placed each day. Acceptability of in-place density shall be based upon the average of at least three tests. For new pavement with a total asphaltic concrete thickness of 1-1/2 inches or more, the Engineer may require removal and replacement at Contractor's expense when the average value of the

density tests is greater or less than specified in paragraph 203-6.3.3.

For evaluation of "out-of-spec" pavement materials, only cores shall be used to determine in-place density, unless otherwise approved by the Engineer. At least three cores shall be taken from the area suspected to be "out-of-spec", with at least one core taken for each 50 tons or 150 lineal feet of paving lane placed. The average of the core densities shall be used for acceptance or rejection, unless the results identify obviously defective or isolated suspicious areas. The average core density shall meet the requirements of paragraph 203-6.3.3. An individual core density of less than 90 percent shall constitute a suspicious area. The limits of isolated defective areas shall be further delineated with nuclear density gauge readings calibrated to the core data and said defective areas removed and replaced.

302-5.7 Joints.

ADD:

Joints between longitudinal (parallel) passes shall be tack coated if the temperature of the preceding pass has cooled below one hundred eighty degrees Fahrenheit (180°F).

The pinched joint method of rolling is to be used for rolling all asphalt concrete joints. The roller shall be employed in a longitudinal direction on the first pass of the breakdown roll with the roller entirely on fresh asphalt and four to six inch (4" - 6") from the existing asphalt or concrete!

The second pass shall be made with the roller centered longitudinally on the four to six inch (4" - 6") wide strip. With the approval of the Engineer, the four to six inch (4" - 6") wide strip may be compacted on the return trip of the first pass of the roller.

302-5.9 Measurement and Payment.

ADD:

Quantities of pavement reinforcing fabric placed and paving asphalt applied as a binder for the pavement reinforcing fabric will be paid for at the contract price per square yard for pavement reinforcing fabric, not including additional fabric for overlap. Full compensation for furnishing and spreading asphaltic sand to cover exposed binder material, if necessary, shall be considered as included in the contract price paid per square yard for pavement reinforcing fabric and no separate payment will be made therefore.

Small quantities of asphalt concrete placed on pavement reinforcing fabric to prevent the fabric from being displaced by construction equipment or to allow traffic to cross over the fabric, shall be considered as part of the layer of asphalt concrete to be placed over the fabric and will be measured and paid for by the ton as asphalt concrete.

ADD:

302-5.10 Sealcoat.

All asphalt concrete surfaces shall be sealcoated unless otherwise specified. The sealcoat shall consist of a coat of asphaltic emulsion and a cover coat of sand. The asphaltic emulsion shall be mixing type conforming to Section 203-3 "EMULSIFIED ASPHALT." Sand shall be clean and dry.

Immediately before applying asphaltic emulsion, the surface to be sealcoated shall be thoroughly cleaned of all dirt and loose material. Asphaltic emulsion shall not be applied when the street is overly wet or when the atmospheric temperature is below fifty degrees Fahrenheit (50°F).

The asphaltic emulsion shall be applied by use of a power-spraying device that uniformly applies the emulsion to the surfacing at a rate of 0.1 to 0.15 gallon per square yard (0.1 to 0.15 g/sq. yd.). The distributor spray bar shall be equipped with asphaltic emulsion type spray jets. Curbs, gutters, other adjoining improvements shall be carefully protected from the emulsion, and any such improvements spattered or touched with emulsion shall be carefully cleaned.

Immediately after the application of asphaltic emulsion, a cover coat of sand shall be spread at the rate of 6 to 12 pounds per square yard (6-12 lbs./sq. yd.). After the sand has been spread, any piles, ridges, or uneven distribution shall be broomed to maintain an even layer over the surface.

Five (5) days after the seal coat has been applied, the surface shall again be broomed and any excess sand shall be picked up and removed from the job. The Engineer may authorize the sand to be broomed, picked up and removed from the job after two (2) or more days.

ADD:

302-5.10.1 Measurement and Payment.

When sealcoat is paid for as a contract item of work, the unit of measurement shall be either per square foot, in which case measurements shall be made in horizontal planes, or per ton of asphaltic emulsion and per ton of sand.

SECTION 303-CONCRETE AND MASONRY CONSTRUCTION

303-1 CONCRETE STRUCTURES.

303-1.6 Falsework.

303-1.6.1 General.

ADD:

The Contractor shall be responsible for designing and constructing falsework which provides the necessary rigidity, supports the loads imposed, and produces in the finished structure the lines and grades indicated on the Plans. No falsework construction shall start until the Engineer has reviewed and approved the Plans of the falsework proposed to be used. The Contractor shall provide sufficient time for the Engineer to complete this review. Such time shall be proportionate to the complexity of the falsework design and in no case shall be less than two (2) weeks.

For falsework over railroads, approval of the Engineer of the falsework Plans will be contingent upon the Plans being satisfactory to the Railroad Company involved.

303-1.7 Placing Reinforcement.

303-1.7.1 General.

ADD:

Reinforcing steel lists shall be submitted to the Engineer for approval when requested. Such approval is intended as additional precaution against errors and shall not be construed as relieving the Contractor of full responsibility for the accuracy of the lists.

303-1.9 Surface Finishes.

303-1.9.2 Ordinary Surface Finish.

ADD:

If rock pockets, in the opinion of the Engineer, are of such an extent or character as to affect the strength of the structure materially or to endanger the life of the steel reinforcement, he may declare the concrete defective and require the removal and replacement of the portions of the structure affected.

303-5 CONCRETE CURBS, WALKS, GUTTERS, CROSS GUTTERS, ALLEY INTERSECTIONS, CURB RAMPS, AND DRIVEWAYS.

303-5.1 Requirements.

303-5.1.1 General.

DELETE the first sentence in the second paragraph and SUBSTITUTE with the following:

Unless otherwise shown on the Plans, and except as otherwise specified in 303-5.1.3, the minimum thickness of walks shall be 3 inches (75mm) to four inches (4").

ADD:

When the plans provide for the reconstruction of a portion of an existing sidewalk, the existing section shall

be cut to a minimum depth of 1 1/2 inches with an abrasive type saw at the first scoring line at or beyond the planned joint and the entire section shall be removed. The new work shall join the old work at this line.

The Engineer shall determine limits for the removal and reconstruction of curb, gutters, sidewalks, driveways, sidewalk ramps, and pavement.

Concrete coloring for sidewalks and driveways shall not be used without written permission from the Engineer.

303-5.1.2 Drainage Outlets Through Curb.

ADD:

The drain pipe shall be trimmed to end flush with the face of curb.

303-5.2.1 Standard Forms.

ADD:

Concrete curb, gutter and sidewalk shall be formed full height, front and back, unless an approved mechanical extruding device is approved.

303 5.3 Placing Concrete.

ADD:

The top and/or face of the finished concrete surfaces shall be true and straight, of uniform width and free of humps, sags, or other irregularities. The finished concrete surface shall not vary more than 0.02 foot (0.02') from a ten-foot (10') straight edge, except at grade changes or curves. No freestanding water will be permitted on slope over one percent (1%). No freestanding water deeper than one-sixteenth inch (1/16") will be permitted on slopes of less than one percent (1%).

Concrete placed immediately before rain shall be protected to prevent rainwater from coming in contact with it. Sufficient protective covering shall be kept on hand at all times for this purpose.

303-5.4 Joints.

303-5.4.2 Expansion Joints.

DELETE the first sentence of the third paragraph and SUBSTITUTE with the following:

Expansion joint filler one-quarter inch (1/4") thick shall be placed in walk at the EC and BC of all walk returns, at forty-five foot (45') intervals in lieu of the regular weakened plane joint and around all utility poles which may project into the concrete along the line of the work.

303-5.4.3 Weakened Plane Joints.

a) General.

In the second paragraph change "10 feet (3m)." to "fifteen feet (15)".

In the third paragraph change "20 feet(6m)." to "fifteen feet (15)".

303-5.5 Finishing.

303-5.5.3 Walk.

ADD:

When placing the tops to concrete drainage and sewer structures within the surface of the sidewalk, the tops to concrete drainage and sewer structures shall be monolithic for the full width of the curb, gutter and sidewalk. The top of the structure shall be imprinted with a Storm Drain Stencil per CVCS-24. When placing the tops of concrete drainage and sewer structures within parkways, if the distance between the edge of the structure and the sidewalk is less than 18", then the tops to said structures shall be constructed to the full width of the parkway.

303-5.5.5 Alley Intersections, Curb Ramps and Driveways.

DELETE and SUBSTITUTE with the following:

Alley intersections, access ramps and driveways shall be constructed . as specified for concrete pavement in Subsection 302-6. except final finishing for alley intersections, access ramps and the sloping portion of driveways shall be done by hand with a steel trowel followed with medium coarse broom and the remaining portion of the driveway finished as specified for walks in accordance with Subsection 303-5.5.3.

303-5.6 Curing.

ADD the underlined portion to the second sentence in the third paragraph:

"...bituminous pavement or cement-treated base adjacent to concrete curb..."

SECTION 306- OPEN TRENCH CONDUIT CONSTRUCTION

306-5. DEWATERING.

ADD after the second paragraph:

The Contractor shall furnish, install, and operate the dewatering system, including but not limited to pumps, well points or other devices as may be necessary to remove any subsurface water, seepage, storm water, or sewage that may be encountered during the construction. The trenches and other excavations shall be kept free from water while concrete or pipe is being installed. Water shall be disposed of in accordance with all Federal, State, or local agency requirements and in such a manner as to cause no injury to public or private property, nor be a menace to public health.

306-6 BEDDING

306-6.1 General.

ADD:

Except where otherwise specified, all non-reinforced and reinforced concrete pipe and all asbestos cement pipe shall be installed using the standard installation. Standard installations for reinforced concrete pipe shall consist of trench and pipe bedding as shown on Regional Standard Drawing No. D-60 except that the ¾-inch graded crushed aggregate rock shall extend up to the upper half (spring line) of the pipe. The remainder of the bedding material shall conform to 217-1.1.

Except where otherwise specified, all corrugated metal pipe and all plastic pipe shall be installed using the standard installation. Standard installation for corrugated metal pipe and plastic pipe shall consist of trench and pipe bedding as shown on Regional Standard Drawing No. D-60 or SP-02 except that the ¾-inch graded crushed aggregate rock shall extend up to 1 foot above top of pipe, wrapped in a filter fabric envelope with a minimum 12" overlap, conforming to 300-8.

Except where otherwise specified, all clay pipe shall be installed using the standard installation that shall consist of trench and pipe bedding as shown on Regional Standard Drawing No. SP-02, wrapped in a filter fabric envelope with a minimum 12" overlap conforming to 300-8.

306-6.5.2 Plastic Pipe and Fittings.

ADD:

It is important that care be taken to provide proper support under the pipe haunches and to each side of the pipe and that the pipe is not moved during the placement and compaction of the bedding material. Care shall be exercised in using granular bedding that contains significant voids. Certain silty or sandy soils near or in the bedding zone tend to migrate into these voids, particularly in the presence of groundwater. Compaction shall be performed in such a manner so that no compaction equipment is used directly above the pipe until sufficient backfill has been placed over the pipe to prevent damage. The Contractor shall provide at least thirty-six inches (36") of cover over the top of the pipe before the trench is wheel-loaded and a minimum of forty-eight inches (48") of cover before utilization of a hydrohammer.

306-7 PREFABRICATED GRAVITY PIPE

306-7.1 General.

ADD:

In order to ensure a true line and grade, grade stakes shall be set every 25 feet. Sewer pipe shall be laid through the manhole unless otherwise directed by the Engineer.

When sewer pipe is to be carried continuously through the manhole, the top portion of the pipe shall be removed after all other work is completed.

306-7.3 Reinforced Concrete Pipe (RCP)

306-7.3.2.1 Tongue and Groove Self-Centering Joints.

DELETE the third and fourth paragraphs and SUBSTITUTE with the following:

Pipes used on curves shall have one or both ends beveled or shall be pulled to provide a smooth curve. One side of the joint shall be tight and on the opposite side the tongue and groove may be opened to have a minimum overlap of one-quarter inch (1/4"). The resulting space shall be filled with Class "C" mortar for the full thickness of the pipe wall. When the opened joint overlaps less than one-quarter inch (1/4"), a pipe collar per San Diego Regional Standard Drawing **D-62** shall be provided.

306-7.4.2 Installation.

306-7.4.2.1 General.

DELETE the first sentence and SUBSTITUTE with the following:

Unless otherwise indicated on the plans, all joints for sewers constructed of clay pipe shall be type "G" joints per 306-7.4.2.3.

The Contractor may submit for approval any other type of joint that he believes is equal or superior to those specified. Said alternate shall be submitted in writing at least fifteen (15) days in advance of the start of the work. The City Engineer shall be the sole judge as to whether any material submitted for approval is equal or superior to those specified. No unspecified material shall be used until approved by the City Engineer.

No sewer shall be broken into except in the presence of the Engineer. The connection shall be made with a standard vitrified clay saddle constructed with lugs to prevent protrusion through the pipe. The hole in the sewer shall be made midway between joints. It shall be made with extreme care starting with as small a hole as possible and carefully enlarged so as to provide a hole approximately 1/4" larger than the outside diameter of the saddle. The saddle shall be mortared in place, filling the annular space between saddle and pipe wall with mortar composed of 1 part Portland cement to 2 parts of clean well graded sand. The inside shall be wiped to provide a smooth joining of the saddle to the pipe wall.

No additional pipe may be joined to the saddle until the contractor receives approval of the saddle connection from the Engineer.

After the saddle has been mortared in place and approved by the Engineer, at least 6 strands of No. 10 galvanized wire shall be loosely wound around the pipe, 3 strands on each side of the saddle, 2 of which shall pass over the saddle. A ring of Class "A" concrete at least 4 inches thick and 18 inches in length shall then be constructed entirely around the pipe at the location of the saddle.

306-7.8 Gravity Pipeline Testing.

306-7.8.3 Maximum Allowable Barrel Deflection Testing of Plastic Sewer and Storm Drain Pipe.

ADD:

This section is also applicable to all plastic pipe and inserted liner whereby the annular space between the outer wall of the liner and inner wall of existing pipe being lined is pressure grouted.

ADD:

306-7.8.4 Balling of Sewers

After completion of the sanitary sewer system, including televising sewer mains and the surfacing of the street, an approved type sewer ball equal to the diameter of the pipe shall be sent through the sewer from the uppermost structure to the lowermost structure. The contractor shall, at his own expense, furnish all materials for carrying out the operation and removing any obstructions that prevent the ball from traveling through the pipe.

ADD:

306-7.9 Digital Video Recording Sewer Mains and Storm Drains.

306-7.9.1 Digital Video Recording Sewer Mains and Storm Drains.

New sewer mains less than thirty-six inch in diameter (36"φ) and storm drains eighteen inches in diameter to thirty-five inches in diameter (18" - 35" φ) shall be inspected by color digital video after completion of trench backfill and finished grading but prior to the placement of pavement or permanent trench resurfacing, to determine the existence and extent of any obstructions, structural deficiencies, or sags. Storm drains less than fifty feet (50') in length for a single run are not required to be videoed.

The Contractor in cooperation with the Agency and its Engineer shall do the digital video recording. The Engineer reserves the right to require the Contractor to digitally re-record any new sewer main, at the Contractor's expense, after the placement of pavement or permanent trench resurfacing, but before acceptance by the Engineer, to determine the existence and extent of any foreign material or obstructions such as, but not necessarily limited to, cement grout, wood, rocks, sand, concrete, or pieces of pipe, and any structural deficiencies or sags precipitated by the permanent resurfacing operations or other contract work. The Contractor shall notify the Engineer thirty (30) working days in advance of the anticipated date that final acceptance will be requested. If the specified advance notice is not given, final acceptance and bond release may be delayed.

The digital recording format shall be as approved by the Agency prior to recording. Five (5) working days shall be allowed for the Engineer to review each individual digital recording of each and every sewer main or storm drain documented on that particular digital video disc (DVD). In the event that any deficiencies or sags are discovered by the Engineer, either by the Contractor's initial digital recording or the Engineer's required digital re-recording, three (3) working days shall be allowed for the Engineer to determine whether the deficiencies or sags are repairable in place. If the Engineer determines that the deficiencies or sags are not repairable in place, the affected portion(s) shall be reconstructed in accordance with Subsection 3-13, "COMPLETION, ACCEPTANCE, AND WARRANTY."

The Contractor shall not be entitled to any additional working days due to delays resulting from the correction of any deficiencies or sags, either repairable or non-repairable in place, as determined by digitally recorded inspections and the Engineer.

ADD:

306-7.9.2 General Requirements.

