DISCOVER LIFE'S POSSIBILITIES

# CITY OF SAN MARCOS, CA
# STANDARD SPECIAL PROVISIONS
## SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION

Supplement to the 2015 Standard Specifications for Public Works Construction "Greenbook"

# Table of Contents

# INTRODUCTION

This document is the City of San Marcos Supplement to the 2015 Edition of Standard Specifications for Public Works Construction, also known as the Greenbook. This document is structured to modify, add, replace, and delete sections of the Greenbook and is applicable to all contracts for the construction of Public Improvements.

## *ORGANIZATION*

The City of San Marcos has organized these specifications consistent with the Standard Specifications for Public Works Construction. The specifications contained within this document are modifications to the Standards Specifications and are referenced as "Standard Special Provisions" by the City.

Part 700 of this supplement is organized to follow section 86 of the Modified 2010 California Department of Transportation (CalTrans) standard specifications.

# STANDARD SPECIAL PROVISIONS

**Amendments to the 2015 Standard Specifications for Public Works Construction "Greenbook"**

In accordance with Resolution 2020-8797 of the City Council of the City of San Marcos has adopted the 2015 Standard Specifications for Public Works Construction "Greenbook" and the City supplement to the Greenbook referenced as the "Standard Special Provisions" as periodically updated by the City Engineer.

**REVISION TABLE**

| Rev # | Revision Date | Sections Revised |
|---|---|---|
| 0 | 7/30/2020 | Introduction, 1-2, 1-4, 5-7.1, 7-23, 9-2.1, 601-2, 601-4.1 |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

**APPROVAL**

Matt Little, City Engineer

R.C.E No. 60569, Expires 12-31-2020

July 30, 2020
Date:

# *PART 1- GENERAL PROVISIONS*

# SECTION 1 – TERMS, DEFINITIONS, ABBREVIATIONS, UNITS OF MEASURES, AND SYMBOLS

## 1-1 GENERAL

*ADD THE FOLLOWING*

### *1-1.1 REFERENCE TO DRAWINGS*

Where words “shown”, “indicated”, “detailed”, “noted”, “scheduled”, or words of similar import are used, it shall be understood that reference is made to the plans, standard or other reference indicated by the Plans or Specifications unless stated otherwise.

### *1-1.2 DIRECTIONS*

Where words "directed”, "designated”, "selected”, or words of similar import are used, it shall be understood that the direction, designation or selection of the Engineer is intended, unless stated otherwise. The word "required" and words of similar import shall be understood to mean "as required to properly complete the work as required and as approved by the Engineer," unless stated otherwise.

### *1-1.3 EQUALS AND APPROVALS*

Where the words "equal”, "approved equal”, "equivalent”, and such words of similar import are used, it shall be understood such words are followed by the expression "in the sole judgment of the Engineer”, unless otherwise stated. Where the words "approved”, "approval”, "acceptance”, or words of similar import are used, it shall be understood that the approval, acceptance, or similar import of the Engineer is intended.

### *1-1.4 PERFORM*

The word "perform" shall be understood to mean that the Contractor, at its expense, shall perform all operations, and provide all labor, tools and equipment, and materials that are indicated, specified or required to complete the Work.

## 1-2 TERMS AND DEFINITIONS

*ADD OR SUBSTITUTE THE FOLLOWING*

As used in these Standard Special Provisions and Contract Documents, capitalized terms shall have the meanings given them in Section 1-2 of the Standard Specifications for Public Works Construction (SSPWC), except as modified and supplemented below:

**Agency –** The City of San Marcos.

**Agreement –** See Owner-Contractor Agreement.

**Best Management Practice(s) (BMP)** – A procedure or device designed to minimize the quantity of runoff pollutants and/or volumes that flow to downstream receiving water bodies.

**Bid Documents** - The notice inviting bids, instructions to bidders, bid schedule, and Bid Forms.

**Bid Forms** - The list of subcontractors, bidder's bond, non-collusion affidavit, hazardous materials statement, contractor's license, other principals with bidder, bankruptcy judgments and financial condition, claims history, contract termination, completion by surety, additional pages, signatures, bidder's bond, and any other supplemental forms required to be submitted per the instructions laid out in the Bid Documents.

**Board** – See City Council.

**City** – See Agency.

**City Council** - The City Council of the City of San Marcos.

**City Manager** - The City Manager of the City of San Marcos or his/her approved representative.

**Complete** - Construction of the Work, or designated portion thereof, is complete in accordance with the Bid and Contract Documents so that the Agency may accept such Work.

**Construction Manager** - The Engineer's authorized representative for construction management for the City of San Marcos or his/her designated representative

**Contract** – See Owner-Contractor Agreement.

**Contract Documents** - The Owner-Contractor Agreement, Bid (including documentation accompanying the Bid and any post-bid documentation submitted prior to the Notice of Award), Plans, Specifications, Special Provisions, Project Special Provisions and other documents described in "EXHIBIT A" to the Agreement and all modifications issued after execution of the Agreement.

**Contract Time** - The period of time commencing on the Date of Commencement stipulated in the Notice to Proceed and ending on the Scheduled Completion Date, as adjusted by any extension of time authorized under the Agreement.

**Date of Commencement** - The start date for Work specified in the Notice to Proceed issued by the Agency fixing the time the date on which the Contract Time will start.

**Date of Completion** - The date upon which the Engineer has determined that Final Completion has occurred, as set forth in the Engineer's certification to the City Council or as filed in the Notice of Completion filed with the County Recorder.

**Engineer** – The City Engineer of the City of San Marcos, or his/her designated representative.

**Final Completion** - means that all of the Work, in the judgment of the Engineer, is complete and ready for acceptance by the Agency.

**Hazardous Material** - (a) material or substance that is flammable, explosive or radioactive; (b) petroleum products, including by-products and fractions thereof; (c) hazardous materials, hazardous wastes, hazardous or toxic substances, or related materials defined in the Comprehensive Environmental Response, Compensation and Liability Act of 1980, as amended (42 U.S.U. Section 9601 *et seq*.), and/or (d) any hazardous, toxic or

infectious substance, material, or waste which is, or becomes, regulated by any local governmental entity, the State of California, or the United States Government under any law, regulation, or ordinance regulating or controlling any Hazardous Material.

**Hazardous Materials Laws** - Any law, regulation, or ordinance regulating or controlling any Hazardous Material enacted by any local governmental entity, the State of California, or the United States Government.

**Hazardous Materials List** - shall have the meaning given it in Section 7-10.4.4, and shall also include any material or substance listed as a hazardous material or hazardous substance in any law, regulation, or ordinance enacted any local governmental entity, the State of California, or the United States Government.

**Invitation for Bids (IFB)** –The combined document published by the Agency at bid advertisement, which is comprised of the Notice to Bidders, instructions to bidders, bid book, and award documents.

**Limits of Work –** The property, area, or facility which will be impacted by the Contractor in the performance of the Work or area defined within the Plans.

**Notice to Bidders** – Public notice of the IFB.

**Notice to Proceed –** A written notice given by the Agency to the Contractor noticing the start of the contract and Date of Commencement and formally authorizing work to be done under the Contract.

**Owner-Contractor Agreement** - That Agreement by and between the Agency and the Contractor for construction of the Work evidenced by the Contract Documents, or a Permit issued by the City authorizing the construction of Pubic Improvements by a Private Development.

**Private Development** – Projects which are funded and contracted through a private entity.

**Project** - The complete construction of all improvements located on the Site as identified in the Contract Documents. Also see Work.

**Project Site** – The Limits of Work and any property under control or use by the Contractor for the performance the Work under the Bid and Contract Documents.

**Project Inspector** - The Engineer's on-site representative for inspection.

**Project Special Provisions** – Additions, modifications, and revisions to the Standard Specifications or Standard Special Provisions applicable to a single project issued by the City.

**Public Improvement** – Any improvement constructed that will ultimately be owned and/or operated by the City of San Marcos or other agency, inclusive of improvements required to be constructed to public standards.

**Resource Agency –** An agency of the state or federal government having jurisdictional authority over an environmental, cultural or historic resource under NEPA or CEQA. Such agencies include but are not limited to the San Diego Regional Water Quality Control Board, U.S. Army Corps of Engineers, and U.S. Fish and Wildlife Service.

**Request for Information (RFI) –** A written request by the Contractor to clarify the Contract Documents.

**Section-** The corresponding section of the Specifications.

**Scheduled Completion Date** - shall have the meaning given it in the Owner-Contractor Agreement, Section 3, Time for Performance.

**Shop Drawings** – Drawings, diagrams, schedules, and other data which show the details, dimensions, and all other pertinent information necessary to demonstrate that the materials and methods used to complete the Work meet the requirements of these specifications.

**Standard Drawings** - The San Diego Area Regional Standard Drawings, edition in effect at time of bid, and Agency approved supplements thereto.

**Special Provisions –** Standard Special Provisions and Project Special Provisions.

**Site** – See Project Site.

**Specifications –** Refers to all specifications included in the Construction Documents including but not limited to the Standard Specifications for Public Works Construction (Greenbook), reference specifications, Standard Special Provisions, Project Special Provisions, Special Provisions, and specifications in Change Orders or Supplemental Agreements between the Contractor and Board.

**Standard Special Provisions-** City of San Marcos additions, modifications, and revisions to the Standard Specifications.

**State Standard Specifications** - The State of California Department of Transportation Standard Specifications, edition in effect at time of bid or as specified in the contract documents.

**Surveyor –** A surveyor licensed in the State of California.

**Survey Monuments** - Monuments, bolts, spikes, leaded tacks and nails (when set in concrete), iron pipes, reinforcing steel and all monuments and marks that are at, or accessory to, property corners and street centerlines.

**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 6-8.1, other than:

a. Saturday, unless required/allowed by the specifications,

b. Sunday, unless required/allowed by the specifications,

c. Any day designated as a holiday by the Agency per Section 6-1.4 unless required/allowed by the specifications,

d. Any other day designated as a holiday in a master labor agreement entered into by the Contractor or on behalf of the Contractor as an eligible member of a contractor association, OR

e. Any day the Contractor is prevented from working during the first 5 hours with at least 60 percent of the normal work force for cause as specified in Section 6-6.1

f. Any restricted work day, as specified.

### *1-2.1 COMMON TERMINOLOGY*

Words used in the Contract Documents which have a well-known technical or trade meaning are used in accordance with such meanings.

## 1-3 ABBREVIATIONS

### *1-3.2 COMMON USAGE*

*ADD THE FOLLOWING*

| **Abbreviation** | **Word or Words** |
|---|---|
| Apts | Apartment and Apartments |
| Bldg | Building and Buildings |
| VWD | Vallecitos Water District |
| VID | Vista Irrigation District |
| BSD | Buena Sanitation District |
| Cfs | Cubic Feet per Second |
| E | Electric |
| G | Gas |
| Gal | Gallon and Gallons |
| Gpm | gallons per minute |
| IE | Invert Elevation |
| MSL | Mean Sea Level (see Regional Standard Drawing M-12) |
| NCTD | North County Transit District |
| OHE | Overhead Electric |
| ROW | Right-of-Way |
| RPM | Raised Pavement Marker |
| S | Sewer or Slope, as applicable |
| SSPWC | Standard Specifications for Public Work Construction (Green Book) |
| SDRSD | San Diego Regional Standard Drawings |
| SFM | Sewer Force Main |
| T | Telephone |
| UE | Underground Electric |
| W | Water, Wider or Width, as applicable |

*ADD THE FOLLOWING SUBSECTION*

## 1-4 APPLICABILITY

The Standard Specifications and Standard Special Provisions are applicable to all Public Improvements being constructed within the City of San Marcos unless otherwise specified by the Contract Documents. Private Development projects constructing Public Improvements shall comply with the Standard Specifications and Standard Special Provisions Part 1, Sections 1, 2-1.2, 2-5.1, 2-5.3, 2-6, 2-7, 2-9.1 through 2-9.6, 2-10, 2-11, 2-12, 4-1.1 through 4-1.3.1, and 4-1.4 through 4-1.8 , 5-1.1, 5-1.3, 5-2 through 5-4, 5-6 through 5-8, 6-1.3 through 6-1.8, 6-8, 6-10, 7-1, 7-5 through 7-11, 7-13 through7-15, 7-16.1, 7-18, 7-21.0 and Parts 2 through 8. Provisions regarding bid prices, prevailing wages, Agency-caused delays, liquidated damages, and Agency payment to Contractor are

specific to Capital Improvement Projects and are not applicable to the construction of Public Improvements by Private Development projects.

# SECTION 2 – SCOPE AND CONTROL OF WORK

## 2-1 AWARD AND EXECUTION OF THE CONTRACT

*DELETE SECTION AND REPLACE WITH*

Consideration of Bids and Award of a Contract shall be done as indicated within the IFB.

*ADD THE FOLLOWING SUBSECTION*

### *2-1.1 CONTRACTORS LICENCE*

The Contractor shall hold the Class of license indicated within the IFB.

*ADD THE FOLLOWING SUBSECTION*

### *2-1.2 BUSINESS LICENSE*

The Contractor and each Subcontractor shall have or obtain a valid City of San Marcos Business License prior to a Notice to Proceed being issued.

## 2-2 ASSIGNMENT

*ADD THE FOLLOWING*

The Agency and the Contractor, respectively, bind themselves, their partners, successors, assigns and legal representatives to the other party hereto and to the partners, successors, assigns and legal representatives of such other party with respect to all covenants, agreements and obligations contained in the Contract Documents. The Contractor shall not assign or transfer the Agreement or sublet it as a whole without the written consent of the Agency. No assignment, transfer or subletting, even though consented to, shall relieve the Contractor of its liabilities under the contract. The Agency may assign the Agreement or any of its rights under the Agreement without the consent of the Contractor.

## 2-3 SUBCONTRACTS

### *2-3.1 GENERAL*

### *2-3.2 SELF PERFORMANCE*

*DELETE THE 1$^{ST}$ SENTENCE AND REPLACE WITH THE FOLLOWING*

Contractors submitting bids must perform work equaling at least 30 percent of the value of the original total bid with your employees and with equipment you own or rent, with or without operators, except that any designated “Specialty Items” may be performed by subcontract and the amount of any such “Specialty Items” so performed will be deducted from the Contract price before computing the amount required to be performed by the Contractor with its own organization.

*ADD THE FOLLOWING*

Should the Contractor fail to adhere to the provisions of this section, the Agency may, at its sole discretion, elect to cancel the contract or withhold and keep an amount equal to 10 percent of the value of the work performed by others in excess of the self-performance percentage required as a penalty for non-compliance. The City Council shall be the sole body for determination of a violation of these provisions. In any proceedings under this section, the Contractor shall be entitled to a public hearing before the City Council and shall be notified ten (10) days in advance of the time and location of said hearing. The determination of the City Council shall be final.

*ADD THE FOLLOWING SUBSECTION*

### *2-3.4 SUBSTITUTION OF SUBCONTRACTORS*

Subcontractors listed as part of the bid may only be substituted in conformance with California Public Contracting Code (PCC) section 4107.

Before the work of any Subcontractor is started, the Contractor shall first submit to the Agency for approval a written statement including the name of the subcontractor, contractor license number, proof of required work experience and qualifications, description and value of each portion of the Work to be subcontracted, reason for the substitution, documentation supporting the substitution, and date of request. All Subcontractors that will work on the Project shall be approved in writing, regardless of the dollar amount of the Work to be performed, and whether or not they were listed in the original bid.

When a subcontractor substitution is requested the period of time taken to substitute the subcontractor shall not constitute reason for an extension of the time for performance.

## 2-5 PLANS AND SPECIFICATIONS

### *2-5.1 GENERAL*

*ADD THE FOLLOWING*

All Plans, Project Special Provisions, and copies thereof furnished by the Agency are and shall remain the property of the Agency. They are to be used only with respect to the Work and are not to be used on any other project.

### *2-5.2 PRECEDENCE OF CONTRACT DOCUMENTS*

*DELETE SECTION AND ADD THE FOLLOWING*

If a discrepancy arises in the Contract documents, the Contractor will immediately submit an RFI.

If there is a conflict between any of the Contract Documents, the documents highest in precedence shall control. The precedence shall be as follows:

1. Permits of other agencies as may be required by law.
2. Change Orders and Supplemental Agreements; whichever occurs last.
3. Contract Documents
4. Bid Schedule
5. Project Special Provisions
6. Plans

7. Agency Standard Drawings
8. Utility District Standard Drawings
9. San Diego Regional Standard Drawings
10. Standard Special Provisions (issued by City of San Marcos)
11. 2015 Standard Specifications for Public Works Construction
12. Reference Specifications
13. IFB Issued with Bid and Associated Addenda

Detail drawings shall take precedence over general drawings.

Detailed specifications shall take precedence over general specifications.

For Federal-Aid projects

Federal-Aid construction project specifications and forms are provided in the Project Special Provisions. If there is a conflict between any of the standards, specifications and/or provisions included in the Contract Documents and any Federal law, regulation, provision, standard and/or requirement, then the most stringent requirement which meets or exceeds the applicable Federal law, regulation, provision, standard and/or requirement shall govern. Under no circumstance shall any standard, specification or other provision included in this Contract Document that does not meet at least the minimum Federal law, regulation, provision, standard and/or requirement(s) prevail.

### *2-5.2.1 RESOLVING DISCREPANCY WITHIN A SINGLE DOCUMENT*

When a discrepancy arises within a single Contract a document, the contractor shall immediately submit an RFI. If clarity cannot be established in the Contract Documents the Engineer shall have the authority to establish the precedence within the document.

### *2-5.3 SUBMITTALS*

### *2-5.3.1 GENERAL*

*ADD THE FOLLOWING*

The Contractor shall provide an initial submittal package at the pre-construction meeting. The initial submittal package must contain any submittals required for work being performed in the first 2 weeks of construction. No work shall begin until the initial submittal package is reviewed and approved.

The contractor shall provide submittals for all materials used in the project unless otherwise approved by the Engineer.

### *2-5.3.3 SHOP DRAWINGS*

*ADD THE FOLLOWING*

Each submittal shall be consecutively numbered (e.g. 1.0, 2.0, 3.0, etc.). Re-submittals shall be labeled with the original submittal number followed by an ascending decimal designation (e.g. The label '4.1' would indicate the first re-submittal for submittal number 4). Each sheet of each submittal shall be consecutively numbered. Each set of Shop Drawings and submittals shall be accompanied by a letter of transmittal on the Contractor's letterhead. The letter of transmittal shall contain the following:

1. Project title and Agency CIP number.
2. Number of complete sets.
3. Contractor's certification statement.
4. Specification section number(s) pertaining to material submitted for review.
5. Submittal number (Submittal numbers shall be consecutive including subsequent submittals for the same materials.)
6. Table of Contents describing the contents of the submittal.
7. Identification of deviations from the contract documents.

When submitted for the Engineer's review, Shop Drawings shall bear the Contractor's certification that the Contractor has reviewed, checked, and approved the Shop Drawings and that they are in conformance with the requirements of the Contract Documents.

The Contractor shall subscribe to and shall place the following certification on all submittals:

"I hereby certify that the (equipment, material) shown and marked in this submittal is that proposed to be incorporated into this Project, is in compliance with the Contract Documents, can be installed in the allocated spaces, and is submitted for approval."

By: _____

Title: _____

Date: _____

Company Name: _____

*ADD THE FOLLOWING SUBSECTION*

### *2-5.3.7 SUBMITTAL OF APPROVED EQUALS*

When the Specifications require the use of a band or trade name by the words "or approved equal" the Contractor will have 10 days following the Notice to Proceed to submit information on proposed equal products or services to those specified. Failure to submit equals within the time indicated may result in equals being rejected. Any proposed equivalent must be of equal quality and suitability to the brand or trade name indicated in the Specifications and use cannot cause delay.

Submittals for equals will conform to section 2-5.3 and will include the following information:

1. Detailed analysis of how the product varies from the one specified
2. Full material specification
3. Sample
4. Contact information for manufacturer representative

*ADD THE FOLLOWING*

### *2-6 WORK TO BE DONE*

Should it appear that the Work to be done or any of the matters relative thereto are not sufficiently detailed or explained in the Contract Documents, the Contractor shall request additional information and clarification from the Agency in writing and shall conform to the Agency's response as part of the Agreement inasmuch as the response is consistent with the original Specifications and Plans. In the event of any doubt or question arises respecting the true meaning of the Specifications, Plans and other Contract Documents, a Request for Information (RFI) shall be made to the Agency, whose decision shall be final. All such requests shall be made in accordance with section 2-13.

## 2-9 SURVEYING

### *2-9.2 SURVEY SERVICE*

*DELETE SECTION AND ADD THE FOLLOWING*

The Contractor shall be responsible for supplying all surveying services necessary and required to perform the Work. All survey service will be provided by a licensed Surveyor in the state of California and will adhere to the requirements of the Land Surveyors Act.

Unless otherwise specified by the Project Special Provisions, stakes will be set and stationed by the Contractor's Surveyor for curbs, headers, sewers, storm drains, structures, and rough grade.

### *2-9.4 LINE AND GRADE*

*ADD THE FOLLOWING*

Finished surfaces in all cases shall conform to the lines, grades, cross-sections and dimensions shown on the Contract Documents. Deviations from the Contract Documents and Plans must be authorized by the Agency.

*ADD THE FOLLOWING SUBSECTION*

### *2-9.5 SUBMITTAL OF SURVEYING DATA*

All surveying data submittals shall conform to the requirements of Section 2-5.3.

The Contractor shall submit two copies of grade sheets to the Engineer prior to commencing work in the area affected by the grade sheets.

The Contractor shall submit field notes for surveying performed. Field notes shall be digital or be:

- Bound on Letter Size Paper (8 1/2" x 11")
- Indicate the date of observation/calculation
- Be legible
- Include supporting documentation and data
- Be labeled with the name of the Surveyor, party/crew chief, and crewmembers and author of notes
- Weather conditions will be identified

When a record of survey is required by the Work being performed the Contractor shall have a Record of Survey prepared by the Surveyor and file it in conformance with §§ 8700 - 8805 of the State of California Business and Professions Code.

When a map is required under § 8762 of the State of California Business and Professions Code and whenever the Surveyor establishes, set or construct any permanent survey monument.

*ADD THE FOLLOWING SUBSECTION*

### *2-9.6 SURVEY REQUIREMENTS*

The Record of Survey shall show all monuments set, control monuments used, the basis of bearings and all other data needed to determine the procedure of survey and the degree of accuracy attained by the field surveying including the unadjusted ratio of closure. The unadjusted ratio of closure shall not exceed 1 part in 40,000. The record of survey shall show the location and justification of location of all permanent monuments set and their relation to the street right-of-way. Record(s) of Survey(s) shall be submitted for the Engineer's review and approval before submittal to the before submittal to the County Recorder.

Stakes shall be set at offsets approved by the Engineer at no greater intervals than specified in TABLE 2-9.6(A) as measured along the project stationing.

Staking and marking shall be completed by the Surveyor before the start of construction in the area marked. Centerline monuments shall have the disk stamped with the date the monument was set and the registration number of the Surveyor. Habitat mitigation sites and other areas to be preserved that are shown on the plans shall be staked and flagged prior to the start of any other activities within the limits of the work.

**TABLE 2-9.6(A)**
**MINIMUM SURVEY REQUIREMENTS FOR CONSTRUCTION STAKING**

| Feature Staked | Stake Description ② | Centerline or Parallel to Centerline Spacing④, ⑥ | Lateral Spacing ③, ⑥ | Setting Tolerance (Within) |
|---|---|---|---|---|
| Street Centerline | SDRSD M-10 Monument | ≤300m (1000'), Street Intersections, Begin and end of curves, only when shown on the plans | On street centerline | 7 mm (0.02') Horizontal, also see section 2-9.2.1 herein |
| Clearing | Lath in soil, painted line on PCC & AC surfaces | lath - Intervisible, ≤ 15m (50') on tangents & ≤ 7.5m (25') on curves, Painted line - continuous | at clearing line | 0.3 m (1') Horizontal |
| Slope | RP + Marker Stake | Intervisible and ≤ 15m (50') | Grade Breaks & ≤7.6 m (25') | 30 mm (0.1') Vertical & Horizontal |
| Fence | RP + Marker Stake | ≤ 60 m (200') on tangents, ≤ 15m (50') on curves when R≥ 300m (1000') & 7.5m (25') on curves when R≤ 300m (1000') | N/A ( constant offset) | 30 mm (0.1') Horizontal |
| Rough Grade Cuts or Fills ≥ 10 m (33') | RP + Marker Stake | ≤ 15m (50') | N/A | 30 mm (0.1') Vertical & Horizontal |

| | | | | |
|---|---|---|---|---|
| Final Grade (includes top of: Basement soil, subbase and base) | RP + Marker Stake, Blue-top in grading area | ≤ 15 m (50') on tangents & curves when R≥ 300m (1000') & ≤ 7.5m (25') on curves when R ≤ 300m (1000') | ≤6.7 m (22') | 10 mm ($^3/_8$") Horizontal & 7 mm ($^1/_4$") Vertical |
| Asphalt Pavement Finish Course | RP, paint on previous course | ≤ 7.5m (25') or as per the intersection grid points shown on the plan whichever provides the denser information | edge of pavement, paving pass width, crown line & grade breaks | 10 mm ($^3/_8$") Horizontal & 7 mm ($^1/_4$") Vertical |
| Drainage Structures, Pipes & similar Facilities①, ⑦ | RP + Marker Stake | intervisible & ≤ 7.5m (25'), beginning and end, BC & EC of facilities, Grade breaks, Alignment breaks, Junctions, Inlets (at face of curb) & similar facilities, Risers & similar facilities (except plumbing), Skewed cut-off lines | as appropriate | 10 mm ($^3/_8$") Horizontal & 7 mm ($^1/_4$") Vertical |
| Curb | RP + Marker Stake | ≤ 7.5m (25'), BC & EC, at ¼Δ, ½Δ & ¾ Δ on curb returns & at beginning & end | ( constant offset) | 10 mm ($^3/_8$") Horizontal & 7 mm ($^1/_4$") Vertical |
| Traffic Signal ① | | Vertical locations shall be based on the ultimate elevation of curb and sidewalk | | |
| Signal Poles & Controller ① | RP + Marker Stake + line stake + top of bolt | at each pole & controller location | as appropriate | 10 mm ($^3/_8$") Horizontal & 7 mm ($^1/_4$") Vertical |
| Junction Box ① | RP + Marker Stake | at each junction box location | as appropriate | 10 mm ($^3/_8$") Horizontal & 7 mm ($^1/_4$") Vertical |
| Conduit ① | RP + Marker Stake | ≤ 15 m (50') on tangents & curves when R≥ 300m (1000') & ≤ 7.5m (25') on curves when R ≤ 300m (1000') or where grade ≤ 0.30% | as appropriate | 10 mm ($^3/_8$") Horizontal & when depth cannot be measured from existing pavement 7 mm ($^1/_4$") Vertical |
| Minor Structure ① | RP + Marker Stake + Line Stake | for catch basins: at centerline of box, ends of box & wings & at each end of the local depression ⑤ | as appropriate | 10 mm ($^3/_8$") Horizontal & 7 mm ($^1/_4$") Vertical (when vertical data needed) |
| Abutment Fill | RP + Marker Stake + Line Stake | ≤ 15 m (50') & along end slopes & conic transitions | as appropriate | 30 mm (0.1') Vertical & Horizontal |
| Wall ① | RP + Marker Stake + Line Point +Guard Stake | ≤ 15 m (50') and at beginning & end of: each wall, BC & EC, layout line angle points, changes in footing dimensions | as appropriate | 7 mm ($^1/_4$") Horizontal & 7 mm ($^1/_4$") Vertical |

| | | | | |
|---|---|---|---|---|
| | | &/or elevation & wall height | | |
| **Major Structure ⑤** | | | | |
| Footings, Bents, Abutments & Wingwalls | RP + Marker Stake + Line Point +Guard Stake | 3 m to 10 m (10' to 33') as required by the Engineer, BC & EC, transition points & at beginning & end. Elevation points on footings at bottom of columns | as appropriate | 10 mm ($^3/_8$") Horizontal & 7 mm ($^1/_4$") Vertical |
| Superstructures | RP | 3 m to 10 m (10' to 33') sufficient to use string lines, BC & EC, transition points & at beginning & end. Elevation points on footings at bottom of columns | as appropriate | 10 mm ($^3/_8$") Horizontal & 7 mm ($^1/_4$") Vertical |
| **Miscellaneous ⑤** | | | | |
| Contour Grading ① | RP + Marker Stake | ≤ 15 m (50') | along contour line | 30 mm (0.1') Vertical & Horizontal |
| Utilities ①, ⑦ | RP + Marker Stake | ≤ 15 m (50') on tangents & curves when R≥ 300m (1000') & ≤ 7.5m (25') on curves when R ≤ 300m (1000') or where grade ≤ 0.30% | as appropriate | 10 mm ($^3/_8$") Horizontal & 7 mm ($^1/_4$") Vertical |
| Channels, Dikes & Ditches ① | RP + Marker Stake | intervisible & ≤ 30 m (100'), BC & EC of facilities, Grade breaks, Alignment breaks, Junctions, Inlets & similar facilities | as appropriate | 30 mm (0.1') Horizontal & 7 mm ($^1/_4$") Vertical |
| Signs ① | RP + Marker Stake + Line Point +Guard Stake | At sign location | Line point | 30 mm (0.1') Vertical & Horizontal |
| Subsurface Drains ① | RP + Marker Stake | intervisible & ≤ 15m (50'), BC & EC of facilities, Grade breaks, Alignment breaks, Junctions, Inlets & similar facilities, Risers & similar facilities | as appropriate | 30 mm (0.1') Horizontal & 7 mm ($^1/_4$") Vertical |
| Overside Drains ① | RP + Marker Stake | longitudinal location | At beginning & end | 30 mm (0.1') Horizontal & 7 mm ($^1/_4$") Vertical |
| Markers ① | RP + Marker Stake | for asphalt street surfacing ≤ 15 m (50') on tangents & curves when R≥ 300m (1000') & ≤ 7.5m (25') on curves when R ≤ 300m (1000'). | At marker location(s) | 7 mm ($^1/_4$") Horizontal |
| Railings & Barriers ① | RP + Marker Stake | At beginning & end and ≤ 15 m (50') on tangents & curves when R ≥ 300m (1000') & ≤ 7.5m (25') on curves when R ≤ 300m (1000') | at railing & barrier location(s) | 10 mm ($^3/_8$") Horizontal & Vertical |

| | | | | |
|---|---|---|---|---|
| AC Dikes ① | RP + Marker Stake | At beginning & end | as appropriate | 30 mm (0.1') Horizontal & Vertical |
| Box Culverts | | 3 m to 10 m (10' to 33') as required by the Engineer, BC & EC, transition points & at beginning & end. Elevation points on footings & at invert | as appropriate | 10 mm ($^3/_8$") Horizontal & 7 mm ($^1/_4$") Vertical |
| Pavement Markers① | RP | 60 m (200') on tangents, 15m (50') on curves when R ≥ 300m (1000') & 7.5m (25') on curves when R ≤ 300m (1000') For PCC surfaced streets lane cold joints will suffice | at pavement marker location(s) | 7 mm ($^1/_4$") Horizontal |

① Staking for feature may be omitted when adjacent marker stakes reference the offset and elevation of those features and the accuracy requirements of the RP meet the requirements for the feature

②Reference points shall be sufficiently durable and set securely enough to survive with accuracy intact throughout the installation & inspection of the features or adjacent facilities for which they provide control. RP means reference point for the purposes of this table

③ Perpendicular to centerline.

④ Some features are not necessarily parallel to centerline but are referenced thereto

⑤ Multi-plane surfaced features shall be staked so as to provide line & grade information for each plane of the feature

⑥ ≥ means greater than, or equal to, the number following the symbol. ≤ means less than, or equal to, the number following the symbol.

⑦ The cut datum for storm drainage & sanitary sewer pipes & similar structures shall be their invert. The cut datum for all other utilities shall be the top of their pipe or conduit.

**TABLE 2-9.6(B)**

**SURVEY STAKE COLOR CODE FOR CONSTRUCTION STAKING**

| **Type of Stake** | **Description** | **Color*** |
|---|---|---|
| Horizontal Control | Coordinated control points, control lines, control reference points, centerline, alignments, etc. | White/Red |
| Vertical Control | Bench marks | White/Orange |
| Clearing | Limits of clearing | Yellow/Black |
| Grading | Slope, intermediate slope, abutment fill, rough grade, contour grading, final grade, etc. | Yellow |
| Structure | Bridges, sound and retaining walls, box culverts, etc. | White |

| | | |
|---|---|---|
| Drainage, Sewer, Curb | Pipe culverts, junction boxes, drop inlets, headwalls, sewer lines, storm drains, slope protection, curbs, gutters, etc. | Blue |
| Right-of-Way | Fences, R/ W lines, easements, property monuments, etc. | White/Yellow |
| Miscellaneous | Signs, railings, barriers, lighting, etc. | Orange |

* Flagging and marking cards, if used.

*ADD THE FOLLOWING SUBSECTION*

### *2-9.7 PAYMENT FOR SURVEY*

Payment for survey work shall be considered included in the Lump Sum unit bid price for "Surveying".

Payment for the placement of monuments shall be paid for per each "Monument".

Payment for the replacement of disturbed monuments and the filing of records of survey and/or corner records, including filing fees, shall be incidental to the Work necessitating the disturbance of said monuments and no additional payment will be made therefor.

## 2-11 INSPECTION

*ADD THE FOLLOWING*

The Agency shall at all times have access to the Work during its construction, and shall be furnished with every reasonable facility and manpower for ascertaining that the materials and the workmanship are in accordance with the requirements and intentions of the Bid and Contract Documents. All Work done and all materials furnished are subject to Agency inspection and approval.

The Contractor is responsible for ensuring that all Work complies with the Contract Documents. Upon discovery, all defective or noncompliant Work must be immediately repaired or replaced by the Contractor. Failure by Agency or Engineer to condemn or reject nonconforming work shall not constitute acceptance or implied acceptance of such Work.

The Contractor shall provide the Engineer free and safe access to any and all parts of work at any time. Such free and safe access shall include safe access and egress, ventilation, lighting, shoring, dewatering, all elements pertaining to the safety of persons as contained in the State of California, California Code of Regulations, Title 8, Industrial Relations, Chapter 4, Division of Industrial Safety, Subchapter 4, Construction Safety Orders and such other safety regulations as may apply. Contractor shall furnish Engineer with such information as may be necessary to keep the Engineer fully informed regarding progress and manner of work and character of materials.

The inspection of the Work shall not relieve the Contractor of any of the Contractor's obligations to fulfill the requirements of the Agreement. Defective Work shall be made good and unsuitable materials shall be rejected and/or replaced, notwithstanding that such defective Work and materials may have been previously overlooked by the Agency and accepted or estimated for payment.

Projects financed, in whole or in part, with State or Federal funds shall be subject to inspection at all times by the State or Federal agency involved.

The Contractor shall notify the Agency in advance of inspection at least twenty-four (24) hours for regular inspection and forty-eight (48) hours for special inspection.

The Contractor shall also be responsible for timely notification of any agency or entity which must inspect or approve of the Work. Should the Contractor fail to notify the Agency and proceed with Work requiring inspection, all such Work will be subject to rejection, and no further Work shall be done on the Project until rejected Work is accepted by the Agency. Should the Contractor request acceptance of such rejected Work the Contractor shall, at the Contractor's expense, secure the services of private material testing laboratories, consulting engineers, licensed land surveyors or other consultants selected by the Agency and/or other agency or entity having a right to approve the Work, who shall certify to the Agency, and/or other agency or entity that the Work does in fact conform to the requirements of the Contract Documents. The Work previously rejected shall be accepted by the Agency after receipt of such certification if the Agency and other agency or entity approves such certification.

*ADD THE FOLLOWING SUBSECTION*

### *2-11.1 REQUIRED INSPECTIONS*

The Contractor shall contact the Agency for inspection for the following required inspections when applicable to the work being performed. The Contractor may be required to submit to additional inspections as directed by the Engineer.

- General
    - Shoring
    - Sand Bedding
    - Concrete Pours
    - Welding
    - Trenching
    - Backfill
    - Traffic Control setup
- Materials
    - Aggregates
    - Stockpiles
- Survey
    - Road Staking
- Retaining Wall
    - Subgrade
    - Formwork
    - Foundation Excavation/Steel
    - Subdrains
    - Geogrid placement
    - Reinforcement
    - Doweling
    - Grouting
    - Veneering
- Storm Drain

    - Bedding
    - Pipe Laying
- Grading
    - Fill Placement/Compaction
- Concrete Flatwork
    - Formwork
    - Reinforcement Layout
    - Dowling
- Roadway
    - Subgrade Compaction
    - Sub-base/Base Placement and Compaction
    - Paving
- Site Electrical
    - Site Electrical Layout
    - Conduit
    - Backfill
    - Foundation
    - Pedestrian Lighting
- Traffic Signal
    - [RESERVED]
- Striping
    - Temporary Tab Placement
    - Layout
- Irrigation
    - Water Service and Backflow Location/Layout
    - Controller Locations
    - Pressure Testing
    - Low Voltage Conductor Testing
    - Irrigation Pressure Main Layout
    - Irrigation and Low Voltage Trenching and Bedding
    - Irrigation Lateral Lines
    - Pre-Planting Coverage Test
    - Final Coverage Testing (Post-Planting)
- Landscaping
    - Pre-Planting
    - Plant Installation
    - Post-Planting/Pre-Establishment Period
    - Establishment Period(Monthly)
    - Tree Pit Percolation Test (1st and 2nd Fill)
    - Plant Material Quality Inspection
    - Plant Material Layout
    - Soil Amendment verification
- Street Paving Inspections
- Storm Water Treatment Facilities
    - Grading
    - Lining Placement
    - Subdrain Layout
    - Riser
    - Engineered Soil Placement
    - Proprietary Treatment Device Placement

- Punch list Inspections for all Work

*ADD THE FOLLOWING SUBSECTION*

### *2-11.2 INSPECTION BY OTHER AGENCIES*

Whenever any part of the Work to be performed is under the jurisdiction, control, or to be paid for by another public entity, jurisdiction, or utility company, that Work shall be subject to inspection and approval by the proper officials of the controlling entity or jurisdiction. All Work must pass inspection by the Agency as well as by any other agency with jurisdiction over the improvements. The Contractor is solely responsible for requesting and coordinating such inspections.

*ADD THE FOLLOWING SUBSECTION*

## 2-13 REQUESTS FOR INFORMATION

The Contractor shall submit an RFI upon recognition of any event or question of fact arising under the Contract Documents.

An RFI must be numbered sequentially, labeled as a "Request for Information", contain the project name and number, be dated, and contain a full description of the issue.

The Agency will provide responses to RFIs within 10 working days. All work is to proceed while the RFI is reviewed unless otherwise directed.

# SECTION 3 - CHANGES IN WORK

## 3-2 CHANGES INITIATED BY THE AGENCY

### *3-2.2 CONTRACT UNIT PRICES*

#### *3-2.2.2 INCREASES OF MORE THAN 25 PERCENT*

*ADD THE FOLLOWING*

Adjustments in excess of 125 percent of the Bid quantity may, at the option of the Engineer, be paid pursuant to Section 3-3.