- a) The digital video recording operator must have at least one (1) year of experience with a project of a similar nature within the recent past.
- b) "Read only" DVDs shall be high definition color format and recorded in mode and disc format as directed and approved by Agency. Any out-of-focus, inadequate, or faulty (electrical interference, etc.) digital video recordings or portions thereof, shall be cause for rejection. of the digital recordings and will necessitate re-recording of the digital video.
- c) The Engineer shall be notified forty-eight (48) hours prior to the digital video recording.
- d) The Contractor shall turn over the original DVD to the Engineer immediately after digital video recording.
- e) Digital video recording shall be done in one direction for the entire length between manholes; each section shall be isolated from the remainder of the sewer line or storm drain as required. Sufficient water shall be supplied to cause drainage within the isolated section prior to digital video recording.
- f) For underground sewer or storm drain conduit installations, the maximum operation tolerance for sag shall

be one-hundredth foot/inch of pipe diameter (0.01 φ). No sag shall be longer than sixty feet (60'). When digital video recording inspection is used to check for sags, a calibrated device acceptable to the Engineer shall be used to measure the depth of sag.

- g) The Contractor shall not be entitled to any additional working days due to delays in securing the digital video services of a private vendor.

ADD:

306-7.9.3 Equipment for Digital Video Recording.

Color digital video recording equipment shall include the solid state color digital video recording camera, digital video monitor, cables, power source, lights and other equipment necessary to the digital video recording operation to meet the requirements specified herein. The components of the digital video system shall be capable of producing high definition picture quality to the satisfaction of the Agency. The components shall provide an image that meets the following specifications or approved equal.

- a) The gray scale shall show equal changes in brightness ranging from black to white with a minimum of five (5) stages.
- b) With the video monitor control correctly adjusted, the six colors - yellow, cyan, green, magenta, red and blue, plus black and white shall be clearly resolved with the primary colors in order of decreasing luminance. The gray scale shall appear in contrasting shades of gray with no color tint.
- c) The picture shall show no convergence or divergence over the whole of the picture. The monitor shall be at least thirteen inches (13") diagonally measured across the picture screen.

The camera shall be specifically designed and constructed with a rotational lens for operation in connection with sewer or storm drain inspection and capable of viewing the complete circumference of the pipe as well as manhole and cleanout structures. The camera shall be self-operative in one hundred percent (100%) humidity conditions. The camera lens shall be an auto iris type with a focal distance which can be remote-adjustable through a range of from one inch (1") to infinity. The camera shall be self-propelled or mounted on skids suitably sized for each pipe diameter to be investigated. Cameras incorporating mirrors for viewing sides or using exposed rotating heads are not acceptable. Lighting intensity for the camera shall be remote controlled and shall be adjusted to minimize reflective glare. Camera and lighting quality shall be suitable to provide a clear, continuously in-focus digital video picture of the entire inside periphery of the sewer pipe or storm drain for all conditions encountered during the work except submergence. The remote reading footage counter shall be accurate to within one-half percent (0.5%) over measured distance of the particular section being inspected and shall be displayed on the digital video monitor. The digital video camera, video monitor and other components of the digital video system shall be defined as ISO-MPEG Level 1 (MPEG-1) coding having a resolution of 352 pixels (x) by 240 pixels (y) (minimum) and an encoded frame rate of 29.97 frames per second. The digital recording shall include both audio and video information that accurately reproduces the original picture and sound of the digital video inspection. The video portion of the digital recording shall be free of electrical interference and shall produce a clear and stable image. The audio portion shall be sufficiently free of background and electrical noise so as to produce an oral report that is clear and discernible. The digital video camera shall be capable of registering a minimum of 470 lines horizontal resolution and be a clear, stable image with no interference. The equipment shall be capable of digitally recording the entire length in one direction. When digital video recording storm drains the camera shall be capable of scanning the joints for three hundred and sixty degrees (360°).

ADD:

306-7.9.4 Digital Video Recording Procedures.

The digital video camera shall be moved through the pipeline in a downstream direction at a uniform rate, stopping when necessary to ensure proper documentation of the condition of the sewer line but in no case shall the digital video camera be pulled at a speed greater than thirty feet per minute (30 fpm). Manual winches, power winches, cable and powered rewinds or other devices that do not obstruct the camera view or interface

with proper documentation of the sewer line or storm drain conditions shall be used to move the camera through the sewer line or storm drain.

If, during the digital video recording operations, the digital video camera will not pass through an entire manhole section or storm access point section, the Contractor shall reset the equipment in a manner so that the inspection can continue opposite the obstruction. If the digital video camera encounters an obstruction within a section not accessible to a manhole or storm drain access point, the Contractor shall remove the obstruction by excavation or other appropriate means, replace whatever pipe is necessary, and re-record the entire section.

Whenever non-remote powered and controlled winches are used to pull the digital video camera through the line, telephones, radios, or other suitable means of communication shall be set up between the two manholes or storm drain access points of the section being inspected to ensure that adequate communications exist between members of the crew.

The importance of accurate distance measurements is emphasized. Measurement for location of defects shall be above ground by means of a metering device. Marking on the cable, or the like, which would require interpolation for depth of manhole or storm access points, will not be acceptable.

The accuracy of the measurement meters shall be checked daily by use of a walking meter, roll-a-tape, or other suitable device. Footage measurements shall begin at the centerline of the upstream manhole or storm drain access point, unless permission is given by the Engineer to do otherwise. Footage shall be shown on the digitally video recorded data view at all times.

ADD:

306-7.9.5 Documentation of Digital Video Recording.

Audio and written documentation shall accompany all DVD(s) submitted to the Engineer. The voice recording of the DVD(s) shall make brief but informative comments on data of significance, including, but not limited to, the locations of unusual conditions, type and size of connection, collapsed section, the presence of scale and corrosion, and other discernible features.

The DVD(s) shall include the following:

a) Data View

- i). Report No.
- ii). Date of digital video recording inspection.
- iii). Upstream and downstream manhole, storm drain access point or station numbers.
- vi). Current distance along reach (digital video recording counter footage).
- v). Printed labels on DVD container with location information, date format information, and other descriptive information.

b) Audio

- i). Date of the digitally recorded video inspection.
- ii). Confirmation of upstream and downstream manhole, storm access point or station numbers.
- iii). Description of pipe size, types and pipe joint length.
- vi). Description and location of each defect.
- v). Description and location of each service connection.

c) Written

- i). Date of digital video recorded inspection.
- ii). DVD number.
- iii). Location, size, type, and length of pipe.
- vi). Direction of flow and measurement (“From” manhole/storm drain access point/station number “To” manhole/storm drain access point/station number).
- v). DVD counter numbers (beginning and end).
- vi). Sketch showing the street and cross streets where the digitally recorded video inspection

- was made.
- vii). Description and location of each defect.
 - viii). Description and location of each connection.

ADD:

306-7.9.6 Payment for Digital Video Recording.

Where payment for digital video recording sewer mains and/or storm drains by the Contractor is a separate bid item, it shall include all work covered by these specifications. Where a separate payment is not provided, it shall be included in the cost per foot of pipe installed and shall include all work covered by these specifications at no additional costs.

306-12.3 Mechanically Compacted Trench Backfill.

306-12.3.2 Compaction Requirements.

DELETE in its entirety.

306-12.4 Jetted Trench Backfill.

306-12.4.1 General.

DELETE c) in the third paragraph and SUBSTITUTE with the following:

- c) The lift of backfill shall not exceed that which can be readily densified by jetting, but in no case shall the undensified lift exceed ten feet (10').

306-12.4.2 Compaction Requirements.

DELETE the entire section and SUBSTITUTE with the following:

All trench backfill shall be compacted to a minimum ninety percent (90%) relative compaction except where ninety five. percent (95%) relative compaction shall be required by 301-1.3.

306-13 TRENCH RESURFACING.

306-13.2 Permanent Resurfacing.

ADD:

Permanent asphalt concrete trench resurfacing shall be placed within a maximum of thirty (30) calendar days after traffic is restored.

ADD:

306-16 UNDERDRAINS.

306-16.1 General.

Trenches for underdrains shall be excavated, the filter fabric placed; if required, the pipe installed, and the trench backfilled with permeable material according to the dimensions and details shown on the Plans. When underdrains are installed in trenches outside the subgrade area, the top six inches (6") of the trench shall be backfilled, as shown on the Plans, with structure backfill conforming to the requirements in 300-3.

Surfaces to receive filter fabric, immediately prior to placing, shall be free of loose or extraneous material and sharp objects that may damage the filter fabric during installation.

Adjacent rolls of the fabric shall be overlapped from twelve to eighteen inches (12"-18"). The preceding roll shall overlap the following roll in the direction the material is being spread. Should the fabric be damaged during placing, the torn or punctured section shall be either completely replaced or shall be repaired by placing a piece of fabric that is large enough to cover the damaged area and to meet the overlap requirement.

Damage to the fabric resulting from the Contractor's vehicles, equipment or operation shall be replaced or repaired by the Contractor at his expense.

PART 4 EXISTING IMPROVEMENTS

SECTION 400 – PROTECTION AND RESTORATION

400-1 GENERAL.

ADD the following to paragraph two:

If the objects are injured or damaged because of the Contractor's operations, they shall be replaced or restored (equal to or better than) at the Contractor's expense.

ADD the following to paragraph four:

The Contractor shall review all roadside vegetation (e.g. trees, shrubs) prior to the start of construction to ensure proper clearance for all construction equipment being utilized for all work involved in this contract. The Contractor shall be responsible for notifying the proper entities (City Arborist and/or private property) to ensure that all vegetation requiring trimming is addressed prior to construction on those locations.

SECTION 401 – REMOVAL

401-2 ASPHALT CONCRETE PAVEMENT.

ADD:

Bituminous pavement shall be cut and removed in such a manner so as not to tear, bulge or displace adjacent paving by use of saw cutting, rockwheel, jackhammer or milling machine: wheel type pressure cutters and drop hammer cutters will not be permitted for final edge cut.

SECTION 402 – UTILITIES

402-1 LOCATION.

402-1.1 General.

ADD the following to paragraph five:

Utility markouts associated with Private Contracts shall be removed when the utility construction work is completed.

SECTION 403 – MANHOLE ADJUSTMENT AND RECONSTRUCTION

403-1 GENERAL.

ADD:

Unless otherwise specified, the paving contractor will be required to adjust all manhole, valve boxes, cleanout, and monument covers.

Prior to paving, all covers shall be tied-off by the contractor in a manner that will permit determination of their exact

locations after paving.

All covers shall be set 1/8" to 1/4" higher than the finish grade. The subgrade, base and pavement shall be neatly removed a distance of 12 inches from the edge of the cover. All spoils shall be removed from the site. All backfill shall be with Crushed Aggregate Base (per Section 200-2.2), compacted to 95% relative density (per Section 211).

Asphalt concrete shall be placed and compacted in a minimum of two layers; a base course and a surface course a minimum of 1 1/2 inches thick.

Pre-cast concrete grade rings are required when the cover is to be adjusted 3" or more. Where manholes have been previously adjusted with steel or fiberglass rings and further adjustment is needed, the steel or fiberglass ring(s) will be removed (and delivered to the City) and replaced with pre-cast concrete grade rings.

Concrete placed to secure the cover shall be a 3250-psi mix, placed a minimum 6" thick. Concrete shall be placed to allow a minimum of 3" of asphalt concrete pavement adjacent to the cover frame and to 1" below the existing asphalt pavement at the pavement removal limits.

Concrete shall be graded and mixed to allow the mixture to fill the space between the cover frame and the pre-cast manhole components; "dry packing" will not be allowed.

PART 6

TEMPORARY TRAFFIC CONTROL

SECTION 601 – TEMPORARY TRAFFIC CONTROL FOR CONSTRUCTION AND MAINTENANCE WORK ZONES

401-1 GENERAL.

ADD:

The Contractor shall maintain, whether shown on the Plans or not, all existing traffic control signs or signals in their proper location on temporary mounting supports until permanent signs or signals are restored.

Traffic control safety devices shall have the owner's name clearly noted.

PART 7

STREET LIGHTING AND TRAFFIC SIGNAL SYSTEMS

SECTION 700 – MATERIALS

700-1 GENERAL.

ADD the following sub-section:

700-1.1 Regulations and Codes.

Before commencing work, the contractor shall contact the San Diego Gas & Electric Company for any requirements regarding their distribution and transmission construction methods. Work shall conform to the "SDG&E" Service guide.

700-3.2 Anchor Bolts, Nuts, and Washers.

ADD:

All reinforcing steel, cables, deformed bars, base plates, anchor bolts and stud bolts shall be electrically bonded together.

A quarter inch (1/4") hot dip galvanized or stainless-steel bolt, accessible through the access hole, or a copper strap brazed or mechanically connected to the reinforcing steel shall be provided to ground direct burial poles.

700-3.4 Mast Arms.

ADD:

Mast arms shall be positively bonded to stud bolts and/or reinforcing steel and cables, by welding or brazing of steel materials, or brazing or mechanically connecting copper strap to steel members.

ADD:

700-3.4.1 Luminaire Mast Arm.

Mast arms shall be two-inch (2") I.P.S. galvanized steel or aluminum, self-supporting, without braces, scrolls or rods. Mounting shall be perpendicular to street centerline unless otherwise shown on Plans. The steel arms shall conform to ASTM A120. Aluminum arms shall be made of corrosion resistant alloys such as Aluminum Association wrought alloys 6061 or 6062, and cast alloys 319 or 356. .

Changes in configuration of mast arms will be permitted, providing the mounting height and stability are maintained. Mast arms shall be galvanized as provided in Subsection 210-3 "Galvanizing."

700-3.5. Conduit.

700-3.5.3 Glvanized Pipe.

DELETE c) and SUBSTITUTE with the following:

c) Be UL listed and approved.

700-4 STREET LIGHTING SYSTEM MATERIALS.

700-4.1 Reinforced Concrete Standards

700-4.1.1 General.

ADD the following sentence to the end of the second paragraph:

Electroliers shall be reinforced concrete unless otherwise shown on the Plans.

DELETE the first two sentences of the third paragraph and SUBSTITUTE with the following:

Concrete poles shall be tapered, centrifugally cast and prestressed. They may be round or octagonal, black and white marble aggregate or natural exposed aggregate, direct burial or anchor base type. Minimum outside diameter dimensions of direct burial poles shall be as follows: Top of pole five inches (5"), bottom of pole nine inches (9"). Pole shape and color shall be uniform for any one project. Replacement poles shall match existing. Aggregates shall conform to current requirements of ASTM C33, except that abrasion requirements therein shall not apply and that no more than seven percent shall pass a No. 100 mesh sieve. No dye or sealer shall be used, without approval of the Agency.

ADD:

Poles shall be furnished with steel pipe brackets that provide a minimum of six inches (6") straight section at the end of the bracket arm to mount a two point three eight inch outside diameter (2.38"0) I.P.S. slipfitter type luminary.

ADD:

700.4.1.1.1 Prestressed Concrete Standards.

1. General:

Prestressed concrete standard shall be fabricated in a manner consistent with generally accepted systems of prestressing. The standards shall be designed on the basis for wind loads of 15 pounds per square foot using a shape factor of 0.80 for all cylindrical members. A maximum tensile stress of 300 PSI will be permitted in the pole for wind loading.

Standard shall consist of a prestressed centrifugally spun, tapered concrete shaft octagonal in crosssection, a galvanized steel or aluminum luminaire bracket or mast arm, anchor rods, and associated appurtenances as shown or specified.

2. Construction Material:

A. CEMENT Cement shall conform to Standard Specifications for Type III Portland Cement ASTM, Designation C150, and shall be fresh when used. B. AGGREGATE Aggregate shall be marble with a high compressive strength. It shall be uniformly graded from 1/4" to #150 mesh sieve and shall be free and clean from foreign material. The proportion will be determined by submitting spun samples for approval by the Engineer. No dyes or artificial coloring will be acceptable.

B. WATER Water shall be taken from a supply distributed for domestic purposes.

C. MIXING Mixing shall be done in a mixer to achieve uniform distribution and mixing of the materials and each batch shall be mixed not less than three (3) minutes. No larger batch shall be mixed than that which can be used within thirty (30) minutes. The quantity of water used shall be limited to the smallest amount that will give concrete of such a consistency that it can readily be forced into the mold, and shall not exceed six (6) gallons to each sack of cement. Strength of concrete shall be 5000 PSI. Tests may be called for.

D. STEEL REINFORCING All prestressing steel used shall consist of high tensile, stress relieved, wire strand conforming to latest revised ASTM Standard A416 or other approved standards. Additional mild steel reinforcing shall consist of deformed steel bars conforming to ASTM Standard A61776. Base plates and anchor lugs shall conform to ASTM Standard A36.

All poles shall be spirally reinforced as required to maintain spacing and provide for bursting stressed

due to prestressing.

Poles shall be reinforced with four (4) or more stranded cables, the number and size of cables being dependent upon the type of standard used. Deformed bars a minimum of 30 inches long shall be welded to the base plate.

The stranded cables shall be pretensioned a maximum of 70% of their ultimate strength before casting, depending upon the type of standard used.

Stud bolts at least 12 inches long extending 2 inches above standard and bonded to cables shall be provided for top mounting arms.

E. BONDING OF HARDWARE All reinforcing steel, cables, deformed bars, base plates, anchor lugs, and stud bolts shall be bonded together. Mast arms shall be positively bonded to stud bolts and/or reinforcing steel and cables.

3. Manufacturing:

All standards shall be cast in rigid molds true to design. The steel reinforcement shall be securely anchored to the top and bottom of mold plates. Steel tension strands shall be placed to have a 3/4" minimum concrete coverage at all points.

Concrete shall be placed in mold as rapidly as possible after mixing. When filled, mold shall be placed on spinning machine in a horizontal position and rotated at a gradually increased speed until maximum rotation is attained. Time and speed of rotation shall be sufficient to produce a dense concrete. Excess water and laitance forced to the center of the mass shall be drained in a suitable manner. A central opening or duct, minimum diameter of 1", shall be formed throughout the length of the pole or as shown on drawings and shall be free from sharp projections or edges of a character which might injure the wire or cable. The base shall be cored to dimensions shown on the standard drawings and access into base shall be provided by door opening as detailed on drawings.

4. Curing:

The standard shall be moist steam cured until the concrete has attained a set sufficiently hard to prevent its deformation or slipping of cable strands. Steam curing shall be controlled so there will be no deformation of the pole center core. Upon removal of the standard from the mold, it shall be protected from the direct action of sun and wind for a period of fortyeight (48) hours. If not steam cured, it shall be kept wet by continuous spraying with water or be covered with heavy burlap or other suitable material that is kept saturated with water during the curing period of seventytwo (72) hours. An additional period of fifteen (15) days shall be allowed for curing in air before standards are delivered for installation.

5. Finishing:

After the standards have been sufficiently cured, the entire outside surface of the standards shall be sandblasted to remove cement laitance and develop the surface texture, care being taken that the true lines of the standards are maintained. The standards when finished shall be without cracks or crazing and shall have a uniform surface and texture throughout the entire length.

The finished standard shall be coated with an antigraffiti coating. The coating shall be the RepelloProtective Surface System as manufactured by the L.M. Schofield Company or an approved equal. Three coats of the anti-graffiti coating shall be applied to the light standard.

6. Luminaire Bracket:

Standards shall be furnished with a bracket or pole mounting conforming to design and dimensions shown on plan. A minimum of 5 inches straight portion shall be provided to mount a 2inch slipfitter type luminaire. The interior shall be free of sharp edges or projections. Steel arms shall be made of pipe conforming to ASTM Designation A12047. Aluminum arms shall be made of 663T6 aluminum pipe. Steel brackets shall be hot dipped galvanized. Aluminum brackets shall be furnished with no finish.

7. Pole Top:

The pole top shall be cast from #214 aluminum alloy. The cover shall be secured to the pole top or bracket by a minimum of two screws.

8. Anchor Rods:

Four anchor rods 3/4" or 1" nominal diameter by 36"x4" shall be furnished. The lower end of the rod shall be formed to produce an ell (L) bend. The upper end shall be threaded a minimum of 6" and fitted with two hex nuts per rod. Rod and nuts shall be hot dipped galvanized to ASTM Designation A15349.

9. Miscellaneous:

All miscellaneous hardware shall be cadmium coated, hot dipped galvanized, or of stainless steel.

10. Design Drawings, Samples, and Guarantee:

The supplier, upon request, shall submit for the approval of the Engineer prior to fabrication, drawings of the standards proposed to be furnished. Such drawings shall be accompanied by design criteria and detailed specifications of materials proposed to be incorporated into the standards. The drawings shall also include details concerning the method of prestressing and fastening of steel to provide the proper residual compressive force in the concrete. The supplier shall also submit as a part of the required drawings the design of the concrete mix proposed to be used. Prior to approval, the Engineer may require the supplier to deliver to the City a standard for test and evaluation.

The supplier shall provide facilities for the Engineer to select samples of any of the materials proposed to be used and shall also provide facilities for the inspection of all molds, materials, manufacturing and assembly of the standards.

The supplier shall guarantee the City for a period of five (5) years from the date of acceptance, the standards against defective workmanship and materials which would cause cracking and/or spalling or any other defects requiring maintenance of the pole finish or replacement of the pole. When notified by the Engineer, the supplier or his sureties shall promptly replace or repair the defective standard or standards in a manner satisfactory to the Engineer. If the supplier or his sureties fail to promptly make the replacement or repair, the City may perform the work and the supplier and his sureties shall be liable for the cost of all such work. Failure of the supplier or his sureties to comply with the terms of this section may disqualify the supplier for any future City work.

700-4.1.2 Reinforcement.

ADD the following paragraphs after the last paragraph:

The ultimate strength of a pole shall be calculated in accordance with the latest revision of ACI-318 utilizing a load factor of 2.0.

Under working loads (including wind loading) the pole must not be stressed beyond the cracking strength. Wind loads shall be as specified in the latest edition of the AASHTO Standards.

All reinforcing steel shall have a minimum cover of five-eighths inch (5/8"). Direct burial prestressed poles shall have the prestressing steel cut off one-eighth inch (1/8") minimum below the surface, at the base.

700-4.1.4 Finish of Concrete Standards.

ADD the following sentence to the end of the first paragraph:

After curing, the surface of the standard shall be treated to remove cement laitance and develop the surface textures.

700-4.2 Wire/Conductors.

700-4.2.1 General.

ADD the following sentences after the fifth sentence in the first paragraph:

Service runs to lights shall be copper wire, No.10 AWG minimum. Voltage drop in service runs shall not exceed five percent (5%); size of wire used shall be indicated on "As Built" Plans.

ADD:

Conductors shall be copper of the gauge shown on the Plans, unless otherwise specified. Wire sizes shall be based on American Wire Gage (AWG). Conductors for multiple lighting installations shall be UL listed and rated for six-hundred-volt (600-V) operation. The insulation for No. 16 or smaller conductors shall be Type TF. The insulation for No. 14 and larger conductors shall be one of the following:

- a). Type TW polyvinyl chloride conforming to the requirements of ASTM Designation: D2219.
- b). Type THW polyvinyl chloride.
- c). Type XHHW or Type RHW cross-linked polyethylene.

Minimum thickness of any of the above insulations shall be 45 mils for conductor sizes No. 14 to No. 10 inclusive, and 60 mils for No. 8 to No. 2, inclusive. A certificate of compliance with these specifications shall be submitted to the Engineer by the manufacturer with all five thousand volt (5,000-V) series lighting conductors.

700-4.4 High Pressure Sodium Luminaires.

700-4.4.1 General.

DELETE the second sentence in the first paragraph and SUBSTITUTE with the following:

Each luminaire shall consist of cast aluminum housing, aluminum reflector or equivalent, a refractor or lens, a mogul (lamp) socket with support assembly, which is adjustable to provide variation in light distribution, an internal (integral) ballast, starter, a terminal strip and a lamp.

ADD the following sentences to the end of the third paragraph:

All exposed hardware shall be cadmium-coated, hot dipped galvanized or stainless steel. All protected hardware not visible after installation shall be cast aluminum, stainless steel, hot dipped galvanized or cadmium-plated steel.

ADD the following sentences to the end of the twelfth paragraph:

Certified distribution curves made in accordance with I.E.S. testing recommendation shall be available for the luminaire. Unless otherwise shown on Plans, the light distribution patterns shall be ASA/IES:

- Type II for 175 watt and 250 watt lights
- Type III for 400 watt and larger

ADD the following paragraphs after the sentences above are added to the end of the twelfth paragraph:

The refractor shall be made from pressed borosilicate glass and the lamp chamber shall be sealed against dust with a heat resistant gasket.

The outer metal surface of the luminaire shall have a baked process finish of modified alkyd, acrylic, enamel, or other equivalent corrosion preventative surface finish. The exterior color shall be ASA70, Light Gray. In general, the luminaire shall be easy to relamp and be safe for handling and use. The luminaire shall be capable of operating in a temperature environment of minus twenty to one hundred fifty degrees Fahrenheit (-20°F - +150°F).

700-4.5 Lamp Ballast.

700-4.5.1 General.

ADD the following sentences after the third sentence in the first paragraph:

The operating sound pressure noise level shall not exceed the ambient noise level by more than five (5) decibels at thirty feet (30') when measured by a sound level meter conforming to the American Standard for sound Level Meters. Where the ambient noise level is below forty (40) decibels a minimum of forty (40) decibels shall be assumed as ambient.

ADD the following sentence to the end of the fourth paragraph:

Rubber covered ballast leads of all external ballasts shall be non-hygroscopic and the entrance of the leads into the ballasts shall have a watertight seal.

ADD the following sentence to the end of the fifth paragraph:

External ballasts shall be protected from moisture by encasement in a suitable non-corroding material.

ADD the following new subsection:

209-4.5.9 Multiple Ballasts.

209-4.5.9 Multiple Ballasts.

The power factor for multiple ballasts shall be better than ninety percent (90%). Ballasts losses (in lamp watts) for the various sizes of mercury vapor lamp ballasts shall not exceed the following:

MERCURY VAPOR LAMP BALLAST	
Watts	Percentage Loss
175	25
250	20
400	15
700	12
1,000	10

Integral ballasts shall be of the component type with resin-impregnated coils and metal-cased, hermetically sealed, capacitors. Ballasts for multiple circuits shall be a constant wattage type with a nominal primary voltage rating of 120/240 or 240/480 volts and shall regulate the lamp wattage to plus or minus thirteen percent (13%) variation in primary voltage. The lamp current wave shape crest factor shall not exceed 2.0 at rated line voltage.

SECTION 701 – CONSTRUCTION

701-1 GENERAL.

DELETE the third paragraph and SUBSTITUTE with the following:

Unless otherwise authorized in writing by the Engineer; the Contractor shall, within thirty (30) days following award of the contract, submit to the Engineer for approval, a list of equipment, wiring diagrams and materials which he proposes to install. The list shall be complete as to name of manufacturer, size and identifying number of each item. Prior to completion, the Contractor shall, in accordance with Subsection 3-8, submit detailed shop drawings and wiring diagrams of controllers, cabinets, electrical equipment, or street lighting equipment to be used. The Agency will not be liable for any material purchased, labor performed, or delay to the work prior to such review.

701-2 MAINTENANCE OF EXISTING AND TEMPORARY SYSTEMS.

ADD:

Where an existing system or temporary system is being modified, work not shown on the Plans or specified in the special provisions and which is considered by the Engineer as necessary to keep all or any part of the system in effective operation will be paid for as extra work as provided in the special provisions. The local authorities will furnish electrical energy for operation.

Where damage is caused by the Contractor's operations, the Contractor shall, at his expense, repair or replace damaged facilities promptly in accordance with these specifications. Should the Contractor fail to perform the required repairs or replacements, the cost of performing such repairs or replacements will be deducted from any moneys due or to become due the Contractor.

The exact location of existing conduit runs and the Contractor shall ascertain pull boxes before using equipment that may damage such facilities or interfere with any system.

Where roadways are to remain open to traffic and existing lighting systems are to be modified, the lighting systems shall remain in operation and the final connection to the modified circuit shall be made so that the modified circuit will be in operation before nightfall of the same day.

Temporary electrical installations shall be kept in effective operation until the temporary installations are no longer required for the traveling public. Removal of temporary installations shall conform to the provisions in Subsection 701-20.

701-3 COORDINATION WITH SERVING ELECTRICAL UTILITY.

ADD:

701-3.1 Safety Precautions.

Before starting work on existing series street lighting circuits, the Contractor shall obtain daily a safety circuit clearance from the serving utility. By-pass switch plugs shall be pulled, and "Men at Work" signs posted at switch boxes before any work is done.

701-10 STANDARDS, PEDESTALS AND MAST ARMS.

701-10.2 Mast Arms.

ADD:

701-10.2.1 Standards and Steel Pedestals.

701-10.2.1.1 Installation of Direct Burial Standard.

Installation of the Direct Burial Standard shall be in accordance with Project Plans, Standard Specifications and San Diego Regional Standard Drawings. Particular attention is called to applicable paragraphs of 700 and San Diego Regional Standard Drawing Number E-01 and others as may apply. Selected sand backfill material shall be clean, free from organic material, trash, debris, rubbish, or other objectionable substances. For direct burial poles, installation shall be as indicated on San Diego Regional Standard Drawing Number E-01 and shall also be as follows: Hole shall be augured eighteen inches (18") in diameter and five feet (5') deep. The surrounding earth shall be five feet plus three inches (5' + 3") from final grade line. Bottom of hand hole shall be approximately eight inches (8") above grade line. Center line of pole shall be five and one-half feet plus two inches (5.5' + 2") or as directed by the Engineer from specified distance to curb. Pole shall be grounded by three-fourths inch by eight foot (¾" x 8') copper covered steel ground rod in feeder trench approximately twenty-one inches (21") from center line of pole, when non-metallic conduit is used.

The Contractor shall call for inspection of the pole for backfill compaction and plumb prior to capping with class 520-C-2500 concrete cap.

The space around the pole shall be backfilled with selected sand, free of rocks and other deleterious materials. The minimum acceptable compaction shall be ninety-five percent (95%). The backfill of each pole will be tested for compaction by penetration of the backfill by a steel rod under controlled pressure, calibrated for the material used in the backfilled. The Contractor shall furnish to the agency sufficient quantities of the

sand to be used in the backfill for calibration of the test equipment. At the time inspection is requested the Contractor shall provide delivery receipts or other acceptable proof that the sand used in the backfill is the same as that provided for calibration of the test equipment.

If ninety-five percent (95%) relative compaction is not achieved, it shall be the responsibility of the Contractor to perform the necessary rework to achieve ninety-five percent (95%) relative compaction.

The pole shall be plumb with a permitted variation not to exceed 0.08 inches per foot (0.08"/) of pole length above grade.

Prestressed poles shall have the exposed ends of the prestressing steel and the base of the light standard heavily coated with roofing asphalt or coal tar enamel.

701-11 PULL BOXES.

701-11.1 General.

ADD:

Grout shall be placed prior to the installation of conductors. A layer of roofing paper shall be placed between the grout and the crushed rock sump. A one inch (1") drain hole shall be provided in the center of the pull box through the grout and the roofing paper.

Covers shall be secured with three-eighths inch (3/8") bolts, cap-screws, or studs, and nuts which shall be of brass, stainless steel or other non-corroding material. Stainless steel hold-down bolts, cap screws and studs, and nuts and washers shall have a chromium content of not less than eighteen percent (18%) and nickel content of not less than eight percent (8%). Nuts shall be recessed below surface of cover.

701-12 CONDUIT.

307-12.1 General.

ADD the following sentence after the first sentence in the sixth paragraph:

Street light conduit for multiple lighting shall be not less than two inches (2") in size. Street light conduit for series lighting shall not be less than one and one-half inches (1-1/2") in size.

ADD the following sentence to the end of the seventh paragraph:

Service riser conduit shall terminate with a service head or shall be sealed to prevent the entrance of water, as approved by the serving utility.

ADD the following sentences to the end of the ninth paragraph:

The threads of all ferrous metal conduits shall be painted with rust preventive paint before couplings are made up. Where the coating on metallic-type conduit has been damaged in handling or installing, such damaged places will be painted with rust preventive paint.

701-13 WIRES, CONDUCTORS AND CABLES.

701-13.1 General.

ADD:

Wire connectors shall be of a type approved by the Engineer and bear the Underwriters Laboratory (UL) seal of approval. The installation procedure, including connector size and crimping tools shall conform to the manufacturer's recommendations. Generally, bulky, or odd shape connectors and narrow connectors will not be allowed. The mechanical performance of the connectors which may damage the wire, or twist-on split-bolt type connectors shall be such that no free play can be observed after the connector is subjected to a combination of hand-applied twists and pulls. A solid cross section will also be required when the connector is subjected to saw cutting. All wire connectors shall have a nominal cross sectional area equivalent to the area of the largest conductor connected.

701-13.3 Bonding and Grounding.

ADD the following sentence to the end of the second paragraph:

Neutral leg of lighting conductor's shall be grounded to base of standard at service entry.