*ADD THE FOLLOWING SUBSECTION*

#### *3-2.2.4 EXTENSION OF LUMP SUM BID ITEMS MORE THAN 25 PERCENT*

Increases or decreases to lump sum bid items may be based on the submitted Schedule of Values per Section 9.2.1. Adjustments to Lump Sum Bid Items may, at the option of the Engineer, be paid pursuant to Section 3-3.

## 3-3 EXTRA WORK

### *3-3.1 GENERAL*

*ADD THE FOLLOWING*

So that the Agency may monitor Extra Work, the Contractor shall provide adequate advanced notice to the Engineer prior to commencing any Extra Work and immediate notification when Extra Work ceases. Notice shall be given each time an Extra Work activity starts and stops. Failure to provide such notice shall waive any right to payment of the Contractor.

#### *3-3.2.2.3 TOOL AND EQUIPMENT RENTAL*

*DELETE SECOND PARAGRAPH AND THE FOLLOWING*

Regardless of ownership, the rates and right-of-way delay factors to be used in determining rental and delay costs shall not exceed those rates and right-of-way delay factors in the edition of the, "Labor Surcharge and Equipment Rental Rates" published by CalTrans that is current at the time of the actual use of the tool or equipment. The right-of-way delay factors therein shall be used as multipliers of the rental rates for determining the value of costs for delay to the Contractor and Subcontractors, if any. The labor surcharge rates published therein shall be used for all extra work. For equipment not listed in said publication, rental rates shall not exceed listed rates prevailing locally at equipment rental agencies or distributors, at the time the work is performed. The CalTrans Equipment and Rental Rates and Labor Surcharge publications may be accessed on the CalTrans website at:

https://dot.ca.gov/programs/construction/equipment-rental-rates-and-labor-surcharge

*ADD THE FOLLOWING*

Manufacturer's ratings and approved modifications shall be used to classify equipment and it shall be powered by a unit of at least the minimum rating recommended by the manufacturer.

### *3-3.2.2.4 OTHER ITEMS*

*ADD THE FOLLOWING*

Invoices covering all such items in detail shall be submitted with the request for payment.

### *3-3.2.3 MARKUP*

### *3-3.2.3.1 WORK BY CONTRACTOR*

*DELETE SECTION AND ADD THE FOLLOWING*

Based on the Agency's analysis of the cost elements of the extra work, the Contractor's costs will be adjusted up to the percentages below which shall constitute the markup for all overhead and profits:

1) Labor ..... up to 20%
2) Materials ..... up to 15%
3) Equipment Rental ..... up to 15%
4) Other Items and Expenditures ..... up to 15%

One percent (1%) shall be added to the sum of the costs and markups provided for in this section as compensation for bonding.

The labor surcharge rate specified in the "Labor Surcharge and Equipment Rental Rates" published by CalTrans, current at the time of the actual use of the labor, shall be used.

### *3-3.2.3.2 WORK BY SUBCONTRACTOR*

*DELETE SECTION AND REPLACE WITH THE FOLLOWING*

When all or any part of the extra work is performed by a Subcontractor, the markup established in section 3-3.2.3(1) shall be applied to the Subcontractor's actual cost of such work. Based on the Agency's analysis of the cost elements of the extra work, a markup of 10 percent on the first $5,000 of the subcontracted portion of the extra work and a markup of up to 5 percent on work added in excess of $5,000 of the subcontracted portion of the extra work may be added by the Contractor.

### *3-3.3 DAILY REPORTS BY CONTRACTOR*

*ADD THE FOLLOWING*

Daily extra work reports shall be made on a form acceptable to the Agency and shall be submitted to the Agency no later than the next working day after each day's extra work is performed.

Payment for extra work will not be made until such time that the Contractor submits completed daily extra work reports with all supporting documents to the Engineer.

### *3-3.4 FIELD ORDERS*

When determined appropriate by the Engineer, a field order may be issued for potential Extra Work. A field order constitutes an agreement by the City to pay for the scope of work within the field order until such time as the field order is converted to an executed Change Order. The Contractor shall accept the field order as direction by the City to perform the work with the understanding that final payment terms will be based on a negotiated Change Order. Nothing in the Field order will be construed by the Contractor as a Change Order.

Cost indicated in the field order will represent an estimated cost of the Extra Work identified. Final cost of work will be negotiated by the City and Contractor for inclusion in a Change Order under Section 3-3. A final Change Order must be finalized prior to completion of 80% of the work unless otherwise authorized by the Engineer. If the Contractor and City are unable to reach an agreement the City may direct the Contractor to proceed with disputed work. Resolution of the disputed work shall follow the terms of the Agreement and Section 3-5.

If work performed as part of a field order is determined to not be Extra Work, payment will be made as indicated in the terms of the contract, the field order will be void, and no additional payment will be made for work identified in the field order.

The Contractor shall not be granted more $25,000 in open field orders on any given contract unless authorized by the Engineer.

## 3-4 CHANGED CONDITIONS

*DELETE THE SECOND SENTENCE OF PARAGRAPH THREE AND PARAGRAPH FIVE AND ADD THE FOLLOWING*

The Contractor shall not be entitled to the payment of any additional compensation for any act, or failure to act, by the Engineer, including failure or refusal to issue a change order, or for the happening of any event, occurrence, or other cause, unless the Contractor shall have first given the Engineer due written notice of potential claim as hereinafter specified. Compliance with this section shall not be required as a prerequisite to notice provisions in Section 6-7.3 Contract Time Accounting, nor to any claim that is based on differences in measurement or errors of computation as to contract quantities. The written notice of potential claim for changed conditions shall be submitted by the Contractor to the Engineer upon their discovery and prior to the time that the Contractor performs any work giving rise to the potential claim. The Contractor's failure to give written notice of potential claim for changed conditions to the Agency upon their discovery, and before they are disturbed, shall constitute a waiver of all claims in connection therewith.

The Contractor shall provide the Agency with a written document containing a description of the particular circumstances giving rise to the potential claim, the reasons for which the Contractor believes additional compensation may be due and nature of any and all costs involved within 20 working days of the date of service of the written notice of potential claim for changed conditions. Verbal notifications are disallowed.

The potential claim shall include the following certification relative to the California False Claims Act, Government Code Sections 12650-12656.

"The undersigned certifies that the above statements are made in full cognizance of the California False Claims Act, Government Code sections 12650-12656. The undersigned further understands and agrees that this potential claim, unless resolved, must be restated as a claim in response to the City's proposed final estimate in order for it to be further considered."

By: _____ Title: _____

Date: _____

Company Name: _____

The Contractor's estimate of costs may be updated when actual costs are known. The Contractor shall submit substantiation of its actual costs to the Engineer within 20 working days after the affected work is completed. Failure to do so shall be sufficient cause for denial of any claim subsequently filed on the basis of said notice of potential claim.

It is the intention of this section that differences between the parties arising under and by virtue of the Contract be brought to the attention of the Engineer at the earliest possible time in order that such matters may be settled, if possible, or other appropriate action may be promptly taken.

## 3-5 DISPUTED WORK

*REPLACE SECTION WITH*

Disputed work shall be resolved by the dispute resolution procedures outlined in the Agreement. Although not to be construed as extra work proceeding under Section 3-3, the Contractor shall keep and furnish all records of disputed work to the Engineer consistent with Section 3-3.

*ADD THE FOLLOWING SUBSECTION*

## 3-6 VALUE ENGINEERING

### *3-6.1 GENERAL*

When the Contractor wishes to pursue a material change to the Contract Documents for the sole purpose of reducing total cost of construction the Contractor may submit a Value Engineering Proposal (VEP). No value engineering proposal may impair projects essential functions, safety, serviceability, operational life, aesthetics, or ability to operate as designed.

### *3-6.1 PROPOSAL*

Prior to proposal a meeting must be held between the Agency and Contractor. During the pre-proposal meeting the Contractor will be expected to discuss:

- Value Engineering Concept

- Permitting Impacts
- Potential Risks
- Potential Impacts to traffic, schedule, and staging

A Value Engineering Proposal (VEP) must contain the following:

- A full and complete description of the modifications needed to the Contract Documents to allow for the proposed changes.
- A full and complete description of additional Contract Documents that would need to be prepared to accomplish the proposal.
- A proposed deadline by which the Contractor would need the Value Engineering change to be approved in order to allow for the proposed Work to be done.
- Demonstration that proposal will comply with all permits.
- Demonstration that the proposal will not affect the function, safety, serviceability, operational life, aesthetics, and ability to operate as designed.
- A critical path schedule showing proposed incorporation of the new work.
- Analysis of the bid items needing change and potential variations.
- Cost estimate of affected work and estimated overall reduction in cost.

### *3-6.2 EVALUATION*

A VEP is not obligated to be accepted. The Engineer has full discretion to accept or reject any VEP. A VEP will be evaluated based on its merits and likelihood of achieving the project's goals. The Agency may require that the Contractor accept a share of the cost to review the VEP by the Agency and Designer. If the Agency does require cost sharing of the review the Contractor will be noticed within 10 days of submittal of the VEP. If the Contractor does not wish to participate in cost sharing of the review of the VEP the Agency reserves the right to reject the VEP. Cost sharing to review the VEP will be withheld from the Contractors payment.

If the Agency accepts the VEP the City will issue a Change Order. The Agency agrees to pay to the Contractor, as additional compensation under the Contract, an amount equal to fifty percent (50%) of the net savings in construction costs.

*ADD THE FOLLOWING SUBSECTION*

## 3-7 INCENTIVES

Cost and schedule incentives shall be applied as indicated within the Project Special Provisions.

# SECTION 4 - CONTROL OF MATERIALS

## 4-1 MATERIALS AND WORKMANSHIP

### *4-1.1 GENERAL*

*DELETE THIRD PARAGRAPH AND ADD THE FOLLOWING*

All Work that has been rejected shall be remedied or removed and replaced by the Contractor in an acceptable manner and no compensation will be allowed the Contractor for such removal or replacement.

Any Work performed by the Contractor beyond the lines and grades shown on the Plans, or any Extra Work performed by the Contractor without written authority from the Agency, may be considered as unauthorized and will not be paid for. Work so done may be ordered removed at the Contractor's expense. Upon failure on the part of the Contractor to comply promptly with any order of the Agency made under the provisions of this paragraph, the Agency shall have authority to cause defective Work to be remedied or removed and replaced, and unauthorized Work to be removed, and to deduct the costs from any monies due or to become due the Contractor.

All packaged, manufactured products shall be delivered to the Project Site in their original unopened containers, bearing thereon the manufacturer's name and the brand name of the product.

Whenever any product or material is selected to be used on the Project, all such products or materials shall be of the same brand and manufacturer throughout the Work.

### *4-1.3 INSPECTION REQURIEMENTS*

#### *4-1.3.1 GENERAL*

*ADD THE FOLLOWING*

Inspection or testing of the whole or any portion of the Work or materials incorporated in the Work shall not relieve Contractor from any obligation to fulfill the Agreement.

### *4-1.4 TEST OF MATERIALS*

*ADD THE FOLLOWING*

Except as specified in these Special Provisions, the Agency will bear the cost of testing locally produced materials and/or on-site materials and workmanship where the results of such tests meet or exceed the requirements indicated in the Specifications. The costs of all other tests shall be borne by the Contractor.

At the option of the Engineer, the source of supply of each of the materials to be incorporated in the Work shall be approved by the Engineer prior to delivery. All materials proposed for use may be inspected or tested at any time during their preparation and use. If, after incorporating such materials into the Work, it is found that sources of supply that have been approved do not furnish a uniform product, or if the product from any source proves unacceptable at any time, the Contractor shall furnish approved material from other approved sources. If

any product proves unacceptable after improper storage, handling or for any other reason it shall be rejected and shall be removed from the project site, all at the Contractor's expense.

Compaction tests may be made at any location along the Site as deemed necessary by the Engineer.

### *4-1.6 TRADE NAMES OR EQUALS*

*ADD THE FOLLOWING*

The Contractor is responsible for the satisfactory performance of substituted items. If, in the sole judgment of the Engineer, the substitution is determined to be unsatisfactory in performance, appearance, durability, compatibility with associated items, availability of repair parts and/or suitability of application, the Contractor shall remove the substituted item and replace it with the originally specified item at no cost to the Agency.

*ADD THE FOLLOWING SUBSECTION*

## 4-2 MATERIAL PROVIDED BY THE AGENCY

Materials furnished by the Agency shall be indicated in the Project Special Provisions. Materials will be made available to the Contractor at the locations stated in the Project Special Provisions. The cost of handling, including loading and unloading, transport, storing, and placing all materials from the place they are stored, after they are made available to the Contractor, shall be considered as included in the contract prices for the Bid items for which they will be used.

The Contractor will be responsible for inspecting materials supplied for any defects or missing materials within 5 days after the material is made available. If any defects or materials are deemed to be missing by the Contractor, the Engineer will be immediately notified. Failure to notify the Engineer of defects or missing materials within 5 days of when the material is made available will be considered approval of the materials supplied. The Contractor shall take immediate possession of the Agency supplied material as soon as it is approved.

Materials supplied by the Agency may be continued to be stored at the location indicated in the Project Special Provisions when approved by the Engineer.

*ADD THE FOLLOWING SUBSECTION*

## 4-3 TAXES

The Contractor shall pay all sales, consumer, use and any other applicable taxes for the Work or portions thereof which are legally enacted at the time bids are received, whether or not yet effective. The Total Bid Amount shall be deemed to include such taxes and the Contractor shall not be entitled to separate compensation for such taxes.

# SECTION 5 - UTILITIES

## 5-1 LOCATION

### *5-1.1 GENERAL*

*ADD THE FOLLOWING*

The Agency and affected utility companies have, by a search of known records, endeavored to locate and indicate on the Plans, all utilities which exist within the limits of the work. However, the accuracy and/or completeness of the nature, size and/or location of utilities indicated on the Plans is not guaranteed.

At least two working days, not including the date of notification, prior to any potholing or excavating, the Contractor shall contact Underground Service Alert of Southern California at (800) 227-2600 or (800) 422-4133 for a Dig Alert I.D. Number. Sections 4216 and 4217 of the Government Code require a Dig Alert Identification number be issued before a "Permit to Excavate" will be valid.

This potholing shall be done as a first order of contract work. The Contractor shall backfill and patch these potholes immediately after establishing those locations. The backfill shall conform to the relative compaction requirements for trenches.

In the event obstructions not shown on the Plans are encountered during the progress of the Work which will require alterations to the Plans, or if potholing indicates utilities are located other than as shown on the Plans, the Engineer shall have the authority to change the Plans and order the necessary deviation from the project planned lines and grades.

The Contractor shall take sole responsibility for the coordination of all utility work within the project site and adjacent thereto necessary to complete the project. This coordination includes, but is not limited to, holding and chairing regular utility coordination meetings to the satisfaction of the Agency.

*DELETE SUBSECTION AND REPLACE WITH*

### *5-1.2 PAYMENT*

Unless a specific bid item is provided, full compensation for utility location including potholing shall be considered as included in the price bid for other items of work requiring said potholing and no additional compensation will be allowed therefor.

*ADD THE FOLLOWING SUBSECTION*

### *5-1.3 PRIVATE PROPERTY LOCATION*

The Underground Service Alert of Southern California does not locate underground utilities on private property or on Agency owned properties, therefore the Contractor shall obtain 3rd party utility location services in order to identify any onsite electrical, communication, water, sewer, or irrigation facilities within the project area prior to

any excavations. The Agency will provide the as-built drawings for the site to the 3rd party location service firm and be available for onsite meeting to answer any question and to provide access to facility utility boxes or utility rooms where applicable. The cost of the 3rd party utility location service shall be included in the unit price bid for the items of work requiring excavation.

## 5-2 PROTECTION

*ADD THE FOLLOWING*

During the progress of the Work, the Contractor shall not disturb, but shall support and protect against injury and maintain in good operating condition, at the Contractor's own expense, all subsurface, surface and overhead utilities, fences, structures and other facilities as are shown on the Plans or are visible from the surface.

Attention is directed to the possible existence of underground facilities not shown. The Contractor shall take steps to determine the exact location of all underground facilities prior to doing work that may damage such facilities or interfere with their service. If the Contractor makes no attempt to locate underground facilities or otherwise operates in an imprudent manner, as determined by the Engineer, the repairs to damaged utilities in the course of work shall be the Contractor's responsibility and all costs resulting therefrom shall be borne by the Contractor.

During the Work, unknown substructures requiring relocation or protection may be encountered. Such unknown substructures will generally fall into two classes, namely: 1) those requiring relocation or protection at the expense of the owner of the substructures, or 2) those requiring relocation or protection at the expense of the Agency.

In the case of the former, the Contractor shall provide working space for protection or relocation activities and may be entitled to an extension of time for completion and/or extra compensation under the provisions of Section 5-5, Delays, of the Standard Specifications for Public Works Construction.

In the latter case, the alteration or relocation of which is to be at the expense of the Agency, the Agency will make arrangement for the alteration or relocation of the substructure by the owner, by the Contractor, or by others. In the event that the alteration or relocation is to be accomplished by the owner or by others, the Contractor shall provide working space and may be entitled to an extension of time for completion and/or extra compensation under the provisions of Section 5-5. In the event that the alteration or the relocation is to be accomplished by the Contractor, the requirements set forth in the Special Provisions shall be utilized.

In the event the Contractor disturbs, disconnects, damages, or removes any subsurface, surface or overhead utility, fence, structure or other facility prior to the making of necessary arrangements by the Agency with the owner thereof, the Contractor shall immediately give to the owner notice of said disturbance, disconnection, damage, or removal, and the Contractor shall assume all responsibility in connection therewith.

All facilities disturbed or removed shall be reconstructed as promptly as is reasonably possible in their original or other authorized locations and in a condition at least as good as existed prior to when disturbed or removed, and subject to the inspection of the owner.

The Contractor shall be responsible for and shall make good all damage to utilities, structures, or other facilities as shown on the Plans due to the Contractor's operations, and the provisions of this section shall not be abated even in the event such damage occurs after backfilling or is not discovered until after completion of backfilling. The Contractor shall bear the costs of repair or replacement of any utilities, structures, or other facilities.

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

The cost of any shoring, bracing, support, and excavation necessary for the protection of utilities shall be included in the price bid for the appropriate items of work for which such activity is appurtenant and no separate payment shall be made therefor.

## 5-4 RELOCATION

*ADD THE FOLLOWING*

In conformance with Section 5-6, the Contractor shall coordinate its work with all affected utility agencies and companies. Prior to the installation of any and all utility structures within the limits of work by any utility agency or company, or its contractor, the Contractor shall place all curb, curb and gutter, and/or sidewalk that is a part of the work and adjacent to the location where such utility structures are shown on the plans and are noted as being located, relocated or are otherwise shown as installed by others. In order to minimize delays to the Contractor caused by the failure of other parties to relocate utilities that interfere with the construction, the Contractor, upon the Engineer's written approval, may temporarily omit the portion of work affected by the utility. If such temporary omission is approved by the Engineer the Contractor shall place survey or other physical control markers sufficient to locate the curb or curb and gutter to the satisfaction of the utility agency or company. Such temporary omission shall be for the Contractor's convenience and no additional compensation will be allowed therefor for additional work, materials or delay associated with the temporary omission. The portion thus omitted shall be constructed by the Contractor immediately following the relocation of the utility involved unless otherwise directed by the Engineer.

In the event that subsurface, surface, overhead utilities, fences or other facilities are required to be disturbed or removed to permit the construction of the improvements, the Contractor shall coordinate with the owner (or owners) impacted by the disturbance or removal of the facilities so as to minimize any inconvenience.

Facilities either permanently or temporarily relocated, or supported by the utility owner shall be protected in place by the Contractor.

## 5-5 DELAY

*ADD THE FOLLOWING*

In accordance with the provisions of the Government Code Section 4215, the Contractor shall not be assessed liquidated damages for delay in completion of the Project when such delay was caused by the failure of the Agency or the owner of the utility to provide for the removal or relocation of such utility facilities which are the Agency's or utility owner's obligation to remove or relocate.

## 5-6 COOPERATION

*ADD THE FOLLOWING*

During the performance of the Work, the owners or agencies in control of any of the facilities affected by the Work shall have the right to enter upon the facility easement or upon any portion of the Work thereof, for the purpose of maintaining service and for making changes in or repairs to said facilities.

The Contractor shall cooperate with the various utility companies in the maintenance, relocation, installation, or adjustment to grade of any poles, pipes, valves, hydrants, meters, manholes, boxes and any other facilities requiring relocation as a result of the Work. Following the completion of any relocation, installation or adjustment operations by utility company/agency forces, the Contractor shall be responsible for the protection of said facilities throughout the duration of the Work.

*ADD THE FOLLOWING SUBSECTION*

## 5-7 COORDINATION

### *5-7.1 GENERAL*

The Contractor shall coordinate its work with all respective utility agencies. The Contractor shall immediately notify utility agencies when an existing utility is damaged by the Contractors operation or found to be damaged during the course of the work. The following utilities and their respective owners and phone numbers are listed in table 5-7.1.

**TABLE 5-7.1**
**UTILITY OWNERS**

| Utility | Owner | Phone Number |
|---|---|---|
| Gas Facilities | San Diego Gas & Electric | (800) 611-7343 |
| Electric Power Transmission and Distribution Facilities | San Diego Gas & Electric | (800) 411-7343 |
| Telecommunication Facilities | AT&T | (760) 489-3943 |
| Telecommunication Facilities | Crown Castle | (760) 688-6420 |
| Cable Television | Charter Communications | (951) 901-5526 |
| Cable Television | Cox Communications | (619) 846-6662 |
| Cable Television | Verizon | (619) 455-1089 |
| Water | Vallecitos Water District | (760) 744-0460 |
| Water | Vista Irrigation District | (760) 597-3100 |
| Water | San Diego County Water Authority | (760) 480-1991 |
| Sewer | Vallecitos Water District | (760) 744-0460 |
| Sewer | City of Vista (Buena Sanitation District) | (719) 395-8095 |
| Railroad | North County Transit District | (760) 967-2851 |

The contactor shall be responsible for following the regulations, requirements, permits, conditions of the utilities while working on their facility.

*ADD THE FOLLOWING SUBSECTION*

## 5-8 TEMPORARY UTILITIES

The Contractor shall be responsible for providing, at its expense, all temporary utility service(s) for the duration of Work, including, but not limited to, mainline and service hi-line, metering, sanitary facilities, bypass equipment, pumping, temporary power, etc. The Contractor shall be responsible for payment for all temporary utilities, including but not limited to, permitting, installation, labor, removal, materials, etc. Temporary utilities shall be considered as included in the price bid for other items of work requiring said temporary utilities and no additional compensation will be allowed therefor.

# SECTION 6 - PROSECUTION, PROGRESS AND ACCEPTANCE OF THE WORK

## 6-1 CONSTRUCTION SCHEDULE AND COMMENCEMENT OF THE WORK

*ADD THE FOLLOWING SUBSECTION*

### *6-1.1.1 MEASUREMENT AND PAYMENT FOR CONSTRUCTION SCHEDULE*

The Contractor's preparation, revisions, and maintenance of the Construction Schedule is incidental to the work and no separate payment shall be made therefor.

*ADD THE FOLLOWING SUBSECTION*

### *6-1.3 PRE-CONSTRUCTION MEETING*

The Agency will schedule a Pre-Construction Meeting after the award and execution of the Contract and prior to construction. The Contractor (Principal and Project Superintendent) and any Subcontractor for 5 percent or more of the Work shall attend and be prepared to provide or discuss the following information:

1) Construction schedule and production rates.
2) Subcontractors
3) Survey requirements
4) Materials and delivery schedule
5) Local phone numbers for supervisory personnel
6) Required permits
7) SWPPP/WPCP (Section 7-8.6)
8) Coordination with other agencies
9) Submittals (Section 2-5.3)
10) Inspections (Section
11) Haul Routes (Section 7-10.3)
12) Schedule of Values Submittal (Section 9-2.1)
13) Potholing/Utility Location
14) Notifications
15) Project Signage, if Any (Section 7-18)

The Contractor shall schedule separate preconstruction meetings with any utilities or other public entities having control over portions of the work prior to commencing work.

The Contractor shall set-up a pre-construction meeting prior to the commencement of landscape and irrigation work which will be attended by the Subcontractor, if any, performing the landscape and irrigation work.

*ADD THE FOLLOWING SUBSECTION*

### *6-1.4 AGENCY HOLIDAYS*

Work shall not be performed on recognized Agency holidays unless otherwise approved.

| HOLIDAY | OBSERVANCE DATE |
|---|---|

| | |
|---|---|
| New Year's Day | January 1 |
| Martin Luther King Day | 3rd Monday in January |
| Presidents Day | 3rd Monday in February |
| Memorial Day | Last Monday in May |
| Independence Day | July 4 |
| Labor Day | 1st Monday in September |
| Veteran's Day | November 11, or<br>Friday if on Saturday or<br>Monday if on Sunday |
| Thanksgiving Day | 4th Thursday in November |
| Day after Thanksgiving | 4th Friday in November |
| Christmas Day | December 25 |

*ADD THE FOLLOWING SUBSECTION*

### *6-1.5 WORKING DAY*

The following hours shall constitute a normal working day hours.

Normal work hours will be between 7:30 a.m. and 4:30 p.m., Mondays through Fridays.

Working hours for Private Development projects located outside of dedicated City right-of-way may begin at 7:00 a.m. unless otherwise restricted within the Contract Documents.

When work is within 500 feet of a school the normal work hours will be between the hours of 9:00 a.m. and 2:00 p.m. on Monday through Friday, unless the school is not in session and approved by the Engineer.

When specified, night work working hours will be between 8:00 p.m. and 4:30 a.m.

*ADD THE FOLLOWING SUBSECTION*

### *6-1.6 WORK OUTSIDE NORMAL WORKING DAY*

The Contractor may request to work outside normal working day hours or at any time during weekends and/or Agency holidays subject to the following conditions.

- The Engineer must determine, in his/her sole opinion, that the work to be done is in the best interest of the Agency.
- Permission must be obtained a minimum of 48 hours prior to such work or earlier should Contract provisions have noticing requirements greater than 48 hours.
- The Contractor shall pay the inspection costs of such work.
- Any overtime or premium costs incurred due to working outside normal working hours will be paid by the Contractor.

*ADD THE FOLLOWING SUBSECTION*

### *6-1.7 REQUIRED WEEKEND/HOLIDAY/NIGHT WORK*

Unless otherwise specified in the Project Special Provisions all work along San Marcos Boulevard west of SR-78 must occur during night working hours.

Additional weekend, holiday or night work may be required by the Project Special Provisions. When required the Contractor will be responsible for incorporating any weekend, holiday or night work into the construction schedule.

*ADD THE FOLLIOWING SUBSECTION*

### *6-1.8 RESTRICTED DAYS*

When required by the Project Special Provisions the Contractor will not be allowed to work on restricted days. A restricted day will not be recorded as a working day against the contract. All work affected by restricted days will be appropriately planned for in the construction schedule per Section 6-1.1.

## 6-6 DELAYS AND EXTENSIONS OF TIME

### *6-6.4 WRITTEN NOTICE AND REPORT*

*ADD THE FOLLOWING*

Any claim by the Contractor for an extension of time under Section 6-6.1 of the Standard Specifications and any claim by the Contractor for payment for delay under Section 6-6.3 of the Standard Specifications shall be made in writing to the Agency as soon as feasible but not more than ten (10) days after the beginning of the delay. The Contractor's written notice shall provide data showing the cause of the delay and the effect of the delay on the critical path of the Work. In the case of a continuing delay, only one claim is necessary. FAILURE OF THE CONTRACTOR TO MAKE A CLAIM WITHIN THE TIME AND IN THE MANNER REQUIRED BY THIS AMENDMENT SHALL CONSTITUTE A WAIVER OF THE CLAIM BY THE CONTRACTOR, AND WILL BE CONSIDERED TO BE GROUNDS FOR REFUSAL BY THE AGENCY TO CONSIDER SUCH REQUEST.

Section 3 of the Standard Specifications is hereby amended to add Section 3-6 CLAIM AND CLAIM RESOLUTION PROCESS which is EFFECTIVE FOR CONTRACTS ENTERED INTO ON OR AFTER JANUARY 1, 2017. The Claim and resolution process shall be made as described in California Public Contract Code ("PCC") section 9204 (Assembly Bill 626) and shall be applicable to any Claim made by a contractor in connection with a public works project. Section 3-6 shall remain in effect only until January 1, 2027, and as of that date is repealed, unless a later enacted statute deletes or extends that date.

No extension of time or adjustment to the Contract Price will be allowed for delays or suspensions caused by or contributed to by the fault or negligence of the Contractor or any person or entity for whose acts the Contractor is liable.

*ADD THE FOLLOWING SUBSECTION*

### *6-6.5 INITIAL AND DAILY REPORTING*

Within two hours of a delay occurring, where the Contractor believes the Agency to be the cause of delay, the Contractor shall provide written notice to the Engineer of the delay. The Contractor shall provide daily written notice, each working day, for the duration of the delay. The daily written notice will include:

- classification of each workman and supervisor
- make and model of each piece of equipment placed on standby
- cumulative duration of the standby
- Contractor's opinion of the cause of the delay and a cogent explanation of why the Contractor could not avoid the delay by reasonable means.

Should the Contractor fail to provide the notice(s) required by this section the Contractor agrees that no delay has occurred and that it will not submit any claim(s) therefor.

## 6-7 TIME OF COMPLETION

### *6-7.1 GENERAL*

*DELETE AND REPLACE SECTION TO READ*

The Contractor shall complete the Work within the time specified in the Notice to Bidders. Unless otherwise specified, the time of completion of the Contract shall be expressed in working days.

## 6-8 COMPLETION, ACCEPTANCE AND WARRANTY

### *6-8.1 COMPLETION*

The Engineer will not deem the project as complete until they are satisfied that all the materials and workmanship, and all other features of the Work, meets the requirements of all of the Contract Documents.

*ADD THE FOLLOWING SUBSECTION*

### *6-8.1.1 PUNCH LIST AND WALK-THROUGH*

In order to determine the completeness of the project the Engineer will perform a project walk-through and establish a punch list if needed.

The walk-through will be performed by the Engineer and Contractor's representative after the Contactor has asserted that the project is complete. The Engineer or Engineer's representative will inspect the condition of all portions of the project stated to be complete by the Contractor. During the inspection the Engineer will develop a "punch list" identifying deficiencies, if any, needing correction by the Contractor. Upon receipt of the punch list the Contractor will correct any and all deficiencies.

The Engineer will not deem the Work, or any portion of the Work, as complete until all outstanding deficiencies are corrected by the Contractor.

### *6-8.2 ACCEPTANCE*

*ADD THE FOLLOWING*

Temporary, interim or permanent use, of all or portions of the Work, does not constitute acceptance of the Work. If, in the Engineer's judgment, the Work has been completed and is ready for acceptance, the Engineer will so certify to the Board for acceptance of the Work. Upon the Board's acceptance of the Work the Engineer will cause a "Notice of Completion" to be filed in the office of the San Diego County Recorder. The Date of Completion shall be the completion date specified in the Notice of Completion.

### *6-8.3 WARRANTY*

*DELETE THE FIRST PARAGRAPH AND REPLACE WITH:*

The Work shall be warranted by the Contractor against defective materials and workmanship for a period of 1 year from the Date of Completion.

*ADD THE FOLLOWING*

Warranty of the project will include 15 gallon, or larger, trees installed under the contract to live in a healthy state for one year from the date of final acceptance of the contract work. The Engineer will be the sole judge as to the condition of the plant material.

## 6-9 LIQUIDATED DAMAGES

*DELETE SECTION AND REPLACE TO READ*

Failure of the Contractor to complete the work within the time allowed will result in damages being sustained by the Agency. 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, as adjusted in accordance with Section 6-6, the Contractor shall pay to the Agency, or have monies withheld due it, in the amount as specified in Table 6-9(A) or as indicated in the Project Special Provisions.

**TABLE 6-9(A)**
**LIQUIDATED DAMAGES***

| Bid Amount | Liquidated Damages per Day |
|---|---|
| $0-50,000 | $500 |
| $50,001-250,000 | $1,000 |
| $250,000-1,000,000 | $1,500 |
| $1,000,001-$5,000,000 | $2,000 |
| $5,000,001-10,000,000 | $3,000 |
| $10,000,001+ | $4,000 |

Execution of the Contract by the Contractor shall constitute agreement by the Contractor that liquidated damages as specified by this section are the minimum value of the costs and actual damage caused by the failure of the Contractor to complete the work within the specified 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.

Execution of the Contract shall constitute agreement by the Agency and Contractor that liquidated damages in the above amount is the minimum value of costs and actual damages caused by the Contractor to complete the Work within the allotted time. Any progress payments made after the specified completion date shall not constitute a waiver of this paragraph or of any damages.

## 6-10 USE OF IMPROVEMENTS DURING CONSTRUCTION

*DELETE SUBSECTION AND REPLACE WITH*

The full, unimpeded use of the existing roadway and right-of-way, except in the immediate vicinity of an actual work operation, by the general public, including patrons, residents, their guests, and service people of the properties shall be permitted by the Contractor at all times.

The Contractor shall be responsible for injury to persons or damage to property arising out of or resulting from the utilization of the public facilities or appurtenances including during suspension of work caused by any willful or negligent act or omission by the Contractor, Subcontractors, their officers, employees, agents, successor or assigns. Contractor shall defend, indemnify, and hold City harmless from any and all costs, expenses, damages, or claims for injury or damage to persons or property during construction.

# *SECTION 7 - RESPONSIBILITIES OF THE CONTRACTOR*

## 7-1 THE CONTRACTOR'S EQUIPMENT AND FACILITES

### *7-1.1 GENERAL*

*ADD THE FOLLOWING:*

Facilities shall be designed and constructed in accordance with general practice for such equipment and shall be of sufficient capacity and of such character as to ensure the production of sufficient material to carry the Work to completion within the Contract Time.

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

Each machine or unit of equipment shall be operated by an experienced operator skilled in handling the particular make of machine or unit of equipment in use, at a speed or rate of production not to exceed that recommended by the manufacturer.

All vehicles used to haul materials over existing traveled ways shall be equipped with pneumatic tires and comply with legal wheel loads.

After the second paragraph, add the following:

Enclosed toilets shall also comply with all applicable laws, ordinances, and regulations pertaining to public health and sanitation of dwellings and camps.

### *7-1.2 TEMPORARY UTILITY SERVICES*

*ADD THE FOLLOWING:*

The Contractor shall obtain a construction meter for water used for the construction, plant establishment, maintenance, cleanup, testing and all other work requiring water related to this contract. The Contractor shall contact the appropriate water agency for requirements. The Contractor shall pay all costs of temporary light, power and water including hookup, service, meter and any, and all, other charges, deposits and/or fees therefor. Said costs shall be considered incidental to the items of work that they are associated with and no additional payment shall be made therefor.

The Contractor shall contact VWD and or VID to obtain a construction water meter (3" meter size from VWD ONLY) and to determine all terms, costs, conditions and regulations imposed on the Contractor for use thereof. The Contractor shall pay all costs associated with procuring and providing water for construction.

## 7-2 LABOR

### *7-2.1 GENERAL*

*ADD THE FOLLOWING:*

If any discrepancy or inconsistency should be discovered in this Contract in relation to any such law, ordinance, Code, order, or regulation, the Contractor shall report the same, in writing, to the Engineer. The Contractor shall indemnify and save harmless the City, and its officers, agents, employees, successors and assigns against all claims or liability arising from violation of any such law, ordinance, code, order, or regulation, whether by itself or by its employees or Subcontractors as stated in these Contract Documents. Any particular law or regulation specified or referred to elsewhere in these specifications shall not in any way limit the obligation of the Contractor to comply with all other provisions of Federal, State, and local laws and regulations.

Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for all labor and services necessary for the proper execution and completion of the Work.

The Contractor shall at all times enforce strict discipline and good order among the Contractor's employees, including, but not limited to, appropriate public behavior and decorum, and shall not employ on the Work any unfit person or anyone not skilled in the task assigned them as determined by the Engineer.

Each machine or unit of equipment shall be operated by an experienced operator skilled in handling the particular make of machine or unit of equipment in use, at a speed or rate of production not to exceed that recommended by the manufacturer.

The mention of any specific duty or liability imposed upon the Contractor shall not be construed as a limitation or restriction of any general liability or duty imposed upon the Contractor by this Contract. Such references to specific duties and liabilities are made only for the purpose of explanation and/or clarification.

### *7-2.2 PREVAILING WAGES*

*DELETE SECTION AND REPLACE WITH*

The Contractor shall comply with prevailing wage requirements in conformance with the terms of the Agreement.

## 7-3 INSURANCE

### *7-3.2 GENERAL LIABILITY INSURANCE*

*DELETE SECTION AND REPLACE WITH*

The Contractor shall furnish the Agency with a policy in conformance with the terms of the Agreement.

### *7-3.3 WORKER'S COMPENSATION INSURANCE*

*DELETE SECTION AND REPLACE WITH*

The Contractor shall furnish the Agency with a policy in conformance with the terms of the Agreement.

### *7-3.4 AUTO LIABILITY INSURANCE*

*DELETE SECTION AND REPLACE WITH:*

The Contractor shall furnish the Agency with a policy in conformance with the terms of the Agreement.

## 7-5 PERMITS

*DELETE SECTION AND REPLACE WITH:*

The regulations and requirements of all mandatory and applicable permits shall be strictly adhered to in the performance of the contract Work. All required or applicable permits, licenses or other authorizations may not be itemized herein. It shall nonetheless be the Contractor's responsibility to identify, acquire and conform to the requirements of permits or licenses, whether or not expressly specified in these Special Provisions, required for the proper, safe, and legal execution of the contract Work.

The Environmental Quality Act of 1970 (Chapter 1433, Stats. 1970), as amended, may be applicable to permits licenses, and other authorizations which the Contractor must obtain from local agencies in connection with performing the Work. The Contractor shall comply with the provisions of said statutes in obtaining such permits, licenses, and other authorizations and they shall be obtained in sufficient time to prevent delays to the Work.

The Contractor shall obtain and pay for all costs incurred for permits necessitated by its operations such as, but not limited to, those permits required for night work, overload, blasting and demolition.

*ADD THE FOLLOWING SUBSECTION:*

### *7-5.1 RESOURCE AGENCY PERMITS*

The Agency will acquire all Resource Agency permits for the Work and will provide copies of permits in the Project Special Provisions. The Contractor is responsible for complying with any Resource Agency permits for the Work.

*ADD THE FOLLOWING SUBSECTION*

### *7-5.2 RAILROAD PERMITS*

#### *7-5.2.1 GENERAL*

The Contractor shall cooperate with the North County Transit District (NCTD), the Burlington Northern and Santa Fe Railway (BNSF), herein after collectively referred to as Railroad.

When required by the Project Special Provisions, or when Work depicted on Plans is within the Railroad ownership, the Contractor shall procure all necessary permits with the Railroad to perform the work.