ADD the following paragraphs after the third paragraph:

At each multiple service point, unless otherwise shown on the Plans, a ground electrode shall be furnished and installed. Ground electrodes of steel or iron shall be one-piece lengths of galvanized rod or pipe at least three-fourths inch in diameter (3/4" ϕ). Electrodes of non-ferrous materials shall not be less than one-half inch in diameter (1/2" ϕ). Ground electrodes shall be installed in accordance with the provisions of the Code.

Ground clamps for service grounding and for grounding of equipment on wood poles shall be a one-half inch (1/2") galvanized, malleable iron conduit hub with swivel feature.

701-14 SERVICES.

701-14.1 General.

ADD:

Upon request of the Contractor, the Engineer will arrange with the serving utility to complete service connections for temporary installations and the Contractor shall pay all required costs and fees therefore.

701-14.2 SERVICES ON UTILITY OWNED POLES.

DELETE and SUBSTITUTE with the following:

When the service point is located on a utility-owned pole, the Contractor shall furnish conduit and all other necessary material to complete the installation of the service riser. If the Contractor is required by the plans or special provisions to install the service riser and equipment on a utility-owned pole, the position of the riser and equipment will be determined by the utility.

The contractor shall make arrangements with the San Diego Gas & Electric Company and shall pay all fees necessary to complete the connection of the service point. Metering installation will be furnished by San Diego Gas & Electric Company.

Full compensation for furnishing and installing service poles, service equipment, in-line fuse holder, fuses, conduit, and conductors (including equipment, conduit, and conductors placed on utility-owned poles, and the additional conductor where the service utility requires 3-wire, 120/240volt service into the meter socket for a 120volt load), and for any service connection fees, shall be considered as included in the contract item of electrical work involved and no additional compensation will be allowed therefor."

Upon request by the Contractor, the Engineer will arrange for furnishing electrical energy. Energy used prior to final acceptance will be charged to the Contractor, except that the cost of energy used for public benefit, when such operation is ordered by the Engineer, will be at the expense of the City.

701-14.5 Payment.

ADD the following paragraph after the first paragraph:

Full compensation for furnishing and installing service poles, service equipment, conduit, and conductors (including equipment, conduit, and conductors placed on -utility poles, and the additional conductor where the service utility requires 3-wire, 120/240-volt service into the meter socket for a 120-volt load), and for any service connection fees, shall be considered as included in the contract item for electrical work involved and no additional compensation will be allowed therefore.

701-16 STREET LIGHTING CONSTRUCTION.

701-16.3 Wiring/Conductors.

ADD:

Service run splices shall be located in pull boxes. When no box is required, the splice shall be located in the base of the standard. Splices shall be made using an approved connector, as specified in Subsection 701-13, and shall provide electrical properties equivalent to those of the cables being joined and shall be waterproof.

The hot leg of lighting conductors shall be fused with a Slo-Blo midget ferrule type fuse, of appropriate amperage, in the plug connector, in the pull box, or in the base of Standard if within five feet (5') of service point. The connector shall be readily accessible. The fuse holder shall completely enclose the fuse and shall protect the fuse against damage from water and weather. The contact between the fuse and the fuse holder shall be by spring pressure. Springs shall not be part of the current carrying circuit. The terminals of the fuse holder shall be rigidly crimped to the line conductor, using a tool of the type recommended by the manufacturer of the fuse holder.

ADD:

701-16.3.1 Wiring Color Code.

Ground wire shall be green (or bare). Neutral wire shall be white. Hot wire shall be any color other than green or white.

701-20 SALVAGE.

ADD:

Holes formed by removing pull boxes and foundations shall be filled with material equivalent to the surrounding material.

ADD:

701-21 PAYMENT.

The lump sum price or prices paid for roadway lighting systems, lighting systems on structures or combinations thereof, modifying systems, temporary systems, removing systems, or the unit prices paid for various units of said systems shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in furnishing and installing, modifying, or removing the systems or combinations thereof as shown on the Plans, and as specified in these specifications and the special provisions, and as directed by the Engineer, including any necessary pull boxes; excavation and backfill; concrete foundations; restoring sidewalk, pavement and appurtenances damaged or destroyed during construction; salvaging existing material; and making all required tests.

Full compensation for all, additional materials and labor, not shown on the Plans or specified, which are necessary to complete the installation of the various systems, shall be considered as included in the prices paid for the systems, or units thereof.

The contract price paid per foot for cast-in-drilled-hole concrete piles (signal foundation) shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in drilling holes, disposing of the material resulting from drilling holes, furnishing and placing anchor bolt assemblies and reinforcing steel, complete. in place, as shown on the Plans, and as specified in these specifications and the special provisions, and as directed by the Engineer.

PART 8 LANDSCAPING AND IRRIGATION

SECTION 800 – MATERIALS

800-1 LANDSCAPING MATERIALS.

800-1.1 Topsoil.

800-1.1.2 Class “A” Topsoil.

DELETE the third sentence in the second paragraph in its entirety and SUBSTITUTE with the following:

Class “A” topsoil shall have the same relative composition and structure, a friable sandy loam character, and be free of roots, clods and stones larger than 1/2 inch in greatest dimension, pockets of coarse sand, noxious weeds, sticks, brush, and other litter.

DELETE in its entirety and SUBSTITUTE with the following:

- c) Agricultural Suitability. The topsoil shall be suitable to sustain the growth of the plants specified, and shall comply with the following requirements listed in the table below:

TABLE 800-1.1.2	
pH	Six minimum to seven and one-half maximum (6-7.5)
Eco	Zero to three (0-3) maximum (electrical conductivity)
ESP	Zero to twelve (0-12) maximum (exchangeable sodium percentage)

ADD the following:

800-1.1.5 Lightweight Planter Mix.

Lightweight planter mix shall be used in raised planters. Lightweight planter mix shall contain a special blend of organic fractions to supply several degrees of breakdown rate, a portion of inorganic amendment that resists further breakdown as well as helps to provide plant stability, a long-lasting form of iron, PH of 5.5 to 7.5; salinity of 1.75; more than 90% organic matter (dry weight basis); non-ionic wetting agent; total nitrogen content of 0.5%; and density at saturation of 60 to 70 lbs./cu. ft. (The following mixes can be modified to meet the above specifications: Butler’s Mill Gold Cup, A-1 Soils A-1 2000 or approved equivalent.) Contractor shall supply Architect or his appointed representative with a ½ cu. ft. sample of the proposed amendment accompanied by Laboratory Analytical Analysis from an approved laboratory illustrating degree of compliance.

ADD the following:

800-1.1.6 Amended Soil.

The above specifications are for unamended soils.e The Engineer may also require tests to be performed on amended soils. The composition of amended soils shall be as follows:

To the unamended soils uniformly add twenty to twenty-five percent (20-25%) of blended organic materials. The organic material shall be composed of wood products, manure, and other organic composts per Subsection 800-1.2 Soil Fertilizing and Conditioning Materials.

800-1.2 Soil Fertilizing and Conditioning Materials

800-1.2.2 Manure

DELETE subsection "800-1.2.2" in its entirety.

800-1.2.3 Commercial Fertilizer.

ADD the following after the first paragraph:

Pre-plant fertilizer shall be granular commercial fertilizer 10-10-10 or approved equivalent. Post-plant fertilizer shall be 14-7-3 or approved equivalent with CA, FE, ZN, and MN and with the majority of nitrogen in non-ammoniac form to prevent acidification of soil.

Planting tablets shall be compressed fertilizer tablets (20-10-5), in a 21 gram size, by Agriform or approved equivalent.

800-1.2.4 Organic Soil Amendment.

DELETE the first sentence in its entirety and SUBSTITUTE with the following: :

Organic soil amendment shall be selected from Types 1 through 4 as described herein.

DELETE the second paragraph in its entirety and SUBSTITUTE with the following:

Type 1 organic soil amendment shall be derived from wood with the following properties: it shall be a wood residual product derived from the bark of pine, white fir and red fir, cedar shavings or redwood shavings. Amendment upon analysis contain at least 0.5% nitrogen (on a dry weight basis) with an ash content not to exceed 10%. A commercial grade product shall be used. The product shall be free of seeds, debris and deleterious material.

Contractor shall supply Architect or his appointed representative with a ½ cu. ft. sample of the proposed amendment accompanied by Laboratory Analytical Analysis from an approved laboratory illustrating degree of compliance described below and shown in Table 800-1.2.4. Guarantee - wt./cu./yd. - 560#-820#. Nitrogen (organic or ammoniac) 0.5% ph (less than) 6.5. Salinity (ec x 10 at 25 c) = 2.5. Iron (fe) expressed as metallic 0.01%. Density - approximately 25 lb.cu.ft. Organic matter - 85%. A non-ionic wetting agent should be used. Properties: screen analysis: % retained on stacked screens - 1 mesh = 0.2%, 5 mesh = 36.6%, 8 mesh = 25.7%, 12 mesh = 30.7%, 32 mesh = 5.9%; remainder = 0.9%. (Shall be similar or equal to Wil Gro Life, Loamex or forest humus)

ADD the following paragraphs at the end of this sub-section:

Type 4 organic soil amendment (hydromulch soil amendment) shall be liquid soil conditioner made from biodegradable fibers, growth mediums, and other soil enhancing organic materials that improve the soil's natural chemistry.

800-1.2.5 Mulch.

DELETE in its entirety and SUBSTITUTE with the following:

e) Type 5 mulch (fir or redwood bark chips) shall be and shall be composed of cedar, fir, redwood or pine shredded bark or equal commercial wood chip products. Average dimensions shall be 3" in length and ½" in thickness. Submit two (2) samples for approval by the Resident Engineer/Landscape Architect prior to installation.

ADD the following mulch classifications:

g) Type 7 Mulch (forest mulch; forest floor mulch), shall be assorted tree trimmings, wood or bark of the size and type specified on the plans.

h) Type 8 Mulch (rock or gravel) shall be rock or gravel in the size specified on the plans.

ADD the following sub-sections:

800-1.2.6 Inorganic Soil Amendments.

Iron sulfate. Iron sulfate shall be ferric or ferrous sulfate in pelleted or granular forms containing not less than eighteen percent (18%) metallic iron. It shall conform to the Agricultural Code of the State of California.

Gypsum. Gypsum shall be commercially processed and packaged. $\text{CaSO}_4 - 2\text{H}_2\text{O}$, with a minimum eighty percent (80%) grade containing fourteen percent (14%) minimum combined sulfur.

Soil Sulfur. Soil sulfur shall be 99.5% elemental. Sizing on stacked screen shall be approximately: 8 mesh 4.3%; 20 mesh 7.8%; 50 mesh 46.9%; 100 mesh 39.3%; 200 mesh 1.7%.

800-1.2.7 Herbicides and Pesticides.

Herbicides and pesticides shall be used in their appropriate applications with strict adherence to manufacturers' specifications and instructions. Pre-emergent and post-emergent herbicides shall be as specified on the plans.

800-1.2.8 SB 1383 Compliant Compost and Mulch

SB 1383 Compliant Compost shall mean those products defined in 14CCR (California Code Requirements) Section 17896.2(a)(4) and 14 CCR section 17852(a)(24.5)(A)]. Compost derivative products—such as compost tea are not considered compost. Projects must use compost produced at one of the following facilities:

- a). A compostable material handling operation or facility permitted or authorized under 14 CCR Chapter 3.1 of Division 7.
- b). A large volume in-vessel digestion facility that composts on-site, as defined and permitted under 14 CCR Chapter 3.2 of Division 7.

SB 1383 Compliant Mulch shall mean those products defined in 14CCR Section 17896.2(a)(4) and 14 CCR section 17852(a)(24.5)(A)]. Projects must use mulch produced at one of the following facilities:

- a). A compostable material handling operation or facility as defined in 14 CCR Section 17852(a)(12), that is permitted or authorized under 14 CCR Division 7, other than a chipping and grinding operation or facility as defined in 14 CCR Section 17852(a)(10).
- b). A transfer/processing facility or transfer/processing operation as defined in 14 CCR Sections 17402(a)(30) and (31), respectively, that is permitted or authorized under 14 CCR Division 7.
- c). A solid waste landfill as defined in Public Resources Code Section 40195.1 that is permitted under 27 CCR Division 2.

Project managers/developers must provide the reports to the City describing the following:

- a). amount of compost and/or mulch used on the project in pounds or tons or cubic yards
- b). The name, physical location, and contact information for each facility from whom SB 1383 compliant mulch and compost was procured
- c). A general description of how and where the SB 1383 compliant mulch and compost was used
- d). Copies of invoices, receipts, or other proof of purchase (in either paper or electronic form) evidencing Contractor's procurement of SB 1383 compliant mulch and compost.

800-1.3 Seed.

DELETE the second paragraph in its entirety and SUBSTITUTE with the following:

All seed used for lawn, erosion control or other planting specified on the plans or listed in the specifications, shall be furnished in labeled and sealed standard containers, with duplicate signed copies of a statement from the vendor, certifying that each container of seed delivered is fully labeled in accordance with the State Agricultural Code, stating certified percent of purity and germination. Seed which has become wet, moldy or otherwise damaged in transit or storage will not be accepted. Seed must be certified to conform to the specified purity and germination.

Seed specified as "Scarified" shall be certified in vendor's statement.

800-1.4 Plants.

800-1.4.1 General.

DELETE the first paragraph in its entirety and SUBSTITUTE with the following:

"Plants shall be reviewed and approved by the Landscape Architect prior to planting."

DELETE the second paragraph in its entirety and SUBSTITUTE with the following:

"Plants shall have a growth habit normal to the species and shall be sound, healthy, vigorous and free from insect pests, plant diseases, sun scalds, fresh bark abrasions, excessive abrasions, or other objectionable disfigurements. Plants shall have normal well-developed branch systems, and vigorous and fibrous root systems which are neither root-nor pot-bound and are free of kinked or girdling roots.

DELETE the third paragraph in its entirety and SUBSTITUTE with the following:

"No pruning shall be done prior to review of the plants by the Resident Engineer/Landscape Architect."

ADD:

Contractor shall notify the Resident Engineer/Landscape Architect a minimum of 48 hours before each plant delivery so the Resident Engineer/Landscape Architect can schedule a review.

Nomenclature: The scientific and common names of plants herein specified conform to the approved names given in "A Checklist of Woody Ornamental Plants in, Oregon, and Washington" published by the University of , Division of Agriculture sciences, publication 4091 (1979). (See list of plant materials on drawing.)

Labeling: Each group of plant materials delivered on site shall be identified clearly as to species and variety on weatherproof labels. All patented plants (cultivars) required by the plant list shall be delivered with a proper plant patent attached. There shall be a minimum of one labeled plant for each 5 plants in a lot.

Quality and Size: Plants shall be in accordance with the California State Department of Agriculture Regulations for Nursery Inspections of Rules and Grading. Nursery tags must be submitted to the Landscape Architect. Sizes shall conform to the dimensions indicated on the planting plan. All plants shall be reviewed and approved for acceptable size and quality by Engineer prior to planting.

Immediately upon award of contract for work in this section, locate and purchase or hold for purchase all trees required. Color photos of all trees shall be submitted to Engineer for approval a minimum of (15) days prior to delivery of the plants to the site. The Engineer reserves the right to reject any plant species upon conducting a physical inspection after delivery to the site.

Quantities: Quantities of all plant materials shall be furnished as needed to complete work as shown on the Drawings.

Inspection of plant materials required by City, County or State authorities, shall be the responsibility of the Contractor, and where necessary, permits or certificates shall have been secured prior to delivery of plans to site.

The Resident Engineer/Landscape Architect is the sole judge as to acceptability of each plant. Vigorous, healthy, well-proportioned plants are the intent of this specification. Plants which are even

moderately "overgrown," or are showing signs of decline or lack of vigor are subject to rejection. The size of the plants will correspond with that normally expected for species and variety of commercially available nursery stock, or as specified in the special conditions or drawings. Plants larger in size than specified may be used with the approval of the Architect, but the use of larger plants will make no change in contract price. If the use of larger plants is approved, the ball of earth and spread of roots for each plant shall be increased proportionately.

Rejection Or Substitution: The Resident Engineer/Landscape Architect reserves the right to reject any plant material found to be defective or not in conformance with plans and specifications. Plants shall be subject to inspection and approval or rejection at the project site at any time before or during progress of work, for size, variety, condition, latent defects, and injuries. All plants not conforming to the requirements herein specified shall be considered defective, and such plants, whether in place or not, shall be marked as rejected and immediately removed from the site and replaced with new plants by the Contractor at his expense. Rejected plant material shall be replaced within one week of written notice, unless otherwise approved by the Resident Engineer/Landscape Architect.

Substitutions will not be permitted except if proof is submitted that any plant specified is not obtainable, then a proposal will be considered for use of the nearest equivalent size or variety and cost. All substitutions are subject to Resident Engineer's written approval.