The contractor shall comply with all regulations and requirements of the applicable permit including but not limited to, railway flagging and safety training. It is understood the Railroad shall have absolute authority and right to cause the Contractor's work on railroad property to cease and will have right to inspect for the duration of the permit.

Right of Entry Permit information can be found at the following website:

https://www.gonctd.com/about-nctd/accountability/working-around-the-rails/The Contractor shall not commence work on Railroad Right of Way prior to receipt of the Right of Entry permit from NCTD.

### *7-5.2.2 WORKER PROTECTION AND RAILWAY FLAGGING PROTECTION*

The Federal Railroad Administration (FRA) requires railroads and/or their contractors to provide roadway worker protection (RWP) training to any worker whose job duties include inspection, construction, maintenance, or repair of track, bridges, roadway, signal and communication systems, roadway facilities, or maintenance machinery on or near the track (FRA 49 CFR 214). All persons entering into the railroad right of way are required to attend ROW training. No additional compensation to Contractor will be allowed for attendance at a Railroad Safety Training course.

Railway flagging protection shall be required when working within railroad right of way. The presence of equipment, materials, or manpower will not be allowed within NCTD's Right of Way without the presence of railway flaggers. The Contractor shall be responsible to coordinate with NCTD to schedule flaggers. Costs for railway flaggers shall be the responsibility of the Contractor and shall be paid directly to NCTD.

RWP training and Flagging Protection information can be found at the following website:

http://www.gonctd.com/working-around-the-rails/

*ADD THE FOLLOWING SUBSECTION*

### *7-5.3 PAYMENT*

Except as specified herein or provided for elsewhere in the Project Special Provisions as being included in specific contract items of work, compliance with the provisions of Section 7-5, 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 therefor. Further, the enforcement of any requirements of the permits during the performance of the Work shall not be the basis for any additional compensation.

## 7-6 THE CONTRACTOR'S REPRESENTATIVE

*ADD THE FOLLOWING*

An authorized representative of the Contractor shall be present at the Site during work hours, including during periods when the Work is suspended. Contractor shall be available to meet at the site, given reasonable notice.

The Agency shall be supplied at all times with the names and local telephone numbers of at least two (2) persons in charge of, or responsible for the Work, who can be reached for emergency work twenty-four (24) hours per day, seven (7) days per week.

Where the Contractor is comprised of two (2) or more persons, co-partnerships, or corporations functioning on a joint venture basis, the Contractor shall designate in writing to the Agency the name of the authorized representative who shall have supreme authority to direct the Work and to whom order will be given by the Agency for the Contractor to obey.

## 7-8 WORK SITE MAINTENACE

### *7-8.1 GENERAL*

*ADD THE FOLLOWING*

A street sweeper is required when:

- The Contractor's operations have earth moving equipment entering or leaving the site along paved roads.
- Traffic is entering or leaving the site repeatedly
- Soil, trash or other debris that can be collected by a street sweeper has migrated off the site
- Before and after surface roadwork is performed, including grinding, sawcutting, paving, and slurry

The Contractor will maintain all existing and new improvements within the project limits free of graffiti. If encountered, graffiti must be removed within 24 hours.

*AFTER THE SECOND PARAGRAPH, ADD THE FOLLOWING:*

The Contractor shall conduct effective cleanup and dust control throughout the duration of the Contract. The Engineer may require increased levels of cleanup and dust control that, in his sole discretion, are necessary to preserve the health, safety, or welfare of the public. Cleanup and dust control required herein shall be executed on weekends and any other non-working days when needed to preserve the health, safety, or welfare of the public. Cleanup and dust control shall be considered incidental to the items of work that they are associated with and no additional payment shall be made therefor.

*AFTER THE THIRD PARAGRAPH, ADD THE FOLLOWING:*

The Contractor's haul routes shall also be kept free from dirt, rubbish, and unnecessary obstruction resulting from the Contractor's operations. Disposal of all rubbish and surplus materials shall be off the Site, at the Contractor's own expense, and in accordance with all local codes and ordinances governing locations and methods of disposal. After completion of the Work and before making application for final acceptance of the Work, the Contractor shall clean the Site of the Contractor's operations, including all areas under the control of the Agency that have been used by the Contractor in connection with the Work by removing all debris, surplus material, equipment and all temporary constructed facilities of whatever nature, unless otherwise approved by the Agency. Final acceptance of the Work by the Agency will be withheld until the Contractor has satisfactorily complied with the foregoing requirements for final clean-up on the Work Site.

*AFTER THE FOURTH PARAGRAPH, ADD THE FOLLOWING:*

No additional compensation will be allowed as a result of such suspension.

### *7-8.2 AIR POLLUTION CONTROL*

*ADD THE FOLLOWING*

The Contractor shall post durable, weatherproof signs visible at the job site entrance stating:

**"DO NOT ALLOW MACHINERY TO IDLE FOR MORE THAN 3 MINUTES"**

Sigs shall be a minimum of 24" x 36" with 4" high lettering.

### *7-8.4.1 GENERAL*

*ADD THE FOLLOWING:*

Any equipment and material storage to be stored on-site shall be confined to areas approved by the Engineer. All cleanup costs shall be included in the Contractor's Bid.

### *7-8.6 WATER POLLUTION CONTROL*

*DELETE SECTION AND SUBSECTIONS AND REPLACE WITH:*

### *7-8.6.1 GENERAL*

The Contractor shall comply with all local, state, and federal regulations and laws, regardless of their inclusion or reference in the specifications, throughout the course of the project. The Contractor shall conduct and schedule its operations, and follow and implement storm water best management practices in such a manner as to prevent water pollution.

The standards outlined herein provide a general overview of the stormwater / water quality regulations that must be adhered to during any and all construction related activities within the City. References and links provided herein represent the minimum resources necessary to ensure that the Contractor or Subcontractor has the necessary information to ensure regulatory compliance at all times throughout the duration of the Project. It is however recommended that the Contractor consult with a Qualified Professional, such as a Qualified SWPPP Developer / Practitioner (*QSD/P*) to ensure regulatory compliance at all times.

The Contractor must update the Agency in writing if and when there are changes to the following within 24-hours of any change: (1) Site official, (2) Site owner(s), (3) Site superintendents, (4) Site engineer of records, (5) Site project manager, (6) Site QSD / QSP, or any other change of note. Written notice must include the new individual's name, contact information and role.

Compliance with the requirements of this section shall in no way relieve the Contractor from its responsibility to comply with the other provisions of the contract and in particular its responsibility for correction of and costs arising from damage, and for preservation of property.

Failure to take said measures satisfactory to the Engineer and/or regulatory agencies having jurisdiction will subject Contractor to orders to cease operations. Any losses to Contractor associated therewith shall be at Contractor's sole expense.

It is possible that storm, surface, and possible ground or other waters will be encountered at various times and locations during the Work. Such waters may interfere with the Contractor's operation and may cause damage to adjacent or downstream private and/or public property by flooding, lateral erosion, sedimentation, or pollution if not properly controlled by the Contractor. The Contractor assumes all said risks and acknowledges that the Contractor's bid was prepared accordingly.

The Contractor shall conduct operations in such a manner that storm or other waters may proceed without obstruction along existing street and drainage courses, and in compliance with all applicable permit requirements, including, but not limited to, those set forth in the National Pollutant Discharge Elimination System (NPDES) permit issued to the City. Drainage of water from existing or proposed catch basins shall be maintained at all times. Diversion of water for short reaches to protect construction in progress will be permitted in areas and in a manner whereby public or private properties are not damaged, or in the opinion of the Engineer, are not subject to the probability of damage.

The Contractor shall maintain and provide drainage control throughout and adjacent to the Project Site at all times during the construction contract.

The Work covers the prevention, control and abatement of waterborne silts, sediments, earth materials, inorganics, chemicals, construction materials, trash, and debris in order that pollution of the existing onsite and downstream soils and watercourses is prevented or minimized. The Work includes preventing, controlling or abating water polluting elements or materials which may result both directly and indirectly from within and outside the project work limits. This includes water flow from, to, or through the site resulting from rainfall runoff, groundwater movement, and stream storm water discharge. In addition, the Responsible Party shall take all reasonable measures to prevent and eliminate the discharge of any and all "fugitive dust" throughout the course of the Work. This work may require the implementation, maintenance, cleaning and /or repair or replacement of various Stormwater Best Management Practices (BMPs) and/or control measures to prevent and / or reduce the discharge of pollutants both on and off site throughout the course of the project as represented on the Plans, SWPPP/WPCP or as required by the Agency or Regulation.

Documentation of all storm water activities in the form of a log will be retained on site with the SWPPP or WPCP at all times. All storm water documentation will be available for review by any public official upon request. Documentation shall, at a minimum, contain a log of all inspections, cleanings, repairs/replacement reports, Rain Event Action Plans (REAPs), etc. All records shall be retained for three (3) years following the completion of the project.

All Work shall conform to the following regulations and standards as updated, amended, and applicable to the work performed:

- **Regional, Local Regulations & Reference Websites**
    - City of San Marcos – For applicable City specific regulations visit: www.san-marcos.net/departments/development-services/stormwater.
    - City of San Marcos Municipal Code – To access the City of San Marcos Municipal Code visit: www.san-marcos.net/departments/city-clerk/municipal-code.
    - City of San Marcos WPCP – A copy of the City's approved Water Pollution Control Plan can be accessed at: www.san-marcos.net/departments/development-services/stormwater.
    - Applicability of Storm Water Best Management Practices (BMP) Requirements Form I-1 –can be accessed at: www.san-marcos.net/home/showdocument?id=11437.
    - Priority Development Project Stormwater Quality Management Plan template can be accessed at: www.san-marcos.net/departments/public-works/stormwater/development-planning.
    - Project Type Determination Checklist Form I-2 can be accessed at: www.san-marcos.net/home/showdocument?id=11438.
    - Standard Project Stormwater Quality Management Plan which can be accessed at: www.san-marcos.net/departments/public-works/stormwater/development-planning.

- Storm Water Quality Management Plan (SWQMP) Submittal Requirements which can be accessed at: www.san-marcos.net/home/showdocument?id=11439.
- Project Clean Water San Diego – For applicable local regulations visit: www.projectcleanwater.org/
- San Diego Regional Water Quality Control Board – National Pollutant Discharge Elimination System (NPDES) permit and Waste Discharge Requirements for Discharges from the Municipal Separate Storm Sewer Systems (MS4s), For applicable region specific regulations visit: www.waterboards.ca.gov/sandiego/.
- San Diego Regional Water Quality Control Board – For applicable regulations specific to ground water extraction and discharge (*Order R9-2015-0013 / NPDES NO. CAG919003*) limitations and restrictions at: www.waterboards.ca.gov/rwqcb9/board_decisions/adopted_orders/2015/R9-2015-0013.pdf.

- **State Regulations & Statewide Reference Websites**
  - California Green Building Codes – For regulations specific to all construction sites visit: www.bsc.ca.gov/
  - CASQA – For examples of various industry acceptable standards visit: www.casqa.org/resources/bmp-handbooks/construction.
  - State Water Resources Control Board (SWRCB)– For applicable statewide regulations visit: www.waterboards.ca.gov/.
  - State Water Resources Control Board Construction General Permit – For regulations and requirements specific to construction sites 1 acre or more in size visit: www.waterboards.ca.gov/water_issues/programs/stormwater/construction.html.
  - State Water Resources Control Board Industrial General Permit – For regulations and requirements specific to industrial facilities visit: www.waterboards.ca.gov/water_issues/programs/stormwater/industrial.html
  - State Water Resources Control Board Porter Cologne Act – For regulations and requirements specific California Water Quality visit: www.epa.gov/laws-regulations/summary-clean-water-act
  - State Water Resources Control Board Pretreatment Regulations – For regulations and requirements specific to pretreatment regulations visit: https://www.waterboards.ca.gov/water_issues/programs/
  - State Water Resources Control Board Trash Policy - Water Quality Control Plan for Ocean Waters of California (Ocean Plan) to Control Trash and Part 1 Trash Provision of the Water Quality Control Plan for Inland Surface Waters, Enclosed Bays, and Estuaries (ISWEBE Plan).

For specific requirements visit:
www.waterboards.ca.gov/water_issues/programs/trash_control/

- **Federal Regulations**
    - To review the Federal Clean Water Act of 1972 visit the EPA's website at: www.epa.gov/laws-regulations/summary-clean-water-act

### *7-8.6.2 BEST MANAGEMENT PRACTICES (BMPS)*

The Contractor shall implement and maintain such BMPs as needed to comply with all applicable regulations to prevent pollutants from entering (including on-site discharges) and/or exiting the project site. The Contractor shall:

- Ensure equipment and workers for emergency work are available at all times during the rainy season. All necessary materials shall be stockpiled on site at convenient locations to facilitate rapid construction of temporary devices when rain is imminent.
- Not modify any devices shown on the plans without approval of the Engineer.
- Restore any and all erosion control devices to their full working order after each rainfall event to the satisfaction of the Engineer.
- Install all erosion control measures shown on the Plans and any additional measures as may be required by the Engineer.
- Ensure that rainfall will drain away from the face of slopes at the conclusion of each working day.
- Have all removable protective devices in place at the end of each working day when the 24 hour rain probability forecast exceeds forty percent (40%).
- Implement all standard (Minimum) and site specific (Required) BMPs per industry acceptable standards.
- Routinely inspect all standard (Minimum) and site specific (Required) BMPs per industry acceptable standards which includes; weekly, pre-storm event, during prolonged storm events when safe and post storm event (within 24 hours).
- Routinely inspect to assess and determine if the devices and/or facilities are effective in eliminating the discharge of pollutants both on and off site at a minimum weekly, before predicted rain events, during prolonged rain events when safe and within 24 hours of a rain event.
- Routinely maintain and clean all standard (Minimum) and site specific (Required) BMPs weekly or more frequently as necessary per industry acceptable standards throughout the course of the project.
- Repair and / or replace any and all standard (Minimum) and site specific (Required) BMPs as necessary per industry acceptable standards.

- Implement Necessary BMPs when it is determined that the standard (Minimum) and site specific (Required) BMPs are not adequately protecting local water quality to the Maximum Extent Practical. Necessary BMPs shall be at the discretion of the City and/or design professional.

- Disturbed soil areas that are not actively and routinely being completely worked shall be stabilized within 14 days of inactivity. This requirement is at the discretion of any agency representative.

- Stockpiles of sand, soil, compost, soil amendments and etcetera shall be covered during all wind events or stabilized prior to wind events.

- Stockpiles of sand, soil, compost, soil amendments and etcetera that are not actively and routinely being completely worked shall be stabilized and/or covered within 14 days of inactivity. This requirement is at the discretion of any agency representative. Note – Small stockpiles of soil, sand, compost, soil amendments and etcetera shall be covered when not being actively worked or at a minimum at the end of each work day. Small stockpiles can be classified as those that are 40 cubic yards or less in size.

- The installation, maintenance, cleaning, repair and/or replacement of any of these devices (Minimum, Required, Advanced and Necessary BMPs) shall not create a public hazard and/or undue risk to the general public.

- Construct and/or install any temporary devices such as fiber rolls (aka straw wattles); silt fences; gravel bags; erosion control netting, fabric, blankets, or mats; silt or sediment basins; dikes or berms; swales, linings; ponds; diversion structures, pipes, and related facilities.

- Regulatory compliance during construction activities shall include the implementation of various Minimum, Necessary and Advanced Best Management Practices.

Minimum BMPs include, but are not limited to: effective scheduling, preservation of existing vegetation, wind and dust control, erosion and sediment control, storm drain inlet protection, material delivery and storage practices, stockpile management, spill prevention and control, solid waste and hazardous waste management, concrete / paint, plaster waste management procedures, good housekeeping practices, water conservation practices, vehicle and equipment cleaning and maintenance practices and etcetera.

Necessary BMPs include those BMPs determined to be required during the course of the project to ensure the protection of local water quality to the maximum extent practical.

Advanced BMPs include post construction devices (i.e. structural and non-structural), active treatment systems, passive treatment systems, dewatering practices and etcetera. All post construction BMPs must be installed prior to acceptance per Section 6-8.2.

For specific details on acceptable construction site BMPs please refer to the CASQA construction site manual and Project specific documents.

The Agency has the following policies restricting BMPs:

- Hay bales for use as sediment control device are not allowed

- Sand bags for use as a storm drain inlet protection device are not allowed
- Sand bags filled with gravel for use as a storm drain inlet protection device are not allowed
- Gravel bags filled with sand for use as a storm drain inlet protection device are not allowed
- Straw wattles / fiber rolls for use as a storm drain inlet protection device on paved surfaces are not allowed
- Gravel bags for use within a major public thoroughfare as a storm drain inlet protection device is not recommended. Equivalent protection devices that are designed to remain flush with the curb drain inlet are available and preferred in high speed and/or high traffic prone areas.

Prior to project completion and acceptance the Contractor shall:

- Contractor shall remove of all temporary Best Management Practices to the satisfaction of the Engineer.
- Removal of all interim post construction Best Management Practices to the satisfaction of the Engineer within one year of completion of the project or sooner based upon site stabilization (i.e. vegetation establishment).

### *7-8.6.3 STORM WATER POLLUTION PREVENTION PLAN (SWPPP)*

For sites 1 acre in size or greater or for sites that were originally part of a common plan of development that required the development and implementation of a SWPPP in accordance with the SWRCB's Construction General Permit, the Contractor shall develop and Implement a Stormwater Water Pollution Prevention Plan (SWPPP) and secure coverage with the SWRCB (i.e. WDID#).

Unless otherwise specified in the Project Special Provisions, the Contractor shall be responsible for preparing and submitting the SWPPP, per Section 2-5.3, for approval by the City. A hard copy and digital copy of the SWPPP shall be provided to the City. In general the SWPPP shall meet the minimum standards specified in the SWRCB Construction General Permit, address specific requirements detailed in the City's Stormwater (MS4) Permit, the City's Jurisdictional Runoff Management Plan (JURMP) and the City's Water Quality Improvement Plan (WQIP). These documents can be accessed at the San Diego Regional Project Clean Water website at: www.projectcleanwater.org/

The Notice of Intent will be filed by the Agency. No work will be allowed to proceed until the Notice of Intent is filed. The Contractor must ensure that a valid WDID # and SWPPP remain in effect for the entire duration of the project.

The SWPPP and all storm water documentation will be maintained on site at all times.

The Contractor shall be solely responsible for finalizing, implementing, and maintaining all requirements in the provided SWPPP including but not limited to all reporting, testing, Rain Event Action Plan preparation/implementation, and SWPPP plan modifications by Construction General Permit Qualified SWPPP Practitioner/Developers QSP/QSDs in conformance with all applicable stormwater laws and regulations.

The Contractor shall ensure one copy of all storm water documents are maintained on site and made available upon demand by the Engineer, other City Staff, or any other agency representative or entity pertaining to the enforcement of storm water regulations.

### *7-8.6.4 DEWATERING*

Dewatering shall be performed by the Contractor as required in the Plans or Specifications, and as necessary for construction of the Work. Dewatering shall be performed in conformance with all applicable local, state and Federal laws and permits issued by jurisdictional regulatory agencies. Permits necessary for treatment and disposal of accumulated water shall be obtained by the Contractor unless otherwise specified in the Project Special Provisions. Accumulated water shall be treated prior to disposal if so specified in the Project Special Provisions or is a condition of permit. The Contactor shall submit a Working Drawing and related supporting information per Section 2-5.3 detailing its proposed plan and methodology of dewatering and treatment and disposal of the accumulated water.

The plan shall identify the location, type and size of dewatering devices and related equipment, the size and type of materials composing the collection system, the size and type of equipment to be used to retain and, if required, treat accumulated water, and the proposed disposal locations. If the proposed disposal location is a sanitary sewer, the Contractor shall submit to the Engineer written evidence of permission from the owner that the disposal is allowed and any restrictions imposed on the disposal. If the proposed disposal location is a storm drain system or natural drainage conveyance, the Contractor shall obtain written authorization from the property or property owner. The Contractor will be responsible for any jurisdictional regulatory agency permits required or provide written evidence that no such permit is required.

The Contractor shall limit the area to be excavated at any one time to that area which can be properly dewatered by the equipment in use. The equipment in use shall be both capable of removing any water that accumulates in the excavation and maintaining the excavation in a dry condition while construction is in progress. The surface of the ground adjacent to the trench shall be sloped away from the excavation or temporary dikes or pipe culverts shall be provided to prevent surface water from entering the excavation.

Disposal of the water from the dewatering system shall be done in such a way as not to damage, contaminate, or overload the existing drainage facilities in the area. The Contractor shall protect from injury any portion of the work completed or in progress such as street surfaces, lawns, or private property. No water shall be directed across a public street outside of the Work limits.

All water encountered during trench excavation shall be properly disposed of by the Contractor in accordance with all applicable statutory requirements, and in such a manner as to not damage public or private property, create a nuisance, or health menace. The Contractor shall furnish, install, and operate pumps, pipes, appliances, and equipment of sufficient capacity to keep all excavations free from water until the excavation is backfilled, unless otherwise authorized by the Engineer. The Contractor shall provide all means or facilities necessary to conduct water to the pumps.

Discharge of pumped groundwater shall be in conformance with the requirements of the Regional Water Quality Control Board, the County of San Diego Department of Environmental Health, the City of San Marcos, and other agencies having jurisdiction. The Contractor shall obtain all required permits before pumped water from naturally occurring groundwater or from rainfall is discharged to any storm drain or sewer. A means shall be

provided for desilting the water before discharging it where required by the Engineer or by the terms of the discharge permits.

### *7-8.6.5 QUALIFIED SWPPP DEVELOPER & QUALIFIED SWPPP PRACTITIONER*

The Contractor shall, at its sole cost and expense, provide a Qualified Storm Water Practitioner (QSP) and a Qualified Storm Water Developer (QSD), including, but not limited to, all necessary tools, equipment, testing devices, materials, facilities, and resources to perform all testing, reporting, sampling, laboratory analysis, storm water pollution prevention plan creation/modification necessary to comply with all applicable laws, standards, and requirements relating to storm water compliance to the satisfaction of the Engineer.

The QSD and QSP shall not be a direct employee of the Contractor, construction sub-contractor, and/or material supplier, but shall be an independent consultant firm solely hired for QSD/QSP and storm water compliance responsibilities on this project. If the QSD/QSP is an employee of an Engineering firm or similar entity that offers multiple non-construction related services (ex: survey) a waiver or modification to the requirements in this paragraph may be authorized with a formal written request from the Contractor and formal written approval by the Engineer prior to construction activities commencing. Non-approval of this waiver shall not be cause for delay or extension of working days.

A submittal for the QSD/QSP shall be required within 15 days of the award of the construction contract and shall at a minimum include the qualifications of the specific individual(s) performing these services and proof of their QSD/QSP certifications to the satisfaction of the Engineer. The approval of this submittal shall be required prior to start of any construction related activities. Disapproval or resubmittal of the QSD/QSP qualifications shall not be cause for delay or extension of working days.

### *7-8.6.6 WATER POLLUTION CONTROL PLAN (WPCP)*

Project sites under 1 acre in size that do not need a SWPPP per Section 7.8.3 shall be required to have a valid Water Pollution Control Plan (WPCP) on file with the Agency prior to any work proceeding on the site.

Unless otherwise specified in the Project Special Provisions, the Contractor shall be responsible for preparing and submitting the WPCP, per Section 2-5.3, for approval to the Agency.

The Contractor shall adhere to the WPCP for the duration of the project. Should any change of situation occur to any portion of the project that would affect the WPCP, the Contractor shall notify the City immediately. The Contractor shall submit any supplemental information required to demonstrate compliance with the WPCP as requested by the Engineer.

### *7-8.6.7 ACCEPTANCE*

The project will not be accepted until the Contractor has demonstrated the installation and proper functioning of all source control, Low Impact Development (LID), and/or structural treatment control BMPs, including any required hydromodification controls as indicated in the Contract Documents.

### *7-8.6.8 FINES*

The Contractor shall reimburse the City for any fines levied against it from governing agencies arising from regulatory non-compliance which shall include: (1) the actual fine amount, together with any penalties thereon,

(2) associated legal and/or staff cost (i.e. administrative overhead), and (3) related required program enhancement cost.

### *7-8.6.9 PAYMENT*

Payment for complying with the requirements of this section shall be considered as included in the lump sum bid price for "Erosion Control." If no bid item is included, then full compensation for complying with the requirements of this section shall be considered included in the contract and no additional compensation shall be allowed thereof.

Payment for dewatering operations shall be considered as included in the individual items of work requiring dewatering.

*ADD THE FOLLOWING SUBSECTION:*

### *7-8.7 VERMIN CONTROL*

At the time of acceptance, structures entirely constructed under the Contact shall be free of rodents, insects, vermin and pests. Necessary extermination work shall be arranged and paid for by the Contractor as part of the Work and shall be performed by a licensed exterminator in accordance with requirements of governing authorities. The Contractor shall be liable for injury to persons or property related to rodents, insects, vermin or pests and shall be responsible for the elimination of offensive odors resulting from extermination odors.

*ADD THE FOLLOWING SUBSECTION:*

### *7-8.8 DRAINAGE CONTROL*

The Contractor shall maintain drainage within and through the work areas. Earth dams will not be permitted in paved areas. Temporary dams of sandbags, asphaltic concrete, or other acceptable material will be permitted when necessary. Such dams shall be removed from the site as soon as their use is no longer necessary.

*ADD THE FOLLOWING SUBSECTION:*

### *7-8.9 GRAFFITI CONTROL*

The Contractor shall maintain all Site improvements, including any temporary facilities, equipment or other materials in a graffiti free condition throughout the construction period, until acceptance of the project by the City. Graffiti encountered on the Site shall be removed by the Contractor within 24 hours.

The payment for graffiti removal shall be including in other items of Work.

### *7-8.10 TEMPORARY SITE FENCING*

Temporary fencing may be proposed by the Contractor to secure the worksite from the public. Unless approved by the Engineer, no temporary fencing shall prohibit the passage of vehicles, bicyclists, or pedestrians. No payment shall made for temporary site fencing proposed by the Contractor.

Required site fencing shall be as indicated within the Project Special Provisions.

Whenever temporary fencing is to be placed a temporary fencing plan must be submitted prior to placement of fencing in conformance with Section 2.5.3.

## 7-9 PROTECTION AND RESTROATION OF EXISTING IMPROVEMENTS

*DELETE THRID PARAGRAPH AND REPLACE WITH:*

Street lighting and traffic signal systems that are damaged, temporarily removed or relocated shall be done in conformance with Part 7.

*ADD THE FOLLOWING:*

Except as may otherwise be provided in specific instances, nothing in the Contract shall be construed as vesting in the Contractor any property in any material, article, or structure existing at the time of the award of Contract within the area in which the Work is to be done or in any material, article, or structure subsequently furnished for the Work by the Agency, or in any material, article, structure, or Work furnished or performed by the Contractor after having been accounted for on an approved estimate supporting the Contractor's demand for payment as provided in Section 9-3 of the Standard Specifications, Payment. In the latter event any such material, article, structure, or Work shall become the property of the Agency after being so accounted for.

The Contractor shall maintain all existing official signs not specified for removal, including but not limited to, directional, warning, advisory, regulatory, street markers, and mailboxes in an erect and functional state at all times during the Work in either a temporary or permanent location as designated by the Engineer. Any of these facilities which are damaged or lost shall be replaced by the Contractor at no cost to the Agency.

All costs involved in protection and restoration of existing improvements shall be included in appropriate items of the bid and no additional compensation shall be allowed therefor.

## 7-10 SAFETY

### *7-10.3 HAUL ROUTES*

*DELETE SECTION AND REPLACE WITH*

Haul routes will be determined by the Contractor and submitted to the Engineer for approval. Haul routes will be submitted a minimum of 10 Working Days prior to use. Contractor will comply with any City weight limit restrictions on local roadways. Prior to use and approval by the Engineer, a visual inspection must be performed by the Contactor with the City's representative of the route. The roadway or access will be documented during the visual inspection for existing damage and general condition. Damage to roadways or access due to hauling activities will not be allowed. Any damage created by hauling activities will be repaired by the Contractor at its expense.

### *7-10.4.1 GENERAL*

*ADD THE FOLLOWING:*

The Contractor shall erect and properly maintain at all times, as required by the conditions and progress of the Work, all necessary safeguards for the protection of workers and public, and shall use danger signs warning

against hazards created by such features of construction as protruding nails, hoists, well holes, and falling materials.

*ADD THE FOLLOWING SUBSECTION*

### *7-10.4.1.4 PLAYGROUND SAFETY*

The Contractor shall provide a secured fence around all playground(s) to prevent use or access. The fencing shall remain in place until the independent Playground Safety Audit has been performed by the Contractor and the Engineer.

The Contractor shall provide certification by a National Playground Safety Institute (NPSI) certified playground safety inspector that the installed equipment is in compliance with all applicable codes.

Payment for fencing around playgrounds and the playground safety audit shall be included in the applicable bid items for the construction of the playground(s).

*ADD THE FOLLOWING SUBSECTION*

### *7-10.4.1.5 OPEN EXCAVATIONS*

All trenches and excavations shall be backfilled or covered with steel plates at the end of each work day to restore roadways and pedestrian facilities for usage unless prior written approval has been issued by the City. Open trenches and excavations are not permitted outside of working hours unless prior written approval is received from the City.

Open excavations outside of roadways or pedestrian facilities which are permitted to be open outside of working hours must be securely fenced in accordance to Section 7-10.5.2.

Open excavations directly adjacent to the active traveled way must have 5’ of clear space from the edge of the traveled way or must utilize K-rail. Such clearances will clearly be shown on any traffic control plan.

### *7-10.4.2 SAFETY ORDERS*

[RESERVED]

### *7-10.4.2.1 GENERAL*

*ADD THE FOLLOWING:*

The Contractor shall submit copies of required permits and notices to the Agency. The acceptance of a copy of a permit "to perform excavation or trench work", shall in no way be construed to impose tort liability on the Agency, its officers, employees, agents, successors or assigns by reason of any damage to person, including death or property resulting from or arising out of the use of such plan, and the Contractor shall be fully responsible for any such damage, and the Contractor shall indemnify and hold harmless the Agency, its officers, employees, agents, successors or assigns from any loss or liability resulting from the use of such plan.

The permit (together with a copy of approved plan for trench safety) shall be maintained by the Contractor at the Site at all times. It shall be the responsibility of the Contractor to provide at least one individual at the site qualified as a competent person, as defined by Cal OSHA standards, during all trenching, shoring, excavation

and subterranean operations. Such competent person shall have responsibility for the evaluation of Site conditions, onsite soil qualities, installations and maintenance of all shoring systems, and the selection and use of all equipment, and shall have the authority to halt work should a dangerous or hazardous condition be detected.

### *7-10.4.4 HAZARDOUS SUBSTANCES*

*ADD THE FOLLOWING:*

Except as expressly set forth in this Section, the Contractor shall not cause or permit any Hazardous Substances to be used, stored, transported, generated or disposed of in or about the Project Site by the Contractor, Subcontractors, or their respective employees, agents or sub-Subcontractors. The Agency acknowledges that the Contractor may need to use, store, generate or transport certain Hazardous Materials on the Project Site in the course of construction and the Agency consents to such use, storage, generation or transportation provided that the Contractor strictly complies with the requirements of this Section. In no event shall any Hazardous Material be incorporated into any of the Work.

The Contractor agrees to deliver to the Agency prior to the issuance of a Notice to Proceed a list ("Hazardous Materials List") identifying each type of Hazardous Material, the nature and extent of use, storage, generation and transportation, and any and all governmental approvals or permits required. Prior to commencing Work, the Contractor shall provide a copy of the Safety Data Sheets in the form provided by the Agency for any material proposed to be used that is listed on the Federal/OSHA Director's List of Hazardous Materials. The Agency shall have the right to withhold consent to the use, store, transport, generate or disposal of any Hazardous Material on the Project Site. The Contractor shall deliver to the Agency an updated Hazardous Materials List (i) before any Hazardous Material not described in the latest Hazardous Material List is brought onto the Project Site; (ii) on or before the date the Contractor obtains any additional permits or approvals relating to the use, storage, transportation, generation or disposal of any Hazardous Materials; or (iii) on or before the date the Contractor increase the use, storage, generation or transportation of any Hazardous Material. The Contractor shall maintain and deliver to the Agency copies of any and all permits for all of its operations, including, without limitation, those relating to the use, storage, generation, transportation or disposal of Hazardous Materials. The Contractor shall maintain and, upon the Agency's request, deliver copies of any and all manifests and other records relating to the transportation and/or disposal of any Hazardous Material.

Use, storage, transportation, generation and disposal of any and all Hazardous Materials by the Contractor, any Subcontractor or their respective officers, employees, agents, successors or assigns shall at all times be in compliance with all Hazardous Materials Laws (including, without limitation, any notices or warnings required by Proposition 65 regulations) and with the highest standards and the best practices and procedures applicable to the use, storage, transportation and disposal of such Hazardous Materials. The Contractor shall not store any quantity of Hazardous Material on the Project Site that is greater than the quantity reasonably necessary for day-to-day operations. The Contractor shall promptly dispose of any Hazardous Materials waste. Any disposal of Hazardous Materials shall be at government approved disposal sites off of the Project Site. The Contractor shall be responsible for providing any and all notices required to be given with respect to any Hazardous Material and for disclosing the use, storage, transportation and generation to all of the Contractor's officers, employees, agents, Subcontractors, licensees, invitees, successors and assigns. The Contractor shall be strictly

liable for the use, storage, transportation, generation and disposal of all Hazardous Materials by its officers, employees, agents, Subcontractors, licensees, invitees, successors and assigns.

If the Contractor knows or has reasonable cause to believe that the release of any Hazardous Material has occurred or will occur on the Project Site, the Contractor shall immediately disclose the release to the Agency in writing, whether or not the Contractor considers the release to be material and whether or not such release is required to be reported to any governmental entity. If any release of Hazardous Materials is required to be disclosed to any governmental entity, the Contractor shall notify the Agency of such requirement and shall provide such written disclosure as may be required to any such governmental entity or entities pursuant to applicable law.

Without limiting the indemnity obligations of the Contractor herein, if the presence of any Hazardous Material on the Project Site results in any contamination of the Project Site, the Contractor shall promptly take all actions necessary at the Contractor's sole expense to return the Project Site to the condition existing prior to the introduction of any such Hazardous Material to the Project Site, provided that the Agency's approval of such action shall first be obtained. The Contractor shall be liable for any and all damages, costs or expenses of any kind or type whatsoever incurred by the Agency as the result of such contamination, including, but not limited to, any diminution in value of the Project Site, costs of investigation, expert witness costs, legal costs, remediation, and any and all claims by other tenants, agencies, or any other third parties for damages, costs or expenses related to the contamination.

The Contractor's obligations under this section shall survive the termination of the Contract.

### *7-10.5.3 STEEL PLATE COVERS*

*ADD THE FOLLOWING:*

Steel plates shall be skid resistant type and placed recessed flush to finish roadway surface. The pavement shall be milled/cold-planed to provide a depth, width and length necessary to place the steel plate cover.

Steel plate covers shall be manufactured in accordance to ASTM A-36, "Carbon Structural Steel" and designed for HS20-44 truck loading per the Caltrans Bridge Design Specifications Manual. Steel plate covers shall extend a minimum of twelve inches (12") beyond the edges of the trench for roadways with posted speed limit less than 45 MPH and shall extend a minimum of eighteen inches (18") beyond the edge of the trench for roadways with posted speed greater than 45 MPH. Contractor may be required to provide additional width as required by the Engineer due to the depth of trench and/or soil conditions.

Trenches shall be adequately shored to support the bridging and traffic loads.

See Table 7-10.5.3 (A) for the advisory minimal thickness of steel plate cover bridging required for trench work.

**TABLE 7-10.5.3 (A)**
**TRENCH WIDTH / MINIMUM PLATE THICKNESS**

| Trench Width (Max) | Minimum Steel Plate Thickness |
|---|---|
| 10" | One-half inch (1/2") |

| | |
|---|---|
| 1’-11” | Three-quarters inch (3/4”) |
| 2’-7” | Seven-eighths inch (7/8”) |
| 3’-5” | One inch (1”) |
| 5’-3” | One & three-quarters inch (1-3/4”) |
| Greater than 5’-3” | (Requires Engineered design) |

Contractor shall submit to the Engineer for approval, working drawings of the planned Steel Plate Covers to be utilized for the project. The plan shall show the dimensions of all steel plate covers, steel plate thickness, the location for their installation, any connections and the sized a spacing of all necessary members.

For temporary steel plate covers whose spans are greater than 5’-3” (63”), a structural design with structural calculations including a shoring system shall be prepared by a State of California licensed Civil or Structural Engineer. Additional structural calculations are not required for previously approved steel plate cover designs which utilized the same span, trench depth, soil conditions, and application previously approved for the same project. The steel plate cover design shall be submitted in accordance to Section 2-5.3 “Submittals”.

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.

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 separation or gaps.

When plates will be in place for more than eight hours, or the trench is perpendicular to traffic, the Contractor shall secure the same from moving through the use of pins or other approved method.

Unless specifically stated in the Special Provisions or approved by the Engineer:

- The installation of steel plate covers SHALL NOT exceed four (4) consecutive working days in any given week.
- The installation of steel plate covers SHALL NOT exceed one hundred lineal feet (100’) in length.

Steel plate covers shall be placed securely against one another. Steel plate covers shall be welded or set in pavement as to not create rattling or movement when truck loading is applied.

The Contractor is responsible for maintaining the steel plate covers, their skid resistance, their connection to any shoring system, the temporary asphalt concrete transition ramps and ensuring the steel plate covers meet minimum specifications. All steel plate covers shall be without deformation. The trueness of a steel plate cover shall be determined by the use of a straight edge. Any steel plate covers found to be permanently deformed shall be rejected and removed from the right-of-way.

The Contractor shall immediately mobilize necessary personnel, equipment, and materials necessary after being notified by the Engineer, any emergency service agency, or the member of the public of a repair need. This includes, but is not limited to, plate movement, noise plate anchors, temporary cold mix asphalt, and the transition of the steel plate cover and the existing roadway, parking area, and sidewalk. Failure to respond to the emergency request within two (2) hours of initial notification to the Contractor by the means specified in section 7-6, above, shall be grounds for the Agency to perform necessary repairs, with all actual costs necessary to perform the work to be withheld from the Contractor's future payment at the sole discretion of the Engineer.

Lack of Contractor conformance to maintain steel plate covers shall be automatic grounds for suspension of work.

*ADD THE FOLLOWING SUBSECTION*

### *7-10.5.4 SHORING, FALSEWORK AND CONCRETE FORMS*

The Contractor and all Subcontractors shall comply with the requirement of §1717 of the Construction Safety Orders, State of California, Department of Industrial Relations, regarding the design inspection of concrete form, falsework and shoring before the placement of concrete. When required by §1717, the Contractor must employ a registered civil engineer for the design calculation and working drawings of the falsework or shoring system or the inspection of such systems prior to the placement of concrete. Payment shall be included in the unit price bid for the applicable items of work.

*ADD THE FOLLOWING SUBSECTION*

### *7-10.5.5 PAYMENT*

Payment for Security and Protective Devices shall be included in the unit price bid for all major items of work which require the placement of such devices.

## 7-12 ADVERTISING

*DELETE SECTION AND REPLACE WITH:*

No advertising will be allowed during construction.

## 7-13 LAWS TO BE OBSERVED

*ADD THE FOLLOWING:*

The Contract shall be governed by the laws of the State of California applicable to contracts to be performed wholly within the State of California.

Rules of law shall prevail over any provision contained in any of the Contract Documents which may be in conflict thereto or inconsistent therewith.

The Contractor shall conform to and abide by all local, State and Federal building, sanitary, health and safety laws, rules, and regulations, including all City ordinances and regulations. To the best knowledge and belief of the parties, the Contract Documents contain no provision that is contrary to Federal or State law or any ruling or any regulations of a Federal or State agency. Should, however, any provisions of the Contract Documents at any

time during its term be in conflict with any such law, ruling or regulation, and such provisions of the Contract Documents are thus held inoperative, the remaining provisions of the Contract Documents shall, nevertheless, remain in full force and effect.

Whenever the provisions of any chapter of the Contract Documents may conflict with any agreement or regulation of any kind in force among members of any trade association, union or council which regulates or distinguishes what work shall or shall not be included in the work of any particular trade, the Contractor shall make all necessary arrangements to reconcile any such conflict without recourse to the Agency.

*ADD THE FOLLOWING SUBSECTION:*

## 7-15 SUPERVISION AND CONSTRUCTION PROCEDURES

The Contractor shall supervise and direct the Work, using industry care, standard and practice. The Contractor shall be solely responsible for all construction means, methods, techniques, sequences and procedures relating to the Work, and shall coordinate all portions of the Work under the Contract, including the relations of the various trades to the progress of the Work, in accordance with the provisions of the Contract Documents.

The Contractor shall be responsible to the Agency for the acts and omissions of the Contractor's officers, employees, agents, successors and assigs and Subcontractors and their respective officers, employees, agents, successors and assigns, and those of any other persons performing any of the Work under a contract with or on behalf of the Contractor.

Nothing in the Contract Documents shall be interpreted to make the Contractor an agent of the Agency.

## 7-16 AS BUILT PLANS

### *7-16.1 GENERAL*

The Contractor shall continuously maintain a complete and accurate set of redlined as-built plans. Redlines shall be made available at the job site at all times.

Upon request by the Engineer, the Contractor shall supply a copy of the current redline set for review and inspection by the Engineer. Discrepancies in the redline set shall be addressed immediately following review by the Engineer.

Failure to maintain up to date redlines may result in delay of payment until redlines are updated to the satisfaction of the Engineer.

As-builts shall be based on accurate measurements and field notes prepared by the contractor and as approved by the Engineer, for the preparation of as-built plans. Upon completion of the Work the Contractor shall provide all field notes, measurements, and changes, redlined plans to the Engineer.

In preparing as-built plans, the Contractor shall show dimensions and elevations varying from the construction plans on all improvements. Changes to any of the following items shall be shown on the as-built plans as well as any other items or improvements, including but not limited to:

- Curbs, sidewalks or other fixed permanent improvements

- Changes in elevations per grading plan
- Street grade/alignment
- Storm drain
- Inlets
- Permanent BMP's
- Utilities (Discovered or installed)
- Play equipment
- ADA paths of access
- Sidewalk
- Curb/Gutter
- Channel grade/alignment
- Street light installations
- Water meters
- Sewer laterals
- Electrical meters
- Connections to existing water sources
- Routing of irrigation main, lateral lines and control wires
- Automatic/Remote control valves w/ station designation
- Quick couplers
- Sleeves
- Backflow prevention devices
- Gate valves
- Controllers

As-built plans for other entities participating in the Project shall be provided in format and substance in accordance with their respective individual requirements.

### *7-16.2 PAYMENT*

Payment for As-Built plans shall be included in the lump sum price paid for "As-Built Plans" and no additional payment will be made therefor. If no bid item is provided, then the cost is considered included in the cost of the other bid items and no additional compensation shall be provided.

*ADD THE FOLLOWING SUBSECTION:*

## 7-17 CONSTRUCTION MEETINGS

The Engineer will establish the time, frequency, and location for regular construction meetings to discuss work progress and other construction related topics. The Contractor's Representative, as specified in Section 7-6, shall attend all construction meetings.

No separate payment will be made for attendance of the Contractor, the Contractor's Representative, or Contractor's employee, Subcontractor, Subcontractor's employee, materials supplier, or materials supplier's employee at these meetings.

*ADD THE FOLLOWING SUBSECTION*

## 7-18 SALVAGE OF EXISTING FACILITES

Where plans or specifications indicate the salvage of existing facilities or equipment, the Contractor will be responsible for the protection, removal, transport, and safe storage of such facilities until delivered to the Agency. The Contractor shall ensure that facilities to be salvaged can be removed or protected for future re-installation. Facilities indicated solely for salvage will be delivered to the City of San Marcos Public Works yard at 201 Mata Way, San Marcos, CA 92069.

Within 10 days after the Notice to Proceed and prior to salvaging any facility, the Contractor will investigate the facilities to be salvaged and verify that the facility is in reasonable condition to be salvaged. Should the Contractor find that the facility cannot be salvaged; written notice of such will be provided to the Engineer.

Unless otherwise specified, payment for the salvage of equipment or facilities will be paid for by Contract Unit Price for work indicated as such or per lump sum bid item.

*ADD THE FOLLOWING SUBSECTION*

## 7-19 PROJECT SIGNAGE

Project signage will be posted if required in the Specifications.

Project signage shall be printed on engineering grade film affixed to aluminum panel. Signage shall be placed on Type 3 barricade for roadway projects or on two four by four inch (4"x4") posts for park or site development projects. Signage on type 3 barricades shall be weighed down or anchored so as to not move, fall or migrate from its original position.

Signage shall be posted 10 days prior to the start of construction and remain for the duration of the project. The Contractor shall use the Agency provided design or design as specified in the Project Special Provisions.

All locations of signage shall be approved by the Engineer.

### *7-19.1 PAYMENT*

Payment for Project Signage shall be deemed included within the lump sum bid price for "Mobilization" and shall include all labor, equipment, materials and tools necessary to complete the work.

*ADD THE FOLLOWING SUBSECTION*

## 7-20 OPERATIONS AND MAINTENANCE MANUAL

When required by the Project Special Provisions, the Contractor shall prepare an Operations and Maintenance Manual.

The Operations and Maintenance Manual shall be provided in digital format and at a minimum include:

- Cover with Name of Project, Address, CIP #, Date of Manual Preparation
- Table of Contents
- Change Log

- Maintenance Schedule Table
    - Provide all Major Components of Project
    - Provide Manufacturer recommended maintenance schedule
    - Manufacturer estimated useful life
- Copies of all approved material submittals
- Copies of all manufacturer warranties
- Copies of all operation/user manuals
- Photos of the completed project showing all major components identified in the manual

The Contractor shall verify the required contents of the operations and maintenance manual with the Engineer prior to production of the manual.

### *7-20.1 PAYMENT*

Payment for Operations and Maintenance Manual shall be demed included within the lump sum Contract Unit Price for "O&M Manual" and shall include the complete preparation of the Operations and Maintenance Manual. Should a separate bid item not be provided, payment shall be deemed included within all other items of work, and no separate compensation will be paid for the same.

*ADD THE FOLLOWING SUBSECTION*

## 7-21 PUBLIC NOTIFICATION

The Contractor shall be responsible for notifying the public in accordance with Table 7-21(A) and Table 7-21(B) based on the type of work being performed. Timing indicated in Table 7-20(B) will be the time at which the notification must be delivered or in place. Public notification being sent by mail must be mailed 3 business days prior to the timing deadline indicated. The Contractor will be provided with templates for notification by the Agency. Templates shall be appropriately modified to reflect the work that is being done. The Contractor shall submit completed templates 10 days prior to performing public notification for review and approval by the Engineer.

Contractor will be responsible for all printing and delivery of public notifications. If requested by the Engineer, the Contractor shall supply a list of properties and owners notified.

**TABLE 7-21(A) – PUBLIC NOTICE REQUIREMENTS**

| TYPE OF WORK | REQUIRED NOTICE TYPES |
|---|---|
| Slurry Seal greater than 25,000 SqFt | A-Frame "No Parking" Signage<br><br>Door Hangers |

| | |
|---|---|
| | Advance Notice Post Cards |
| Slurry Seal up to 25,000 SqFt | A-Frame “No Parking” Signage |
| Roadway or Storm Drain Improvements | A-Frame “No Parking” Signage<br>Door Hangers<br>Advance Notice Post Cards |
| Park Project | Advance Notice Post Cards<br>Project Signage (See Project Special Provisions) |
| Linear Projects performed as part of ROW Permit | A-Frame “No Parking” Signage<br>Door Hangers<br>Advance Notice Post Cards<br>Project Signage (If required by Engineer) |
| Transit Stop Impacts | Contact Facility Owner for Requirements |

**TABLE 7-21(B) PUBLIC NOTICE TYPES**

| COMMUNICATION METHOD | CONTRACTOR RESPONSIBILITY | TIMING |
|---|---|---|
| A-Frame “No Parking” Signage | Contractor is responsible for providing and installing a-frame signage along the public ROW where parking is allowed, along the project limits. A-frame signage will indicate the date and times when parking will be prohibited due to work. | 1 Week prior to work |
| Door Hangers | Contractor is responsible for providing and delivering door hangers to all residences and businesses along the roadways that will be impacted along the project limits. Door hangers will use the Agency provided template with pertinent information filled in. | 72 Hours prior to work |
| Advance Notice Post Cards | Contractor is responsible for providing and delivering advance notice post cards to all residents, businesses and property owners along the project limit that will be impacted by work. Post cards for parks will also be sent to all residents within a 300 foot radius from the park site. Advance notice post cards will use the Agency provided template with | 2 Weeks prior to work |

| | | |
|---|---|---|
| | pertinent information filled in. | |
| Project Signage | Contractor is responsible for posting project signage in conformance with Section 7-18. Project signage shall be 4'x4' in size with lettering 4" or greater in size. Signage shall be white with black lettering. Signs shall contain the name of project, facility owner, and contact name and phone number. | See Section 7-18 |

### *7-21.1 PAYMENT*

Payment for public notification shall be deemed included within the lump sum Contract Unit Price for "Public Notification and Convenience," which shall without limitation be deemed to include payment for the production, mailing, delivery, coordination and any other costs associated with notifying the public.

*ADD THE FOLLOWING SUBSECTION*

## 7-22 GROUNDBREAKING/RIBBON CUTTING

When required by the Project Special Provisions, the Contractor shall be responsible for coordinating with the Agency to participate in a groundbreaking and/or ribbon cutting.

The Contractor shall perform minimal grading and site preparation at a suitable location for groundbreaking. Where needed, an area shall be prepared to allow vehicles to park. The Engineer may request that heavy equipment be staged for groundbreaking. Staged equipment will not have banners, logos, or other promotional material affixed to the equipment.

The Contractor shall provide one day for ground breaking and one day for ribbon cutting in the schedule. Work not related to the groundbreaking or ribbon cutting will not be allowed. Groundbreaking and ribbon cutting days will not count towards the Contractors contract Working Days.

### *7-22.1 PAYMENT*

Payment for groundbreaking/Ribbon cutting shall be deemed included within the lump sum Contract Unit Price for "Groundbreaking & Ribbon Cutting". Should no bid item be provided payment for groundbreaking and ribbon cutting events shall be deemed included in all other bid items, and no separate compensation will be paid for the same.

## 7-23 CONSTRUCTION MANAGEMENT SOFTWARE

Unless otherwise specified in the Project Special Provisions, or exempted by the Engineer, the Agency shall provide access to a cloud-based construction management software for the Contractors use at no cost. The Contractor shall use this software for the duration of the project unless otherwise specified in the Project Special Provisions.

The Agency shall provide access to the software within 10 days of execution of the Contract.

### *7-23.1 DRAWING & SPECIFICAITON MANAGEMENT*

The Agency will upload the contract documents and drawings to the construction management software. The drawings and specifications contained within the construction management software will be considered the official working documents. If conformed plans are uploaded the Contractor shall have 10 working days to notify the Agency of any potential discrepancy between the approved set of plans and uploaded conformed plans.

### *7-23.2 DOCUMENT MANAGEMENT*

The Contractor shall use the provided construction management software to manage and submit documents for review and approval by the City. The Contractor shall at a minimum use the software to manage:

- Request for Information (RFI)
- Submittals
- Contractors Daily Reports
- Shop drawing submittals
- Scheduling

### *7-23.3 INSPECTION*

The Agency will document most inspections through the construction management software. The Contractor is responsible for re-scheduling any failed inspections filed in the construction management software.

### *7-23.4 PUNCH LIST AND CONTRACT CLOSEOUT*

The Agency will document the punch list and contract closeout utilizing the construction management software.

# SECTION 8 - FACILITIES FOR AGENCY PERSONNEL

## 8-1 GENERAL

*ADD THE FOLLOWING*

Facilities for agency personnel shall be provided if required by the Project Special Provisions.

The facilities shall be 100% complete prior to start of Work. Monthly progress payments to the Contractor will not be made until such time as the field office is provided, fully furnished, and supplied.

Agency facilities shall be burglar resistant including a remotely monitored alarm system or other security monitoring as needed to keep the facilities free from vandalism or theft.

## 8-2 FIELD OFFICE FACILITIES

### *8-2.1 CLASS "A" FIELD OFFICE*

*DELETE AND REPLACE WITH:*

Class "A" Field Office facilities shall have a minimum floor space of 400 square feet. Field offices must provide at least 1 door and have window area of not less than 22 square feet. All doors and windows shall have screens.

The field office shall be separate and independent from the Contractor's facilities and shall be for the use of Agency personnel. The field office shall be a separate structure from any other office or on-site facility. The Contractor shall supply and maintain the field office in every way throughout the entire duration of the contract unless otherwise directed by the Engineer. The field office and all of its furnishings and supplies shall be new and subject to Agency approval.

The field office shall be located at a site satisfactory to the Engineer and within or immediately adjacent to the limits of the Work. Vehicular access and four parking spaces shall be provided immediately adjacent to the field office for the exclusive use of the Agency. The access and parking spaces shall have an all-weather surface approved by the Engineer.

The field office shall be located within a 6' chain link fenced area which may be part of the Contractor's yard when approved by the Agency.

The field office shall have a 24" by 36" sign affixed near the entry door. The sign shall have a white background with black lettering and the text shall include "City of San Marcos".

The Contractor shall have the field office cleaned weekly by a third party cleaning service.

The field office shall be ready to use including the assembly of any items or furnishings requiring assembly.

The Contractor shall provide high speed internet connectivity and wireless internet access for the CM and Agency Staff to use when in the field office.

Electric power shall be provided to offices and provide a minimum of 4 duplex outlet receptacles. The office shall be illuminated at tables and desks. An outdoor security light will be installed with a 300W bulb.

Offices shall have heating and air conditioning of sufficient capacity to heat and cool the entire volume of air of the office. Drinking water shall be provided within the office area and integral sanitary facilities directly adjoining the office. If required by the Engineer, phone service will be provided to the field office at no additional charge to the Agency.

The "Class A" Field Office shall be provided with the following items:

- One (1) plan table
- two (2) standard five foot (5') double pedestal desk
- four (4) desk chairs
- one (1) drafting stool
- one (1) electrostatic copier
- one (1) FAX machine
- computer printers for each desk
- speaker phones for each desk (if telephone line requested)
- one (1) 8 cubic feet refrigerator
- one (1) microwave oven
- one (1) plan rack
- one (1) four drawer legal size file cabinet
- three (3) 4'x8' folding tables
- twelve (12) padded folding chairs
- one (1) 4'x8' white board, two 3'x4' bulletin boards
- one (1) water cooler with both hot and chilled water.

## 8-6 BASIS OF PAYMENT

*ADD THE FOLLOWING:*

Payment for Field Office Facilities will be made at the lump sum price bid for "Field Facilities" and shall include full compensation for installing and removing the field office, relocating it as may be necessary to facilitate the Work, obtaining all permits, property rental, utilities including, but not limited to, internet service, electrical, heating and cooling, security monitoring, telephone, potable water and sanitary facilities, office supplies, cleaning services, and maintenance.

# SECTION 9 MEASUREMENT AND PAYMENT

## 9-1 MEASUREMENT OF QUANTITIES FOR UNIT PRICE WORK

### *9-1.1 GENERAL*

*ADD THE FOLLOWING:*

Before proceeding with any Work, the Contractor shall carefully check and verify all dimensions and quantities and shall immediately inform the Engineer of any discrepancy between the Contract Documents and actual conditions. No work shall be done in any area of such discrepancy until approval for same has been given in writing by the Engineer.

Bid items designated with an "F" shall be considered final pay quantities and no additional payment will be made for contract work regardless of actual quantities of contract work performed. Unit prices established by final pay quantities may, at the option of the Agency, be used for payment of extra work.

It is the Contractor's sole responsibility to perform its own, independent, quantity take offs for final pay quantity bid items.

*ADD THE FOLLOWING SUBSECTION*

### *9-2.1 SCHEDULE OF VALUES*

The Contractor shall supply a Schedule of Values to the Agency for all lump sum bid items with exception of Mobilization and Field Order bid items. The Schedule of Values will subdivide the Work into its respective parts and include values for all items comprising the work. The Schedule of Values will be used as a basis for progress payments.

The Schedule of Values shall be submitted to the Agency at the pre-construction meeting for review and approval by the Engineer. Failure to submit the Schedule of Values at the time of the pre-construction meeting will result in no payment being issued on affected Lump-Sum items until such time as all work is completed for such bid items or the Schedule of Values is provided.

Adjustments to the Schedule of Values due to a discrepancy discovered in the original approved Schedule of Values must be approved and accepted by the Engineer.

## 9-3 PAYMENT

### *9-3.1 GENERAL*

*DELETE THE EIGHTH PARAGRAPH AND ADD THE FOLLOWING:*

Guarantee periods shall not be affected by any payment, but shall commence on the Date of Completion specified in the "Notice of Completion"

### *9-3.2 PARTIAL AND FINAL PAYMENT*

*DELETE THE FIRST SENTENCE OF THE THIRD PARAGRAPH AND ADD THE FOLLOWING:*

The Agency shall retain five percent (5%) of each progress estimate as part security for the satisfactory performance of the Work in accordance with the Contract Documents by the Contractor, and the remainder, after deducting the amount of all previous payments and all sums to be kept or retained under the provisions of the Contract, shall be paid to the Contractor. No such payment shall be required to be made by the Agency when in the judgment of the Agency:

i. defective Work is not remedied;

ii. third party claims are filed or the Agency has reasonable evidence indicating probable filing of such claims;

iii. the Contractor fails to make payments properly to Subcontractors, or for labor, materials or equipment;

iv. the Agency has reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Price;

v. the Contractor has caused damage to the Agency or another contractor;

vi. the Agency has reasonable evidence that the Work will not be completed within the Contract Time; or

vii. the Agency has reasonable evidence of persistent failure of the Contractor to carry out the Work in accordance with the Contract Documents.

When the Engineer finds the Work acceptable under the Contract Documents and the Contract requirements fully performed, the Agency will file a Notice of Completion in the San Diego County Recorder's Office. The Agency, upon expiration of thirty-five (35) days following the date of filing of the Notice of Completion, will pay the entire sum so found to be due under the Contract after deducting therefrom all previous payments.

No payment made hereunder shall be construed to be an approval or acceptance of any defective Work or improper materials.

Neither the final payment nor the remaining retention shall become due until the Contractor submits to the Agency, (1) an affidavit that all payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the Agency or the Agency's property might in any way be responsible, have been paid or otherwise satisfied, (2) consent of the sureties issuing the Bond for Faithful Performance and Contractor's Payment Bond to final Payment, and (3) if required by the Agency, other data establishing payment or satisfaction of all such obligations, such as receipts, releases and waivers of liens arising out of the Contract, to the extent and in such form as may be designated by the Agency. If any Subcontractor refuses to furnish a release or waiver required by the Agency, the Contractor may furnish a bond satisfactory to the Agency to indemnify the Agency against any such lien. If any such lien remains unsatisfied after all payments are made, the Contractor shall refund to the Agency all monies that the latter may be compelled to pay in discharging such lien, including all costs and reasonable attorneys' fees.

Acceptance by the Contractor of final payment shall be and shall operate as a release to Agency, its officers, agents, employees, successors and assigns for any and all claims and all liability to the Contractor for all things done or furnished in connection with the Work and for every act and neglect of the Agency, its officers, employees, successors and assigns relating to or arising out of the Work. No payment, final or otherwise, shall

operate to release the Contractor or the Contractor's sureties from any obligations or liability under this Contract for the Contractor's Faithful Performance and Payment Bonds.

### *9-3.3 DELIVERED MATERIALS*

*DELETE THIS SECTION AND REPLACE WITH:*

The cost of materials and equipment delivered but not incorporated into the Work will not be included in the progress estimate unless otherwise specified in the Project Special Provisions.

### *9-3.4 MOBILIZATION*

*ADD THE FOLLOWING*

Mobilization shall consist of preparatory work and operations including, but not limited to, those necessary for the move-on and move-off operations of personnel, equipment, supplies, and incidentals to the Project Site; hook-ups and disconnects of utility services for the establishment of all offices, storage yards, buildings, and other facilities necessary to perform the Work; and for costs incurred for items which must be performed prior to beginning the Work such as acquiring required permits from other agencies.

When applicable, Mobilization shall be paid at the Contract lump sum price bid. The lump sum price for Mobilization shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in mobilization as specified herein. When the Contract does not include a contract pay item for mobilization as above specified, full compensation for any necessary mobilization required shall be deemed included within the prices paid for the various contract items of Work involved, and no additional compensation shall be made therefor.

Payments for Mobilization will be made after the Contractor achieves milestone amounts of the original Contract Amount, less mobilization, in accordance with the following schedule:

i. When five percent (5.0%) of the original contract amount is earned, fifty percent (50.0%) of the bid for Mobilization may be paid.

ii. When ten percent (10.0%) of the original contract amount is earned, seventy-five percent (75.0%) of the bid for Mobilization may be paid.

iii. When twenty percent (20.0%) of the contract is earned, ninety-five percent (95.0%) of the bid for Mobilization may be paid.

iv. When fifty percent (50.0%) of the contract amount is earned, one hundred percent (100.0%) of the bid for Mobilization may be paid.

If Contract bid items are adjusted as provided for in the Standard Specifications for Public Works Construction, any mobilization costs applicable to such items of work will be deemed to have been recovered by the Contractor by the payments made for Mobilization, and mobilization costs will be excluded from consideration for Extra Work in determining compensation under the Standard Specifications for Public Works Construction.

*ADD THE FOLLOWING SUBSECTION*

### *9-3.5 ALLOWANCES*

Allowances shall cover all costs, fees, and related expenses for the applicable Bid item. The Contractor will be credited for actual costs of labor, materials, and/or other costs, and shall be subject to markup indicated in Section 3-3.2.3.1. Contractor shall submit a scope of work and cost estimate for approval prior to commencing work on items. Every effort shall be made to stay within the allowance amount specified in the Contract Documents.

An allowance log, indicating each debit from each allowance, shall be maintained by the Contractor. The log shall be reconciled with expenditure documentation and provided to the Engineer for approval monthly with invoicing. Payment under Allowance Bid items shall be based on the actual expenditures and for pre-authorized items of Work in accordance with the contract documents.

If Work under an allowance item is not executed, or is only partially executed, or the allowance for any item is not expended or partially expended, then a deductive Change Order shall be issued for the amount that is not expended.

If Work under an allowance item results in a higher cost than the allowance bid item, the Engineer will issue a Change Order. A change order will not be issued for Work not captured in the approved scope of work.

# *PART 2- CONSTRUCTION MATERIALS*

## SECTION 200 – ROCK MATERIAL

*ADD THE FOLLOWING SUBSECTION*

### *200-1.5.6 SAND FOR PLAY AREAS*

Sand will be imported, double washed, manufactured silica sand. Sand will be grade #20, #30 or "Pro Tour" bunker sand. Material will be free of deleterious organic material, clay, and debris. The mean effective size of material will be between 0.012 inch minimum and 0.025 inch maximum and have a uniformity coefficient between 1.00 and 2.5.

### *200-2.1 GENERAL*

*DELETE SECTION AND REPLACE*

Materials for use as untreated base or subbase will be classified in order of preference as follows:

1) Crushed Aggregate Base
2) Crushed Miscellaneous Base
3) Processed Miscellaneous Base
4) Class 2 Aggregate Base
5) Disintegrated Granite Base
6) Select Subbase

When base material without further qualification is specified, the Contractor shall supply Class 2 aggregate base. When a particular classification of material is specified, the Contractor may substitute any higher classification, following the order of preference listed above, of base material for that specified. All processing or blending of material to meet grading requirements will be performed at the plant or source. The material shall compact to a hard, firm, unyielding surface and shall remain stable when saturated with water.

*ADD THE FOLLOWING SUBSECTION*

### *200-2.9 CLASS 2 AGGREGATE BASE*

### *200-2.9.1 GENERAL*

Class 2 Aggregate Base will be clean and may consist of any combination of broken stone, crushed gravel, natural rough surfaced gravel, sand, processed reclaimed asphalt concrete, processed reclaimed Portland cement concrete, or processes reclaimed concrete treated base.

Class 2 aggregate base will be specified by maximum aggregate size as either 1-1/2-inch or ¾-inch. Where material is specified with no further qualification, the Contractor shall supply ¾-inch Class 2 Aggregate Base for use.

### *200-2.9-2 GRADING*

Class 2 Aggregate Base will conform to the grading requirements shown in Table 200.9.2.

**TABLE 200.9.2**

| Sieve Size | 1-1/2 inch Maximum | 3/4"-inch Maximum |
|---|---|---|
| 2” (50 mm) | 100 | -- |
| 1-1/2” (37.5 mm) | 87-100 | -- |
| 1” (25 mm) | -- | 100 |
| 3/4” (19 mm) | 45-90 | 87-100 |
| No. 4 (4.75 mm) | 20-50 | 30-65 |
| No. 30 (600 $\mu$m) | 6-29 | 5-35 |
| No 200 (75 $\mu$m) | 0-12 | 0-12 |

### *200-2.9.3 QUALITY REQUIREMENT*

Class 2 Aggregate Base will conform to the following quality requirements:

**TABLE 200.9.3**

| Test | Test Method | Requirements |
|---|---|---|
| R-Value (min) | California 301 | 78 Min |
| Sand Equivalent (min) | California 217 | 30 Min |
| Durability (min) | NA | 35 Min |

*ADD THE FOLLOWING SUBSECTION*

## 200-5 MISCELLANEOUS ROCK MATERIALS

### *200-5.1 MOUND AND CATCHERS BOX CLAY*

Clay material may be an appropriate clay such as illite, kaolinite or other suitable clay material. Clay content for mound and catcher’s box must have greater than 35% clay content. Clay may be in the form of granules, shreds, or blocks. Clay material shall not have particles larger than sand incorporated into the mix.

### *200-5.2 INFIELD MIX*

Infield mix rock product will be manufactured and intended for the use on baseball and softball infield areas. Materials will be free of all organic material. Infield mix will be composed of sand, silt and clay. Infield mix will

contain 70-80% sand and roughly equal proportions of silt and clay (ratio silt to clay = 1 ± 0.3). Infield mix will meet the USDA soil texture classification of sandy clay loam.

The material will be a “Red”, “Gold”, “ Reddish Gold”, “Grey”, “Brown”, or “Reddish Brown” color and will match the color of the warning track mix or existing infield to remain.

### *200-5.3 WARNING TRACK MIX*

Warning track mix will be manufactured and intended for the use on baseball and softball fields. Materials will be free of all organic materials. Warning track mix will be a mixture of decomposed granite and sand conforming to the gradation of Table 200-5.3 (A). The material will be a “Red”, “Gold”, “Reddish Gold”, “Grey”, “Brown”, or “Reddish Brown” color and will match the color of the infield mix.

**TABLE 200-5.3(A)**

**WARNING TRACK MIX GRADATION**

| Sieve Size | % Passing |
|---|---|
| 3/16” | 95-100% |
| No. 4 | 90-100% |
| No. 30 | 25-60% |
| No. 200 | 5-20% |

### *200-5.4 BIOFILRATION AND BIORETENTION BASINS*

Rock used for both the filter and storage course of a water quality basin shall meet the minimum requirements as outlined in the County of San Diego BMP Design Manual and appendices.

# SECTION 201- CONCRETE, MORTAR, AND RELATED MATERIALS

## 201-1 PORTLAND CEMENT CONCRETE

**TABLE 201-1.1.2**

## 201-3 EXPANSION JOINT FILLER AND JOINT SEALANTS

### *201-3.1 GENERAL*

*ADD THE FOLLOWING*

Unless otherwise specified, all joint sealer shall be Type 'A' Sealant and will be colored to match adjacent concrete.

Fillers and sealants used will be compatible with one another and be non-staining to the substrate on which they will be applied.

### *201-3.10 SUBMITTALS*

The Contractor will submit material product data and installation instructions from the manufacturer for materials used. Sealant and filler material and/or color samples will be provided when requested by the Engineer.

# SECTION 202 – MASONRY MATERIALS

*ADD THE FOLLOWING SUBSECTION*

## 202-4 PAVER SYSTEMS

### *202-4.1 GENERAL*

Pavers shall consist of interlocking paving units placed on stabilized substrate of bedding sand, aggregate base, stone, subbase aggregate, or PCC depending on application and as indicated on plans. Joints of pavers shall be filled with bedding sand material or permeable rock material as indicated on plans. When pavers have been specified with no further qualification, the contractor shall supply impervious paver for vehicular application.

### *202-4.2 MATERIALS*

### *202-4.2.1 PAVING UNITS*

Paving units shall comply with ASTM C 936. Paver color pigment material shall comply with ASTM C 979. For vehicular or emergency access applications, paving units will be a minimum of 3-1/8-inch thick. For pedestrian applications paving units will be a minimum of 2-3/8-inch thick.

### *202-4.1.2 JOINT FILLER AND BEDDING*

Joint filler and bedding sand will conform to ASTM C33 for fine aggregates.

Where a permeable system is specified the joint and bedding material shall be crushed stone aggregate and conform to ASTM D448 No. 8 gradation requirements, unless otherwise specified. Stone will be clean, washed, and free of deleterious materials.

### *202-4.1.3 BASE AGGREGATE*

Base aggregate for pavers shall conform to Section 200-2, unless otherwise specified.

Where permeable system is specified the base material shall be crushed stone aggregate and conform to ASTM D448 No. 57 gradation requirements, unless otherwise specified.

### *202-4.1.4 SUBBASE*

When specified, subbase for pavers will conform to Section 200-2.6. Select subbase may be substituted for any higher classification of material as defined in Section 200-2.1.

Where permeable system is specified subbase material shall be crushed stone aggregate and conform to ASTM D448 No. 2 gradation requirements.

### *202-4.1.5 NOT USED*

[RESERVED]

### *202-4.1.6 COLOR, PATTERN AND FINISH*

Color, pattern, and finish will be as specified in the Project Special Provisions or Plans.

# SECTION 203 – BITUMINOUS MATERIALS

## 203-5 SLURRY SEAL

### *203-5.1 GENERAL*

*ADD THE FOLLOWING*

When slurry seal is specified or indicated on the plans without further qualification, the Contractor shall supply Type 2 quick set emulsion (Type II-CQS-1h-EAS) with 2.5% latex added.

## 203-6 ASPHALT CONCRETE

### *203-6.3 JOB MIX FORMULA (JMF) AND MIX DESIGNS*

### *203-6.3.2 HVEEM MIX DESIGN METHOD*

*ADD THE FOLLOWING*

The Contractor may use the Hveem Mix Design or the Superpave Mix Design method as specified in Section 203-6.3.3.

The Hveem Mix Design Method **WILL NOT BE ACCEPTED** for roadways with design ESAL's greater than 3 million, as specified in Section 203-6.3.3, after July 1, 2021. The Hveem Mix Design will not be accepted for any roadway after July 1, 2022.

*ADD THE FOLLOWING SUBSECTION*

### *203-6.3.3 SUPERPAVE MIX DESIGN METHOD*

Unless otherwise specified in the Special Provisions the mix design will be prepared in accordance with AASHTO M323 and R35. Roadway 20 Year design ESAL's are provided in Table 203-6.3.3(A).

Base Binder Grade:

- 64-10 for Conventional Asphalt
- 64-16 for Rubberized Asphalt

**TABLE 203-6.3.3(A)**
**20 YEAR DESIGN ESAL'S**

| ESAL (Million) | Roadways |
|---|---|
| <0.300 | All Residential |
| 0.300 to <3 Million | Industrial |
| 3 to < 10 | Discovery Street<br>Barham Drive |
| 10 to <30 | Twin Oaks Valley Road<br>Mission Road<br>Rancho Santa Fe Road<br>San Marcos Boulevard |

| | |
|---|---|
| 30+ | None |

### *203-6.4 ASPHALT CONCRETE MIXTURES*

### *203-6.4.1 CLASS AND GRADE*

*ADD THE FOLLOWING*

Binder grade specified shall be considered the base binder for superpave job mix formulation.

When asphalt concrete is specified or indicated on the plans without further qualification, the Contractor shall supply C2-PG-64-10 except where maximum aggregate size will exceed 33% of the planned lift thickness.

Class and grade of asphalt for asphalt dike shall be D1-PG 70-10.

Class and grade of asphalt for Skin Patching shall be D2-PG 64-10.

### *203-6.4.4 COMPOSITION AND GRADING*

Asphalt concrete mixtures being designed using the Superpave method specified in Section 203-6.3.3 will considered the combined aggregate gradation as indicating the maximum nominal aggregate size using Table 203-6.4.4(B). Composition and grading of aggregates for asphalt mixtures will be determined based on consensus requirements and control points determined in AASHTO M323.

**TABLE 203-6.4.4(B)**

| Combined Aggregate Grade Class | Max Nominal Size |
|---|---|
| A | 1” |
| B | 3/4” |
| C1 | 1/2” |
| C2 | 1/2" |
| D1 | 3/8” |
| D2 | 3/8” |

*ADD THE FOLLOWING SUBSECTION*

## 203-16 MISCELLANEOUS PAVEMENT TREATMENT

[Reserved]

# SECTION 206 - MISCELLANEOUS METAL ITEMS

### *206-3.3 MANUFACTURING AND FINISHING*

### *206-3.3.2 MANHOLE FRAME AND COVER SETS AND GRATES*

[RESERVED]

*ADD THE FOLLOWING SUBSECTION*

### *206-3.3.5 MANHOLE ADJUSTING RINGS*

Manhole adjusting rings will be solid cast iron with integral lip for manhole cover.

*ADD THE FOLLOWING SUBSECTION*

### *206-3.3.6 TREE GRATES*

Tree grates shall be solid cast iron manufactured as two halves. Tree grates shall be the size indicated on the plans. If no further clarification is provided indicating the size of the tree grate the Contractor shall provide 60" x 60". Tree grates shall be Ironsmith 'Marina' model 6084, unfinished with pilfer proof bolting option or approved equal.

### *206-3.3.7 TRENCH GRATES*

[Reserved]

*ADD THE FOLLOWING SUBSECTION*

## 206-7 SIGNS, POSTS, AND HARDWARE

### *206-7.1 GENERAL*

Unless otherwise specified all traffic signs shall conform to the California Manual on Uniform Traffic Control Devices (MUTCD) except as modified herein.

### *206-7.2 SIGN POSTS*

Sign posts will be 12-gage cold-rolled steel perforated tubing posts as shown on San Diego Regional Standard Drawing M-45. Posts will be Telspar or Unistrut, or approved equal. When the sign area exceeds the maximum area allowed for on that drawing multiple posts can be used if approved by the Engineer. Posts carrying signage larger than 48" wide shall be placed on two posts unless other mounting is approved.

### *206-7.3 REGULATORY/WARNING SIGNS*

Sign panels shall be .063 inch (2mm) minimum thickness aluminum alloy 5052 mill- produced stable H38 hardness. Aluminum will be anodized. Sign content will be on sheeting affixed to the sign panel. Sheeting will be 3M™ High Intensity Grade Reflective Sheeting Series 2870/3870, Stimsonite Series 6200 or approved equal.

### *206-7.4 STREET NAME SIGNS*

### *206-7.1.1 GENERAL*

Street name signs shall consist of street name sign blade units, pole extension, cross piece, spacers and bolting as needed.

### *206-7.1.2 SIGN BLADE*

Street name signs will be 9" high, 0.063" thick sheet stock aluminum alloy 5052 mill produced stable H38 hardness. Sign content will be on sheeting affixed to aluminum blade. Sheeting will be 3M™ High Intensity grade film, or approved equal. Street Name background will be highway blue. Lettering will be produced in white, measure 6" tall, with the first letter of each word in capitals and the remaining letters in lower case. Block address and road designations shall be printed in 3" lettering at the end of the road name and be stacked vertically. Sign blades edges will be free of all sharp burs or edges.

### *206-7.1.3 SPACER*

[RESERVED]

### *206-7.4.1 SUBMITTAL*

Contractor shall submit road sign layout prior to production of any signs.

## 206-8 [RESERVED]

[Reserved]

*ADD THE FOLLOWING SUBSECTION*

## 206-9 ARCHITECTURAL METALS

[Reserved]

# SECTION 207 - GRAVITY PIPE

## 207-2 REINFORCED CONCRETE PIPE (RCP)

### *207-2.5 JOINTS*

*DELETE THE SECOND PARAGRAPH AND ADD THE FOLLOWING*

Reinforced concrete pipe with 'O' ring joints shall conform to the requirements of Section 208-3, Gaskets for Concrete Pipe, except 'O' ring joints shall be as made by Ameron, Precon, Hydro-Conduit, or approved equal.

Pipe designated in the plans as "pressure pipe" or with a 100-year hydraulic grade line at or above the pipe soffit shall be bell and groove spigot joint with "O" rings conforming to ASTM C-443 and C-361 for the limits shown on the plans.

*ADD THE FOLLOWING SUBSECTION*

## 207-17 PVC GRAVITY PIPE

### *207-17.6 STORAGE*

PVC Pipe will be stored in a manner to prohibit environmental degradation from UV exposure and other environmental effects until pipe is to be placed. Pipe stored for more than 2 years from the date of manufacturing will be required to be re-tested in conformance with 207-17.4 prior to installation.

### *207-17.7 PERFORATED PVC PIPE*

### *207-17.7.1 MATERIALS*

Perforated plastic pipe will be smooth-walled or corrugated PVC plastic pipe with smooth interior surface. All pipes will comply with material specifications of Section 207-17.4.

### *207-17.7.2 PERFORATIONS*

Perforations will be 3/8-inch minimum diameter. Perforations will be spaced a maximum of 5 inches apart as measured from their center. Perforations will extend around pipe or be locates only on the lower half of the pipe.

# SECTION 210 - PAINT AND PROTECTIVE COATINGS

[RESERVED]

# SECTION 212 – WATER AND SEWER SYSTEM VALVES AND APPURTENCES

## *212-1 GENERAL*

*ADD THE FOLLOWING*

Specifications contained within Section 212 shall be applicable only to water and sewer systems owned by the Agency.