Right To Changes: The Landscape Architect reserves the right to change the species, variety, and/or sizes of plant material to be furnished, provided that the cost of such plant changes do not exceed the cost of plants in the original bid, and with the provision that the Contractor shall be notified, in writing, at least thirty (30) days before the planting operation has commenced.

800-1.4.2 Trees

DELETE in its entirety and SUBSTITUTE with the following:

All trees (24" box, 36" box, 48" box) shall:

- a. be of the specified type and size as indicated on the Drawings, selected from high quality, well-shaped and proportioned Southern California-grown nursery container stock. Field grown stock grown in climatic regions which are different (as determined by the Landscape Architect) to those conditions found at the project site, shall have been acclimated to a climate similar to their intended locations prior to delivery and shall be accompanied by letter and/or certificate from the nursery that the plant materials are suitable for said locations or they will not be accepted. Tree height shall be taken from ground level for field grown stock and from the soil line for container grown stock, which would be at or near the root flare. Caliper measurement of the trunk shall be taken six inches above the ground up to and including the four-inch caliper size. If the caliper at six inches above the ground exceeds four inches, the caliper should be measured at 12 inches above the ground. The height of palm trees shall be measured from the groundline to the base of the growing bud. All trees shall stand reasonably erect without support.
- b. have grown in containers for sufficient time to permit full rooting within the container to bind the soil but not so long as to create a rootbound condition. No container plants that have cracked or broken balls of earth, when taken from the container, shall be planted. No plants with damaged roots, broken root balls, or root bound, when taken from the container shall be planted.
- c. have a main leader branch and not have a co-dominant branching structure, unless the tree is intended to be multi-trunk.
- d. be free of weeds, native grasses, Bermuda grass, and Kikuyu grass.
- e. have a minimum 50% live crown ratio, meaning there shall be live branches in the upper 50% of the trunk to distribute wind stress and develop trunk taper for stability.

800-1.4.3 Shrubs

DELETE in its entirety and SUBSTITUTE with the following:

All shrub container stock (1 gal., 5 gal., 15 gal.) shall:

- a. be of the specified type and size as indicated on the Drawings, selected from high quality, well-shaped and proportioned Southern California-grown nursery container stock. Field grown stock grown in climatic regions which are different (as determined by the Landscape Architect) to those conditions found at the project site, shall have been acclimated to a climate similar to their intended locations prior to delivery and shall be accompanied by letter and/or certificate from the nursery that the plant materials are suitable for said locations or they will not be accepted.
- b. have grown in containers for sufficient time to permit full rooting within the container to bind the soil but not so long as to create a rootbound condition. No container plants that have cracked or broken balls of earth, when taken from the container, shall be planted. No plants with damaged roots, broken root balls, or root bound, when taken from the container shall be planted.
- c. be free of weeds, native grasses, Bermuda grass, and Kikuyu grass.
- d. be full and bushy to ground.

800-1.4.4 Flatted Plants.

DELETE in its entirety and SUBSTITUTE with the following:

Groundcover plants and other flatted plants shall:

- a. be healthy, vigorous, rooted cuttings grown in flats or 1-gallon cans until transplanting. See plant material legend on Drawings.
- b. The soil and spacing of the plants in the container shall ensure the minimum disturbance of the root system at time of transplanting.

800-1.4.5 Sod and Stolon (turf grass)

DELETE in its entirety and SUBSTITUTE with the following:

Sod shall be fully mature, well maintained and free of all other grasses or weeds and shall be evenly cut with a sod cutting machine to the thickness specified on the Plans or in the Special Provisions. All the materials shall be from the same growing ground and delivered.

ADD the following sentence at the end of sub-section:

Turf seed shall be used only in small landscape area applications where sod is not feasible or in protected areas that would allow for successful seed establishment.

ADD the following sub-section:

800-1.4.7 Vines.

Vines shall be of the specified type and size, selected from high quality, well-shaped nursery stock.

800-1.5 Headers, Stakes, and Ties

800-1.5.2 Headers and Stakes.

DELETE in its entirety and SUBSTITUTE with the following:

Headers and stakes shall be made from recycled, ultraviolet stabilized, non-toxic plastic. Headers shall be recycled plastic boards, 1x4x20' minimum, or approved equivalent. Stakes shall be 1x2x12" pointed on one end.

EDIT the sub-section title below:

800-1.5.3 Tree Stakes and Staples.

DELETE in its entirety and SUBSTITUTE with the following:

Tree stakes shall be two (2) inch diameter lodgepole pine of lengths required, pointed on end, and minimum 10' in length for 15-gallon and larger containers.

Tree staples shall be used for tree stabilization within tree grate installations. Staples shall be a 2-prong system made of uncoated, cold-rolled, plain carbon steel.

ADD the following sub-section:

800-1.5.4 Tree Ties.

Tree ties shall be commercially manufactured of virgin flexible vinyl meeting ASTM-D-412 standards for tensile and elongation strength. Material shall be manufactured with a double back locking configuration and secured with one galvanized nail to prevent slippage. Material shall be ultraviolet resistant. Minimum length shall be twenty (20) inches. Tree ties shall be "Cinch-Tie" by V.I.T., or approved equivalent.

ADD the following sub-sections:

800-1.6 Root Control Barriers.

800-1.6.1 General.

Root barriers shall be installed for all trees within ten feet of hardscape and shall extend a minimum of ten feet out from trunk on both sides.

Root barriers shall be a long-term root control barrier system consisting of 24"-39" height molded recycled plastic panels. Panels must have factory installed independent joiner strips. Barriers must be a minimum of 2 mm (0.80 inches) thick and be made of 50% post consumer High Impact Polypropylene (HIPP). Material must contain U.V. inhibitors to insure longevity. Barriers must have 12 mm (1/2") raised vertical ribs running perpendicular to the panel and be 150 mm (6") on center. Panels shall have a 10 mm (3/8") wide "T" top edge and an external ground anchoring base flange 3 mm (1/8") in width.

The root barrier shall conform to the following specifications:

Physical Properties	ASTM Test	Typical
Tensile strength, PSI (MPa)	D638	2,000-3800()
Ultimate elongation %	D638	12%
Flexural modulus, PSI (MPa)	D790	400,000 (1034)
Notched Izod Impact, PSI	D256	

800-1.7 Perforated Pipe.

Perforated pipe for tree drain: Poly vinyl chloride SDR35 perforated pipe. Perforated pipe shall meet ASTM F-758 and AASHTO M-219. Pipe be supplied with a spun bonded filter sleeve (drain sock) to protect pipe from soil intrusion.

800-1.8 Pea Gravel.

Pea gravel shall be 3/8" size, rounded, mixed gray color.

800-1.9 Mow Curbs.

Concrete mow curbs shall be used as landscape edging between turf and mulched planting beds or to delineate maintenance boundaries. Mow curbs shall be 6-inch x 6-inch Portland cement concrete with #3 rebar centered and control joints at 10' on center . Concrete, joining and reinforcement materials shall meet specifications of Section 201 – Concrete, Mortar and Related Materials.

800-1.10 Erosion Control Matting.

800-1.10.1 Jute.

Jute matting shall be of open weave, with approximately one-inch square (1" x 1") mesh. It shall be manufactured from loosely twisted jute yarn.

Matting shall be made smolder resistant by treatment with chemicals, which are non-leaching and non-toxic to vegetation. An identification mark to differentiate it from untreated jute cloth shall be present.

800-1.10.2 Excelsior.

Excelsior blanket shall consist of a cured wood excelsior mat. Fibers shall be evenly distributed over the entire area of matting; eighty percent (80%) shall be at least six (6”) long with consistent thickness. The top side of the matting shall be covered with two inch by one inch (2” x 1”) biodegradable extruded plastic mesh. The blanket shall be made smolder resistant without chemical additives.

800-1.10.3 Staples.

Staples for erosion control matting shall be eleven gauge galvanized steel wire, bent in a “U” shape with six inches (6”) minimum length.

800-2 IRRIGATION SYSTEM MATERIALS.

800-2.1 Pipe and Fittings.

800-2.1.3 Plastic Pipe for Use with Solvent Weld Socket or Threaded Fittings.

DELETE the second and third paragraphs in their entirety and SUBSTITUTE with the following:

Continuously pressurized main line pipe 2-inch and larger shall be PVC Class 315. Continuously pressurized main line pipe 1-1/2-inch and smaller shall be PVC Schedule 40. PVC Schedule 40 pipe only, shall be supplied for continuously pressurized pipe on the supply side of control valves and for all valve manifold assemblies. PVC Schedule 40 pipe shall be used for all non-pressure lateral lines and pipe sleeves. All fittings for pressure pipe shall be Schedule 80 and all fittings for non-pressure pipe shall be Schedule 40.

Fittings and couplings for plastic pipe shall be threaded or slip-fitting tapered socket solvent weld type. Threaded female adapters shall be provided with socket pipe for connections to threaded pipe. All plastic pipe fittings and couplings shall be PVC I or PVC I/II material. The type of plastic material and schedule size shall be indicated on each fitting or coupling. Fittings and couplings shall conform to the requirements shown in Table 800-2.1.3. Solvent cement shall be as specified in Section 800-2.1.6.

DELETE TABLE 800-2.1.3 and SUBSTITUTE with the following:

TABLE 800-2.1.3

Socket Fittings	
Schedule 40 (non-pressure pipe)	ASTM D2466
Schedule 80 (pressurized pipe)	ASTM D2467
Threaded Fittings	
Schedule 40 (non-pressure pipe)	ASTM D2464
Schedule 80 (pressurized pipe)	ASTM D2464

800-2.1.5 Copper Pipe.

DELETE in its entirety and SUBSTITUTE with the following:

Copper pipe shall be Type “L” in accordance with ASTM B 88; brass pipe; brass piping shall be I.P.S. red brass.

Type "K" copper pipe, in accordance with ASTM B 88, shall be used to extend the existing water main at the meter, to the new reduced pressure principle backflow assembly.

ADD the following sub-section:

800-2.1.6 Pipe Installation Materials.

Primer for solvent weld joints shall be an industrial strength, low VOC product suitable for use on Schedule 80 and large size pipe. Cement for solvent weld joints shall be an industrial strength, low VOC product suitable for use on all types of PVC plastic pipe applications. Cement shall be maintained at proper consistency throughout use.

800-2.2.4 Remote Control Valves.

DELETE in its entirety and SUBSTITUTE with the following:

All remote control valves shall be solid brass intrabronchial valves (IBV) with fabric reinforced EPDM diaphragm and EPDM seat, stainless steel flow control stem, manual operation capability, heavy-duty electrical solenoid, and internal pressure regulation.

800-2.2.6 Quick-Coupling Valves and Assemblies.

DELETE in its entirety and SUBSTITUTE with the following:

Quick coupling valves shall be brass or bronze with built-in flow control, self-closing valve, rubber cover, lockable and supplied in three quarter-inch size unless otherwise specified.

RENUMBER the following sub-sections as shown:

800-2.2.7 Valve Boxes.

ADD the following:

Remote control valve boxes and covers shall be either rectangular precast Portland cement concrete with a cast iron locking lid or rectangular high quality HDPE plastic where allowed.

The Contractor shall rework the locking toggles of the concrete valve boxes by replacing the existing clevis pin and sheet metal clip with a cadmium-plated machine bolt and self-locking nut. Apply oil to lubricate and to prevent rust.

The Contractor shall weld the identification number of the valve and the controller clock on the cover of the valve box. Plastic valve boxes shall be "hot branded" with the I.D. number permanently pressed in to cover.

Valve boxes shall be sized accordingly to allow wire coils in pull boxes to be loose and maintain a three inch (3") clearance from the lid.

All valve boxes shall be installed with rodent deterrent methods using one of the following methods:

- a. 1/4-inch square steel 18 gauge wire mesh with thick black landscape fabric, bricks, pea gravel, and stainless steel bolts and washers in lids
- b. water and insect resistant valve box with gasket included and dirt skirt with snap tabs.

ADD the following sub-section under Section 800-2.2.7 Valve Boxes:

800-2.2.8 Ball Valves.

Isolation ball valves shall be line-sized PVC Schedule 80 true union easily actuated ball valves with full port design, reversible PTFE seats, and double O-ring stem seals.

800-2.4 Sprinkler Equipment.

DELETE the first paragraph in its entirety and SUBSTITUTE with the following:

Sprinkler heads, bubbler heads, and spray nozzles shall be of types and sizes shown on the Plans. Sprinkler and bubbler bodies shall be constructed of a non-corrosive, impact-resistant, UV-resistant, heavy duty ABS material. Equipment of one type and flow characteristic shall be from the same manufacturer and all equipment shall bear the manufacturer's name and identification code in a position where they can be identified in the installed position.

DELETE the third paragraph in its entirety and SUBSTITUTE with the following:

Fixed heads, shrubbery heads and bubbler heads shall have adjustable radius control.

ADD the following under the third paragraph:

Anti-drain check valves shall be installed as indicated on the Plans. The anti-drain check valve shall be the same diameter size as the riser and shall be integrated into the riser assembly.

Sprinklers heads shall have either factory or field-installed individual pressure regulators at each head set at the desired designed sprinkler output nozzle.

ADD the following sub-section:

800-2.5 Drip Equipment.

Drip emitters, drip valve assemblies, and drip components shall be of the types and sizes shown on the Plans.

All materials and equipment used in drip irrigation work shall be new and without flaws or defects and of quality and performance as specified. Prior to installation of any irrigation work, the Contractor shall submit, for approval by the City, five copies, minimum, of a list of all materials and equipment (s)he proposes to use. Should the Contractor propose to use materials or equipment other than those listed as approved, they shall submit in writing to the City a request to deviate from the approved list. Samples of the materials or equipment shall accompany the request to assist the evaluation of the proposal.

800-3 ELECTRICAL MATERIALS.

800-3.2 Conduits and Conductors.

800-3.2.1 Conduit.

DELETE in its entirety and SUBSTITUTE with the following:

Conduit shall be PVC Schedule 40 gray electrical conduit with electrical sweep elbows not greater than 270 degrees of bending and/or 200 feet between pull boxes. All conduit ends shall be sealed.

800-3.2.2 Conductors.

DELETE in its entirety and SUBSTITUTE with the following:

Control wires shall be as specified on the Plans and shall be per Controller, valve and decoder manufacturer's specifications.

Line voltage conductors shall be supplied in the sizes and types shown on the plan and shall be solid copper, THW, 600-volt insulation rating, conforming to the applicable provisions of ASTM D-734. Low voltage control conductors shall be Type UF, solid copper and supplied in the sizes shown on the plan or in accordance with the control equipment manufacturer's recommendation, and shall be UL approved for direct burial installation.

Direct Burial Control Wires: All control wires shall be solid copper, single conductor, 600 volt, type UF, conforming to the project standard specifications and drawings, special provisions, and the following wire colors and installation requirements.

Neutral Wires: White (#12 AWG). Do not interconnect neutral wires between controllers.

Spare Wires: Red (#14 AWG). From furthest valve or valve manifold to each controller.

Pilot Wires: (#14 AWG) or larger as recommended by controller manufacturer for the corresponding run distance.

Valve No.

- 1 Yellow
- 2 Orange
- 3 Blue
- 4 Black
- 5 Brown

Valve No.

- 10 White w/black stripe
- 11 Yellow w/red stripe
- 12 Blue w/red stripe
- 13 Orange w/red stripe
- 14 Purple w/white stripe

- | | |
|-------------------------|--------------------------|
| 6 Purple | 15 Brown w/white stripe |
| 7 Yellow w/black stripe | 16 Yellow w/white stripe |
| 8 Orange w/black stripe | 17 Blue w/white stripe |
| 9 Red w/black stripe | 18 Red w/white stripe |

For controllers with more than 18 valves, the sequence shall be repeated.

Wire Connections: Neutral, pilot, and spare wires shall be installed with a three (3) foot excess coiled wire length at each end enclosure. Each and every wire splice shall be soldered (using 60-40 solder) together, then encased in the waterproofed epoxy of the "Scotch-Pac" or "Pen-tite" connectors shown on Standard Drawing I-15. Wire splices shall be made only in valve or pull boxes.

Wire Bundles: Each individual controller clock's control wires shall be bundled and taped together with colored tape at intervals not exceeding ten (10) feet. Controller identification tape colors shall be as follows:

Controller No.	Color
"A" or 1	Black
"B" or 2	Red
"C" or 3	White
"D" or 4	Blue
"E" or 5	Green
"F" or 6	Yellow

(For additional controllers, repeat sequence)

Trench Marker: All direct burial wires shall be marked with a continuous yellow colored trench marker tape placed nine (9) inches below finished grade directly above the buried wires. Marker tape shall be equal to "alarmtape" as manufactured by Paul Potter Warning Tape, Inc. Tape shall be three (3) inches wide.