Materials used on water and sewer systems located on a site owned and controlled by the Agency will be in conformance with the latest adopted California Building Code (CBC), as amended by the Agency, and the Specifications. If a conflict exists between the Specifications and the CBC, the more stringent requirement shall have precedence.

Water and Sewer systems constructed as part of another agency's system shall be constructed as specified in the Project Special Provisions or as indicated in applicable permits issued by that agency.

# SECTION 213 - ENGINEERING GEOSYNTHETICS

## 213-5 GEOTEXTILES AND GEOGRIDS

*ADD THE FOLLOWING*

Where geotextile or geogrid is specified with no further qualification the Contractor will supply by type based on application as described in Table 213-5.2(F).

**TABLE 213-5.2(F): STANDARD GEOSYNTHETICS**

| APPLICATION OF GEOTEXTILE | Type |
|---|---|
| Subgrade stabilization | S1 |
| Separation of Soil and Street Structural Section | 90WS |
| Separation of Soil and Subsurface Aggregate Drain | 180N |
| Reinforcement of Street Structural Section | 200WS |
| Remediation and Separation of Soil | 270WS |
| Reinforcement of Soil | 270WS |
| Drainage at the Interface of Soil and Structures | N/A |
| Rock Slope Protection Fabric for Rock Sizes Below 225 kg (¼ Ton) | 180N |
| Rock Slope Protection Fabric for Rock Sizes Including and Above 225 kg (¼ Ton) | 250N |
| Plant Protection Covering | 90N |
| Erosion Control Fence with 14 AWG - 150 mm x 150 mm (6”x6”) Wire and 3 m (10’) Post Spacing | 90WS |
| Erosion Control Fence with 1.8 m (6’) Post Spacing and No Wire Fencing | 200WS |

*ADD THE FOLLOWING SUBSECTION*

## 213-6 GEOMEMBRANES

Geomembranes shall be low permeability synthetic barriers designed for used in subsurface environments for the control of fluids. Geomembranes shall consist of impermeable liners for the separation of water quality basins from surrounding soil, water containment protection, or the soil separation. High density polyethelene (HDPE) geomembranes shall conform to Table 213-6(A). Polyvinyl chloride (PVC) goemembrane shall conform to Table 213-6(B). Clay liners shall be composed geomembranes utilizing bentonite to form a low permeable geomembrane and shall conform to Table 213-6(C). HDPE and PVC geomembranes shall be 40 mil thicknesses unless otherwise specified. Liners

**TABLE 213-6(A): HDPE GEOMEMBRANES**

[Reserved}

**TABLE 213-6(B): PVC GEOMEMBRANES**

| Property | Requirement @ 15 mil Thickness | Requirement @ 30 mil Thickness | Requirement @ 40 mil Thickness | Requirement @ 60 mil Thickness | Test Procedure |
|---|---|---|---|---|---|
| Elongation % | 275 MIN | 380% | 420 MIN | 450 MIN | ASTM D-822 |

| | | | | | |
|---|---|---|---|---|---|
| Break Strength (lbs/in) | 30 MIN | 70 MIN | 95 MIN | 135 MIN | ASTM D-882 |
| Tear Strength (lbs) | 4 MIN | 8 MIN | 10 MIN | 15 MIN | ASTM D1004 |
| Hydrostatic Resistance (PSI) | 50 MIN | 100 MIN | 120 MIN | 150 MIN | ASTM D751 |
| Soil Burial Loss (Max Change) | | | | | |
| Break Strength (%) | 5 | 5 | 5 | 5 | ASTM G160 |
| Elongation (%) | 20 | 20 | 20 | 20 | ASTM G160 |

**TABLE 213-6(C): CLAY LINERS**

[Reserved]

# SECTION 214 – TRAFFIC STRIPING, CURB AND PAVEMENT MARKINGS, AND PAVEMENT MARKERS

*ADD THE FOLLOWING SUBSECTION*

### *214-6.4.3 TEMPORARY REFLECTIVE PAVEMENT MARKERS*

Temporary pavement markers shown on the plans and required in the specifications shall be TFPM type manufactured by DAPCO Davidson Plastics Company, or approved equal.

*ADD THE FOLLOWING SUBSECTION*

## 214-8 CHANNELIZERS

### *214-8.1 GENERAL*

Channelizers will be permanent(not temporary traffic control),vertical, tubular or flat plastic roadway markers with the ability to be placed on a firm and unyielding surface.

### *214-8.2 REQUIREMENTS*

Reflective Channelizer shall be new surface-mounted type and shall be furnished, placed, and maintained at the locations shown on the plans. Reflective channelizer posts shall be yellow or white in color as directed by the Engineer. Reflective channelizers shall have affixed reflective sheeting. The reflective sheeting shall be 3"x 12" in size. The reflective sheeting shall be visible at 1000' at night under illumination of legal high beam headlights, by persons with vision of or corrected to 20/20. Reflective channelizer shall be one of the types shown in Table 214-5.2(A), or approved equal.

***TABLE 214-5.2(A)***

| Type | Manufacturer of Distributor |
|---|---|
| Safe-Hit SH236MA | Safe-Hit Corporation<br>1930 West Winton Avenue, Building #11<br>Hayward, CA 94545<br>Telephone (415) 783-6550 |
| Carsonite "Super Duck" SDF-436 | Carsonite International Corporation<br>2900 Lockheed Way<br>Carson City, NV 89701<br>Telephone (702) 883-5104 |
| Repo "The Replaceable Post" | Western Highway Products<br>P.O. Box 7<br>Stanton, CA 90680<br>Telephone (800) 422-4420 |

The Contractor shall provide the Engineer with a certificate of conformance in accordance with the provisions of Section 2-5.3.3. Said certificate shall certify that the permanent reflective channelizers comply with the plans and specifications and conform to the prequalified design and material requirements approved by the Engineer and were manufactured in accordance with the approved quality control program.

*ADD THE FOLLOWING SUBSECTION*

## 214-8 STENCILS FOR PAVEMENT MARKINGS

Pavement marking stencils shall be Caltrans standard metric type or City approved equal. Contractor shall verify that stencils to be used are approved by the City of San Marcos prior to application of paint.

*REPLACE SECTION 215 WITH*

# SECTION 215 – MISCELLANEOUS MATERIALS

## 215-1 STORM WATER POLLUTION PREVENTION

### *215.1.1 NO DUMPING MARKER*

No dumping markers must be placed on all inlets within the project limits. No dumping markers shall be DAS Model NDW (3”x5.25”) Duracast marker, or approved equal.

## 215-2 DETECTABLE WARNING SURFACE

Detectable warning surfaces shall be sized as shown on the plan. Where no size is indicated surface shall be the size as indicated in SDRSD G-30.

Warning domes size and spacing shall be as shown in SDRSD G-30.

Detectable warning surfaces color shall conform to Table IV of Federal Standards 595B. Color shall be dark grey when installed within the public right-of-way and yellow when installed within real property.

Surface to surface application is only permitted when retrofitting an existing ramp at the discretion of the Engineer.

## 215-3 [RESERVED]

[Reserved]

### *215-4 SINGLE FACE REFLECTORIZED STREET NAME SIGNS (RSNS)*

### *215-4.1 FABRICATION*

Sign panels shall be fabricated from a single sheet of eight hundredths of an inch (0.080") thickness 6061-H12 aluminum. Panels shall be a minimum of seventeen inches (17") high and either six feet (6') or eight feet (8') as required. Sign panels over six feet (6') in length shall be furnished with a one inch (1") 6063 T6 U channel attached across the longest span of the rear face of the panel.

The front face of the sign shall be laminated with a white reflectorized vinyl sheet background, and overlaid with a green vinyl sheet. The green layer shall be appropriately cut with a mechanical plotter to form borders, letters, numbers, symbols or characters as specified in pole schedule of the traffic signal plans or the special provisions.

Exposed mounting hardware (bolt heads, rivets, etc.) on the face of the sign shall be painted to closely match the color of the area in which they are placed. Nylon washers shall be used beneath bolt heads at vinyl surfaces of the sign face.

White vinyl sheeting for borders, letters, numbers, symbols or characters shall be 3M reflective sheet Diamond Grade Vip #3990 or approved equal. Vinyl overlay shall be 3M Scotchlite Electronic Cutable Transparent Film

Green #1177 or approved equal. Letters shall be white reflectorized, eight inch (8") uppercase and six inch (6"), with style and spacing established by Caltrans. Sign faces shall include a one inch (1") minimum white reflectorized border.

### *215-4.2 MOUNTING*

Reflectorized street name signs shall be furnished with a sign mounting assembly. The sign mounting assembly shall consist of a minimum four foot (4') length by two inch (2") diameter aluminum tube with ends formed to mount flush with the rear of the sign surface and a cast aluminum sign mounting bracket with stainless steel bands to attach the aluminum tube to the signal mast arm. The sign mounting assembly shall be universally adjustable and suitable for mast arm mounting. The formed tube shall be extruded from 6063-T5 aluminum. The sign mounting bracket shall be cast from aluminum alloy 713. Each sign mounting assembly shall be complete with all necessary hardware and not require use of special tools to install or adjust.

# SECTION 217 – BEDDING AND BACKFILL MATERIALS

## 217-1 BEDDING MATERIAL

[RESERVED]

## 217-2 TRENCH BACKFILL

### *217-2.1 GENERAL*

*DELETE SECOND PARAGRAPH AND ADD*

If native material does not conform to Table 217-2.2, it shall be disposed of off the Work site, and suitable material capable of conforming to Table 217-2.2 and meeting the required relative densities shall be furnished by the contractor at their expense.

*REPLACE TABLE 217-2.2 WITH REVISED TABLE*

**TABLE 217.2.2**

| Zone | Zone Limits | Maximum Size (greatest dimension) | Backfill Requirements |
|---|---|---|---|
| Street or Surface Zone or Backfill of Tunnels beneath Concrete Flatwork or Street Light and Signal Conduit | From ground surface to 12” (300 mm) below pavement subgrade or ground surface | Sand | Sand Equivalent not less than 30 |
| Trench Zone and Deep Trench Zone | From 12” below pavement subgrade or ground surface to 12” (300 mm) above top of pipe or box | 6” (150 mm) | Sand equivalent not less than 20 |
| Pipe Zone | From 12” (300 mm) above top of pipe or box to 6” (150 mm) below bottom of pipe or box exterior | 2.5” (63 mm) | Sand Equivalent of not less than 30 or a coefficient of permeability greater than 1-1/2 inches/hour. Trench backfill |
| Overexcavation | Backfill more than 6” (150 mm) below bottom of pipe or box exterior | 6” (150 mm) | Sand Equivalent of not less than 30 or a coefficient of permeability greater than 1-1/2 inches/hour. Trench backfill |
| | --- | --- | --- |

*ADD THE FOLLOWING*

Street lighting and traffic signal systems shall conform to the trench bedding and backfill requirements of Part 7.

*ADD THE FOLLOWING SUBSECTION*

## 217-5 SLURRY CEMENT BACKFILL

Slurry cement backfill in trenches shall conform to Section 201-1. Use of slurry cement backfill may only be used with written approval by the Engineer.

*ADD THE FOLLOWING SUBSECTION*

## 217-6 CONTROLLED LOW STRENGTH MATERIAL (CLSM) FOR BACKFILL

CLSM may be used for backfill if approved by the Engineer. CLSM will conform to Section 201-6. The request to use CLSM for backfill shall be submitted ten (10) working days prior to proposed use.

*ADD THE FOLLOWING SECTION*

# SECTION 218 - SITE FURNISHINGS

## 218-1 SEATING AND TABLES

### *218-1.2 PICNIC TABLES*

Picnic tables shall be concrete with anti-skate indentations. All concrete picnic tables shall be sealed by the factory or as directed by the manufacturer.

Picnic tables shall be rectangular 36" wide by 96" long by 33" tall and flanked along the long edges with integrated benches of the same material and color. Unless otherwise specified in the Contract Documents, picnic tables shall be QCP Inc., LBT Picnic Table, Model #: QLBT96PT, Color: Harvest, Texture: Craftsman Etch, or approved equal.

ADA accessible picnic tables shall be 36" wide by 102" long by 33" tall, flanked along the long edges with integrated benches of the same material and color providing sufficient room at one end to accommodate a wheelchair. Unless otherwise specified in the Contract Documents, ADA accessible picnic tables shall be QCP, LBT Picnic Table, Model #: QLBT102PTADA, Color: Harvest, Texture: Craftsman Etch, or approved equal.

### *218-1.3 BENCHES*

Benches shall be concrete or metal. Benches may have a seat backing or may be a bench only configuration if specified. Benches shall have a seat height of 18" and minimum depth of 18" and will be either 48" wide or 72" wide as specified on the Plans or Project Special Provisions. If no width is indicated the Contractor shall supply a 72" wide bench. All concrete benches will be provided sealed by the manufacturer or as directed by the manufacturer.

If bench is indicated without further clarification on the Plans then the Contractor shall supply 72" wide concrete bench.

### *218-1.4 [RESERVED]*

## 218-2 CONTAINERS

### *218-2.1 GENERAL REQUIREMENTS*

[RESERVED]

### *218-2.2 WASTE CONTAINERS*

Waste containers will be either concrete containers with an attached metal lid; or, they will be full metal containers with metal lid. Concrete waste containers shall be round 24" diameter, 36" tall, and be embossed with the Agency's name with 2" high lettering. All concrete containers will be sealed by the manufacturer or as directed by the manufacturer. Waste Containers will conform to the Agency's standard drawings.

Metal waste containers shall be Landscapeforms, Petoskey, Hinged Lid, Color: Silver, or approved equal. All metal Petoskey waste containers will be accompanied by a Petoskey Ash Urn, Color: Silver, or approved equal.

### *218-2.3 RECYCLING CONTAINERS*

Recycling containers will be either a concrete container with an attached metal lid; or, a full metal container with metal lid. Concrete waste containers shall be 24" diameter, 36" tall, and be embossed with the recycling logo painted green. The concrete container shall have a green lid with stenciling to read "Bottles and Cans only" 180 degrees apart. All concrete containers will be sealed by the manufacturer or as directed by the manufacturer. All concrete waste recycling containers will conform to the Agency's standard drawings. Metal containers shall have a UV resistant vinyl recycling logo in green placed on the front of the container. Around opening of metal recycling container will be 1" high vinyl lettering reading "Bottles and Cans Only".

Metal recycling containers shall be Landscapeforms, Petoskey, 5" Hole with Sign, Color: Silver, or approved equal.

### *218-2.4 HOT ASH CONTAINERS*

Hot ash containers shall be concrete and be capable of storing hot coals from fires without damage. Hot ash containers will have a rear access door for cleaning. Hot ash containers will be etched with white letters on a red background.

Hot ash containers shall be QCP, QP-SHA2842, Color: Harvest, Texture: Craftsman Etch

### *218-2.5 DOG WASTE DISPOSAL UNIT*

Dog waste disposal units will be all metal and be composed of a waste disposal container, signage, dog waste bag dispenser, signage, and galvanized steel post. Signage for units must be reflective aluminum sign panel 12"x18" and indicate that all dogs remain "on leash". Waste disposal containers will be painted stainless steel and have a minimum capacity of 10 gallons. Bag dispensers shall be aluminum and capable of holding a minimum of 400 dog waste bags. All metal items shall be powder coated forest green.

Dog waste disposal units shall be Dogipot, Pet Station #1003-L, or approved equal.

### *218-2.6 CHARCOAL GRILL*

Charcoal grills shall be Little Tikes Commercial, Model: LTPQG01N, pedestal mount, vandal resistant firebox, Color: Black, or approved equal.

## 218-3 PLAY EQUIPMENT

Play equipment supplied shall be as indicated on the plans or Project Special Provisions.

All play equipment supplied to a project shall comply with all applicable provisions of the latest edition of the "Handbook for Public Safety" published by Consumer Product Safety Commission (CPSC) and ASTM F1487-98, "Standard Consumer Safety Performance Specifications for Playground Equipment for Public Use". All products shall bear the certification seal of the International Play Equipment Manufacturers Association (IPEMA). All manufactures of play equipment must possess International Organization for Standardization ISO certification.

## 218-3 MISCELLANEOUS SITE FURNISHINGS

### *218-3.1 SKATEBOARD DETERNANTS*

[RESERVED]

### *218-3.2 BOLLARDS*

### *218-3.2.1 STANDARD BOLLARDS*

[Reserved]

### *218-3.2.2 DECORATIVE BOLLARDS*

Bollards shall be removable 4” diameter galvanized steel.

### *218-3.3 BIKE RACK*

[Reserved]

# *PART 3 - CONSTRUCTION METHODS*

# SECTION 300 - EARTHWORK

## 300-1 CLEARING AND GRUBBING

### *300-1.1 GENERAL*

*ADD THE FOLLOWING*

During surface clearing operations, the Contractor shall not cover or bury any plant material or other objectionable materials. If the Contractor cannot successfully separate the plant material from the surface soil and advertently or inadvertently mixes organic or other objectionable materials with the soil, the soil so contaminated shall be removed from the site by the Contractor. All costs associated with removing and disposing of the soil mixed with organic or other objectionable materials and importing of soil to replace said contaminated soil shall be borne by the Contractor and no additional payment shall be made therefor.

Clearing and Grubbing shall also include, but is not limited to, the following items:

- Clearing for and providing temporary graded driveways and continuing maintenance thereof to provide for safe, smooth, stable and continuous all weather access to all residences and businesses within the project area and as directed by the Engineer.
- Minor grading for swales and drainage control.
- Progressive clean-up and maintenance of project appearance.
- Control of water and dewatering during construction.
- Clean-up of project area upon completion of the Work.
- Capping and removing sprinkler lines and sprinkler heads that are within the project limits and providing same to the property owner. The Contractor shall mark locations of capped lines with lath so that Owner can locate them later.
- Removing and disposing of interfering portions of, making modifications to, and maintaining existing private sprinkler systems in working order. This includes water supply, water distribution, electrical supply, and electrical control elements of the existing sprinkler system.
- Removing existing street signs and other miscellaneous signs that are in conflict with roadway construction and replacing/relocating them at new locations per plan or salvaging as directed by the Engineer.
- Removal and salvage/disposal of miscellaneous items such as utility boxes and covers, street signs, posts, poles, interfering portions of water, sewer and storm drain pipes, fences, mail boxes, and retaining walls.
- Removal and disposal of interfering portions of abandoned utility lines and structures and the filling with blown sand and plugging of abandoned pipes and conduits not removed.
- Installation, maintenance, and removal of fences, temporary fences, and gates as required in these Special Provisions and/or for the contractor's convenience.
- Removal and disposal of any additional items not specifically mentioned which may be found within the work limits as directed by the Engineer.
- Removal and disposal of existing A.C. berm, pedestrian ramps, lined ditches, curb inlets and outlets, and mow curbs which may be found within the work limits as directed by the Engineer.
- Removal of all items necessary to complete the work including items not specifically shown on the demolition plans but discoverable through site visit or other reasonable means at time of bid. The Engineer shall have sole discretion in determining what items were “discoverable” but will generally be

defined as items that could be seen, measured, and/or otherwise identified through surface investigation.

Clearing and Grubbing shall comply with the CEQA document or any resource agency permits.

Clearing and grubbing should occur outside of breeding and nesting season, between February 1 to September 15. If clearing and grubbing activities must occur during the breeding season the Contractor will retain a Qualified Biologist to conduct a pre-construction survey to determine the presence or absence of nesting birds within the proposed area of disturbance and conform with all permits applicable to the Work. The pre-construction survey shall be conducted within 10 days prior to the start of construction activities, or as otherwise indicated in permits, including trimming or removal of vegetation. The Contractor shall submit the results of the survey to the Agency for review and approval prior to initiating construction activities. If nesting birds are present the Qualified Biologist must provide a mitigation plan in conformance with applicable regulations, laws, CEQA documents, or resource agency permits applicable to the project. Mitigation plans must be reviewed and approved by the Agency prior to start of construction activities.

*DELETE SUBSECTION 300-1.3 AND REPLACE WITH THE FOLLOWING*

### *300-1.3 REMOVAL, DISPOSAL AND ABANDONMENT OF MATERIAL*

#### *300-1.3.1 GENERAL*

All materials removed shall be taken from the work site and disposed of at a legal site in accordance with applicable law and permits.

Demolition of structures and permitted activities under the CBC shall divert construction waste as required by the State of California and/or local ordinances.

Abandonment of facilities in place will render the facility unserviceable. The Contractor will take all necessary precautions to preserve the functionality of all connected or adjacent improvements to those being abandoned. Portions of facilities indicated for abandonment in direct conflict proposed improvements will be removed.

#### *300-1.3.2 REQUIREMENTS*

*DELETE SECTION AND REPLACE WITH*

**a) Bituminous Pavement**

Bituminous pavement shall be removed to neatly saw-cut clean and straight edges. Saw cuts for removal shall be a minimum depth of 76 mm (3"). Where surface of existing bituminous pavement is to be removed, the method shall be by cold milling, and shall provide a minimum laying depth of 1 1/2 inch of new pavement materials shall be provided at the join line unless otherwise specified. Where bituminous pavement adjoins a trench, the edges adjacent to the trench shall be sawcut and trimmed to neat, straight lines and provide access to compaction equipment.

**b) Concrete Pavement**

Concrete pavement shall be removed to neatly sawed edges. Saw cuts shall be made to a minimum depth of 6 inches. Concrete shall be removed to the nearest construction joint, cold joint or edge. The edges of existing concrete pavement adjacent to trenches, where damaged subsequent to saw cutting of the pavement, shall again be saw cut to neat, straight lines for the purpose of removing the damaged pavement areas. Such saw cuts shall be either parallel to the original saw cuts or shall be cut on an angle which departs from the original saw cut not more than 1 inch in each 6 inches.

**c) Concrete Curb, Walk, Gutter, Cross Gutter, Driveway, and Alley Intersections**

Concrete shall be removed to neatly sawed edges, with saw cuts made to a minimum depth of 6 inches. Saw cuts on curbs shall be made at a right angle to the curb face. Curb, walk, gutter, cross-gutter, driveways, and alley intersections will be removed cleanly to the nearest construction or expansion joint. No section to be replaced shall be smaller than 30 inches in width or length.

**d) Trees**

Trees to be removed shall have all the crown, trunk , and roots removed. Root removal will be done so that no roots remain that are larger than 1" in diameter. Tree branches to be cut shall be done in observance by, and with the approval of the Agency's arborist.

**e) Structures**

When required by the plans and/or special provisions, structures will be fully removed and backfilled with CLSM to existing line and grade. Where structures are connected to facilities to remain in service, the Contractor shall protect or reconfigure exiting facility to remain in service.

**f) Traffic Striping**

[RESERVED]

**g) Landscaping**

Removal of trees and brush shall be done in conformance of Section 300-6.2.

*ADD THE FOLLOWING SUBSECTION*

### *300-1.3.3 ABANDONMENT*

**1. SEWER AND WATER FACILITES**

When indicated on the plans or special provision the abandonment of sewer and water facilities shall be done in conformance with the Project Special Provisions and the standards of the facility owner.

### *2. STORM DRAIN MANHOLES*

When indicated on the Plans or Project Special Provisions the abandonment of storm drain manholes shall have their cover, frame and cone removed and be backfilled with suitable material. Backfill of the structure shall not extend above the top of the remaining storm drain riser. At the request of the Engineer, the frame and cover may be requested for salvage.

**3. STORM DRAIN LINES**

When indicated on the Plans or Project Special Provisions the abandonment of Storm drain lines shall be plugged and slurry filled with two sack slurry.

***4. CONDUIT***

Conduit to be abandoned in place will be slurry filled. Conductors or any other material within conduit will be removed to the fullest extent reasonable and disposed of.

### *300-1.4 PAYMENT*

*ADD THE FOLLOWING*

Payment for abandonment of facilities will be made at the lump sum Bid price, or the Contract Unit Price indicated on the Bid for the items being abandoned. Payment for abandonment shall include all work to cap, backfill, remove, reconfigure, slurry fill, or any other work required to properly abandon the facility.

## 300-2 UNCLASSIFIED EXCAVATION.

### *300-2.1 GENERAL*

*DELETE THE FIRST PARAGRAPH AND ADD THE FOLLOWING:*

Unclassified Excavation shall consist of making all cuts and fills to the lines and grades shown on the Plans, stockpiling of suitable material, transport of stockpiled material to its ultimate location, all mixing, moisture conditioning, and compaction of stockpile and fill material, and export of excess material to a legal site.

Unclassified Excavation shall also include scarification, moisture conditioning, and compaction of the top one foot of subgrade material to 95 percent relative compaction under roadway and other paved areas bearing traffic loads.

### *300-2.2 UNSUITABLE MATERIAL*

#### *300-2.2.1 GENERAL*

*ADD THE FOLLOWING:*

Such direction may include, but is not limited to, directing the Contractor to blend, adjust moisture content of, rework, or place unsuitable soils at specific locations or elevations within the Project Site.

*ADD THE FOLLOWING SECTION:*

### *300-2.2.3 REMOVAL & RECOMPACTION*

Compressible soils such as uncontrolled fills, alluvium, and colluvium may exist within the limits of Work. When encountered, these unconsolidated soils shall be removed by the Contractor until a firm and unyielding surface is exposed and approved by the Engineer. If the excavated material has a moisture content greater than optimum moisture content, the Contractor shall blend the wet soil with soils having a lower moisture content and/or spread the excavated material in a manner that enables the material to dry to optimum moisture content. The cost of blending, spreading and/or drying shall be included in the contract unit price for Removal and Recompaction. The excavated material shall be placed and compacted in accordance with Section 300-4, Unclassified Fill, except that Section 300-4.9, Measurement and Payment, shall not apply.

### *300-2.5 SLOPES*

*ADD THE FOLLOWING AFTER THE FIRST SENTENCE OF THE FIRST PARAGRAPH:*

A slope shall be defined as any slope with a ratio of 3:1 (horizontal to vertical) or greater.

*AND ADD THE FOLLOWING TO THE FIRST PARAGRAPH:*

The hinge points (the top and bottom) of slopes shall be located within 75 mm (0.25') of the locations shown on the plans.

### *300-2.6 SURPLUS MATERIAL*

*ADD THE FOLLOWING:*

The Contractor shall export all surplus material from the project. The Contractor shall utilize highway legal trucks for export of material from the Project Site to a legal site secured by the Contractor. No earth moving equipment or special construction equipment, as defined in Section 565 of the California Vehicle Code, will be allowed for hauling material on public streets.

### *300-2.8 MEASUREMENT*

*DELETE THE FIRST AND SECOND PARAGRAPHS AND ADD THE FOLLOWING:*

Unclassified Excavation payment quantity shall consist of all cut shown on the plans.

When paid as a unit price, Unclassified Excavation shall be measured based on the volume it occupies in its original position before excavation. The quantity of Unclassified Excavation shall be the volume of cut occupied between the original ground surface after clearing and grubbing and the design elevations shown on the plans. Materials excavated or otherwise removed as all or part of any other bid item shall not be measured as Unclassified Excavation.

Unclassified Fill shall be paid as Unclassified Excavation and no separate payment will be made.

The Contractor shall notify the Engineer three (3) working days prior to completing clearing and grubbing and the removal of all deleterious material from the entire site. It is the intent of the Engineer to schedule and perform field survey and/or aerial photography of the entire site at one time to determine the original ground surface prior to grading for the purpose of Unclassified Excavation quantification. If the Contractor has not removed all deleterious material from the entire site by the day prior to the scheduled field survey and/or

photography, the field survey and/or photography will be cancelled and not rescheduled until the Contractor has completed removing all material from the entire site. The Contractor shall not be entitled to any additional compensation or extensions in time if the field survey and/or aerial photography is cancelled due to the Contractor not completing clearing and grubbing and removal operations as scheduled. If the entire site cannot have field survey performed and/or be photographed because of weather, poor visibility, or adverse flight conditions, the Contractor will be entitled to a corresponding time extension but shall not entitled to any additional compensation due to the delay.

Removal and recompaction shall be paid at the unit price bid. The quantity of removal and recompaction shall be the volume occupied between the original ground surface after clearing and grubbing where the original ground surface is at or beneath the design lines and grades and the bottom contours of the removal and recompaction area.

The Contractor shall allow a minimum of 36 hours after completion of the removal of compressible soils in Removal and Recompact areas for the Agency to measure the cut for the quantity of work performed.

### *300-2.9 PAYMENT*

*DELETE THIS SECTION AND ADD THE FOLLOWING:*

Payment for unclassified excavation and removal & recompaction will be made at the unit prices bid in the proposal unless specified otherwise. Only the quantity of Unclassified Excavation and removal & recompaction measured shall be paid for. No excavated material which is re-excavated will be paid for. For progress payments, the quantity of Unclassified Excavation and removal & recompaction shall be estimated by the Engineer. The Engineer's calculations shall be considered the definitive determinant for quantities for progress and final payments. All topographic surveying and calculations necessary to quantify Unclassified Excavation and removal & recompaction payment quantities shall be performed by the Engineer.

Payment for Unclassified xcavation and removal & recompaction shall include all costs for salvaging clean and suitable material and filling areas to the required grades and cross sections, transport, placement, compaction, moisture conditioning and water therefor, rework of compressible soils, all work incidental to Section 300-4.8, slope rounding, grading, stockpiling, exporting and disposing of excess material, access roads, temporary detour roads, matching existing grades, construction of transitions, and grading of earthen swales and drainage channels as shown on the drawings or required by the Contract Documents.

When payment for Unclassified Excavation is made as a final pay quantity it shall be made pursuant to Section 9-1.1, General, and no additional payment shall be made therefor.

When no bid item(s) exist for Unclassified Excavation and/or removal & recompaction, costs shall be considered included within other items of work, and no additional payment shall be made therefor.

*ADD THE FOLLOWING SECTION:*

### *300-2.10 GRADING TOLERANCE*

The Contractor shall finish excavated areas other than slopes and subgrade below structures, within the roadway and sidewalk areas within 0.1' of the grades shown on the plans. Subgrade tolerances shall conform to the requirements of Section 301-1.4 Subgrade Tolerances.

## 300-3 STRUCTURE EXCAVATION AND BACKFILL.

### *300-3.1 GENERAL*

*ADD THE FOLLOWING:*

The Contractor shall excavate to the lines and levels required and/or shown on the Plans. The Contractor shall provide all shoring, bracing, cribbing, pumping, and planking required. The Contractor shall excavate and maintain the bottom of all trenches in a condition that is level, firm, clean and free from all debris or foreign matter. Excavations shall be kept free from water at all times. The Contractor shall remove any unsuitable material encountered below grade as directed by the Engineer.

### *300-3.6 PAYMENT*

*ADD THE FOLLOWING:*

Dewatering shall be considered incidental to structure excavation and no additional compensation shall be made therefor. Except for unsuitable materials removed as part of unclassified excavation, unsuitable material encountered below structural excavation finished grade will be paid for at the unit price, lump sum, or if neither are specified in the Contract, pursuant to Section 3-3.

## 300-4 UNCLASSIFIED FILL

### *300-4.3 OTHER FILL MATERIALS*

*DELETE THIS SECTION AND ADD THE FOLLOWING:*

Excess soil remaining on the Project Site from excavations other than Unclassified Excavation may only be used for fill material when rocks, lumps, cobbles, clods, or other solid materials such as broken concrete or asphalt from removal operations are suitable for the particular area to be filled as determined by the Engineer and in conformance with the requirements of the geotechnical investigation. Broken concrete or asphalt pavement materials shall not be allowed within site fill areas or roadway fills less than three feet (3') in height, within three feet (3') of final grade in any area, or within five feet (5') (vertically) of the existing ground water table. Concrete or asphalt placement shall be approved by the geotechnical engineer. Concrete or asphalt pieces shall be less than six inches (6") in maximum dimension and surrounded by soil particles when used as compacted fill. No nesting shall occur.

### *300-4.4 BENCHING*

*ADD THE FOLLOWING:*

Benching and keyways shall be constructed as shown in the Contract Documents and pursuant to local ordinance as applicable. Benching and keyways shall be considered as incidental to Unclassified Fill and no separate payment shall be made therefor.

### *300-4.5 PLACING MATERIALS FOR FILLS*

*ADD THE FOLLOWING:*

The Contractor shall perform grading such that the upper 3' of fill placed in the roadway right-of-way is composed of properly compacted low expansive soils when available on-site or when specified. The more highly expansive soils shall be placed in the deeper fill areas and/or properly compacted or exported from the site. Low expansive soils are defined as those soils that have an Expansion Index of 50 or less when tested in accordance with 1994 UBC Standard 18-2 as published by the International Conference of Building Officials. Should insufficient soils meeting the requirement of an expansion index of 50 or less be present within the limits of work, soils of the least expansion index that are available within the limits of work shall be incorporated in the upper 3' of fill placed in the roadway.

*DELETE THE THIRD AND FOURTH PARAGRAPHS AND ADD THE FOLLOWING:*

Rocks with any dimension greater than 18" shall not be incorporated into the fill. Rock exceeding 6" in diameter shall not be placed in the upper 3' of any fill. Rocks shall not be nested but shall be spread with sufficient room between them so that intervening voids can be adequately filled with fine material to form a dense, compact mass. Oversized material shall be removed from the site by the Contractor. If disposed of within the city limits of City of San Marcos, a separate grading permit will be required for disposal of rock.

### *300-4.6 APPLICATION OF WATER*

*ADD THE FOLLOWING:*

The Contractor shall place all fill soil at a moisture content no less than one (1) percent below optimum moisture as determined by ASTM test D-1557-91.

### *300-4.7 COMPACTION*

*ADD THE FOLLOWING:*

The Contractor shall compact all fill soils placed within the top 1' of roadway subgrade to a minimum of 95 percent relative compaction.

### *300-4.8 SLOPES*

*ADD THE FOLLOWING:*

Feathering of fill over the tops of slopes will not be permitted.

### *300-4.9 MEASUREMENT AND PAYMENT*

*DELETE THIS SECTION AND ADD THE FOLLOWING:*

Unclassified fill, grading, shaping, compacting or consolidating, moisture conditioning, slope rounding, construction of transitions and all work included in and incidental to Section 300-4, Unclassified Fill, shall be paid for as unclassified excavation, and no additional payment will be made therefor.

## 300-5 BORROW EXCAVATION

### *300-5.2 IMPORTED BORROW*

*ADD THE FOLLOWING SECTION:*

### *300-5.2.1 IMPORTED BORROW PROPERTIES*

The Contractor shall provide imported borrow that is clean well graded soil consisting of material conforming to all of the requirements in Table 300-5.2.1(A) and the following requirements. Rock shall not be a component of imported borrow.

**TABLE 300-5.2.1(A)**
**IMPORTED BORROW PROPERTIES**

| Tests | Test Method No. | Requirements |
|---|---|---|
| R-Value | Calif. 301 | 40 Min. |
| Expansion Index | UBC Standard 18-2 | 30 Max. |
| Plasticity Index | ASTM D 424 | 4 Max. |
| Sieve Analysis | ASTM D 422 | Percent Passing 75μ (No. 200) 15 Max. |

## 300-8 GEOTEXTILES FOR DRAINAGE

### *300-8.1.2 MEASUREMENT AND PAYMENT*

*DELETE AND REPLACE WITH*

Payment for geotextiles shall be paid for as included in unit bid price for the items of work requiring the usage of the geotextile.

*ADD THE FOLLOWING SUBSECTION*

### *300-8.2 BASINS*

Geotextiles or geomembranes used in retention, bioinfiltration, or biofiltration basins shall be placed so that they do not impinge on the ability of the basin to operate as a treatment device.

### *300-8.2.1 PLACEMENT*

Geotextiles for basins shall be placed firmly against subgrades. Sufficient slack shall be provided in geotextiles so that expansion and shrinkage due to thermal influence do not create damaging stresses. No workers will be allowed to walk on geomembranes with damaging footwear.

Prior to welding any seam in the field the Contractor will prepare a qualification seam. The qualification seam will be made with a separate piece of geomembrane using the same material and equipment that will be used for field welding. All field welding will be done in conformance with the manufacturer's recommendations.

### *300-8.2.2 MEASUREMENT AND PAYMENT*

Payment for the placement of geotextiles in basins shall be considered as included in the lump sum unit bid price for "Basin" unless separate bid item for geotextile is provided. Geotextiles will be measured parallel to the ground by square foot placed.

## 300-9 GEOTEXTILES FOR EROSION CONTROL

### *300-9.1.2 MEASUREMENT AND PAYMENT*

*DELETE AND REPLACE WITH*

Payment for geotextiles for erosion control shall be paid for as included in the lump sum unit bid price for "Erosion Control".

## 300-10 GEOTEXTILES FOR SEPARATION

*ADD THE FOLLOWING SUBSECTION*

### *300-10.2 SOIL ISOLATION*

Geotextile use for soil isolation will be done under the observation of the geotechnical engineer.

### *300-10.2.1 PLACEMENT*

Geotextiles used for soil isolation shall be placed firmly between soil layers. The Contractor shall place, weld, and secure the geotextile as recommended by the manufacturer.

Soil isolation will be done as recommended in the geotechnical report or as specified in the Project Special Provisions.

When soil being isolated contains hazardous or contaminated material the Contractor shall comply with all applicable permits and supplemental information provided in the Project Special Provisions.

### *300-10.2.2 MEASUREMENT AND PAYMENT*

Geotextile for soil isolation shall be paid at the Contract Unit Price for "Geotextile" or "Geomembrane". The measurement of geotextitles will be measured parallel to the ground by square foot placed.

# SECTION 301 TREATED SOIL, SUBGRADE PREPARATION, AND PLACEMENT OF BASE MATERIALS

## 301-1 SUBGRADE PREPARATION

### *301-1.2 PREPARATION OF SUBGRADE*

*DELETE THE FIRST SENTENCE OF THE SECOND PARAGRAPH AND ADD THE FOLLOWING:*

After rough grading has been completed, when scarifying and cultivating are required, the roadbed shall be loosened to a depth of at least 12 inches (305 mm).

*DELETE THE THIRD PARAGRAPH AND ADD THE FOLLOWING:*

Uniform pervious soils, that allow the immediate penetration of water or uniform impervious soils which will allow the penetration of water to a depth of at least 12 inches (305 mm) after the addition of a suitable wetting agent, will not require scarifying and cultivation unless a condition pervious set forth in this section requires such processing. When scarifying and cultivation are not require, the moisture content of the top 12 inches (305 mm) of the subgrade material shall be brought to optimum by the addition of water at the surface, and the material shall be compacted by approved equipment to the specified relative compaction.

### *301-1.3 RELATIVE COMPACTION*

*DELETE THE FIRST PARAGRAPH AND ADD THE FOLLOWING:*

The Contractor shall compact the upper 12” of subgrade beneath roadways, alleyways, parking lots, other pavement areas under traffic loading, and beneath and including curb to curb to not less than 95 percent maximum dry density as determined by ASTM test D-1557-91, whether pavement is placed directly on subgrade, subbase, or base. The top 12” of all other areas shall be compacted to no less than 90 percent maximum dry density as determined by ASTM test D-1557-91.