In multiple controller installations, enclosures shall be sized accordingly. No 110 volt wire runs shall pass from controller cabinet to cabinet. Each controller shall have a separate electrical service through a raceway. Provide one power off-on switch for each controller.

SECTION 801 – INSTALLATION

801-1 GENERAL.

ADD the following after the second paragraph:

Once rough grading has been accomplished, a minimum of (4) four soil samples from different representative areas of site shall be taken from areas approved by the Resident Engineer/Landscape Architect and a soil analysis performed to determine nutrient and mineral content, compositional characteristics, permeability, and existence of possible toxic elements. Soil test shall be conducted by a reputable agricultural soils laboratory approved by Landscape Architect. Analysis shall include recommendations for amending or correcting soil conditions. Results of soil analysis shall be received by Landscape Architect thirty (30) days prior to amending or soil and ordering amendments.

Based on the soils test results, the quantity or type of amendments may be modified by the Landscape Architect within 14 days of receipt of analysis.

Grub and clean all planting areas, removing all weeds, debris, and rocks from the site. All planting areas, 3:1 or less in steepness, shall be thoroughly tilled and loosened to a depth of twelve (12) inches by approved method. Do not till near existing trees if roots are encountered.

All areas where existing soils are replaced with imported topsoil shall be backfilled and settled using applications of water to moisten soil and establish a stable finish grade. Areas which subside, and all depressions or irregularities shall be repaired, settled and grade re-established.

ADD the following after the last paragraph:

During installation Contractor shall observe safe practices in accordance with the Standard Specifications, and all appropriate Federal, State and Local Laws concerning safe job practices.

Contractor shall install a temporary water supply from an approved source to irrigate the existing trees during construction, as outlined in section 801-4.9.5 of the specification addenda.

ADD the following subsection:

801-1.1 Landscape Inspections.

Landscape inspections shall be as indicated on the Plans and as specified below.

The landscape architect of record and city representatives shall be notified no less than 72 hours in advance of the start of construction, site observations, or meetings. After an initial pre-construction meeting, landscape site observations and/or inspections may include, but are not limited to the following:

- a) Landscape grading and soil amending
- b) Landscape construction
- c) Spotting of specimen plants
- d) Irrigation pressure and coverage test
- e) Planting and/or hydroseeding
- f) Pre-maintenance
- g) Post-maintenance

801-2 EARTHWORK AND TOPSOIL PLACEMENT.

801-2.2 Topsoil Preparation and Conditioning.

801-2.2.1 General.

DELETE the third and fourth paragraphs in their entirety and SUBSTITUTE with the following:

The existing soil below subgrade for Class "A" or "B" topsoil shall be deep ripped in a cross pattern to a depth of eight inches (8"). Rocks six inches or greater (6"+) in length shall be removed from the deep ripped area. The area shall be smooth and uniform before topsoil is placed.

Class "C" topsoil shall be deep ripped and cultivated to a finely divided condition to a depth of 8 inches (200 mm) minimum below finish grade. During this operation, all stones over 1 inch (25 mm) in greatest dimension shall be removed.

ADD the following:

Weed eradication for entire project site. After irrigation installation, but before planting installation, the Contractor shall irrigate the entire project site three (3) to four (4) times over seven (7) to ten (10) days to germinate existing weed seeds. Allow weed seeds to grow until they reach a maximum height of two to three inches (2" - 3"). A post-emergent herbicide shall then be applied per manufacturer's specifications and instructions. Planting and/or hydroseed application should not commence before a waiting period as prescribed by herbicide manufacturer.

Weed eradication for shrub areas and groundcover areas (planted from flats). Three (3) to four (4) days after these plants have been installed, the Contractor shall apply the pre-emergent herbicide per manufacturer's specifications and instructions.

801-2.2.2 Fertilizing and Conditioning Procedures

DELETE the first sentence of the second paragraph in its entirety and SUBSTITUTE with the following:

Soil amendment materials shall be uniformly spread at the prescribed rate. All hardscape shall be dry at time of application.

DELETE the first sentence of the third paragraph in its entirety and SUBSTITUTE with the following:

After spreading, cultivate the following soil amendments into the upper 6 inches (6") of soil by suitable equipment operated in at least two directions approximately at right angles. In small planters, the same results are to be achieved using hand tilling methods.

ADD the following:

Prior to implementing soil amendments, create a test plot to amend soil to lab recommendations and leach with at least one foot of water over a week. Retest plot following leaching period to verify soil condition improvements are acceptable.

After verifying test plot results and once all planting areas meet the finish grades per grading plan, the following rates of soil conditioning and amendment materials (or as modified by the soils report), shall be evenly spread over all planting areas and worked into the soil:

1) Soil amendments for all planting areas 3:1 or less in steepness (except temporary hydroseeded areas):

Soil conditioner	4 cu. Yds/1,000 sq. Ft.
Gypsum	120 lbs/1,000 sq. Ft.
Iron sulfate	10 lbs/1,000 sq. Ft.
Soil sulphur	10 lbs/1,000 sq. Ft.
After leaching, apply:	
10-10-10 fertilizer	25 lbs/1,000 sq. Ft.

Amendments shall be thoroughly tilled and blended into the existing soil to a depth of six (6) inches by approved methods.

2) Soil amendments for sloped planting areas 3:1 or greater in steepness:

Gypsum	120 lbs/1,000 sq. Ft.
Iron sulfate	10 lbs/1,000 sq. Ft.
Soil sulphur	10 lbs/1,000 sq. Ft.
After leaching, apply:	
10-10-10 fertilizer	25 lbs/1,000 sq. Ft.

Amendments shall be raked into soil surface without disturbing the compaction of the slope.

Note: Soil amendments, as specified, are for bidding purposes only. Actual types and quantities may be altered based on soil analysis (provided by Contractor) after rough grading.

3) In addition, after amending soil as described above, all planting areas shall be sprayed with "Sarvon" at the rate of 6 gallons/acre (or 1 qt./2,000 sq. ft.) immediately prior to any leaching recommendations.

4) Hydroseed Areas:

Soil amendments and incorporation are not required, except as applied as part of the hydroseeding procedure.

Deep Water Leaching:

1) After complete installation and testing of the irrigation system, including tilling of soil amendments, all on-grade areas shall be deep water leached, compacted and settled by repeated application of irrigation water until the soil has received a minimum of 12" of water, and has been thoroughly moistened to a depth of 24".

2) After leaching operation, 4 soil samples shall be taken by Contractor per Resident Engineer's / Landscape Architect's direction and given to the soil laboratory for testing. Soil test shall meet the following requirements:

EC - Maximum 3.00
pH - Maximum 7.50
Minimum 6.0

Tree and Shrub Backfill:

Tree and shrub backfill mixture shall be sixty-seven percent (67%) imported Class "A" topsoil OR site soil and thirty-three percent (33%) Type 1 organic soils amendment and ten (10) lbs./cu.yd. gypsum - 6 lbs./cu.yd. 12-12-12 fertilizer. After backfilling planting hole, apply a mixture of two (2) tablespoons of liquid soil conditioner in five (5) gallons of water to each tree and shrub.

Post Planting Fertilizer:

The Contractor shall apply post-plant 14-7-3 fertilizer at the rate of twenty pounds (20 lbs.) per 1,000 sq.ft., thirty (30) days after planting and once again at the end of the post-construction maintenance period.

801-2.3 Finish Grading

DELETE the first paragraph in its entirety and SUBSTITUTE with the following:

Contours and finish grade shall provide for drainage to sheet flow and shall not channel drainage in a manner where volume and velocity of water will create surface erosion.

DELETE the second paragraph in its entirety and SUBSTITUTE with the following:

The finish grade below adjacent paving, curbs or headers shall be 1/2 inch (12.5mm) in lawn areas and 4 inches (50mm) in shrub or groundcover areas.

DELETE the first sentence of the third paragraph in its entirety and SUBSTITUTE with the following:

After blending soil amendments and fertilizers into soil, water and allow soil to settle to provide a stable base.

ADD the following after the third paragraph:

Finish grade shall insure positive drainage from the site. Surface drainage shall be away from all building foundations. The Architect shall approve the final grades and elevations before planting operations may begin.

The finish grade in hydroseed areas shall have moderately rough texture to provide a suitable surface for adherence of the hydroseed mix.

EDIT section title below and modify contents to include landscape edging installation:

801-3 HEADER AND LANDSCAPE EDGING INSTALLATION.

ADD the following sub-section:

801-3.1 Concrete Mow Curbs.

Concrete mow curb installation shall follow specifications of Section 303 – Concrete and Masonry Construction.

801-4 PLANTING.

801-4.1 General.

DELETE the last sentence of the fourth paragraph in its entirety and SUBSTITUTE with the following:

Except as noted for specimen planting, all planting shall follow the completion of the irrigation system and finish grading.

For drip irrigation systems, all irrigation components, including drip headers but with the exception of drip tubing, shall be installed before planting. Drip tubing can be installed and staked after shrub installation.

ADD:

Protection and Restoration of Existing Improvements and Plant Material:

The Contractor shall meet with the Engineer and City Arborist to establish and mark out the exact location of the limit of work and the vegetation canopy of existing desirable vegetation to avoid/minimize impacts to this vegetation.

At this time, the City Arborist shall photograph and assess the condition of each existing tree to remain within the project limits and provide a written report of his findings to the Engineer and Contractor. This report shall be the basis for which an appraised value will be applied to each tree should the need arise for replacement purposes. The Contractor may, at his expense, retain the services of a qualified certified arborist to provide this assessment. Appraised values shall be determined by using the most recent edition of the 'Guide for Plant Appraisal,' published by the Council of Tree and Landscape Appraisers and employing the 'Trunk Formula Method'.

In the event that the death or decline of existing plants to remain is attributable to the Contractor's negligence or lack of protection as determined by the Engineer, the Contractor shall be responsible for replacement of said plant material, in-kind, up to 36" box size. Contractor shall be fined the appraised value (as determined in the above paragraph) of any damaged existing plant material larger than 36" box.

The Contractor shall be responsible for managing the site and performing planting, maintenance and corrective measures to the best advantage of the plant material to promote healthy growth, establishment and success of the plantings. This shall include providing for drainage, irrigation, repair of damaged features, correction of deleterious conditions, maintaining a proper soil moisture level, weeding, fertilization, protection, temporary measures to promote establishment and other reasonable maintenance and construction efforts needed to provide for the successful establishment of the plant materials during the entire contract period.

The Contractor shall not install planting as shown in the plans when it is obvious in the field that conditions exist which are detrimental to plant survival and growth. Such conditions shall be brought to the attention of the Resident Engineer. The successful establishment of the plantings during the entire contract period is the Contractor's responsibility.

The irrigation system shall be installed, pressure tested, coverage tested and operational prior to planting, with the exception of large specimen planting that must be planted prior to other operations as approved by the Resident Engineer.

Actual planting shall be performed during those periods when weather and soil conditions are suitable and in accordance with locally accepted horticultural practice, as approved by the Resident Engineer / Landscape Architect. No planting shall be done in any areas until it has been satisfactorily prepared in accordance with these specifications. Soil moisture level prior to planting shall be no less than 75% of field capacity. The determination of adequate soil moisture for planting shall be the sole judgment of the Resident Engineer / Landscape Architect and his decision shall be final. The Contractor shall obtain approval from the Landscape Architect of planting pits before planting operations shall begin. If the soil moisture level is found to be insufficient for planting, all planting pits shall be filled with water and allowed to drain before starting planting operations. No more plants shall be distributed in the planting area on any day than can be planted and watered on that day. All plants shall be planted and watered as herein specified immediately after the removal of the containers. Containers shall not be cut prior to placing the plants in the planting area.

Percolation Test for general planting: Prior to installing plants, Contractor shall perform a minimum of three percolation tests in representative areas of the site to verify acceptable natural drainage for planting pits. Tests shall be performed as follows:

- 1) Dig a pit 2'x 2'x 2' deep.
- 2) Fill with water to top and cover with plywood and barricade to protect pedestrians.
For tree pit percolation tests, fill with one foot (1') of water and fill again four hours later to one foot depth with infiltration rate of 1 inch per hour. Pit must completely drain in order to pass.
- 3) Make daily observations noting the depth of water each day.
- 4) Report to the Resident Engineer the length of time that the water takes to drain completely from each

hole. If water drains from the hole within one day, refill with water. Based on this test, the Resident Engineer will confer with the Landscape Architect and will make a determination of whether additional drainage measures will be required for boxed size tree plantings.

No plants shall be installed until percolation tests have been observed by the Resident Engineer and a determination made that no further drainage measures are required.

Planting shall not be performed if plant pits contain standing water, or if pits are over saturated to a condition which may result in an unhealthful condition for the plant. It is the Contractor's responsibility to provide a suitable growing condition for the plant material and to maintain that condition throughout the entire contract period.

If requested by the Contractor, the Resident Engineer, Landscape Architect, and/or designated representative, will visit the nursery from which trees are procured to inspect the trees prior to delivery to the site. The Contractor shall reimburse the City for all time spent driving to and from the nursery and inspecting the trees at an hourly rate of \$105/hour or fraction of hour.

It is in the Contractor's interest to have the Resident Engineer (or designated representative) visit the nursery and inspect the Contractor's selected trees prior to delivery to the site. This may prevent extra shipping expenses to the Contractor for trees delivered to the site, but subsequently rejected by the Resident Engineer. This does not preclude the Resident Engineer from rejecting any trees delivered to the site which, upon inspection at the site, do not meet the criteria for acceptance as previously outlined.

After approval and transportation, and upon arrival at the construction site, the City's Landscape Inspector will inspect the plants for any damage that may have occurred in transit. Plants that have been damaged in transit may be rejected at no cost to the City in accordance with the Project Special Technical Provisions, Section 212-1.4.1.

Bid item unit prices for trees, shrubs and groundcover shall include all items incidental to tree, shrub and groundcover planting including excavation, backfill, soil amendments, fertilizer tablets, staking, drain pipes and all other items not included in other bid items to sustain healthy growing conditions for the trees, shrubs and groundcover throughout the contract period.

801-4.2 Protection and Storage.

ADD the following:

The Contractor's on-site plant storage area shall be approved by the Architect prior to the delivery of any plant materials. Any plants determined by the Architect to be wilted, broken, or otherwise damaged shall be rejected at any time during the project, whether in the ground or not. All plants shall be handled by their containers. Any plant that has been handled by its trunk or stem shall be rejected. All rejected plants shall be removed from the site immediately.

Shade loving plants, stolons and sod shall be stored in the shade or screened from the sun.

ADD the following sub-sections:

801-4.2.1 Existing Tree, Shrub and Ground Cover Protection.

The work is to be performed in areas of existing planting and irrigation. The Contractor shall take precautions to minimize the disturbance to adjacent planted areas and is required to replace in kind any irrigation or planting disturbed by the work.

Identify and protect from damage all individual plants and areas of planting to remain by appropriate means. The Contractor shall provide equivalent size replacement plants in the event that the death or decline of existing plants to remain is attributable to the Contractor's negligence or lack of protection as determined by the Resident Engineer.

No storage of construction equipment or construction materials nor stockpiling of soil or debris shall be placed within 1'-0" from the trunk for every 1" caliper of any existing tree.

All plants to remain on-site shall be watered and irrigated as necessary during the entire construction contract to provide for the health of the plant. Any plants required to be removed, boxed and set aside for future

installation shall be watered, and maintained by the Contractor in a healthy condition until replanted or until the end of the maintenance period.

The pruning and trimming of the limbs and roots of plant materials to remain within the project scope shall be done by tradesmen experienced in this type of work. The removal of any limbs, branches, and roots shall be done only after conferring with the Resident Engineer and Landscape Advisor.

801-4.2.2 Excavation Adjacent to Existing Tree, Shrub and Ground Cover to Remain.

Trenching within the drip line of trees and shrubs shall be avoided. It is the intent of the plans that the Contractor provide an alternate routing of trenching to avoid cutting through roots of existing trees.

Where it is necessary to excavate in close proximity to existing trees and shrubs, all possible caution shall be exercised to avoid injury to roots and trunks. In the event it is necessary to cut the roots of an existing tree, the tree shall be pruned prior to excavation to reduce the foliage volume by the same percentage as the approximate percentage of roots removed. Pruning of trees on private property shall not be done without written permission of the property owner.

Excavation within the drip line of the tree shall be done by hand, tunneling under roots 1" in diameter and larger, and shall be done only on the approval of the Resident Engineer and Landscape Advisor. The exposed roots of trees shall be covered and shaded by moist burlap or canvas until the trench is backfilled.