# SECTION 302 ROADWAY SURFACING

## 302-1 COLD MILLING OF EXISTING PAVEMENT

### *302-1.1 GENERAL*

*ADD THE FOLLOWING:*

Additional widths of cold milling may be required at various locations as determined by the Engineer.

### *302-1.9 TRAFFIC SIGNAL LOOP DETECTORS*

*DELETE SECTION AND ADD THE FOLLOWING.*

Before cold milling pavement within 90 m (300 feet) of a traffic signal, the Contractor shall notify the Agency at least three (3) working days prior to commencing work within said area. Upon notification, the Agency will mark the location of all existing loop detectors if not readily apparent.

The Contractor shall not mill within 12 inches (300mm) of any existing loop detectors that are shown to be protected in place on the Plans or in the Special Provisions. Traffic signal loop detectors that were shown to be protected in place but are damaged or removed by the Contractor shall be replaced in their entirety in conformance with Part 7.

Damage to the existing loops caused by the Contractor operation will require replacement of the loops in their entirety at the Contractor's expense.

## 302-2 CHIP SEAL

### *302-2.1 GENERAL*

*ADD THE FOLLOWING*

The Contractor shall treat all vegetation within the limits of the paved area to receive chip seal with a post emergent herbicide. Herbicide shall be applied at least 5 (five) working days prior to chip sealing the street. Allowance for the five day period shall be shown in the schedule required per Section 6-1.

### *302.2.4 EMULSIFIED ASPHALT*

*ADD THE FOLLOWING*

When rubberized chip seal is specified the emulsified asphalt shall have the binder modified by the addition of 20% crumb rubber modifier by weight of asphalt binder.

### *302-2.8 MEASUREMENT AND PAYMENT*

*ADD THE FOLLOWING*

Payment for chip seal shall include post emergent herbicide treatment of the areas to receive chip seal and no additional payment will be made therefor.

## 302-4 SLURRY SEAL SURFACING

*ADD THE FOLLOWING SUBSECTION:*

### *302-4.1.1 APPLICATION*

(Reserved)

### *302-4.1.2 SURFACE PREPARATION*

As part of surface preparation prior to application of emulsion-slurry seal the Contractor shall:

1. Treat the area to receive emulsion-slurry seal with a post emergent herbicide. Herbicide shall be applied at least five (5) working days prior to sealing of street. Allowance for the five day period shall be shown in the schedule required per Section 6-1.
2. Remediate cracks, potholes, and large areas of alligator cracking. Remediation shall be accomplished by:
    a) Removal of existing asphalt pavement, base material and soil and replacement with full depth asphalt concrete in locations designated by the Engineer
    b) Crack cleaning and sealing of all cracks designated by the Engineer.

### *302-4.8 SPREADING AND APPLICATION*

*ADD THE FOLLOWING*

Rubber tire rollers shall be used for slurry compaction.

## 302-5 ASPHALT CONCRETE PAVEMENT

### *302-5.1 GENERAL*

*ADD THE FOLLOWING*

The Contractor shall treat all vegetation within the limits of the paved area to receive asphalt concrete paving with a post emergent herbicide. Herbicide shall be applied at least 5 (five) working days prior to paving the area. Allowance for the five day period shall be shown in the schedule required per Section 6-1.

The surface course asphalt concrete shall be installed as a last order of work after all concrete improvements and base course asphalt has been installed.

### *302-5.5 DISTRIBUTION AND SPREADING*

*AFTER SECOND SENTENCE OF SIXTH PARAGRAPH ADD THE FOLLOWING*

The paving machines shall have automatic screed control, or acceptable alternative control, for surface course paving. The automatic screed control shall be a minimum of 30' minimum length. The paving machine shall be operated by an operator and two full-time screed men during all paving.

### *302-5.6 ROLLING*

*ADD THE FOLLOWING*

Rubber tire rollers shall be used for intermediate rolling.

### *302-5.6.1 GENERAL*

*ADD THE FOLLOWING*

Unless otherwise directed by the Engineer, breakdown rolling shall be followed by an intermediate rolling completed by pneumatic-tired roller.

### *302-5.8 MANHOLES (AND OTHER STRUCTURES)*

*ADD THE FOLLOWING*

Sewer structures shall be adjusted as required by the Project Special Provisions, or as permitted by the owner.

The Contractor will be responsible for coordinating the adjustment of manholes not being adjusted as part of the Agreement with respective owners. Appropriate amounts of time will be included in the Contractor's schedule per Section 6-1.

When placing the ARHM overlay the Contractor shall pave over appurtenances in the roadway which includes sanitary and storm access covers, water valve boxes, air vents, sewer dead end boxes and survey monument boxes. Each appurtenance shall be treated or covered to prevent adhesion of the overlay. Each appurtenance shall be located immediately after the overlay is placed and shall be thoroughly cleaned of any and all construction debris which may have entered due to the Contractor's operation.

### *302-7 PAVEMENT FABRIC*

### *302-7.2.1 GENERAL*

*ADD THE FOLLOWING*

Pavement fabric will be installed per the manufacturer's recommendations. Surface cracks over 1/4 inch shall crack sealed. All pavement fabric will be placed on a consistent surface free of major defects.

Pavement reinforcing shall be placed to the limits approved by the Engineer.

### *302-7.2.3 LAYDOWN*

*ADD THE FOLLOWING*

The fabric shall be stretched, aligned, and placed without any wrinkles that lap. The test for lapping shall be made by gathering together the fabric in a wrinkle. If the height of the double portion of extra fabric is1/2" or more, the fabric shall be cut to remove the wrinkle, and then lapping in the direction of paving. Lap in excess of 2" shall be removed.

*DELETE THE SECOND SENTENCE OF THE EIGHTH PARAGRAPH AND ADD THE FOLLOWING*

If necessary, exposed tack coat on top of fabric shall be covered lightly with sand.

*ADD THE FOLLOWING SUBSECTION*

## 302-14 ASPHALT CONCRETE DIKE

Asphalt concrete materials shall conform to Section 203-6.4. Where dike is specified with no further clarification on type or geometry is provided, the Contractor shall construct Type A asphalt concrete dike per the SDRSD.

Prior to placement of asphalt concrete dike the existing surface shall be clear of all dirt, moisture and debris. Asphalt dike will be placed on a tack coat, per Section 302-5.4 Tack Coat, applied to the existing or new pavement.

The asphalt concrete dike shall be placed and compacted to the required lines, grades, and cross sections shown on the plans. The dike shall be shaped and compacted with an extrusion machine capable of providing the finished dike in place to the required dimensions.

### *302-14.1 PAYMENT*

Payment for asphalt concrete dike shall be at the price bid per linear foot in place, and shall include full compensation for furnishing all labor, materials, tack coat, tools, equipment, and performing all work involved in providing the dike complete, in place.

*ADD THE FOLLOWING SUBSECTION*

## 302-15 ASPHALT CRACK SEALING

### *302-15.1 GENERAL*

Crack sealing will be performed on cracks 1/8" or larger. Any area to received slurry seal, chip seal, or other bituminous surface treatment will have cracks sealed prior to the application of the surface treatment. Areas where alligator cracking has occurred will not be crack sealed.

### *302-15.2 PREPARATION*

Cracks will be cleared with compressed air to provide a clear area to receive crack seal material. Cracks will be prepared by the removal of weeds, vegetation, foreign, or loose material. Any cracks containing weeds or vegetation shall have a post emergent herbicide sprayed into all cracks and allowed to dry prior to the application of crack seal material.

### *302-15.3 MATERIAL*

Crack sealant for asphalt shall be Road Works 306, CRAFCO Polyflex Type 3 or approved equal. Sealant shall be applied in conformance with the manufacturer's recommendations and instruction expect as otherwise specified.

### *302-15.4 APPLICATION*

The Contractor shall provide traffic control as needed to safely apply the crack seal material.

No crack sealing will occur in wet weather or where the ambient air temperature is less than 40°F. Sealant shall be applied from the bottom of the crack up to the surface in a manner which does not result in sealant bridging or pockets of entrapped air forming. The sealant shall be applied to a slightly overfilled condition and then

leveled with a squeegee. The width of the sealant remaining shall not exceed 1.5 inches on either side of the crack.

The contractor shall remove any debris or remaining crack seal material from the work site at the end of each working day.

### *302-15.5 PAYMENT*

The payment for crack sealing shall be included in the items or work requiring crack sealing unless separate "Asphalt Crack Seal" Bid item is provided. Payment for "Asphalt Crack Seal" will be at the Contract Unit Price per pound of sealant placed.

*ADD THE FOLLOWING SUBSECTION*

## 302-16 ASPHALT PATCHING & REPAIR

### *302-16.1 GENERAL*

Patching and repair shall be the correction of failed asphalt and shall include pothole repair, skin patching, and full depth repair.

Locations for repair shall be at the locations indicated on the Plans or Project Special Provisions. Should no locations be identified in the Plans or Specifications the Contractor shall coordinate locations for repair with the City.

All repairs shall be done in conformance with Section 302-5.6.2 except that patches will have a 1/8 to 1/4 inch crown.

Paving lifts shall not exceed four inches (4") per lift.

After patching and repair the Contractor shall clear any remaining debris or remnant material and leave the work site in a clean

### *302-16.2 POTHOLE REPAIR*

Potholes will be jack hammered or chipped along edges to remove loose or deteriorating edges and to establish roughly vertical sides.

The pothole will be cleared of all debris and loose material to a firm and unyielding base.

The pothole will be prepared by the placement of asphalt binder tack coat painted or sprayed on all surfaces within the pothole at approximately 0.2 gal/yd$^2$.

Asphalt concrete will be placed, using minimal handwork, and compacted in conformance with Section 302-5.6.1, unless otherwise approved by the Engineer.

Cold mix asphalt will not be used to repair potholes unless otherwise approved by the Engineer for a temporary repair which will later be replaced with HMA.

### *302-16.3 SKIN PATCHING*

The area to be skin patched shall be cleaned of all debris and dust, free of all weeds or vegetation, and not be damp or wet. All cracks shall be crack sealed in conformance with Section 302-15. The area to be skin patched will be prepared by the placement of a tack coat. Asphalt material will conform to Section 203-6.4.1 and be placed with minimal handwork to prevent segregation and have its edges feathered to a smooth transition with the existing pavement.

### *302-16.4 FULL DEPTH REPAIR*

Full depth repair will be a selective removal of a pavement section and reconstruction of a new pavement section.

All full depth repair locations indicated on the Plans or in the Project Special Provisions should be considered general locations until the Contractor walks the locations with the Agency representative to precisely locate the limits of the repair.

Areas for full depth repair will have its edges sawcut clean and be rectangular or square in shape.

Pavement will be removed to the subgrade sufficient to accommodate the new structural section.

### *302-16.5 NAROW AND SLOT PATCHING*

[reserved]

### *302-16.6 MEASUREMENT AND PAYMENT*

"Pothole Repair" shall be paid at the Contract unit price per square foot at the thickness range indicated on the Bid Schedule or the Contract unit price per ton of asphalt placed as shown on the Bid. Such price shall constitute full payment for all labor, materials, tools, and equipment for the preparation, tack coat, asphalt, compaction, site clean-up, disposal of asphalt material, and all related work incidentals required to complete the work.

"Skin Patching" shall be paid at the Contract unit price per square foot. Such price shall constitute full payment for all labor, materials, tools, and equipment for the preparation, tack coat, crack sealing, asphalt placement, compaction, site clean-up, and all related work incidentals required to complete the work.

"Full Depth AC Repair" shall be paid at the Contract unit price per square foot for the structural section indicated in the Bid Schedule or by its component parts. Full depth AC repair shall constitute full payment for all labor, materials, tools, and equipment for the saw cutting, preparation, removal, disposal, placement of base and asphalt, compaction, site clean-up, and all related work incidentals required to complete the work.

# SECTION 303 CONCRETE AND MASONRY CONSTRUCTION

## 303-1 CONCRETE STRUCTURES

### *303-1.1 GENERAL*

*ADD THE FOLLOWING*

Where the Plans included in the Contract Documents refer to the Standard Drawings or Standard Plans for construction details for concrete structures or elements and the primary dimensional requirements (such as chamber length, width, depth, etc.) are not shown in said Standard Drawings or Plans, then the next larger size dimension for that requirement shall be used to establish dependent structure element characteristics (such as wall thickness, reinforcement schedule, etc.).

The Contractor may extend or otherwise increase the total length of inlet, basin or cleanout structures by as much as a total of four feet (4'), to meet the uncut ends of pipe. Payment for pipe to the limits shown on the Plans shall be full compensation for extending such structures. Where concrete structures are extended, steel reinforcing shall be extended in the pattern and spacing shown for the standard-length structure.

All inlet tops are to be certified by the surveyor prior to concrete placement. Certification shall be provided to the Engineer 24 hours prior to pouring the concrete.

Concrete brow ditches, if air-placed, shall be constructed in accordance with Section 303-2. Otherwise, brow ditch construction and materials shall conform to the applicable provisions of Section 303-1.

### *303-1.2 SUBGRADE FOR CONCRETE STRUCTURES*

*ADD THE FOLLOWING SUBSECTION*

### *303-1.2.1 REINFORCED CONCRETE BOX SUBGRADE*

The design details for the project provide for the placement of six-mil polyethylene sheeting as an underlayer below the RCB culvert and transition structures and over the gravel foundation mattress. The Contractor shall furnish and place six-mil polyethylene sheeting as an underlayer below these reinforced concrete structures. The placing of steel reinforcement and placement of concrete shall be accomplished as soon after the installation of the polyethylene sheeting as possible.

*ADD THE FOLLOWING SUBSECTION*

### *303-1.2.2 REINFORCED CONCRETE BOX GRAVEL FOUNDATION MATTRESS*

Gravel foundation mattress under the reinforced concrete box (RCB) culverts and reinforced concrete box (RCB) transition structures shall be constructed to the limits and grades shown on the Plans and in accordance with these Special Provisions.

It is the intent of these specifications that a firm, unyielding gravel mattress or layer be constructed to help bridge any earthen subgrade irregularities or minor differential settlements and to act as a stable working

surface for the placement of reinforcing steel and concrete forms for the construction of RCB culverts and transition structures.

Permeable material for use as gravel foundation mattress under RCB and transition structures shall consist of hard, durable, clean sand, gravel, or crushed stone; and shall be free of organic material, clay balls, or other deleterious substances.

The Contractor shall place permeable material for foundation mattress within the limits and to the lines and grades shown on the Plans. Permeable material shall be placed directly on prepared subgrade unless filter fabric material is specified or shown on the Plans. The finish subgrade surface of the pervious mattress material shall be held to the closest practicable tolerance, and in no case shall the finish subgrade surface deviate from the indicated slope and grade lines by greater than plus zero inches (0") above or minus two inches (-2") below.

Permeable mattress material shall be spread uniformly on the prepared subgrade to the neat lines indicated on the drawings in such a manner that the gradation after final placement remains within the limits specified. Placing of material by methods which will tend to segregate particle size within the mattress layer will not be permitted.

Permeable material shall be deposited and spread in a manner so as to prevent damage to or displacement of the filter fabric subgrade cover below.

Imported permeable material shall be placed on the subgrade as uniform mixtures and each layer shall be spread in one operation. Segregation shall be avoided and the layer shall be free from pockets of coarse or fine material.

Permeable material shall be deposited at a uniform quantity per linear foot, which quantity will provide the required compacted thickness within the tolerances specified herein without resorting to spotting, picking up, or otherwise shifting the gravel material.

Where the required thickness, as determined by the Engineer, is twelve inches (12") or less, the gravel mattress material may be spread and compacted in one layer. Where the required thickness is more than twelve inches (12"), the permeable material shall be spread and compacted in two or more layers of approximately equal thickness, and the maximum compacted thickness of any one layer shall not exceed twelve inches (12"). Each layer shall be spread and compacted in a similar manner.

The use of motor graders will be permitted during depositing, spreading, and compacting operations.

Rolling for compaction shall always be commenced along the edge of the area to be compacted and the roller shall gradually advance toward the center of the area to be compacted. Rollers shall be operated along lines parallel or concentric with the centerline of the road being constructed, and no material variation there from will be permitted. All rollers must be maintained in good mechanical condition.

During and after placement and compaction of the permeable mattress material, the surface shall be protected from damage, erosion, or movement by flowing water or mechanical injury.

*ADD THE FOLLOWING SUBSECTION*

### *303-1.2.3 REINFORCED CONCRETE BOX SUBDRAIN AND BACKDRAIN SYSTEMS*

Sidewall backdrain systems along reinforced concrete box (RCB) culverts and transition structures shall be constructed to the limits and grades and per the details shown on the Plans and Specifications.

Each pipe shall be carefully inspected immediately before it is laid, and any that are damaged or defective shall not be used. The pipe shall be placed on the bedding surface that is accurately shaped to conform to the lower ¼ of the outside portion of the pipe. Perforated pipe shall have two rows of perforations of one-half inch diameter (1/2" Φ) holes at five inches (5") on center, with rows separated by 120 degrees (120°) of arc centered at the pipe bottom. Pipe shall be laid to the grades and alignment indicated or as directed. Pipe laying shall proceed upgrade from the lower end of the pipeline. Pipe grade shall be maintained within ¼ inch in 10 feet of that indicated. Upon completion of backfill, the area shall be suitable for placement of concrete invert or fill as applicable.

The Contractor shall flush the sidewall backdrain system with sufficient water to develop a flow of at least five cubic feet per minute (5 cfm) out of the end of the length of pipe being tested, as measured by approved measuring equipment furnished by the Contractor. Tests shall be conducted in the presence of the Engineer.

Two separate tests to demonstrate proper functioning of the sidewall backdrain collector lines shall be made by the Contractor. The first test of each completed section of the new backdrain system shall be made immediately prior to placing concrete invert. Both tests shall conform to the above requirements. Final acceptance will be made only if the discharge is free and of adequate quantity. Any necessary clearing of drain lines shall be performed at no additional cost to the Agency.

*ADD THE FOLLOWING SUBSECTION*

### *303-1.2.4 REINFORCED CONCRETE BOX SUBDRAIN AND BACKDRAIN PIPE MATERIALS*

Pipe for weep holes and backdrain collector pipes shall be smooth-wall polyvinyl chloride (PVC).

Non-perforated pipe materials specified above for the backdrain system shall conform to the requirements of Section 68-1.02B, 68-1.02E, 68-1.02H and 68-2.02 of the State Standard Specifications and as specified herein.

Perforated pipe materials specified above for the backdrain system shall conform to the requirements of Sections 68-1.02E, 68-1.02H and 68-2.02 of the State Standard Specifications and as specified herein.

Standard for pipe diameter requirement shall be deleted from Section 68-2.02 of the State Standard Specifications and as specified herein. PVC pipe shall be smooth-wall type; no corrugated pipe shall be allowed.

Cast iron pipe and fittings for backdrain outlet shall be service weight and shall conform to the requirements of ASTM A74.

*ADD THE FOLLOWING SUBSECTION*

### *303-1.2.5 REINFORCED CONCRETE BOX BACKDRAIN PERMEABLE MATERIAL*

Permeable material for sidewall backdrains shall be Class 2 permeable material per Section 200-1.2.2, Permeable Material, of these Special Provisions.

*ADD THE FOLLOWING SUBSECTION:*

### *303-1.2.6 REINFORCED CONCRETE BOX FILTER FABRIC/COMPOSITE DRAIN*

Filter fabric shall be in accordance with Section 213.

Composite drain material on the sidewalls of the culverts shall be installed at the locations indicated on the project plans. Drain material shall be Miradrain G100N, J-Drain 300, or approved equivalent drainage system installed in accordance with the recommendations of the manufacturer. The composite drain material shall have a minimum compressive strength of 20,000 pounds per square foot (20,000 psf), a minimum flow rate of seven gallons per minute per foot (7 gpmpf), and the filter fabric shall have a minimum grab tensile strength of 90 pounds. The fabric side of the composite drain shall be placed toward the soil.

*ADD THE FOLLOWING SUBSECTION*

### *303-1.2.7 REINFORCED CONCRETE RETAINING WALL FOUNDATION*

Foundation soil shall be excavated as required to the depths and locations shown on the Plans or as directed by the Engineer. The exposed foundation soil shall be observed by the geotechnical engineer prior to construction to verify that the exposed material is suitable for the design bearing pressure and that the base of the excavation is free of loose soil, uncompacted fill, or water. The Contractor shall undercut any unsuitable soil when directed by the Engineer. Undercut areas shall be filled with crushed gravel or granular native soil when required by the geotechnical engineer and compacted to at least 90% of the material's maximum dry density (per ASTM D1557).

*ADD THE FOLLOWING SUBSECTION*

### *303-1.2.8 REINFORCED CONCRETE RETAINING WALL BACKFILL*

Wall backfill material shall be placed in maximum eight inch (8") loose lifts and compacted to at least 90% of the material's maximum dry density as determined by ASTM D1557. Backfill shall be placed, spread, and compacted in such a manner that minimizes disturbance to the wall backdrain and drainpipe. The soil shall be sloped during construction in such a manner to drain all water away from the wall.

Construction equipment shall be operated in such a way so as not to damage the wall drain and drainpipe system.

Wall backfill soil shall have the following properties:

- Soil friction angle shall be greater than or equal to 33 degrees.
- Expansion index less than or equal to 50 (per UBC Standard 18-2).
- Maximum particle size = 2 inches.

On-site soils meeting the above criteria may have to be processed or selectively graded, or soils may need to be imported onto the site to meet this specification.

### *303-1.3 FORMS*

*ADD THE FOLLOWING*

Forms shall be braced to withstand the pressures developed and shall be tight to prevent loss of mortar. Tangent sections for formed wall surfaces shall result in concrete surface free of any unevenness greater than quarter-inch (1/4") when checked with a ten-foot (10') straightedge.

Forms for covered conduit or open channel curved sections shall be constructed along the arc of the curve. The finished surface shall follow the arc of the curve.

If permitted by the Engineer, covered conduit curved section may use chord panel length not to exceed eight feet (8'). Ends of the chord panel shall be on the arc of the curve.

Reinforcing steel shall be billet steel conforming to ASTM A615 and of the grade shown.

### *303-1.6 FALSEWORK*

### *303-1.6.2 FALSEWORK DESIGN*

*ADD THE FOLLOWING*

The Contractor shall provide all temporary bracing necessary to withstand all imposed loads during erection, construction, and removal of any falsework. The Contractor shall provide falsework drawings and calculations prepared by a registered professional engineer, civil or structural, that show provisions for resolution of all loads that may be imposed upon the falsework. Such plans and calculations shall include:

1. Resolution of all live, dead, wind, construction and impact loads that may be imposed on the falsework.
2. Temporary bracing or methods to be used during each phase of erection and removal of the falsework.
3. Concrete placement sequence.
4. Erection and removal sequence.
5. Deflection values for the falsework that include recommended methods to compensate for falsework deflections, vertical alignment, and anticipated falsework deflection.

### *303-1.7 PLACING REINFORCEMENT*

### *303-1.7.1 GENERAL*

*ADD THE FOLLOWING*

Aluminum and plastic supports for reinforcement shall not be used.

Bars shall be accurately spaced as shown on the Plans and spacing of the first bar immediately adjacent to a transverse construction joint shall be one-half the required spacing shown on the Plans. In no case shall the clear distance between parallel bars be less than 2 ½ diameters of the bar or a minimum of two inches (2").

Unless otherwise shown on the plans, embedment of reinforcing steel (other than stirrups and spacers) shall be 1 ½ inches clear depth for #8 bars and smaller, and shall be 2 inches clear for #9 bars and larger. Where placement of reinforcing steel requires alternate bars of different size, embedment requirements shall be governed by the larger bar. Stirrups and spacers shall be embedded not less than one inch clear depth. Measurement of embedment shall be from the outside of the bar to the nearest concrete face.

Tack welding on reinforcing bars will not be permitted.

### *303-1.7.2 SPLICING*

*ADD THE FOLLOWING*

Splicing of reinforcing bars shall be either by lapping, butt welding, or by mechanical butt splicing, at the option of the Contractor unless otherwise indicated in the plans or otherwise specified.

Reinforcing bars may be continuous at locations where splices are shown on the Plans, at the option of the Contractor. The location of splices, except where shown on the Plans, shall be determined by the Contractor as approved by the Engineer, based upon using available commercial lengths where practicable.

Unless otherwise shown on the Plans or approved by the Engineer, splices in adjacent reinforcing bars shall be staggered. The minimum distance between staggered splices for reinforcing bars No. 11 or small shall be the length required for a lapped splice in the bar.

Completed welded butt splices and mechanical butt splices shall develop not less than ninety percent (90 %) of the specified minimum ultimate tensile strength of the unspliced reinforcing bar.

The deviation in alignment of reinforcing bars at a welded or mechanical splice shall not be more than ¼-inch over a 3 ½ foot length of bar.

Prior to use in the Work, welded butt splices and mechanical butt splices shall be qualified by tests made on sample splices.

During progress of the Work, in addition to inspection and non-destructive testing performed by the Engineer on all types of butt splices, job control tests shall be made on sample splices representing each lot of mechanical butt splices. Sample splices for qualification and job control tests shall be tested for compliance with all specified requirements for splices. All such sample splices shall be fabricated and tested by the Contractor at its cost and a copy of the test results furnished to the Engineer.

Splices shall consist of placing the reinforcing bars in contact and wiring them together in such a manner as to maintain the alignment of the bars and to provide minimum clearances.

No lapped splices will be permitted at locations where the concrete section is not sufficient to provide a minimum clear distance of two inches (2") between the splice and the nearest adjacent bar. The clearance to the surface of the concrete shall not be reduced.

When not specified by the Engineer, the length of lapped splices shall be as follows: Reinforcing bars No. 8, or smaller, shall be lapped at least 45 diameters of the smaller bar joined, and reinforcing bars Nos. 9, 10, and 11 shall be lapped at least 60 diameters of the smaller bar joined, except when otherwise shown on the Plans.

Splices of tensile reinforcement at points of maximum stress shall be avoided; however, any deviation from splices shown on the Plans shall be approved by the Engineer. Splices in longitudinal steel shall be staggered at least the length of the splice.

### *303-1.8 PLACING CONCRETE*

*ADD THE FOLLOWING*

When concrete is to be deposited in a member less than 16 inches in width, the use of double belting to prevent segregation of the concrete shall be permitted, in lieu of pipes or tremies. Each belt shall extend equidistant into the forms to a point where concrete shall not fall more than six feet (6'). When placed in the forms, the belts shall be aligned directly opposite each other.

### *303-1.8.6 JOINTS*

*ADD THE FOLLOWING*

Unless otherwise specified, transverse construction joints shall be placed in all reinforced sections at intervals of not less than ten feet (10') or more than fifty feet (50'). The joints shall be in the same plane for the entire structure, and for concrete thickness greater than six inches (6") shall be keyed as directed by the Engineer.

Construction of all reinforced concrete sections (including inverts) shall be by the alternate panel method, and no continuous placement through joints will be permitted. After placement of all concrete in a panel or section on one side of the joint has been completed, placement of concrete on the other side of the joint shall be delayed as directed by the Engineer; but in no event shall the delay be less than eight (8) hours.

### *303-1.9 SURFACE FINISHES*

### *303-1.9.1 GENERAL*

*ADD THE FOLLOWING*

The longitudinal and transverse channel invert elevation shall not vary from true line and grade more than ½ inch. The unevenness shall not be more than ¼ inch when checked with a ten-foot (10') straightedge.

Top of channel wall and channel side slope elevation shall not vary from true line and grade more than ½ inch. Unevenness shall not be more than ½ inch when checked with a ten-foot (10') straightedge.

Any surfaces which fail to conform to the above tolerances shall be ground in accordance with the best standard practice until the tolerances are met. Grinding shall not reduce the concrete cover on reinforcing steel to less than 1-1/2 inches. Portions of inverts which cannot be corrected satisfactorily by grinding shall be removed and replaced.

Except as specified above, vertical or horizontal position of structures as shown on the Plans or as specified in these specifications, shall not vary more than ½ inch from true position. Elevation at inlet lips shall not vary more than ¼ inch from elevations shown on the Plans.

The ten-foot (10') straightedge or template shall be furnished by the Contractor and shall be readily available prior to placing of concrete.

### *303-1.9.2 ORDINARY SURFACE FINISH*

*ADD THE FOLLOWING*

Ordinary surface finish shall not apply to rock pockets which, 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. In such cases, the Engineer may declare the concrete defective and require the removal and replacement of the portions of the structure affected.

*ADD THE FOLLOWING SECTION*

### *303-1.9.5 SURFACE FINISH FOR CONCRETE SPILLWAY*

The Contractor shall provide a surface finish for concrete spillway to prevent the use of rollerblades, skateboards, and other rolling devices. Surface finish shall be a rough finish approved by the Engineer.

### *303-1.10 CURING*

*ADD THE FOLLOWING*

Where the curing compound method is used on concrete surfaces exposed after construction, the invert surface shall be sealed with a Type 1 chlorinated rubber base compound, and the wall surfaces shall be sealed with a Type 1 wax base compound.

### *303-1.11 PAYMENT*

*ADD THE FOLLOWING*

Full compensation for this work shall be paid at the lump sum or unit prices bid for various concrete construction and appurtenant items or shall be considered as included in the Contract price for other items of work.

The unit or lump sum price paid for the various concrete structures shall be considered as including the furnishing and installation of all concrete, reinforcing steel, forming, finishing, form removal, miscellaneous metal, gratings, frames and covers, excavating, backfilling, compaction, making connection of pipes, chain, access steps, ladders, plates, hardware, concrete bases, supporting utilities, weep holes and back drains, and providing all labor, equipment, materials, and tools necessary to provide the structure complete in place.

Payment for curb inlets, curb outlets, catch basins, clean-outs, pipe collars and manholes shall be at the contract unit price per each.

Payment for concrete brow ditch shall be at the contract unit price per lineal foot complete in place.

Payment for concrete encasement or backfill of structures shall be considered as included in the contract price(s) paid for various type of pipe as specified elsewhere in these Special Provisions.

*ADD THE FOLLOWING SECTION:*

### *303-1.11.1 REINFORCED CONCRETE BOX PAYMENT*

Payment for reinforced concrete box (RCB) culvert and transition structures shall be at the Contract lump sum or unit price bid. Such payment shall be considered as full compensation for the furnishing of all labor, material, tools, equipment, and for performing of all work necessary for the construction of RCB culverts, complete, and in place including, but not limited to, structural excavation, removal of portions of existing culverts and connecting thereto, forming, joints, joint material, finishing, Portland cement concrete, reinforcing steel; weepholes, permeable mattress and backdrain material, subdrain & backdrain systems, inlet pipe connections,

access manholes, flab gates, variable-width common walls, interior wall hydraulic window openings, parapet walls, cut-off walls, wing walls, polyethylene subgrade cover; temporary utility support; phased construction requirements, integral utility crossing structures or sleeves, and backfill.

All costs involved in the construction of windows for box conduits shall be included in the price bid for the applicable RCB item. For purposes of payment, no additions or deductions in box quantities will be made for windows.

*ADD THE FOLLOWING SECTION:*

### *303-1.11.2 REINFORCED CONCRETE RETAINING WALL PAYMENT*

Payment for reinforced concrete retaining walls shall be made at the lump sum or unit prices bid. Such payment shall be considered as full compensation for the furnishing of all labor, materials, tools, equipment and for performing all work necessary for the construction of the Project Site retaining walls, complete, and in place including, but not limited to, structural excavation, forming, joints, joint material, reinforcing steel, weep holes, Portland cement concrete, finishing, waterproofing, installation of wall back drain system and connections to the storm drain system, backfill, and spoils disposal.

## 303-4 MASONRY CONSTRUCTION

### *303-4.1 CONCRETE BLOCK MASONRY*

### *303-4.1.2 CONSTRUCTION*

*ADD THE FOLLOWING SUBSECTION*

### *303-4.1.2.1 MASONRY RETAINING WALL FOUNDATION*

Foundation soil shall be excavated as required to the depths and locations shown on the Plans or as directed by the Engineer. The exposed foundation soil shall be observed by the geotechnical engineer prior to construction to verify that the exposed material is suitable for the design bearing pressure and that the base of the excavation is free of loose soil, uncompacted fill, or water. The Contractor shall excavate any unsuitable soil when directed by the Engineer. Unsuitable material excavated shall be replaced with crushed gravel or granular native soil when required by the geotechnical engineer and compacted to at least 90% of the material's maximum dry density (per ASTM D1557).

*ADD THE FOLLOWING SECTION*

### *303-4.1.2.2 MASONRY RETAINING WALL BACKFILL*

Wall backfill material shall be placed in maximum eight inch (8") loose lifts and compacted to at least 90% of the material's maximum dry density as determined by ASTM D1557. Backfill shall be placed, spread, and compacted in such a manner that minimizes disturbance to the wall backdrain and drainpipe. The soil shall be sloped during construction in such a manner to drain all water away from the wall.

Construction equipment shall be operated in such a way so as not to damage the wall drain and drainpipe system.

Wall backfill soil shall have the following properties:

- Soil friction angle shall be greater than or equal to 33 degrees.
- Expansion index less than or equal to 50 (per UBC Standard 18-2).
- Maximum particle size = 2 inches.

On-site soils meeting the above criteria may have to be processed or selectively graded, or soils may need to be imported onto the site to meet this specification.

### *303-4.1.5 MEASUREMENT AND PAYMENT*

*ADD THE FOLLOWING*

Payment for masonry retaining walls shall be considered as full compensation for the furnishing of all labor, materials, tools, equipment and for performing all work necessary for the construction of the retaining walls, including, but not limited to, structural excavation, joints, joint material, reinforcing steel, weep holes, Portland cement concrete, foundation, finishing, waterproofing, installation of wall back drain system and connections to the storm drain system, backfill, and spoils disposal.

When paid by the square foot the quantity measurement shall be the length of the wall by the height of the wall from top of footing to top of wall.

## 303-5 CONCRETE CURBS, WALKS, GUTTERS, CROSS GUTTERS, ALLEY INTERSECTIONS, ACCESS RAMPS, AND DRIVEWAYS

### *303-5.1 REQUIREMENTS*

### *303-5.1.1 GENERAL*

*DELETE SECTION AND REPLACE WITH:*

Concrete curbs, walks, gutters, cross gutters, alley intersections, access ramps, and driveways shall be constructed of Portland cement concrete of the class and other requirements specified in Section 201-1. Unless otherwise specified on plans or Project Special Provisions the thickness of all gutters, cross gutters, alley intersections, alleys, and driveways shall be the thickness as specified on the applicable SDRSD or on the COSMSD for commercial radius-type driveways.

### *303-5.5 FINISHING*

### *303-5.5.2 CURB*

*ADD THE FOLLOWING:*

The Contractor shall stamp the curb face with 3" high block letters directly above the point that it is crossed by underground facilities with the marking specified in Table 303-5.5.2(A)

**TABLE 303-5.5.2(A)**
**CURB FACE MARKINGS**

| Type of underground facilities | Marking |
|---|---|

| | |
|---|---|
| Water Service Lateral | W |
| Sewer Service Lateral | S |
| Irrigation Water Lateral or Sleeve | RW |

*DELETE LAST SENTENCE OF SECOND PARAGRAPH AND ADD THE FOLOWING:*

The name of the Contractor and the year in which the improvement is constructed shall not be stamped in the completed work.

### *303-5.5.5 ALLEY INTERSECTIONS, ACCESS RAMPS, AND DRIVEWAYS*

*ADD THE FOLLOWING*

Access ramps shall be placed at the grades shown on the Plans. Detectable warning surfaces, "Truncated Domes", for access ramps shall conform to SDRSD G-30 and will be grey in color when placed in the public right-of-way and yellow for all other applications. When approved by the Engineer, surface applied detectable warning surfaces may be installed and shall comply with Section 215-2.

### *303-5.6 CURING*

*DELETE FIRST PARAGRAPH AND ADD THE FOLLOWING:*

Immediately after finishing operations are completed, Type 2 concrete curing compound shall be applied at a rate of one gallon per 150 square feet.

### *303-5.9 MEASUREMENT AND PAYMENT*

*ADD THE FOLLOWING:*

Payment for concrete Curb and Gutter or Curb only shall be made at the price bid per linear foot, including transition sections where the curb face height varies (such as at pedestrian ramps, curb inlets, cross gutters and other depressions). Payment for concrete Sidewalk, Driveway, and Cross Gutter shall be at the unit prices bid per square foot, including transition sections where the concrete thickness varies (such as at the wings of driveways).

Payment for curb inlet transitions on each side of curb inlets shall be made at the unit price bid for Curb and Gutter and no additional payment shall be made therefor.

Measurement for access ramps indicted for payment per each ramp installed shall be done perpendicular from the face of curb from edge of wing to edge of wing, and will include everything from the gutter lip to back of walk including curb, gutter, transition areas, borders, monolithic curb at back of ramp, and detectable warning tiles within those limits.

*DELETE SECTION 303-6 AND REPLACE WITH*

## 303-6 DECORATIVE CONCRETE FINISHES

### *303-6.1 STAMPED CONCRETE*

#### *303-6.1.1GENERAL*

Stamped concrete shall be imprinted with special tools to provide the pattern specified. Colored stamped concrete shall conform to Section 303-7.

#### *303-6.1.2 CONCRETE PLACEMENT*

Placing of concrete shall conform to 302-6 and 303-5. The minimum slab thickness shall be 4 inches. The maximum size of aggregate in the top 2 inches shall be 3/8 inch.

#### *303-6.1.3 PATTERN*

The pattern of stamped concrete shall be implanted, indented, imprinted, or stamped into the surface by means of forms, molds, or other approved devices. The impressions shall be approximately 3/8 inch in width, not to exceed 1/2 inch in depth and be ungrouted unless otherwise specified. Expansion joints and control joints shall be located so as not to disrupt the pattern. The pattern for medians shall be Cut Stone Cobble (part no. CS350) pattern or approved equal.

Joints will conform to Section 303-5.4.

The pattern will be as specified on the Plans or Specifications

Existing stamped concrete medians shall be matched whenever indicated by the Plans or Project Special Provisions. Medians shall be integrally colored Terra Cotta by David Colors, or approved equal. The stamp shall be a flagstone pattern “cookie cutter” type stamp that matches the existing pattern. Stamps may be found at:

| | | |
|---|---|---|
| Integrity Concrete<br>(760) 744-4444<br>540 Opper Street<br>Escondido, CA 92029 | OR | TB Pinnick, Inc<br>(760) 212-6410<br>134N. Hayden Dr<br>Escondido, CA 92027 |

### *303-6.2 ETCHED SURFACE*

[Reserved]

### *303-6.3 SEEDED AGGREGATE SURFACE FINISH*

[Reserved]

### *303-6.4 BOARD FORMED CONCRETE FINISH*

[Reserved]

### *303- 6.5 EXPOSED AGGREGATE FINISH*

### *303-6.5.1 GENERAL*

Exposed aggregate concrete surface finishes shall be accomplished through the use of concrete surface retarder. Surface retardant shall only be applied to areas indicated for an exposed aggregate finish in the Plans or Project Special Provisions. Fresh concrete adjacent to areas where surface retardant will be used will be protected. The depth of aggregate exposure shall be as specified on the Plans or Project Special Provisions. Surface retarder shall be applied as directed by the manufacturer's recommendations.

### *303-6.5.2 MATERIAL*

Surface retardant for exposed aggregate finish shall be a material manufactured for the use of slowing curing of the surface of placed concrete. Retarder may be either a spray or powder for application on horizontal concrete surfaces and a viscous emulsion for application to forms when surface retardant is needed on vertical surfaces.

### *303-6.6 OFF-FORM FINISH*

[RESERVED]

### *303-6.7 TEST PANELS*

The Contractor will prepare test panels on the project site when required by the Engineer. Test panels will be prepared using the same techniques and products planned to achieve the surface finish. The Contractor shall notify the Engineer of completion of the test panels and allow 5 working days for the Engineer to review and approve the panels prior to placing concrete. Each panel shall be five feet by five feet (5'x5'). If rejected by the Engineer the Contractor shall make adjustments to procedures to address the Engineer's comments and produce a new test panel.

Test panels shall be maintained for the duration of the Work or until the Engineer approves their disposal. The Contractor shall be responsible for the removal and disposal of the test panels.

### *303-6.8 MEASUREMENT AND PAYMENT*

Payment for stamped concrete paving shall be made at the contract unit price bid per square foot for "Stamped Concrete Paving". Said payment shall include compensation for all excavation, grading, backfill, forming, mesh, reinforcing steel, concrete, integral color, texture sealers, weakened plane and expansion joints, test panels, and other material necessary to construct the specific paving.

Payment for finishes shall be considered as paid as part of the major item of work to which they are apart.

## 303-7 COLORED CONCRETE

### *303-7.1 GENERAL*

All colored concrete shall be Integral Color by Method B unless otherwise specified. Median color shall be Solomon Colors 775 Sand (SRI 46) or approved equal and shall comply with Section 201-1.2.4(a).

# SECTION 304 - METAL FABRICATION AND CONSTRUCTION

## 304-3 CHAIN LINK FENCE

### *304-3.1 GENERAL*

*ADD THE FOLLOWING*

The work includes installation of new chain link fencing and gates and the removal and relocation of existing chain link fencing as shown on the Plans.

### *304-3.2 FENCE CONSTRUCTION*

*ADD THE FOLLOWING*

New fence construction includes both hole-dug ground surface installations and embedded-pole, structure-mounted installations (such as on parapets, wing walls, headwalls, retaining walls, and channel lining stiffening beams). Unless otherwise specified, materials and construction of chain link fencing and gates shall conform to Sections 206-6, Chain Link Fence, Plans, and Specifications. .

### *304-3.3 INSTALLATION OF GATES*

*ADD THE FOLLOWING*

Where existing chain link fencing and/or gate improvements are shown on the Plans to be relocated, or where new fencing is required to alter Caltrans right-of-way fencing, new fabric and support posts or framework materials shall match those to be joined or extended.

Where existing fence is shown to be removed and relocated, and the Contractor does not undertake the installation in the new location immediately after removal, then the Contractor shall make provision to install temporary fencing or other type of perimeter enclosure or security during the interim period. The use and type of temporary, interim fencing, if proposed, shall be approved by the Engineer prior to the removal of the original fencing. The needs and wishes of the affected property owner shall be considered when selecting the type of temporary fence material for, and the timing of, interim fence installation.

### *304-3.4 MEASUREMENT AND PAYMENT*

*ADD THE FOLLOWING*

Payment for the removal and relocation of existing chain link fencing shall be at the Contract Unit Price per lineal foot.

*ADD THE FOLLOWING SUBSECTION*

## 304-5 GALVANIZED ORNAMENTAL IRON FENCING

### *304-5.1 GENERAL*

The work includes the installation of new hot-dipped galvanized ornamental iron fence materials including galvanized ornamental iron gates, posts and hardware and the removal and/or relocation of existing chain link fencing; all as shown on the Plans.

New galvanized ornamental iron fence construction includes hole-dug, ground surface installations and embedded-pole, structure-mounted installations (such as on parapets, wing walls, headwalls, and channel lining stiffening beams). Unless otherwise specified, materials and construction of the galvanized fencing materials shall conform to these Special Provisions.

### *304-5.2 FENCE MATERIALS*

The manufacturer shall supply a complete ornamental fencing system including all components defined (fence panels, posts, post caps, gates and hardware).

The fence and gate style shall be six-foot (6') Extra Heavy Duty Commercial grade "Aristocrat" style (fattened spear at top of picket). The rails shall be 2" x 2" 14 gauge steel tube. The pickets shall be 1" x 1" 16 gauge steel tube at 5" O.C. The posts shall be 2" x 2" 11 gauge steel tube with a pressed steel cap. Steel posts shall be eight feet (8') O.C.

Slide gates shall be 2" x 2" x 11 gauge steel tube top rail and verticals. Bottom rail shall be 2" x 4" x 11 gauge steel tube with wheel housings. Ground track to be angle iron (sized per requirements) with #4 rebar hooks welded at 24" O.C. Wheels shall be 6" diameter V-Groove type with grease fitting and needle bearings. Upper guides shall be Type I roller assemblies with 2" diameter hard rubber rollers, ½" axle, and bronze bushings. Safety posts to be minimum 4" square 11 gauge steel tube.

Pickets, rails and posts shall be manufactured from tubing meeting the requirements of ASTM A 513 or A 500 Grade B.

Solid steel bars, flat plates and shapes shall be manufactured from steel conforming to the requirements of ASTM A 36.

Pickets for gates shall be of the same size and style as those in the fence panels. Frames for gates shall be of sufficient size and thickness to provide adequate support without sag. Adjustable trussing may be required. Gate hardware shall be supplied by the manufacturer and shall be of sufficient size and capacity to support the gate specified.

The color of the fencing materials shall be high gloss black.

### *304-5.3 QUALITY ASSURANCE*

The Contractor must have and must demonstrate experience with the construction methods and materials involved in ornamental iron fencing.

### *304-5.4 REFERENCE SPECIFICATIONS*

ASTM A 36, Structural Steel, Bars, Flats and Shapes; ASTM A 123, Zinc (Hot-dipped Galvanized) Coatings; ASTM A 500, Steel Structural Tubing in Rounds and Shapes; ASTM A 513, Electric-Resistance-Welded Carbon and Alloy Steel Mechanical Tubing.

### *304-5.5 SUBMITTALS*

Contractor shall submit the manufacturer's shop drawings and literature pursuant to Section 2-5.3, Submittals, prior to installation. Approved shop drawings shall become the basis for acceptance of the work.

### *304-5.6 DELIVERY, STORAGE, AND HANDLING*

Delivery of the job site materials in good condition and properly protected against damage to factory-finished surfaces. Materials shall be stored in a clean, dry location and in such a way as to avoid damage, especially from dust, chemicals and moisture in the air b covering with protective material. Handle materials carefully on the job site to protect factory finishes.

### *304-5.7 MANUFACTURER'S CERTIFICATION*

Manufacturer shall certify that it manufactures the ornamental iron fence materials in accordance with specifications and/or shop drawings. Manufacturer assumes responsibility of providing products meeting prescribed specifications. Damage to coating due to shipping and installation is to be expected and must be adequately touched up or repainted immediately after occurrence by installer to meet original specification standards.

### *304-5.8 FABRICATION*

Steel used in the manufacturing of panels, gates and posts shall conform to the ASTM standards specified and shall be new prime material.

Panels, gates and flanged posts shall be of welded construction. No wire rods, screws or rivets shall be accepted to attach pickets to rails. Layout and welding shall be done by experienced craftsmen. Welds shall be made by the gas metal arc method and welds shall be neat, clean and of the sizes indicated on the drawings. All flush welds shall be ground smooth.

After fabrication panels, gates and posts shall be power washed in a phosphoric acid solution, rinsed and dried.

Finish shall be GALVA-GUARD II (Hot-dipped galvanized and polyurethane painted) (or approved equal).

### *304-5.9 EXECUTION*

### *304-5.9.1 PREPARATION*

The Contractor shall layout the new fence in accordance with these specifications, fence constructions plans, shop drawings, and all applicable requirements and codes.

The Contractor shall verify any grade changes or surface irregularities.

Discrepancies between the approved shop drawings and field conditions must be approved by the Engineer prior to proceeding with the installation.

### *304-5.9.2 INSTALLATION*

Fence posts shall be plumb and level at spaces shown on the drawings. Footings shall be of the sizes indicated. Post caps shall be as indicated on the drawings.

Fence panels shall be welded or bolted to the posts. Field welding of rail to the post shall be a complete 360-degree (all four sides) and shall be the size indicated on the drawings. Welds shall be cleaned and coasted with a primer the same day the welding is performed. Bolted connections shall use bolts and tabs of the size indicated on the drawings. After tightening bolt, threads shall be peened.

Gates shall be installed plumb and level and shall be the sizes and style indicated on the drawings. The Contractor shall install any gate stops that may be required. Any padlock provisions or strikes shall be field attached to assure alignment. The Contractor shall lubricate the hinges, rollers and other gate hardware after installation.

All field welds and any abrasions to factory coatings shall be thoroughly cleaned, re-primed and touched up by the Contractor with paint of the same quality, color and gloss of that used by the manufacturer.

### *304-5.9.3 CLEANING*

The Contractor shall clean job site of excess materials.

Posthole excavations shall be scattered uniformly away from the posts or removed as directed.

Concrete splatter shall be cleaned from exposed posts.

### *304-5.10 PAYMENT*

Payment for the installation of new galvanized Ornamental Iron Fence shall conform to Section 304-3.4.

# SECTION 306 – OPEN TRENCH CONDUIT CONSTRUCTION

## 306-2.7 SHUTDOWNS OF EXISTING PIPELINES

### *306-2.7.3 TEMPORARY BYPASSES*

*DELETE SUBSECTION AND REPLACE WITH*

Temporary bypasses needed for Work will be done in accordance with the facility owner's requirements and any Project Special Provisions.

## 306-3 TRENCH EXCAVATION

### *306-3.4 MINIMUM AND MAXIMUM PIPE ZONE TRENCH WIDTH*

[reserved]

## 306-4 SHORING AND BRACING

*ADD THE FOLLOWING*

The Contractor shall be responsible for the design of all shoring and bracing unless otherwise provided in the Project Special Provisions. The Contractor shall submit any shoring and bracing calculations 20 days prior to shoring and bracing operations.

*ADD THE FOLLOWING SECTION*

### *306-1.2 INSTALLATION OF PIPE*

## 306-6 BEDDING

### *306-6.2 BEDDING FOR NARROW TRENCHES*

*ADD THE FOLLOWING*

Trench construction owned by the Agency will have a minimum of four inches (4") of bedding material placed below the pipe barrel.

Bedding requirements for narrow trenches, other than those owned by the Agency, will be specified by the owner of the installation, and shall be placed on firm and unyielding subgrade so as to support the pipe or conduit for its full length.

When the Contractor is permitted to place the pipe or conduit without bedding, it shall be placed on firm and unyielding subgrade.

### *306-7.3 REINFORCED CONCRETE PIPE (RCP)*

*ADD THE FOLLOWING SUBSECTION*

### *306-7.3.4 TEMPORARY BULKHEADS*

If for convenience or protection the Contractor elects to use temporary bulkheads that are not detailed on the Plans, the Contractor shall submit for approval detailed calculations and drawings of the bulkheads, prepared and signed by a Civil or structural Engineer registered in the State of California, whenever the span exceeds four feet or the depth of cover above the bottom of the bulkhead exceeds 20 feet. The Contractor shall allow a minimum of 21 days for the review of the plans.

Bulkheads for which a submittal is not required shall have the following minimum structural sections shown in Table 3-1.2.14.

**TABLE 3-1.2.14**

| Material | Grade | Section |
|---|---|---|
| Timber | D.F. No. 2 | 3" thick |
| Concrete | $f'_c$ = 2500 psi | 6" thick w/#4 @ 10" parallel to span and #4 @ 18" |
| Brick | $f_m$=2500 psi solid units | 12" thick w/#4 @ 9" parallel to span ½" from inside tier and #4 @ 18" perpendicular to span |
| Steel Plate | A36 Steel | ½" thick |

All costs involved in temporary bulkhead work shall be included in the prices bid for the various items of work unless otherwise specified.

Any concrete or brick and mortar plugs/bulkheads shall be removed before making connections.

### *306-7.8 GRAVITY PIPELINE TESTING*

### *306.7.8.1 GENERAL*

*ADD THE FOLLOWING*

All storm drain lines shall be inspected by closed circuit television in Conformance with Part 5. The video inspection shall be performed by an entity with the demonstrated experience to perform the inspection as approved by the Agency.

## 306-12 BACKFILL

### *306-12.1 GENERAL*

*ADD THE FOLLOWING*

The Contractor shall install detectable underground utility marking tape one foot above top of pipe or conduit. The type and color of detectable underground utility marking tape shall conform to the requirements of the utility owner and to the satisfaction of the Engineer.

### *306-12.3.2 COMPACTION REQUIREMENTS*

*DELETE SECTION AND REPLACE WITH*

The Contractor shall compact trench backfill to a minimum of 90 percent relative compaction except that in the top 12" of the street right-of-way sub-grade compaction shall be 95 percent.

## 306-13 TRENCH RESURFACING

### *306-1.5.1 TEMPORARY RESURFACING*

*ADD THE FOLLOWING*

When temporary bituminous resurfacing materials are used in lieu of permanent resurfacing it shall be removed and replaced with permanent resurfacing within 7 days of placement or as approved by the Engineer.

In the event the Contractor does not place temporary resurfacing by end of work day of placing backfill, the Agency may furnish and place temporary resurfacing at the sole expense of the Contractor. The Agency shall deduct such expense from payments due to the Contractor.

Temporary bituminous resurfacing materials shall be used in lieu of permanent resurfacing only when approved by the Engineer.

## 306-14 MEASUREMENT

### *306-14.1 SHORING AND BRACING*

*DELETE SECTION AND REPLACE WITH*

[reserved]

### *306-15 PAYMENT*

*ADD THE FOLLOWING*

Payment for utility underground conversion of CATV, telephone, gas, and electrical shall be made at the Contract lump sum price bid for utility undergrounding and no additional payment will be made therefor. The Contractor will furnish and install all utility infrastructure pursuant to the utility company's specifications.

Payment for underground conduit construction shall also include removal and disposal of excavated material not suitable for use as trench backfill.

## 306-15 PAYMENT

### *306-15.2 SHORING ANG BRACING*

*DELETE AND REPLACE WITH*

Unless a separate bid item is provided for "shoring and bracing", the cost of sheeting, shoring and bracing shall be included with related items of work including furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in providing trench safety, shoring or sloping of excavations; including, but not limited to, constructing trench shoring, design of the shoring system, removal and disposal of the shoring materials, obtaining all necessary permits from the Division of Occupational Safety and Health; all as shown on the Plans, as specified in the Standard Specifications and these Special Provisions.

No additional payment will be made for sheeting, shoring, and bracing as a result of required revisions in the trench support details due to a type of soil encountered which requires a method of trench support different from that approved.

### *306-15.9 TEMPORARY RESURFACING*

*DELETE AND REPLACE WITH*

Payment for temporary resurfacing will be considered included in the conduit construction cost. No additional payment will be made for temporary bituminous resurfacing materials. The price bid for the associated conduit or structure shall include full compensation for furnishing, placing, maintaining, removing, and disposing of such temporary resurfacing materials.

Temporary bituminous resurfacing materials which are placed by the Contractor are for its own convenience and shall be at no cost to the Agency.

### *306-15.9 TEMPORARY RESURFACING*

*DELETE SUBSECTION AND REPLACE WITH*

Payment for temporary resurfacing will be considered included in the major item of work for which temporary resurfacing is being performed and no additional payment shall be made therefor.

*ADD THE FOLLOWING SECTION*

# SECTION 313 - SIGNING

## 313-1 GENERAL

[reserved]

## 313-2 TRAFFIC SIGNAGE

### 313-2.1 GENERAL

Unless otherwise specified traffic signage shall conform to the California Manual of Uniform Transportation Control Devices (CAMUTCD).

### 313-2.2 LOCATION

Sign locations shown on the plans are approximate in nature. Final location of sign posts supporting signage shall be approved by the Agency prior to installation.

Signs shall have 7' vertical clearance from bottom of sign to finished surface for one sign and 7' vertical clearance for a two sign installation unless otherwise specified.

Sign posts shall be located such that they maintain a minimum of forty-eight (48) inches of clearance between post and back of sidewalk for ADA compliance.

Signs shall be a minimum of twelve (12) inches clear (horizontal) from curb face.

### 313-2.3 SIGN POSTS

Each post shall be new and have a maximum of two signs (with different meanings) on each side of a post (maximum number of signs on both sides shall not exceed four).

Sign posts shall be anchored a minimum of twenty-four (24) inches below finished grade in undisturbed soil and backfilled with post hole concrete [if in sidewalk area, backfill shall be four (4) inches of concrete above twenty (20) inches of sand].

Sign posts located in the median shall be set in an eight (8) inch diameter by twenty-four (24) inch deep PVC sleeve and backfilled with sand to top of sleeve.

Wood posts for Class II & III barricades shall be painted white.

### 313-2.4 SIGNS

Signs that are forty eight (48) inches wide shall be installed utilizing sign strap hardware on the back.

Signs greater than forty eight (48) inches wide shall be installed utilizing two posts unless otherwise specified in the Project Special Provisions.

Signs shall be installed on existing or new street light poles utilizing 5/8" "band it" stainless steel strapping with fasteners.

Single signs mounted on aluminum posts shall include 2 7/8" post caps and double signs shall include 2 7/8" cross saddle.

Signs shall not be installed on utility company poles.

Existing signs shall be salvaged and delivered to the Public Works Department located at 201 Mata Way.

## 313-2.5 MEASUREMENT AND PAYMENT

Permanent signing and appurtenances thereto shown on the plans or required in the specifications shall be paid as part of the lump-sum price bid for Traffic Signing & Striping and shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all work involved in supplying and installing permanent signing, striping, and appurtenances, complete in place, as shown on the plans, as specified in the Standard Specification and these Special Provisions, and as directed by the Engineer.

## 313-3 WAY FINDING SIGNAGE

### *313-3.1 GENERAL*

This section shall apply to signs as shown in the "Entry and Wayfinding Signage Master Plan".

The location of signage shown on the Plans is general in nature. The Contractor shall precisely locate the signage based on direction from the Engineer.

Monument signage will be installed as shown on the Plans and Project Special Provisions.

### *313-3.2 METAL SIGN PANELS*

Sign panels shall be made of aluminum sheet metal. The sign panels shall be a single continuous panel. To achieve the correct size two panels may be used but must be welded and have welds ground smooth. A single sign shall not be made of more than two metal panels welded together unless approved by the Engineer. Connection of two sign panels using mechanical methods or adhesive will not be allowed.

Graphic sheeting shall be affixed to sign panels so that messaging is level when mounted. The City will provide digital vector files of signage for production. The Contractor will be responsible for ensuring the correct messaging is placed on signage per the Plans or Project Special Provisions. Where no messaging is provided on the Plans or Specifications, the Contractor shall contact the Engineer for messaging.

### *313-3.3 ACRYLIC SIGN PANELS*

[reserved]

### *313-3.4 MOUNTING*

### *313-3.3.1 GENERAL*

### *313-3.3.2 STREET LIGHT*

### *313-3.3.3 GALVANIZED STEEL POLE*

### *313-3.3.4 CORTEN STEEL*

### *313-3.5 SUBMITTALS*

[Reserved]

### *313-3.6 MEASUREMENT AND PAYMENT*

Measurement and payment for wayfinding signage shall be at the lump sum Contract unit price for "Wayfinding Signage". The Contract unit price for wayfinding signage shall be deemed to be inclusive of placement, fabrication, installation, and maintenance.

## 313-4 MONUMENT SIGNAGE

[Reserved]

## 313-5 MISCELLANEOUS SIGNAGE

[Reserved]

# SECTION 314 – TRAFFIC STRIPING, CURB AND PAVEMENT MARKINGS, AND PAVEMENT MARKERS

## 314-1 GENERAL

*ADD THE FOLLOWING*

Striping, pavement markings and pavement markers shall not be placed any sooner than 7 days after the placement of asphalt paving, slurry seal or other bituminous treatment.

Final pavement markings, striping and markers shall be placed within 14 days of approved field layout.

## 314-2 REMOVAL OF TRAFFIC STRIPING AND CURB AND PAVEMENT MARKINGS

### *314-2.1 GENERAL*

*DELETE SECTION AND REPLACE WITH*

The Contractor shall remove existing striping by dry sand blasting all existing or temporary traffic markings that conflict or may confuse the public. Dust control methods may be implemented as directed by the City representative. Grinding methods may also be permitted based on approval by the Engineer. When temporary detour striping or markings are no longer required, they shall be removed prior to painting the new traffic stripes or markings. Obliteration with black paint or emulsified asphalt will not be allowed.

Thermoplastic striping and markings shall be removed fully unless otherwise approved by the Engineer.

Curb markings shall be removed where required using dry sandblasting. Curb markings intended to be re-painted shall have all existing loose material removed prior to painting.

Damage to pavement caused by the excessive grinding of the street shall be repaired as directed by the Engineer.

The surface produced by grinding on pavement shall not exceed variations from a uniform plane more than 3 mm (1/8”) in 3 m (10’) when measured parallel to the centerline of the street or more than 6 mm (1/4”) in 3 m (10’) when measured perpendicular to the centerline of the street.

### *314-2.2 MEASUREMENT*

Measurement for removal of traffic striping will be measured as a lump sum unit basis.

### *314-2.3 PAYMENT*

Payment for striping removal shall be considered included in the lump sum unit price for “Traffic Striping” and shall include full compensation for furnishing all labor, materials, tools, and equipment for the removal and disposal of striping, pavement markings, and pavement markers.

## 314-4 APPLICATION OF TRAFFIC STRIPING AND CURB AND PAVEMENT MARKINGS

### *314-4.1 GENERAL*

*ADD THE FOLLOWING*

All striping and pavement markings shall conform to the appropriate details in the California Manual on Uniform Traffic Control Devices (MUTCD) except as modified herein.

Contractor shall apply striping as indicated on the plans or specifications in conformance with the latest CalTrans standard plans. Where no further clarification is provided on the striping to be placed or lack of detail is provided the Contractor shall coordinate with the Engineer to determine the type of striping and markings.

### *314-4.2CONTROL OF ALIGNMENT AND LAYOUT*

### *314-4.2.1 GENERAL*

*ADD THE FOLLOWING*

The Contractor shall establish the necessary control points for all required pavement striping and markings by surveying methods. No layout of traffic striping shall be performed by the Contractor before establishment of the necessary control points.

Continental cross-walk layout shall be in accordance with the City of San Diego Standard Drawing SDM-116.

### *314-4.3 PAINTED TRAFFIC STRIPING AND CURB AND PAVEMENT MARKINGS*

### *314-4.3.1 GENERAL*

*ADD THE FOLLOWING*

Paint shall not be applied if rain is forecast within 24 hours.

Paint shall not be applied until the layout is approved by the Engineer.

### *314-4.3.2 SURFACE PREPARATION*

*ADD THE FOLLOWING*

After the removal of existing traffic striping and pavement markings a slurry seal shall be applied to the surface of the grinding, or sandblasting areas.

### *314-4.3.4 APPLICATION EQUIPMENT*

### *314-4.3.4.1 GENERAL*

*ADD THE FOLLOWING*

The use of any equipment that leaves ridges, indentations or other objectionable marks in the pavement shall be discontinued, and equipment capable of providing acceptable surface shall be furnished by the Contractor.

### *314-4.3.5 APPLICATION*

*ADD THE FOLLOWING*

Paint shall be applied no less than seven (7) days and not more than (14) days after application of a new surface or surface treatment. The Contractor shall apply the first coat of paint immediately upon approval of striping layout by the Engineer.

One coat of paint shall be applied over existing surfaces.

The Contractor shall apply temporary traffic stripes in one coat. Temporary traffic stripes shall be maintained by the Contractor so that the stripes are clearly visible both day and night.

### *314-4.3.6 MEASUREMENT*

*DELETE AND REPLACE WITH*

Removal of traffic striping will be measured as a lump sum unit basis.

Placement of slurry seal in preparation for striping shall be measured per square yard.

### *314-4.3.7PAYMENT*

*DELETE AND REPLACE WITH*

Payment for the application of traffic striping and curb and pavement markings shall be made at the lump sum Contract Unit Price for "Traffic Striping".

Payment for slurry seal in preparation of permanent traffic striping and markings will be paid for at the Contract Unit Bid Price per square yard.

### *314-4.4 THERMOPLASTIC TRAFFIC STRIPING AND PAVEMENT MARKINGS*

### *314-4.4.5 MEASUREMENT*

*DELETE SECTION AND REPLACE WITH*

Thermoplastic traffic striping and pavement markings will be measured per lump sum unit basis.

### *314-4.4.6 PAYMENT*

*DELETE SECTION AND REPLACE WITH*

Payment for thermoplastic traffic striping and pavement markings will be made at the lump sum Contract Unit Price for "Traffic Striping".

## 314-5 PAVEMENT MARKERS

### *314-5.4 PLACEMENT*

*ADD THE FOLLOWING*

Unless otherwise specified in the Project Special Provisions, pavement markers shall be set using hot-melt bituminous adhesive.

### *314-5 PAVEMENT MARKERS*

### *314-5.6 MEASUREMENT*

*DELETE SECTION AND REPLACE WITH*

Pavement markers will be measure per lump sum unit basis.

### *314-5.7 PAYMENT*

*DELETE SECTION AND REPLACE WITH*

Payment for pavement markers will be made at the lump sum Contract Unit Price for “Traffic Striping.”

# SECTION 315 – SITE FURNISHINGS

## 315-1 GENERAL

This section shall apply to the installation of site furnishings. Site furnishings are exterior amenities added to the site to accommodate the needs and enhance the use of the site by users including but are not limited to furniture, shade structures, play equipment, trash and recycling bins, planters, etc.

## 315-2 SUBMITTALS

The Contractor shall submit a color sample for all site furnishings prior to ordering materials. When no color has been specified for a site furnishing the Contractor shall request clarification from the Engineer.

When an operations and maintenance manual is required to be submitted in conformance with Section 7-19, the Contractor shall submit care and maintenance information for all installed site furnishings.

## 315-3 HANDLING AND STORAGE

The Contractor shall store site furnishings in a secure location until they are to be installed. Materials shall be handled in such a way as to prevent chips, dents, cracks or other damage from occurring. Material that is damaged during storage or handling shall not be installed and shall be repaired or replaced as required by the Engineer.

## 315-4 PLACEMENT AND INSTALLATION

### *315-4.1 GENERAL*

All site furnishings shall be placed in accordance with the manufacturers recommendations. No installation will be allowed that voids equipment warranties.

### *315-4.2 PLAY EQUIPMENT*

Play equipment shall only be installed by a contractor certified by the Consumer Product Safety Commission.

Play equipment and surroundings shall be inspected, audited, and certified by an independent Certified Playground Safety Inspector (CPSI) . The audit and certification shall be submitted to the Agency prior to acceptance.

Play equipment will be placed as shown on the Plans. Should relocation of equipment be required the Contractor will maintain sufficient fall zone clearance around all equipment and will verify such with the Engineer prior to final placement.

### *314-4.3 DOG WASTE COLLECTION*

Dog waste locations shown on Plans are approximate. The Contractor shall work with the Engineer to place and orient the dog waste collection stations.

### *315-4.4 SHADE STRUCTURES*

The Contactor shall follow any requirements in any Agency supplied building permits for shade structures. Structural welds being performed on site shall be continuously inspected by a deputy inspector hired by the Contactor.

The Contractor shall coordinate the construction of the shade structures foundations and supports with any other concrete work required as part of the project. The Contractor will not be allowed to sawcut into existing concrete paving to construct foundations unless otherwise specified on the Plans or Project Special Provisions.

### *315-4.5 SEATING*

Seating will be set on concrete pad as shown on the Plans. Seating will be mounted on surface with no more than 2% grade in any direction. Should the Plans indicate that the grades will exceed 2% the Contractor shall seek clarification from the Engineer.

Bolts if used for mounting will be stainless steel or treated to resist rusting.

### *315-4.6 TRASH AND RECYCLING RECEPTACLES*

Trash and recycling receptacles shall be installed on concrete pad as indicated on Agency standard plans. Concrete pads shall be level. Trash receptacles shall be placed so messaging on the receptacle is visible to users or as indicated by the Engineer. Receptacles will be affixed to concrete pad through the use of epoxy capable of bonding the receptacle to the concrete.

### *315-4.7 TABLES*

Tables shall be installed on concrete pad as shown on the Plans. Tables will not be mounted on a surface with more than 2% grade in any direction. All tables will be secured to concrete pads by the use of stainless steel bolts.

### *315-4.8 KIOSKS*

Kiosks locations shown on plans are approximate. The Contractor shall work with the Engineer to place all kiosks so they are visible to all users. Kiosks shall be constructed as shown on the Plans or Agency details.

Kiosk maps and graphics will be provided by the Agency within 10 days of the Contractor requesting such images.

Graphics specified to be printed on acrylic sheeting will be printed on weather resistant, non-yellowing, UV resistant acrylic sheets. Acrylic sheets shall be mounted with one inch (1”) of float from kiosk wall. Acrylic signage will also conform to Section 313-3.

Metallic signage shall be on aluminum sheeting with messaging printed on engineering grade film. Metallic signage shall be mounted with one inch (1”) of float from kiosk wall.

Signage bolts shall be stainless steel or other fastener that is rust resistant. Bolting will be at locations indicated on the Plans or at locations to provide sufficient support to signage without flexing or interference with messaging/graphics.

Kiosk foundations will not allow water to pond around the base of the kiosk. Positive drainage will be provided away from Kiosks.

### *315-4.9 RESERVED*

[reserved]

## 315-5 MEASUREMENT AND PAYMENT

Site furnishings will be paid at the Contract unit price per each furnishing, and shall be deemed to include the storage, handling, installation and placement, pad, mounting, fabrication, deputy inspection, compliance with building code and any other federal, state, or local statutory requirement.

# *PART 4 – ALTERNATE MATERIALS*

## SECTION 400 – ALTERNATE ROCK PRODUCTS, UNTREATED BASE MATERIALS, AND PORTLAND CEMENT CONCRETE

[RESERVED]

# *PART 5 – PIPELINE SYSTEM REHABILITATION*

## SECTION 500 – PIPELINE, MANHOLE AND STRUCTURE REHABILITATION

### *500-1.1.4 CLEANING AND PRELIMINARY INSPECTION*

*DELETE SECTION AND REPLACE WITH*

Pipeline cleaning and closed circuit television (CCTV) inspection shall be performed prior to any rehabilitation. The contractor shall protect the manholes to withstand the forces generated by equipment, water and air pressure. After cleaning, the Contractor shall also confirm the inside minimum and maximum size (diameter/configuration) of the pipeline. The Contractor shall be responsible for the removal of debris from the pipeline and restore the pipeline to a minimum of 95 percent of the original diameter or area, as shown on the plans or as specified in the Project Special Provisions. Pipeline debris shall be considered as, but not limited to, sludge, dirt, sand, rocks, grease, roots, and other solid or semisolid materials.

Cleaning and inspection shall be done within 10 days prior to rehabilitation work beginning or as otherwise approved by the Engineer.

Cleaning and CCTV inspection will be done in conformance with Section 500-5.

*DELETE SECTION AND REPLACE WITH*

### *500-1.1.5 POST CONSTRUCTION INSPECTION*

The Contractor shall perform CCTV inspection after all rehabilitation is complete. Post construction inspection shall be completed within 5 days after the completion of rehabilitation. CCTV inspection and reporting shall be done in conformance with Section 500-5.

### *500-1.1.9 MEASUREMENT AND PAYMENT*

*DELETE THE FIRST PARAGRAPH OF SECTION 500-1.1.9*

*ADD THE FOLLOWING SUBSECTION*

## 500-5 INSPECTION AND CLEANING

### *500-5.1 GENERAL*

This section shall apply to the cleaning and inspection of any Agency owned conduit. Inspection shall consist of the investigation of conduit, measurement and assessment of conduit defects, and the reporting of findings. Cleaning and inspection requirements for non-agency owned conduit shall be done as indicted in the Project Special Provisions or as required by the facility owner.

### *500-5.2 INSPECTION*

### *500-5.2.1 GENERAL*

Unless otherwise indicated by the Project Special Provisions the inspection of conduit shall be done by use of digital color closed circuit video recorder.

### *500-5.2.2 VIDEO EQUIPMENT*

All equipment shall be subject to approval by the Engineer. Video equipment shall be a CCTV, high resolution camera with the following characteristics:

- Capable of remote operation
- Minimum resolution of 640x480
- Minimum video bit rate of 4.7 Megabits per second
- Minimum audio bit rate of 128 Kilobits per second
- Minimum of 30 frames per second
- Operable in 100% humidity
- Remote focus with focal range of at least 6 inches to infinity
- Lens with minimum of 140 degree viewing angle.

Camera systems shall be one of the following:

- Rotating-lens camera
- Pan-and-tilt camera

All camera systems shall be capable of capturing images spanning 360 degrees in circumference and 270 degrees on the horizontal axis.

The video camera shall be mounted on a skid, floatable raft system, or transporter based on the conditions of the pipeline to be inspected.

All video equipment shall be designed to be used for the inspection of sewer or storm drain pipelines.

Lighting shall be provided to produce clear image and provide illumination for a minimum of six (6) feet. Lighting that produces glare, washes out images or prohibits the proper evaluation of defects in a pipe shall not be used.

Video inspection shall be accompanied by audio commentary about defects found in the pipe during the video.

### *500-5.2.3 INSPECTION PROCEDURE*

Existing conduits shall be cleaned in conformance with Section 500-5.3 prior to inspection unless otherwise approved by the Engineer.

The Contractor shall be responsible for performing any traffic control required for operations conforming to Part 6.

Video and image quality shall be clear and in-focus. Videos with rapidly shifting focal zones, rapid camera movement, jerky or unstable images or other aberrations that impact the ability of the pipe to be inspected fully will be rejected and new inspection performed.

The Contractor shall inspect the pipeline with the maximum flow diverted for sewer lines and during dry conditions for storm lines. If needed, the Contractor shall perform sewer bypass to isolate the section of pipe to be inspected. A sewer bypass plan will be prepared for any sewer proposed for inspection.

Inspections will be done in the downstream direction. Inspections shall progress at a constant rate except where pauses are required to more fully inspect the pipe for defects or characteristics of the pipe. The rate of travel down the pipeline shall not exceed 30 feet per minute.

The inspection shall document distress and pipe characteristics including but not limited to:

- Joint Offset - A joint that is shifted vertically or horizontally to the adjacent pipe
- Deformation – localized change to the pipe diameter/configuration
- Connections – Areas where a pipes are directly connected
- Intrusions – places where foreign material has passed through the pipe wall or joint such as structures or tree roots.
- Missing Pipe – Areas where the pipe has deteriorated revealing the surrounding soil.
- Voids – areas where visible erosion of soil has occurred behind pipe walls in areas of missing pipe or joint openings
- Ponding – localized stagnation of fluid
- Collapses – A portion of pipeline that has collapsed hindering flow
- Blockages – When a foreign material has become lodged in a pipe
- Change in materials – Locations where pipeline material visibly changes material types
- Spalling – Surface of concrete breaking off
- Cracking – narrow opening in the pipe surface larger than 1mm

Audio commentary during the video shall not contain inappropriate language, idle chatter, background noise, or conversations not pertaining to the video. At the beginning of the video, narration shall, at a minimum, include:

- Manhole numbers
- Pipe segment ID

- Direction of camera travel
- Date and time of day
- Weather conditions
- Pipe material
- Pipe size

Narration along the length of the pipe shall include the call out at regular intervals as the camera progresses through the pipe. Narrations shall also include any characteristics or defects. The narrator shall indicate the location of defects, providing the length at which the observation was made and position in the pipe in the form of clock position.

Narration at the conclusion of the pipe segment shall indicate the video inspection is completed and provide the pipe segment id that was inspected.

Should the contractor encounter a buried structure or one not indicated on the Plans or Project Special Provisions, the Contractor shall notify the Engineer immediately. The Contractor shall make every effort to uncover a buried manhole unless otherwise directed by the Engineer.

Should the camera not be capable of passing through the entire pipeline section due to an obstruction, the Contractor shall stop inspection remove the obstruction and resume CCTV inspection. Should the Contractor fail to remove obstructions the Contractor shall reset CCTV operations at the downstream manhole and provide inspection from the opposite direction.

### *500-5.2.4 RESERVED*

[Reserved]

### *500-5.2.5 REPORTING*

#### *500-5.2.5.1 GENERAL*

All inspections shall be provided in digital format. A hard copy of all reports completed as part of the Work shall be submitted to the Engineer bound in three ring binder(s). Video shall be provided in MPEG format. Images shall be provided as .JPEG or .TIFF format. Reports shall be provided as .PDF format.

The Agency uses identification numbers for all pipe segments in its inventory. These ID numbers will be provided to the contractor or will be indicated in the Plans or Project Special Provisions.

All Video files shall be broken up by pipe segment between structures and named based on the Agency's ID numbers. File naming conventions for video shall follow:

**PipeID-U/D-MMDDYYYY.MPG**

All image files will be organized by Agency ID numbers. All images used in reports shall be provided as individual files. File naming conventions for images shall follow:

**PipeID-U/D-Distance-MMDDYYYY.JPG**

Report file naming conventions shall follow

**PipeID_Report-U/D-Distance-MMDDYYYY.PDF**

- PipeID = Pipe Identification Number provided by Agency
- PipeID_Report = the pipe identification number followed by an underscore and word Report indicating the file is a report.
- U/D = U will be used when inspection was done in the upstream to downstream direction, D will be used when inspection was done in the downstream to upstream direction.
- Distance = the distance from the starting point of the inspection to the location of the image in whole feet
- MMDDYYYY = the date on which the inspection was performed

Reports will be provided for all inspections performed. An individual report will be provided for each pipe segment inspected. Reporting shall include, at a minimum, the following:

- Agency Pipe Segment ID Number
- Downstream Structure Type
- Downstream Structure ID Number
- Upstream Structure Type
- Upstream Structure ID Number
- Date of Inspection
- Location
- Shape
- Diameter/Dimensions
- Material
- Direction of Inspection
- Total Length
- Purpose
    - Routine Assessment

    - Pre-Construction
    - Post Construction
- Inspection Company Name
- Inspector/Operator
- Inspection Summary
    - Distance at which defects or characteristics of note is encountered
    - Description of defect or characteristics of note
- Photos showing encountered defect or characteristics of note
    - Distance at which photo was taken
- Representative photos of upstream and downstream structures
- Page Number

Reports shall not use font size smaller than 10 pt.

### *500-5.2.5.2 CONDITION ASSESSMENT*

When required by the Project Special Provisions the pipeline shall be analyzed for condition.

### *500-5.3 CLEANING*

This contractor may substitute any of the cleaning methods indicated within this section when approved by the Engineer.