801-4.2.3 Protection and Storage of Palms to be Transplanted.

All palms to be stored during the construction period shall be located in a suitable area protected from construction activity and any conditions which may result in damage to the tree. Care shall also be taken to provide an environment conducive to storage of the species. Appropriate care shall be provided on a continuing basis to the best advantage of the tree including but not limited to watering, fertilization, pest control, pruning, weeding and maintaining stability to assure survival and good health. All storage techniques and locations shall be acceptable to the Resident Engineer.

801-4.2.4 Remove Existing Trees.

Trees noted to be removed and not transplanted shall be removed completely including the root crown and roots over two inches (2") in diameter where practicable. Stump shall be removed by grinding or other mechanical method to a depth of thirty inches (30") below proposed finish grade. The contractor shall verify the specific trees to be removed with the Resident Engineer prior to removal. Caution shall be exercised to avoid damage to adjacent property and barricades shall be erected to protect pedestrians. Trees outside the City right-of-way shall not be removed or otherwise damaged.

801-4.4 Specimen Planting.

ADD the following sub-section:

801-4.4.1 Transplanting of Existing Palm Trees.

All work relating to the removal, storage and replanting of existing palms shall be performed by a licensed landscape contractor with a proven record of a minimum of five years of successful specimen palm relocation experience. The contractor shall provide evidence of experience transplanting similar large palms of the same species, and a list of references.

This contractor may be a specialty subcontractor selected by the project landscape contractor to meet the experience level required. The subcontractor shall be approved by the Resident Engineer.

Prior to the removal of the existing palms to be transplanted, the health of the palms shall be reviewed with the Resident Engineer and Landscape Advisor. Record color photos shall be taken of each tree and provided to the Resident Engineer for future reference.

Existing palm trees to be transplanted shall be removed and stored or transplanted to the locations shown on the plans in accordance with the provisions for planting trees in section 308-4.5 of the Standard Specifications and these Special Provisions.

When the palm trees are removed and the work within the areas to which the trees are to be transplanted is not completed to the stage at which the trees can be planted, the trees shall be stored and maintained until transplanting can be completed. In all other cases, the palm trees shall be planted at their new locations the

same day they are removed. Trees may be stored at a nursery or on site as directed by the Resident Engineer.

Care shall be taken to determine if gas or electrical hazards are present in the excavation area and proper precautions shall be taken to protect the safety of life and property.

Transplanting palm trees shall be performed between February 15 and October 15 unless otherwise directed by the Resident Engineer. The contractor shall submit a written procedure and list of equipment to be utilized to the Resident Engineer for approval prior to relocating the palms. All work shall be performed to the best advantage of the tree's health.

Before each palm tree is removed or planted, all dead fronds and frond stubs shall be removed from the trunk. In addition, green fronds shall be removed to the best advantage of the tree. The remaining fronds shall be tied in an upright position with light hemp or manilla rope. Clean and skin trunks. Fronds and frond stubs shall be removed at the trunk in a manner that will not injure the tree trunk or the health of the tree.

The roots of each palm tree shall be cut in a manner approved by the Resident Engineer. Such approval shall be obtained before excavating, or removing any palm tree to be transplanted. The diameter and depth of each rootball shall be large enough to support the root system of the tree and maintain the palm in a healthy, viable condition. Exposed root balls shall be kept covered with wet burlap or canvas until the trees are planted or boxed.

Holes resulting from the removal of transplanted palm trees shall be backfilled the same day the trees are removed. Existing site soil, or Class "A" top soil shall be used to backfill such holes unless area is to be paved in which case existing site soil may be used. The backfill shall be mounded slightly to allow for settling and compaction. If the area is to be paved, compact the backfill to match required compaction for paving. Finish grade and fill any depressions created from compaction to create a smooth, evenly compacted base.

Following digging, the palm shall be boxed, using a container large enough to contain the rootball and a minimum of 48" depth. Palms shall be lifted using a crane of sufficient size to avoid damage to the palms and surrounding work. The rootball shall be moved in such a manner to avoid damage to the rootball. Palm trees shall not be dragged during transplanting operations, and the trunks shall be protected from injury.

Each planting hole shall be as dimensioned on the planting detail. Install perforated drain line per detail.

Backfill material for the palm tree planting holes shall be 100% washed, weed free coarse plaster sand.

Palm trees shall be planted such that, after settlement of the backfill, the tree maintains its original relationship to the surrounding grade.

Watering basins for the transplanted palm trees shall be constructed as shown on the plans. After the planting holes have been backfilled, water shall be applied to the full depth of the backfill soil.

When the palm trees are planted, a root stimulant, approved by the engineer shall be applied to the roots of each palm tree in accordance with the printed instructions of the root stimulant manufacturer. A copy of said printed instructions shall be furnished to the Resident Engineer before applying any stimulant. Root stimulant to be used shall be submitted to the engineer for approval not less than two weeks prior to its intended use. Root stimulants not approved by the Resident Engineer shall not be used.

Palm trees to be transplanted shall be maintained from the time the palm trees are removed to the time of final acceptance of the installation at the end of maintenance period. The palm trees shall be watered and fertilized as necessary to maintain the trees in a healthy condition. Contractor shall be responsible for the protection and health of the tree during the entire contract period. The Contractor shall replace the tree with one of equal size in the event of damage or death of the tree as determined by the Resident Engineer.

Palms which die or are judged to be permanently disfigured or unhealthy as a result of operations or maintenance performed under this contract shall be replaced. The replacement palm tree for each unsuitable transplanted palm tree shall be the same size and species as the palm tree being replaced to a minimum brown trunk height of 15 feet. Each replacement palm tree shall be planted in the planting hole of the unsuitable palm which it is replacing. The method for planting replacement palm trees shall be as specified in this section for transplanting palm trees. Removed unsuitable palm trees shall be disposed of off-site.

801-4.5 Tree and Shrub Planting.

DELETE the first sentence of the first paragraph in its entirety and SUBSTITUTE with the following:

Planting holes shall be twice the width of the plant container or ball. Bottom of planting hole equivalent to diameter of root ball shall be 1-4" less than depth of root ball depending on container size so crown of root ball is slightly elevated above finish grade. Planting holes shall be larger if necessary to permit handling and planting without injury or breakage of the root ball or root system.

AMEND the first sentence of the second paragraph to read:

Remove containers in such a manner that the plant root is not injured.

AMEND the second sentence of the fourth paragraph to read:

Soil mix shall consist of the following components for each ten cubic yards of soil mix:

The following soil mix types and quantities are for bidding purposes only. Actual soil mix types and quantities shall be based on the soils analysis test results after rough grading is complete.)

- 3 Cubic yards type 1 organic soil amendment
- 7 Cubic yards on site soil
- 30 Lbs. Agricultural gypsum
- 5 Lbs. Iron sulfate
- 15 Lbs. 10-10-10 fertilizer

AMEND the following requirements in the fifth paragraph to include:

- (1) The bottom of the planting hole shall be scarified to a depth of 6 inches and the native soil mixed with an equal amount of soil mix.
- (2) Where required, place root control barriers into planting holes at locations noted on drawings prior to adding soil mix.
- (3) Soil mix shall be added and water compacted in the bottom of the planting hole so that the crown of the plant is one inch above finish grade, unless indicated otherwise on details.
- (4) The plant shall be approximately at the center of the hole and plumb.
- (5) Prepared soil mix shall be added in the hole to cover one-half the height of the root ball. Water shall then be added to thoroughly saturate the root ball and adjacent soil.
- (6) After the water has drained, the specified number of fertilizer tablets shall be placed in the planting hole adjacent to the root ball. The Resident Engineer shall approve fertilizer tablet placement prior to filling remainder of hole with soil mix.
- (7) The backfill shall be thoroughly water settled and additional prepared soil mix added to fill any remaining void below finish grade.
- (8) The plant shall be guyed and/or staked as specified in Section
- (9) The area around plants shall be regraded to finish grade. The excess soil shall be disposed of by the Contractor or as directed by the Resident Engineer.
- (10) Fertilizer planting tablets (21 gram) shall be placed with each plant at the following rates:
 - One (1) tablet per 1 gallon container
 - Two (2) tablets per 5 gallon container
 - Four (4) tablets per 15 gallon container
 - One (1) tablet per each two (2) inches of box size container
- (11) All plants which settle deeper than specified shall be raised to correct level or replaced as directed by the Resident Engineer / Landscape Architect.
- (12) Pruning shall be limited to the minimum necessary to remove injured twigs and branches, and to

compensate for loss of roots during transplanting, but never to exceed one-tenth the branching structure. Pruning may be done only with the approval of and in the presence of the Resident Engineer / Landscape Architect. Cuts over three-quarters of an inch shall be painted with an approved tree wound paint.

- (13) Install 2 deep aeration tubes per tree, one set at rootball depth and one set at depth 1.5 times the rootball depth at low end of tree pit. Tubes to be 4-inch diameter perforated SDR35 or PVC Schedule 40 pipe.

ADD the following subsection:

801-4.5.1 Plastic Root Barriers.

Materials shall be delivered and stored in accordance with Section 4 of the Standard Specifications.

Avoid prolonged exposure to direct sunlight and high temperatures.

Material shall be handled in accordance with manufacturer's instructions.

Plastic panels shall be ribber, interlocking, and a minimum depth of 24 inches (24"). Connect panels together to required length. The panels shall be laid in a continuous barrier without gaps. Panels shall be connected by means of a locking strip provided for this purpose by the root barrier manufacturer.

Install root barrier against edge of all paving adjacent to planting areas within 10' of tree trunks measured perpendicular to curb. A minimum 4" wide trench shall be excavated to the depth of root barrier. Insert barrier to bottom of trench and place it against the side of trench adjacent to concrete with the "ribs" or root guides faced toward the root ball. Top edge shall be 3" below grade of concrete structures.

Backfill, removing all adverse materials such as large rocks, severed roots, broken pipes, etc. Tamp soil gently and firmly into place as backfilling is accomplished to prevent soil settling. Avoid collapsing or distorting the barrier when backfilling.

Payment for root barriers shall include all labor, materials, equipment and all incidentals necessary to provide a complete installation.

801-4.6 Plant Staking and Guying.

801-4.6.1 Method "A" Tree Staking (Single Stake). **DELETE the first sentence in its entirety and SUBSTITUTE with the following:**

The tree shall be staked with the type and length of stake specified on the plans or in the special provisions. The stake shall be placed at the windward side of the tree and positioned adjacent to the root ball. The stake shall be vertical and driven 12 inches into undisturbed soil.

ADD the following:

Payment for tree staking shall be included in the unit price paid for trees and no separate payment will be allowed therefore.

801-4.6.2 Method "B" Tree Staking (Double Stake).

ADD at the beginning of the first paragraph:

All 15 gallon, 24" box and 36" box size trees shall be double staked. Refer to section 800-1.5.3 of these addenda for approved staking materials and guying materials.

DELETE the first and second sentences of the first paragraph in their entirety and **SUBSTITUTE** with the following:

The tree shall be staked with the type and length of stake specified on the plans or in the special provisions. One stake shall be placed 24 inches minimum from each side of the tree trunk, unless directed otherwise by the Resident Engineer or Landscape Architect.

ADD the following:

Payment for tree staking shall be included in the unit price paid for trees and no separate payment will be allowed therefore.

801-4.6.3 Guying.

ADD the following at the beginning and delete the first paragraph:

All boxed trees over 36" box shall be guyed. Trees and other plants, except specimen plants, to be guyed will be shown on the Plans or specified in the Special Provisions.

ADD the following subsection:

801-4.6.4 Tree Grate Installation

Tree grate materials shall be as specified in Plans and follow requirements of Section 206. Tree grates must be able to be disassembled on site.

For trees installed within tree grates, install tree staples for stabilization per manufacturer's recommendations. Shorter prong side should extend 12 inches below the root ball. Depth range on the longer prong side shall be dependent on the tree caliper size.

801-4.6.5 Ground Cover and Vine Planting.

ADD the following to the second paragraph:

Soil shall be moist within the total root zone of the material being planted.

DELETE the first sentence of the third paragraph in its entirety and SUBSTITUTE with the following:

Each plant shall be planted with its proportionate amount of container soil to minimize root disturbance.

DELETE the second sentence of the fourth paragraph in its entirety and SUBSTITUTE with the following:

A layer of the specified mulch shall be spread over the planted areas to the depth specified in the plans with 1-inch maximum over actual root ball of shrub.

801-4.8 Lawn Planting.

801-4.8.2 Seed.

ADD the following under the first paragraph of Method 'A':

(A) Method A

The soil shall be moist for a depth of 6 inches before planting. If not, prior to planting the soil shall be deep watered to a depth of 8 inches and allowed to dry out to the point soil is moist and will support labor and equipment without damage or undue compaction to soil and finish grade."

AMEND the fourth paragraph under Method 'B' to read:

(B) Method B

Areas to be planted by this method shall be moistened to a depth of 6 inches.

801-4.8.3 Sod.

DELETE the second through fifth paragraphs in their entirety and SUBSTITUTE with the following:

Lawn will be planted by sodding in areas indicated on the plans.

Preparation of soil : After conditioning of soil, area to be planted with lawn sod shall be raked, floated and rolled to finish grade; smooth and even, free of rocks and clods, and reasonably well firmed. Prior to planting, the surface of the area shall be sufficiently loose, moist, and friable to receive the sod.

Sodding: Sub-soil finish grade shall be sufficiently below final grade to allow for the thickness of the sod. Sod slabs shall be laid promptly after delivery to job site. In hot, dry, or windy weather, stacked sod at job site shall be lightly sprinkled with water to prevent slab edges from drying excessively. Sod slab ends and sides must be butted together for a close fit and in a staggered pattern without overlapping, parallel to lay of land. Initial Watering: Immediately following planting, sod shall be thoroughly watered and kept sufficiently moist until the sod has rooted.

Final Compaction: Fully germinated and rooted lawn areas shall be allowed to dry sufficiently to permit rolling with a two hundred to three hundred pound water weighted roller to compact the soil around grass and roots and to provide a firm, smooth mowing surface.

Filling: Following compaction and irrigation settlement, all depressed areas shall be filled with screened conditioned top soil and re-sodded.

Protection: The lawn areas shall be protected against foot traffic and other use. Damaged areas shall be repaired immediately.

Finishing: After planting operations are completed, the top surface of the lawn areas shall be left smooth and visually even, with no ridges, rises or depressions.

801-4.8.4 Stolon Planting.

DELETE the first sentence in its entirety and SUBSTITUTE with the following:

Topsoil preparation and conditioning and finish grading shall be completed before stolon planting.

DELETE the first sentence of the second paragraph and SUBSTITUTE with the following:

The area to be planted in stolons shall be thoroughly irrigated to a depth of at least 6 inches before planting.

801-4.9 Erosion Control Planting.

801-4.9.3 Seeding and Mulching.

DELETE Method A, ADD the following:

Method B slurry mix (hydroseed mixes) shall be composed of materials as follows:

Seed mix per plan	Lbs./acre per plan
16-6-8 inorganic fertilizer	400 lbs./acre
Wood fiber mulch	2,000 lbs./acre
Organic soil binder	130 lbs./acre
Humectant CPA 4000	50 lbs./acre
'Sarvon' soil conditioner	6 gals/acre

Landscape Contractor must provide owners representative with "bag tags" and receipt forms prior to installation of hydroseed mixture.

All bare spots shall be re-hydroseeded by the Contractor within thirty days of the initial application.

Hydroseeded areas designated on plan to receive straw mulch, shall be treated as follows:

1. Hydroseed with mix per plans and above specifications.
2. Broadcast weed free straw at a rate of two tons per acre. Avoid disturbance of hydroseed.
3. Apply a tack coat using hydroseeding equipment to apply the following components:

Wood fiber mulch	600 lbs./acre
Organic soil binder	130 lbs./acre

Non-irrigated hydroseed:

1. It is preferred that the non-irrigated hydroseed mix be applied between the dates of October 15 and March 15, or during the winter season.
2. The contractor shall provide temporary irrigation, by a method approved by the resident engineer, in the event that:
 - a. Application of the hydroseed cannot be performed during the time period listed above; or

- b. Winter rains do not provide adequate water for the survival of the non-irrigated hydroseed.
3. Application of water shall not be detrimental to the planting.
4. Any additional costs associated with providing supplemental water shall be at the contractor's expense.

801-5 IRRIGATION SYSTEM INSTALLATION.

801-5.1 General

ADD:

Materials shall be delivered and stored in accordance with Section 4 of the Standard Specifications.

Contractor shall provide a temporary water supply from an approved source to irrigate existing plants until the permanent water source is operable. Contractor shall submit shop drawings and description of the temporary water supply to the governing water authority and City for approval. The temporary water supply shall be of adequate pressure and gallonage to operate the existing irrigation system and other required irrigation equipment at its designated capacity.

Contractor shall furnish any and all temporary electric power required to operate irrigation controllers during construction period or until permanent electrical power has been furnished.

Contractor shall check and verify the water pressure at P.O.C. prior to beginning of work. Notify Resident Engineer of any discrepancy between pressure indicated on plans and actual water pressure.

Contractor shall check and verify all site conditions, utilities, and services prior to trenching. Verify point of connection location prior to beginning of work.

Plans are diagrammatic and approximate. All piping, valve boxes, backflow preventers, etc., shall be located in planting areas. No irrigation equipment except pipe crossings and electrical crossings shall be located in or below sidewalks or streets except where street crossings or trench rerouting is required to protect existing trees.

All irrigation equipment shall be installed, flushed, pressure tested, and the coverage test approved prior to plant installation.

801-5.3 Irrigation Pipeline Installation.

801-5.3.1 General.

ADD the following to the end of the third paragraph:

Unless otherwise specified, no PVC pressurized pipeline shall be installed within 2 feet of and parallel to another line with the exception of lateral lines.

ADD:

Concrete thrust blocks, minimum 1 cu. ft. with sufficient bearing area to resist the thrust of water, shall be constructed against undisturbed earth at all changes of direction exceeding 45 degrees for pressure mainline pipe larger than 2", thrust blocks shall be installed at gate valves, tees, elbows, crosses, and ends of pipe runs; or wherever the Resident Engineer/Landscape Architect deems one to be necessary. Thrust blocks are to be installed as per Standard Drawings W-17, W-18, and W-19, SDW-100 for 4" pipe.

Contractor shall install sleeves and chases where any waterline or controller wire passes under paving. Sleeves and chases shall extend 2'-0" beyond each side of the improvement. The letter "E" for electrical or the letter "W" for water shall be stamped or chiseled on the improvement directly above the chase or sleeve. The chases shall be a minimum 15" deep for electrical and the sleeves 24" deep minimum for water. Sleeves and chases shall be Schedule 40 PVC, typical. The diameter of the sleeve shall be two (2) pipe sizes larger than the diameter of waterline, to be installed in sleeve.

All pressure pipe shall have a continuous blue colored trench marker metallic tape placed nine inches

(9") below finished grade directly above the buried pipe. In addition to this tape, the reclaimed water warning tape shall be installed with reclaimed systems per specifications.

Sand encasement, where applicable, for all irrigation pipe, direct burial control wire, and electrical conduit shall be plaster or mortar sand with a sand equivalent of 50 per Section 200 of the standard specifications.

Avoid installing pipe through proposed tree locations to avoid conflict with root ball.

801-5.3.2 Steel Pipeline.

DELETE the third paragraph in its entirety and SUBSTITUTE with the following:

Joints shall be made with a non-toxic non-hardening joint compound or teflon tape applied to the male threads only.

801-5.3.4 Copper Pipeline.

DELETE the first paragraph in its entirety and SUBSTITUTE with the following:

Copper pipe shall be cut square and all burrs and fins removed.

801-5.4 Installation of Valves, Valve Boxes, and Special Equipment.

DELETE the first paragraph in its entirety and SUBSTITUTE with the following:

Valves, backflow preventers, pressure regulators, and related accessories shall be furnished and installed as specified on the contract documents.

DELETE the third paragraph in its entirety and SUBSTITUTE with the following:

Valves shall be the size specified on the contract documents.

DELETE the fourth paragraph in its entirety and SUBSTITUTE with the following:

Quick-coupler valves and garden valves projecting above the grade shall be installed 12 inches from curbs, pavement, and walks. In lawn areas, such equipment shall be installed in a covered concrete box set to finish grade. In groundcover and shrubbery areas, quick-couplers valves shall be set 4 inches above finish grade, and garden valves shall be set a minimum of 8 inches above finish grade.

ADD the following after last paragraph:

All valve boxes shall be installed with rodent deterrent method including, but not limited to, installation of 1/4-inch square steel 18-gauge wire mesh with thick black landscape fabric, bricks, tape, and stainless steel bolts and washers in lids.

All wires in pull boxes shall be loose thirty-six inch (36") coils and shall not come within three inches (3") from lid. Boxes shall be sized accordingly to accommodate these requirements.

801-5.5 Sprinkler Head Installation and Adjustment.

801-5.5.1 General.

ADD the following after the first sentence:

Plans are diagrammatic and approximate. Precise location of sprinkler heads and bubblers shall be adjusted in field to meet minor variations in the plan.

801-5.5.2 Location, Elevation, and Spacing.

DELETE the second through fifth paragraphs in their entirety and SUBSTITUTE with the following:

In lawn areas, sprinkler heads shall be installed 1/2-inch above finish grade. Lawn sprinklers shall be installed 6 inches clear of adjacent horizontal elements such as walks, curbs, headers, and similar

improvements.

Sprinkler heads projecting above finish grade shall be installed at least 6 inches, but not more than 12 inches, from adjacent vertical elements projecting above grade, such as walls, planter boxes, curbs, and fences.

Unless otherwise specified, shrub heads, bubbler heads, and impact sprinklers shall be installed 6 inches above finish grade. Sprinkler heads shall be installed at a minimum of 6 inches from adjacent horizontal elements such as walks, curbs, headers, and similar improvements.

801-5.5.3 Riser and Nozzle Line Adjustment.

ADD the following after the fifth sentence:

All sprinkler swing joints shall be hand-assembled with Teflon tape using (3) PVC Schedule 40 street elbows and (1) PVC Schedule 80 nipple.

801-5.6 Automatic Control System Installation.

DELETE the third through fifth paragraphs in their entirety and SUBSTITUTE with the following:

Remote control valves shall be compatible with the automatic controller. When the valve is to be housed in a valve box, it shall be installed with at least a 4-inch minimum to a 6-inch maximum clearance below the cover. Valve boxes shall be set to finish grade on an unmortared brick foundation."

All service wiring shall be installed at the minimum depth specified in section 307-2.5 in PVC conduit from the service point to the controller. For the purpose of these specifications, service shall include all material and equipment necessary to complete the electrical connection between the terminating point of the serving utility and the irrigation controller. A separate disconnect switch or combination meter socket, as required, shall be installed between the source of power and the controller. The minimum service wire shall be No. 12 awg copper 600 volt type TW, TWH or TWHH or larger as required by the contract documents or controller manufacturer. Wire splices shall be located only in specified pull boxes and shall be made with a packaged kit approved for underground use."

DELETE the seventh paragraph in its entirety and SUBSTITUTE with the following:

All wiring shall be tested for continuity, open circuits, and unintentional grounds prior to connecting to equipment. The minimum insulation resistance to ground shall be fifty (50) megohms. Any wiring not meeting this requirement shall be replaced at the Contractor's expense. A reduced "as-built" irrigation plan, color coded by stations and laminated in plastic, shall be submitted to the Resident Engineer and upon approval, mounted on the inside of controller for use by maintenance personnel. The "as-built" plan shall be in accordance with Section 308-5.7 of these Special Provisions."

Control wiring or hydraulic control tubing shall be housed in conduit between the controller and a point at least one foot outside the limits of the controller foundation, or the structure foundation and where the controller is housed. All other wiring and hydraulic control tubing issuing from the conduit shall be direct burial installed in main or lateral water line trenches wherever practicable. The wiring or tubing shall be installed in the lower corner of the irrigation pipeline trench. Sufficient slack shall be left in the wiring or tubing to provide for expansion and contraction. When the control wiring or tubing cannot be installed in a pipe trench, it shall be installed a minimum of 18 inches below finish grade."

ADD:

Each installed remote control valve shall be coded to its parent controller in the same numerical sequence as indicated on plans. Each installed remote control valve shall be coded to its parent controller in the same numerical sequence as indicated in Section 212-3.2.1. Controllers, 12 volt conductors and valve actuators shall be installed in conformance with the controller manufacturer's instructions.

801-5.7 Flushing and Testing.

ADD the following to the end of the first paragraph:

Flush all pipe clean prior to installing sprinkler heads. Do not allow water from irrigation flushing to enter plant pits where water would result in over-saturation of soil creating an unhealthful condition for plant materials.

801-5.7.2 Pipeline Pressure Test

801-5.7.2.3 Method B

DELETE the third paragraph in its entirety and SUBSTITUTE with the following:

Pipelines to be tested shall be filled with water and a pressure gauge shall be connected to the pipeline. Mainline pipe shall then be placed under a pressure of 150 pounds per square inch for a period of four hours except as otherwise specified below, by air or water pressure, after which the source of pressure shall be cut off leaving the line under the required pressure. Lateral pipes shall be placed under a pressure of 80 pounds per square inch for a period of four hours.

DELETE the first sentence of the fourth paragraph in its entirety and SUBSTITUTE with the following:

The pipeline shall be tested under the required pressure for a test period of four hours.

ADD the following sentence at the end of section:

All pipeline pressure testing shall comply with requirements of governing water authority.

801-5.7.3 Sprinkler Coverage Test

DELETE the first sentence in its entirety and SUBSTITUTE with the following:

The coverage test shall be performed after sprinkler heads have been installed and prior to planting and shall demonstrate that each section or unit in the irrigation system is balanced to provide uniform and adequate coverage of the areas serviced.

ADD the following sub-sections:

801-5.8 As-Built Plans (Record Drawings).

Before final acceptance of work, the Contractor shall provide a record set of drawings showing the irrigation system works. Information shall be on clean, full size prints of plans. Lettering shall be one-eighth(1/8) inch minimum height. All items changed/relocated from original drawings shall be so indicated with the same symbol in the new location. All notes/call outs pertaining to the item shall be directed to new location. All work shall be neat, indicated in red ink and subject to the satisfaction of the Resident Engineer.

All valves shall be numbered by station and corresponding numbers shall be shown on the record drawings. Contractor shall provide Owner with a wiring diagram of each power circuit and control panel that corresponds to each irrigation controller supplied.

All main lines, lateral lines, sleeves, flow sensors, master control valves, remote control valves, shut-off valves, quick coupling valves, and controllers shall be located by measured dimensions, to the nearest one-half foot. Dimensions shall be given from two (2) permanent objects such as sidewalks, curbs, walls, structures and driveways.

Reduced set: In addition to full size record drawings and prior to final acceptance of work, the Contractor shall prepare and mount a reduced, clear plastic encased, waterproof color-coded chart showing the valves, mainline, and systems serviced by that particular controller. All valves shall be numbered to match the operation schedule and the drawings. Only those areas controlled by that controller shall be shown. This chart shall be a plot plan, entire or partial, showing building, walks, roads and walls. A photostatic print of this plan, reduced as necessary and legible in all details, shall be made to a size that will fit into the controller cover. This

print shall be approved by the Resident Engineer and shall be hermetically sealed by plastic. This shall then be secured to the back of the automatic controller enclosure door.

The Contractor shall keep on the site at all times, a current record set of the plans.

Immediately upon the installation of any buried pipe or equipment, but prior to any backfilling of trenches, the Contractor shall indicate on the record set of drawings the locations of said pipe or equipment. All changes in direction of main line or lateral lines and all sleeves shall be noted on plans with size and depth.

Record drawings shall be signed and dated in red ink by the Contractor attesting and certifying the accuracy of the record drawings. Contractor shall also include Contractor company name, address and phone number on record drawings.

801-5.9 Operation and Maintenance Manuals

Prepare and deliver to the Resident Engineer within ten calendar days prior to completion of construction, two (2) three ring hard cover binders containing the following information:

1. Index sheet stating Contractor's address and telephone number, list of equipment with name and addresses of local manufacturers' representatives,
2. Catalog and parts sheets on all material and equipment,
3. Contractor Guarantee statement,
4. Complete operating and maintenance instructions for all equipment.

In addition to the above mentioned maintenance manuals, provide the maintenance personnel with instructions for maintaining equipment and show evidence of such instruction in writing to the Resident Engineer at the conclusion of the project.

801-5.10 Extra Equipment

Contractor shall provide to the Owner:

1. Three (3) keys for opening and locking each automatic controller enclosure,
2. Two (2) globe valve keys with a minimum four (4) foot long handle,
3. Five (5) sprinkler heads with nozzles, screens and flexible swing joints of each type used on the project,
4. Five (5) quick coupler keys with swivel hose ells to match quick coupler valves used on the project.

801-6 MAINTENANCE AND PLANT ESTABLISHMENT.

Fifth paragraph, revise "30 calendar days" to "90 calendar days."

ADD the following:

The post-construction maintenance / plant establishment period shall not begin until all items in the contract are complete, constructed, in place, checked and accepted. The effective date of the start of the post-construction maintenance period shall be established by the Resident Engineer.

The Contractor shall continuously maintain all involved areas of the contract during the progress of the work and during the maintenance period until the final acceptance of the work. The landscape maintenance is considered as work to be done under this contract and is included in the overall time of completion of this contract.

The Contractor shall provide complete landscape maintenance of all planting areas. The work shall include, but not be limited to, watering, litter control, weed control, stake repair, cultivating, repair of irrigation systems, control of diseases and pests and control and repair of soil erosion. Maintenance practices shall be a sufficient effort that assures plant health and growth.

Throughout the maintenance period, the Contractor shall be responsible for controlling the application of irrigation water to promote plant growth, health, and vigor while minimizing water use and avoiding over irrigation which may contribute to structural damage or water related damage. This control shall be exercised by careful and frequent programming of controller and occasional hand watering.

New planting areas where a permanent irrigation system was not proposed to be installed shall be carefully monitored and hand-watered to promote plant growth, health, and vigor while minimizing water use and avoiding over irrigation which may contribute to structural damage or water related damage.

All bark-mulched areas and planted areas, except lawn and hydroseed areas, shall be treated with an approved granular pre-emergent herbicide according to manufacturer's specifications at the beginning of the post-construction maintenance period and, if the product specifies, additional scheduled treatments on a regular schedule, as required through the post-construction maintenance period. Verify appropriate product use on newly planted groundcovers.

The Contractor shall control weeds, disease, and pest infestations in the planting areas. The Resident Engineer shall approve all methods and materials for such control upon approval. The Contractor shall implement the control measures exercising extreme caution in using pesticides and taking all steps to ensure the safety of the public. Only licensed personnel will be permitted to perform toxic spraying.

During the plant establishment period, the Contractor shall furnish sufficient personnel and equipment on a daily or weekly basis to perform the work required by this section. Any day when the Contractor fails to adequately carry out specified maintenance work, as determined necessary by the Resident Engineer, the day will not be credited as one of the plant establishment days. All planting areas which are damaged by construction shall be repaired by the Contractor within thirty (30) calendar days following completion of construction in such areas, unless otherwise approved by the Resident Engineer. Repair shall consist of bringing the damaged area back to final grade, replanting the area with the same vegetation as originally specified and maintaining the area to achieve acceptable plant establishment.

The Contractor is responsible for protection of all planting during the entire contract period by adequate methods. Planting damaged during the contract period shall be replaced.

Contractor shall call Resident Engineer for a final inspection two (2) weeks before the end of the post-construction maintenance period. Failure to pass inspection will result in an extension of the post-construction maintenance period as the Resident Engineer deems necessary, at no additional cost to the City.

Contractor shall provide the Resident Engineer with as-built drawings of the entire irrigation system a minimum of one week prior to the final walkthrough. "As-built" drawings shall be prepared per Section 801 - 5.8 of these Special Provisions.

ADD the following section under Section 801-8 PAYMENT:

801-9 GUARANTEE.

The entire irrigation system shall be guaranteed against defects in material and workmanship for a period of one (1) year from the date of acceptance of the work.

All fifteen (15) gallon and larger trees installed under the contract shall be guaranteed to live and grow for one (1) year from the date of final acceptance of the contract work unless decline of plant is specifically attributable to causes unrelated to installation, plant material quality and Contractor's maintenance practices.

All other plant material, including ground covers, shall be guaranteed to live and grow for a period of ninety (90) days from the date final acceptance of contract work unless decline of plant is specifically attributable to causes unrelated to installation, plant material quality and Contractor's maintenance practices.

Any material found to be dead, missing or in poor condition during the post-construction maintenance period, shall be replaced immediately. The Resident Engineer shall be the sole judge as to the condition of the material. Material found to be dead or in poor condition within the guarantee period shall be replaced by the Contractor, at his expense, within fifteen (15) days of written notification. Replacement shall be made to the same specifications required for the original plantings.

Should the Contractor fail, during the guarantee period, to expeditiously correct a defect upon written notification by the City or owner, the City or owner shall cause the work to be corrected and bill the actual costs incurred to the Contractor. Defect corrections shall include the complete restoration of existing improvements that were damaged as a result of the defect.