When utilizing high-velocity hydraulic cleaning equipment independently or in combination with other cleaning methods, a minimum of 2 passes with the hydraulic nozzle shall be done unless otherwise approved by the Engineer. Root cutters and porcupines shall be attached to the winches if so specified in the Project Special Provisions or directed by the Engineer. The Contractor shall be responsible for conducting a site inspection of each pipeline prior to rehabilitation to determine which cleaning methods are to be used. These methods shall be submitted to the Engineer for approval in accordance with 2-5.3.

a) **Hydraulically Propelled Equipment.** The equipment shall be a movable-dam type and be constructed in such a way that a portion of the dam may be collapsed at any time during the cleaning operation to prevent flooding of the sewer. The moveable dam shall be equal in size to the pipeline being cleaned and provide a flexible scraper around the outer periphery to ensure removal of grease and other debris. If sewer cleaning balls or other equipment which cannot be collapsed are used, special precautions to prevent flooding of the sewers and public or private property shall be taken.

b) **High-Velocity Hydraulic (Hydro-Cleaning) Equipment.** High-velocity hydraulic cleaning equipment shall carry a water tank, auxiliary engines, pumps, and a hydraulically driven hose reel. The equipment shall have a selection of 2 or more high velocity nozzles capable of producing a scouring action from 15

to 45 degrees in all size lines designated to be cleaned. The cleaning units shall have high-velocity nozzles for washing and scouring manhole walls and floors. The nozzles shall be capable of producing flows from a fine spray to a solid stream.

c) **Mechanically Powered Equipment.** Bucket machines shall be used in pairs with sufficient power to perform the work in an efficient manner. Machines shall be belt operated or have an overload shutoff device. Machines with a direct drive that could cause damage to the pipe will not be allowed. Bucket machines shall not be used on any host or rehabilitated pipelines that are lined with a plastic pipe or material. A power rodding machine shall be either a sectional or continuous-rod type capable of holding a minimum of 750 feet of rod. The machine shall be fully enclosed and have an automatic safety clutch or relief valve.

For segmented liner systems 27 inches and larger, a standard test section of liner pipe or mandrel shall be inserted prior to sliplining. The mandrel shall have a segment length equal to that of the liner pipe. The outside diameter of the mandrel shall be a minimum of one percent greater than the outside diameter of the liner pipe but shall not exceed ½ inch without prior approval of the Engineer. The equipment used by the Contractor to insert the test section or mandrel shall conform to Table 500-5.3. A baffle plate shall be attached to the test section with adequate height to remove any debris which could be present.

If cleaning cannot be completed from one manhole, the equipment shall be moved and set up on other manhole and cleaning will be re-attempted. If successful cleaning still cannot be performed or the equipment fails to traverse the entire pipeline section, it shall be assumed that a major blockage exists. Efforts to clean the lines shall be temporarily suspended and the Contractor shall notify the Engineer. Upon removal of the obstruction, the Contractor shall complete the cleaning operation.

The contractor shall dispose of all debris removed from the pipeline in accordance with current applicable regulations. Any hazardous waste material encountered during the contract shall be considered as a changed condition in accordance with Section 3-4.

### *500-5.4MEASUREMENT AND PAYMENT*

Pipeline cleaning and inspection, including CCTV inspection, report preparation, condition assessment, disposal of debris, and all other work associated with inspection and cleaning of pipelines shall be paid for at the Contact Unit Bid Price for “Pipeline Cleaning and Inspection” per linear foot. If a separate bid item is not included, payment shall be deemed included within the Bid price for the linear pipe and or pipeline point repair/replacement pipe, and no additional compensation shall be paid theefor.

# *PART 6 – TEMPORARY TRAFFIC CONTROL*

# SECTION 600 – ACCESS

## 600-1 GENERAL

*ADD THE FOLLOWING*

The Contractor will issue notification in conformance with Section 7-20. The limits of work for notification shall extend 200' past the areas where temporary traffic control will be in place.

The Contractor shall be responsible for warning motorists, cyclists, and pedestrians entering areas where the Works is being performed of any hazardous or dangerous conditions resulting from work activities.

The Contractor shall not limit access unless approved by the Engineer or otherwise specified.

## 600-2 VEHICULAR ACCESS

*DELETE SECTION AND REPLACE WITH*

Vehicular access will be maintained onto properties adjacent to the Work. When Work requires the closure of vehicular access to a property, the Contractor shall ensure that closures are coordinated with adjacent properties and closures are minimized. Driveway access will be restored using backfill and temporary paving if work is to extend longer than 1 working day.

Road closures will not be allowed unless otherwise indicated on the Plans, Project Special Provisions or as approved by the Engineer.

The Contractor shall comply with City of San Marcos City Council Resolution 2002-5865 and shall not impact vehicular access or perform temporary traffic control along San Marcos Boulevard between 6:00 a.m. and 7:00 p.m. unless City Council waiver has been processed and granted for the Work.

*ADD THE FOLLOWING SUBSECTION*

### *600-2.1 WORKER PARKING*

Personal vehicles of the Contractor's employees shall not be parked on the traveled way or shoulders at any time, including any section closed to the public traffic. When entering or leaving roadways carrying public traffic, the Contractor's equipment, whether empty or loaded, shall in all cases yield to public traffic.

## 600-3 PEDESTRIAN ACCESS

*ADD THE FOLLWING*

The Contractor shall follow the California MUTCD Chapter 6D guidelines and requirements.

Pedestrian access to businesses and residents shall be retained unless otherwise approved by the Plans, Project Special Provisions or the Engineer.

Pedestrian access to public transit stops will be maintained unless Contractor has coordinated the temporary relocation of transit stop with North County Transit District (NCTD). Relocated transit stops will adhere to the requirements of NCTD and provide safe, ADA compliant access to transit stops.

Pedestrian walkways shall have horizontal clearance of five feet from Work unless otherwise approved by the Engineer.

*ADD THE FOLLOWING SUBSECTION*

### *600-3.1 ADA ACCESS*

Temporary facilities shall be detectable by a person with a visual disability traveling with the aid of a long cane and including accessibility features consistent with the features present in the exiting pedestrian facility. A detectable barrier will be placed across the full width of the closed sidewalk. Channelized pedestrian routes shall be clear of obstacles and shall have a continuous detectable edging.

Accessible routes shall have the following:

- Clear headroom of at least 80 inches
- A firm, stable, unyielding, and slip resistant surface
- 48 inches in clear unobstructed width
- Provide adequate turning radii and space for the operation of doors
- No level changes in excess of ½ inch vertically
- Curb ramp slope of less than 8.3%
- A path of travel with longitudinal slope of less than 5% and cross slope of less than 2%
- Audible information devices as required by the Plans, Project Special Provisions or traffic control plans

The Contractor shall retain all ADA pathways to and between existing structures to remain in service during the Work. If the Work requires that pathways be closed the Contractor shall provide suitable alternative access for the duration of construction. Removal of ADA pathways shall not be done until suitable alternative is provided. Providing access may require that the Contractor construct temporary ramps, place temporary paving, installation of detectable warning devices, or construction of other devices as might be required to ensure ADA access is maintained. Temporary pathways will not be allowed to have vertical drops in excess of 30 inches without railing.

*ADD THE FOLLOWING SUBSECTION*

## 600-4 BICYCLE ACCESS

Bicycle access shall be maintained whenever possible. If the Contractor cannot maintain safe bicycle access during the Work the Contractor will establish a detour rout in conformance with Section 601.

*ADD THE FOLLOWING SUBSECTION*

## 600-5 WASTE COLLECTION AND POSTAL SERVICE ACCESS

The Contractor shall be responsible for providing access to waste collection and postal services.

The Contractor shall coordinate its schedule to ensure waste collection services will have appropriate access. The Agency uses EDCO disposal as its waste collection provider. Information on waste collection schedules can be found on EDCO's website located at:

https://www.edcodisposal.com/san-marcos/service-schedules/

If waste collection services will be interrupted the Contractor shall coordinate with EDCO to provide alternative collection services.

Postal services will also be provided continuous, unobstructed access. The Contractor will contact the postmaster if any of the Work will create a conflict with delivering mail.

# SECTION 601- WORK AREA TRAFFIC CONTROL

## 601-1 GENERAL

*ADD THE FOLLOWING*

Temporary traffic control for construction and work zones shall conform to the Part 6 of the California MUTCD, the Specifications, Plans, and any traffic control plans approved by the Engineer.

Traffic control shall only be performed during working hours as indicated in Section 6-15, unless otherwise approved on a traffic control plan or indicated by the Project Special Provisions.

If Work is to be done in phases, the Contractor shall complete all work associated with the current phase prior to moving on to the next. Phased Work shall be shown in a plan submitted to the Engineer within fifteen (15) working days after the Notice of Award has been issued to the Contractor. No work shall commence until this plan has been reviewed and approved by the Engineer.

Roadways adjacent to the Work site shall be kept clean and free of obstructions or other hazards. Do not store or allow equipment, material, or debris to remain in public right-of-way without prior approval by the Engineer.

Traffic control plans provided by the Agency as part of the Plans may be altered if approved by the Engineer.

When performing temporary traffic control for the Work within railroad right of way, the Contractor shall comply with NCTD's requirements. More information regarding working within railroad right of way can be located on the NCTD website:

http://www.gonctd.com/working-around-the-rails/

## 601-2 TRAFFIC CONTROL PLAN (TCP)

*DELETE SECTION AND REPLACE WITH*

Traffic Control Plans will be submitted in accordance with Section 2-5.3 whenever the Contractor will suspend or alter the normal operations of a roadways, bicycle route, or pedestrian pathway in order to accomplish the Work. The Contractor shall provide a 10-day review period for each submittal of TCPs.

The Contractor may submit San Diego Regional Standard Drawings (SDRSD) if the drawing is applicable to the work being done and no modifications of the drawing are required to accommodate the proposed work. SDRSD traffic control plans can be found on the San Diego Regional Standards Committee Website:

http://www.regional-stds.com/home/book/drawings/appendix-a

If the Contractor requires modifications to the SDRSD traffic control plans or designed traffic control plans are needed the Traffic control plans will be stamped by a registered Traffic Engineer or Civil Engineer.

Traffic control plans shall include the following information:

- Title

- Project name
- Phase
- Name of firm/individual preparing plan
- Name, stamp, and signature of registered Traffic Engineer or Civil Engineer
- Approval block for Agency
- North Arrow

All TCP shall be prepared either as 8-1/2 inches by 11" inches, 11" inches by 17 inches, or Architectural D (24 inches by 36 inches). TCP size required will be determined by the Engineer.

TCP will be prepared to a 1 inch = 40 feet (1:500) scale. Detour TCPs may be prepared at 1 inch = 100 feet scale if approved by the Engineer.

A TCP that includes a temporary signal or modification to an existing signal in order to accommodate temporary traffic conditions shall have a timing plan prepared and submitted with the TCP for approval by the City. The Contractor shall be responsible for preparing the timing plan. The Contractor may request that the City prepare the timing plan subject to a $500 deduction of payment per timing plan prepared and approval by the Engineer. A request by the Contractor to prepare a timing plan by the City shall be done at least 15 days prior to the implementation of the TCP that requires such timing plan.

### *601-2.1PREPARATION OF NEW, OR MODIFICATIONS AND ADDITIONS TO EXISTING, TRAFFIC CONTROL PLAN SHEETS*

New or revised TCP submittals shall include all TCP needed for the entire duration of the Work. Each phase of the TCP shall be shown in sufficient scale and detail to show the lane widths, transition lengths, curve radii, stationing of features affecting the traffic control plan and the methodology proposed to transition to the subsequent TCP phase. When the vertical alignment of the traveled surface differs from the finished pavement elevation vertical curves must also be shown. Such modifications, supplements and/or new design of TCP shall meet the requirements of the Engineer and the MUTCD. Such modification, addition, supplement, and/or new design of TCP shall be prepared by a registered professional engineer appropriately registered in the State of California when required by the Agency. The Engineer shall be the sole judge of the suitability and quality of any such modifications, supplements, and/or new designs to TCP. The Engineer may approve any such modifications, supplements, and/or new designs to the TCP when, in the Engineer's sole opinion, such modifications, supplements, and/or new designs to the TCP prepared by the Contractor or its registered professional engineer will be beneficial to the best interests of the Agency. Such modification, addition, supplement, and/or new design shall not be implemented and no work shall be commenced that is contingent on such approval until the changed TCP are approved by the Engineer. The preparation of such modification, addition, supplement, and/or new designs of TCP shall not presuppose their approval or obligate the Agency in any fashion. Submittal and review requirements for such modifications, supplements, and/or new designs to TCP shall conform to the requirements of Section 2-5.3 Shop Drawings and Submittals.

*DELETE SECTION 601-3 AND REPLACE WITH*

## 601-3 TRAFFIC CONTROL DEVICES

### *601-3.1 GENERAL*

The Contractor shall supply and install temporary traffic pavement markers, channelizers, signing, railing (type K), crash cushions and appurtenances at the locations shown on the TCP or as required to perform the Work. Devices shall be complete and in place prior to performing work.

### *601-3.2 TEMPORARY PAVEMENT MARKERS*

Temporary reflective raised pavement markers shall be placed in accordance with the manufacturer's instructions. Temporary reflective raised pavement markers shall be cemented to the surfacing with the adhesive recommended by the manufacturer, except epoxy adhesive shall not be used to place temporary reflective raised pavement markers in areas where removal of the markers will be required. Pavement striping, legends and markers which conflict with any traffic pattern shall be removed by sandblasting or grinding (based upon approval by the city representative) and as determined by the Engineer. The Contractor shall use temporary reflective raised pavement markers for temporary pavement marking, except when the temporary pavement markers are used to replace patterns of temporary traffic stripe that will be in place for less than 30 days. Reflective pavement markers used in place of the removable-type pavement markers shall conform to the section 312 "Pavement Marker Placement and Removal", except the 14-day waiting period before placing the pavement markers on new asphalt concrete surfacing as specified in section 312-1 “Placement”, shall not apply; and epoxy adhesive shall not be used to place pavement markers in areas where removal of the markers will be required.

### *601-3.3 TEMPORARY CHANNELIZERS*

Channelizers shall be new surface-mounted type and shall be furnished, placed, and maintained at the locations shown on the plans. Channelizer posts shall be orange in color. Channelizers shall have affixed white reflective sheeting as specified in the special provisions. The reflective sheeting shall be 75 mm x 300 mm (3” x 12”) in size. The reflective sheeting shall be visible at 300 m (1000’) at night under illumination of legal high beam headlights, by persons with vision of or corrected to 20/20. The channelizer bases shall be cemented to the pavement in the same manner as provided for cementing pavement markers to pavement in section 312-1, “Placement.” Channelizers shall be applied only on a clean, dry surface. Channelizers shall be placed on the alignment and location shown on the plans and as directed by the Engineer. The channelizers shall be placed uniformly, straight on tangent alignment and on a true arc on curved alignment. All layout work necessary to place the channelizers to the proper alignment shall be performed by the Contractor. If the channelizers are displaced or fail to remain in an upright position, from any cause, the channelizers shall immediately be replaced or restored to their original location, by the Contractor. The Contractor shall provide the Engineer with a Certificate of Conformance in accordance with the provisions of section 4-1.5, "Certification.” Said certificate shall certify that the channelizers comply with the plans and specifications and conform to the prequalified design and material requirements approved by the Engineer and were manufactured in accordance with a quality control program approved by the Engineer.

### *601-3.4 TEMPORARY TRAFFIC SIGNING*

### *601-3.4.1 GENERAL*

The Contractor shall provide and install all temporary traffic control signs, markers, markings, and delineators at locations shown on plans and specified herein.

### *601-3.4.2 MAINTENANCE OF TEMPORARY TRAFFIC SIGNS*

If temporary traffic signs are displaced or overturned, from any cause, during the progress of the work, the Contractor shall immediately replace the signs in their original approved locations. The Contractor shall maintain all temporary traffic signs used in the Work in a clean, reflective and readable condition. The Contractor shall replace or restore graffiti marked temporary traffic signs and posts used in the Work within 18 hours of such marking being discovered during non-working hours or, when the marking is discovered during working hours, within 2 hours of such discovery of marking.

## *601-3.5 TEMPORARY RAILING (TYPE K) AND CRASH CUSHIONS*

### *601-3.5.1 GENERAL*

Temporary railing (Type K) shall consist of interconnected new or undamaged used precast concrete barrier units as shown on the plans. Temporary sand-filled crash cushions shall consist of new or undamaged used temporary sand-filled crash cushions units as shown on the plans.

### *601-3.5.2 APPEARANCE*

Exposed surfaces of new and used units of Temporary railing (Type K) shall be freshly coated with a white color paint prior to their first use on the project. The paint shall conform to the provisions in Sections 210-1.5, Paint Systems, and 310, Painting. The Contractor shall be responsible for the removal and cleanup or painting over the graffiti from the K-Rails within 48 hours. The Contractor Shall replace or repaint units of Temporary railing (Type K) or shall remove graffiti, tire or vehicle marks, dirt or any and all materials such that said marks or discoloration mar the appearance of said units when ordered by the Engineer after the units are in place.

*ADD THE FOLLOWING SECTION:*

### *601-3.5.3 MANUFACTURE OF TEMPORARY RAILING*

In addition to the requirements herein, the temporary railing (Type K) shall be manufactured per CALTRANS Standard Drawing T3. Concrete used to manufacture Temporary railing (Type K) shall conform to the provisions in Sections 201-1, Portland Cement Concrete, and 303-1, Concrete Structures. Load tickets and a Certificate of Compliance will not be required. Reinforcing steel shall conform to the provisions sections 201-1, Portland Cement Concrete, and 303-1, Concrete Structures. Steel bars to receive bolts at ends of concrete panels shall conform to ASTM Designation: A 36/A 36M. The bolts shall conform to ASTM Designation: A 307. A round bar of the same diameter may be substituted for the end-connecting bolt shown on the plans. The bar shall conform to ASTM Designation: A 36/A 36M, shall have a minimum length of 660 mm and shall have a 75 mm (3”) diameter by 9 mm ($^3/_8$”) thick plate welded on the upper end with a 5-mm ($^3/_{16}$”) fillet weld. The final surface finish of temporary railings (Type K) shall conform to the provisions in section 303-1.9.2 “Ordinary Surface Finish.” Exposed surfaces of concrete elements shall be cured by the water method, the forms-in-place method, or the pigmented curing compound method. The pigmented curing compound shall be type 2 curing compound.

Temporary railing (Type K) may have the Contractor's name or logo on each panel. The name or logo shall not be more than 100 mm in height and shall be located not more than 300 mm above the bottom of the rail panel.

### *601-3.5.4 INSTALLATION OF TEMPORARY RAILING*

In addition to the requirements herein the temporary railing (Type K) shall be installed per CALTRANS Standard Drawing T3. Temporary railing (Type K) shall be set on firm, stable foundation. The foundation shall be graded to provide a uniform bearing throughout the entire length of the railing. Abutting ends of precast concrete units shall be placed and maintained in alignment without substantial offset to each other. The precast concrete units shall be positioned straight on tangent alignment and on a true arc on curved alignment each rail unit placed within 3 m (10') of a traffic lane shall have a reflector installed on top of the rail as directed by the Engineer. Reflectors and adhesive will be furnished by the Contractor. A Type P marker panel conforming to the requirements of the CALTRANS Traffic Manual shall also be installed at each end of railing installed adjacent to a two-lane, two-way highway and at the end facing traffic of railing installed adjacent to a one-way roadbed. If the railing is placed on a skew, the marker shall be installed at the end of the skew nearest the traveled way. Type P marker panels shall conform to the provisions of section 206-7.2, "Temporary Traffic Signs". Where shown on the plans, threaded rods or dowels shall be bonded in holes drilled in existing concrete. When temporary railings (Type K) are removed, any area where temporary excavation or embankment was used to accommodate the temporary railing shall be restored to its previous condition, or constructed to its planned condition.

### *601-3.6 TEMPORARY SAND-FILLED CRASH CUSHIONS*

Temporary sand-filled crash cushion units shall be "Energite III" manufactured by Energy Absorption Systems, "Fitch Inertial Barrier System Modules" manufactured by Roadway Safety Service, or equal. Features required to determine equivalence of any other temporary sand-filled crash cushion units shall be approval of the system by CALTRANS and that the temporary sand-filled crash cushion units meet NCHRP 350 standards. Other features will be suitability to application, operational characteristics, durability and other such characteristics that the Engineer shall determine. Temporary sand-filled crash cushions (TSFCC) shall be of the type and array configurations shown on plans, and installed at every end of, or gap in, the temporary railing (Type K) whenever the closest point of approach of traffic, regardless of direction, is 4.6 m (15') or less to the end of the temporary railing (Type K) being considered. The TSFCC shall be installed per CALTRANS Standard Drawings T1 and T2 for approach speeds no less than the posted speed of the street prior to construction or 55 kilometers per hour (35 mph), whichever is the greater. The TSFCC array shall be appropriate to the application as shown on said standard drawings. A Type J and/or P marker panel conforming to the requirements of the CALTRANS Traffic Manual shall also be installed at each TSFCC array as shown in CALTRANS Standard Drawings T1 and T2. Particular care shall be taken to assure that crash cushions are installed with the soil supporting them and the adjacent soil leveled to match the elevation of the bottom of the temporary railing immediately adjacent to the crash cushion. All routes of approach to the TSCFF array shall be graded such that any vehicle diverging from the traveled way to strike the TSCFF will travel on a vertical alignment parallel to the segment of the travel lane that it departed from.

### *601-3.7 TEMPORARY STRIPING*

[reserved]

*ADD THE FOLLOWING SECTION*

## 601-4 PLACEMENT OF TRAFFIC CONTROL

### *601-4.1 GENERAL*

After obtaining approval of TCP by the Engineer the Contractor shall notify the following agencies at least five (5) working days before closing, detouring, partially closing or reopening any street, alley or other public thoroughfare:

| | | |
|---|---|---|
| 1. | The Engineer | (760)744-1050 |
| 2. | San Marcos Fire Department Dispatch (NorthCOMM) | (858) 756-3006 |
| 3. | San Marcos Sherriff Department Dispatch | (760) 510-5200 (Press "1" for dispatch) |
| 4. | San Marcos Traffic Signals Maintenance | (760) 752-7550 x3334 |
| 5. | North County Transit District – Bus Operations | (760) 966-6708 |
| 6. | Waste Management (EDCO) | (760) 744-2700 |
| 7. | U.S. Post Office | (760) 744-2998 |

The Contractor shall obtain the written approval a minimum of five working days (5) prior to placing any traffic control that affects bus stops.

If any component in the traffic control system is damaged, displaced, or ceases to operate or function as specified, from any cause, during the progress of the work, the Contractor shall immediately restore said component to its original condition or replace said component and shall restore the component to its original location. In the event that the Contractor fails to install and/or maintain barricades or such other traffic signs, markings, delineation or devices as may be required herein, the Engineer may install the traffic signs, markings, delineation or devices and charge the Contractor twenty five dollars ($25.00) per day per traffic sign or device, or the actual cost of providing such traffic control facility, whichever is the greater.

If temporary striping or signage is needed as part of the Work the Contractor shall remove conflicting striping and ensure that conflicting signage is temporarily removed or covered from view.

The contractor shall promptly remove traffic control devices when traffic control operations are complete.

Temporary traffic control devices placed by the Contractor that conflict with one another shall immediately be removed.

### *601-4.2 SIGNS AND CONTROL DEVICES*

All construction traffic signs and control devices shall be maintained in good order throughout the duration of work and according to the approved traffic control plan.

Warning and advisory signs, lights and devices installed or placed to provide traffic control, direction and/or warning shall be furnished, installed and maintained by the Contractor.

Warning and advisory signs that remain in place overnight shall be stationary mounted signs. Stationary signs that warn of non-existent conditions shall be removed from the traveled way and from the view of motorists in the traveled way or shielded from the view of the traveling public during such periods that their message does not pertain to existing conditions.

Care shall be used in performing excavation for signs in order to protect underground facilities. All excavation required to install stationary construction area signs shall be performed by hand methods without the use of power equipment. Warning and advisory signs that are used only during working hours may be portable signs. Portable signs shall be removed from the traveled way and shielded from the view of the traveling public during non-working hours. During the hours of darkness, as defined in Division 1, Section 280, of the California Vehicle Code, portable signs shall be illuminated or, at the option of the Contractor, shall be in conformance with the provisions in Sections 206-7.2 et seq. If illuminated traffic cones rather than post-type delineators are used during the hours of darkness, they shall be affixed or covered with reflective cone sleeves as specified in CALTRANS "Standard Specifications", except the sleeves shall be 180 mm (7") long. Personal vehicles of the Contractor's employees shall not be parked within the traveled way, including any section closed to public traffic. Whenever the Contractor's vehicles or equipment are parked on the shoulder within 1.8 m (6') of a traffic lane, the shoulder area shall be closed with fluorescent traffic cones or portable delineators placed on a taper in advance of the parked vehicles or equipment and along the edge of the pavement at not less than 7.6 m (25') intervals to a point not less than 7.6 m (25') past the last vehicle or piece of equipment. A minimum of nine (9) cones or portable delineators shall be used for the taper. A C23 (Road Work Ahead) or C24 (Shoulder Work Ahead) sign shall be mounted, as required herein, on a signpost or telescoping flag tree with flags. The signpost or flag tree shall be placed where directed by the Engineer.

### *601-4.3 TRAFFIC CONTROL FOR PERMANENT AND TEMPORARY TRAFFIC STRIPING*

During traffic striping operations, traffic shall be controlled with lane closures or by use of an alternative traffic control plan proposed by the Contractor and approved by the Engineer. The Contractor shall not start traffic striping operations using an alternative plan until the Contractor has submitted its plan to the Engineer and has received the Engineer's written approval of said plan.

*ADD THE FOLLOWING SECTION:*

## 601-5 MEASUREMENT AND PAYMENT

Temporary traffic pavement markers, temporary channelizers, temporary signing, temporary railing (type K), temporary crash cushions, signal modifications and temporary appurtenances thereto shown on the plans or required in the specifications are a part of the lump-sum item for traffic control and payment therefor shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in applying, installing, maintaining, and removing temporary traffic pavement markers, channelizers, signing, railing (type K), crash cushions and appurtenances, complete in place, as shown on the plans, as specified in the Standard Specification and these Standard Special Provisions, and as directed by the Engineer. Payment for temporary crash cushions, concrete barriers and the signs and reflectors marking them shall include the installation, grading for installation, grading for the approach path, maintenance, painting and re-painting, replacement of damaged units and removal and shall also be included in the lump-sum price bid for traffic control. Payment for installation and/or relocation of K-rails and crash cushions when not shown on the plans and requested by the Engineer shall be made per Section 3-3, Extra Work, SSPWC.

# *PART 7 – ELECTRICAL SYSTEMS*

**DELETE PART 7 AND REPLACE WITH SECTION 86, "ELECTRICAL SYSTEMS", EXCLUDING SECTIONS 86-7 THROUGH 86-8, OF THE CALIFORNIA DEPARTMENT OF TRANSPORTATION (CALTRANS) 2010 REVISED STANDARD SPECIFICATIONS AS MODIFIED HEREIN.**

# SECTION 86 – LIGHTING AND SIGNAL SYSTEMS

Where Greenbook refers to Section 700 refer Section 86.

Signal, lighting, and electrical systems material and installation work shall be done in accordance with the Caltrans Standard Plans and specifications except as amended herein.

References to Sections 10 through 95 of the Standard Specifications of the State of California Department of Transportation (Caltrans) shall apply where shown in Section 86. References in the State Standard Specifications to the State of California, its agencies, or agents shall be construed to refer to the City, its corresponding agencies or agents.

These specifications shall be used in conjunction with Section 701, "Construction".

## 86-1.01 GENERAL

## 86-1.01A SUMMARY

*ADD THE FOLLOWING*

Where this manual refers to METS, METS shall mean a 3rd party testing facility as approved by the Engineer.

## 86-1.01B DEFINITIONS

*ADD THE FOLLOWING*

Roadway Crossings: Refers to full and/or partially signalized intersections.

Traveled Way: Refers to the driving surface as measures from the back of curb to back of curb. In areas where there is no curb, it refers to edge of pavement.

Driveway: Refers to a non-concrete surface adjacent to the roadway for vehicles existing the street.

*ADD THE FOLLOWING SUBSECTION*

## 86-1.01C(12) FIBER OPTIC CABLE

Cable sample and certifications will be provided to the City for review and approval prior to installation. Laboratory test reports will be provided from representative samples of similar cable design to demonstrate compliance with the provisions of Section 86-1.02F. The manufacturer certification must demonstrate the cable complies the optical and mechanical properties of these specifications.

## *86-1.02B Conduit and Accessories*

## 86-1.02B(1) GENERAL

*ADD THE FOLLOWING*

Unless otherwise specified in the Plans or Project Special Provisions all conduit owned by the Agency shall be Type 3, schedule 80 HDPE.

All conduits for use in traffic signal and fiber optic systems shall have a minimum nominal inside diameter of (4") encased in a minimum of twelve inches (12") of 56-C-3250 psi concrete (8" minimum concrete cover over top of pipe) for roadway crossings. A minimum inside diameter of three inches (3") shall be used for all other conduits.

## 86-1.02C PULL BOXES

## 86-1.02C(1) GENERAL

*ADD THE FOLLOWING*

Pull box lids shall not be bolted down.

Unless otherwise specified all pull boxes (box, lid, extension) shall be concrete and size No. 6 and marked as "Traffic Signal". Pull boxes shall be Christy® concrete enclosures produced by Oldcastle, model numbers conforming to Table 86-10.C, or approved equal.

**TABLE 86-1.02C**
**PULL BOX MODEL NUMBERS**

| Size | Part Number |
|---|---|
| # 5 Box | C30B-N30 Box |
| #5 Box Lid | FL30 Lid |
| #6 Box | C36B-N36 Box |
| #6 Box Fiberlyte Lid | FL36T86-FL36T Lid |

A No. 5 pull box may be used for advance loops.

The pull box cover marking for an interconnect conduit and cable system shall be marked "TS COMMUNICATION".

*REPLACE THE SUBSECTION WITH THE FOLLOWING*

## 86-1.02C(4) STREET LIGHT PULL BOXES

Pull Boxes shall be in accordance with the City of San Marcos Street Lighting Standards and Specifications manual and shall be installed as follows:

1) Located at the end of the conduit run and three feet (3') from SDG&E service point and five feet (5') clear of curb face (NOTE: if the street light is within ten feet (10') of the service point only one pull box is required.
2) Located within five feet (5') of each street light.
3) Located at conduit interval runs of not more than 200 LF. Additional #3-1/2 pull boxes will be required for conduit runs over 200 LF long.

The bottom of the pull box shall rest firmly on a six-inch (6") thick bed of three-quarter-inch (3/4") crushed rock extending six inches (6") beyond the outside edges of the box. Pull boxes shall be installed behind sidewalk or five feet (5') behind the face of curb or dike and, where practical, shall be installed with the short side parallel to the curb. They shall not be installed in any part of a driveway or other traveled way. Pull box covers shall be inscribed "STREET LIGHTING" and shall be secured with 3/8" bolts, cap screws or studs and nuts made of stainless steel or non-corroding materials. Anti-seize shall be used. (1) OES Rex Key shall be provided for each installed pull box to the City.

*ADD THE FOLLOWING SUBSECTION*

## 86-1.02C(5) INTERCONNECT PULL BOXES AND VAULTS

All interconnect pull boxes shall be 6T concrete with extension and installed per Caltrans Standard Plans ES-8 unless otherwise specified in the Plans or Project Special Provisions.

Interconnect pull box and vault lids shall be galvanized steel and stamped or welded "TS COMMUNICATION".

Boxes shall be installed between 800 feet (minimum) and 1,000 feet (maximum) apart unless otherwise approved by the Engineer.

A 30" x 60" x 14" concrete electrical vault with two (2) extensions (total depth approximately 3 feet) and a galvanized steel lid shall be installed at each signalized intersection on the corner near the traffic signal controller.

Signal Interconnect conduit shall be installed in pull boxes using 45-degree, UL approved elbows. These elbows shall be placed as far apart in the pull box as possible, oriented in the direction of the cable, and offset to one side to facilitate cable pulling and coiling.

Approximately 200-feet of SIC slack shall be coiled inside of each vault box (12 and 144 SMFOC).

Approximately 20-feet of SIC slack shall be coiled inside of each pull box.

*REPLACE THE SUBSECTION WITH THE FOLLOWING*

### *86-1.02E ETHERNET AND VIDEO*

All Ethernet components shall provide a lifetime warranty option on parts and 1 year "live" technical support (either in person or over the phone) during business hours (Pacific time) 9AM to 5PM Monday through Friday,

from the date of installation Warranty parts replacement shall be within three business days. A warranty certificate meeting these requirements shall be provided on the date of installation.

### *86-1.02E(1) ETHERNET SWITCHES*

*ADD THE FOLLOWING*

All switches shall be managed and support advanced features including:

a. Port based VLAN segregation.
b. DHCP snooping and/or IGMP snooping
c. MAC address filtering
d. Quality of Service
e. SNMP
f. Remote management
Fiber uplinks shall be single mode and support 10/100/1000 Duplex Ethernet ports and provide long haul capability.

In addition to the above requirements, local switches (located at intersections) shall meet the following requirements:

a. Shall be environmentally hardened (-40 to 160 degrees F) and NEMA TS-2 rated.
b. Switch ports minimum requirements:
    i. Ethernet Switches (Cabinet Switch Locations – All City of San Marcos Locations):
        1. Provide a minimum of eight 10/100 Base TX copper ports and one duplex fiber port.
    ii. Ethernet Switches Caltrans Locations:
        1. Provide a minimum of six 10/100 Base TX copper ports and two duplex fiber ports.
    iii. Aggregate Switches (Hub Switch Locations):
        1. Provide a minimum of four 10/100 Base TX copper ports, three 1000 Base TX copper ports, and sixteen (16) duplex fiber ports.
        2. The switch shall support rack mount on 19” rack chassis
c. The fiber uplink ports shall be SC, LX or LC type connectors utilizing SFP modules.
d. Power supply shall support 120 VAC and/or 24 VDC.
e. The switch shall support standard 332L rack mount, DIN rail or 19” rack mountable.

The Contractor shall furnish and install all Ethernet switches at the local intersections. Communication between the field switch and the City of San Marcos Traffic Management Center shall be tested prior to acceptance. Contractor shall coordinate with Engineer and provide 48hours notice prior to test. Configuration of Ethernet switches shall be performed by others.

Approved manufacturers of Ethernet communications solutions include: Etherwan, Siemens, and Comnet. Non-listed manufacturers shall be approved by the Engineer.

### *86-1.02E(2) BROADBAND WIRELESS ETHERNET COMMUNICATION*

*ADD THE FOLLOWING*

The broadband wireless ethernet communication system shall provide traffic signal and CCTV video and control communication. The Contractor shall furnish and install such other items or details not mentioned below, that are required to construct a complete and operational system including, antennas, radios, mounting equipment, hardware, cabling, and incidental materials shall be performed, placed, constructed or installed.

The Contractor shall follow the manufacturer recommendations and instructions for installation.

Wireless communication shall provide the following functionality:

a. Support Ethernet communications.
b. Support mesh network topology and point-to-point and point-to-multipoint configuration.
c. 802.11 Compliant and operate on a license free band.
d. Provide a minimum of 108 Mbps data rate.
e. Provide a minimum range of 10 miles.
f. Provide security encryption (WPA, WPA2, MAC, and Radius).
g. Be compatible with Ethernet switching and routing protocols including:
    1. VLAN
    2. VPN
    3. DHCP snooping
    4. Quality of Service
    5. SNMP
    6. Remote management
h. Be a NEMA rated enclosure.
i. Power supply shall support 120 VAC and/or 24 VDC.

The Contractor shall perform a wireless site survey to determine the radio path and signal strength values assigned to each wireless site. The results of the survey (path quality, data integrity, and spectrum analysis) shall be provided to the Engineer to determine optimized system configuration and performance.

The Contractor shall test the completed system and ensure the proper functioning of all wireless components and connected devices to the satisfaction of the Engineer.

Approved manufacturers of Wireless Ethernet communications solutions include: Comnet, Iteris,

Encom, and Ubiquity Networks, or approved equal. Non-listed manufacturers shall be approved by the Engineer.

### *86-1.02E(3) CCTV VIDEO NETWORK*

*ADD THE FOLLOWING*

All new traffic signal installations shall include, as part of the standard safety systems, the installation of CCTV camera equipment and transmission equipment and any additional wiring or hardware required to support an operational CCTV system.

All CCTV communication protocol shall be Ethernet.

A License Key shall be provided for each CCTV camera installed for the City's Video Management System.

The CCTV system shall be installed per manufacturer's installation recommendations.

Power for CCTV systems at new intersections shall consist of a Power on Ethernet with a rugged rated power injector.

The CCTV transmission equipment shall be installed and tested for operation by the contractor to the satisfaction of the City Engineer before acceptance of the system.

CCTV Encoders for the inclusion of existing Analog video cameras will require a video encoder device.

a. The Video Encoder shall provide Pan Tilt Zoom (PTZ) capability through a Web GUI.
b. The Video Encoder shall provide H.264 video compression algorithms.
c. The Video Encoder shall provide Pelco D PTZ protocol and integrated coaxitron.
d. The Video Encoder shall provide streams up to 4CIF (704x480) resolution.

CCTV Camera and Transmission components required to accommodate a typical CCTV installation are shown in Table No. 86-1.02E below or City approved equal.

**Table 86-1.02E CCTV Camera and Transmission Equipment**

| Description | Manufacturer | Model |
|---|---|---|
| IP Outdoor Dome Camera | Pelco | P1220-ESR1 Network Camera or approved equal |
| Video Encoder | Pelco | NET5401T or approved equal |
| Network Cable | Generic | CAT6 OSP 24 AWG |
| Wall Mount | Pelco | IWM24-SR with integrated 24 VAC Transformer |
| Pole Adapter | Pelco | PA101 Pole Mount |

### *86-1.02E(4) VIDEO DETECTION*

*ADD THE FOLLOWING*

Video detection shall be used only with express written approval from the City Engineer. The video detection system shall be Iteris VantageNext system or approved equal. All installations shall include video processor(s), a flat panel monitor (10.4" TFT LCD video monitor or approved equal), SURGEPAN assembly, on VantageNext Wide Dynamic Range camera or approved equal, and sufficient extension modules to satisfy the presence detection requirement of the intersection.

Cameras shall be Iteris Vantage Vector Hybrid or approved equal. Camera shall include all related setup equipment including but not limited to Vector Setup Tool (VST). Camera shall have 110VC power provided, operate within temperature limits of -35°F to 165°F with a humidity range of 0-95% relative humidity, and have an IP67 rated enclosure. The Camera image sensor shall be ¼"CCD, 380,000 effective pixels, 550 Horizontal TV

lines, >50dB S?N ration, 1.0 lux minimum illumination, 2D/3D Noise Reduction, automatic white balance, and 1.0 Vp-p (sync negative). The lens shall be 12x optical zoom with f=3.7mm (wide) to 44.4mm(tele). The camera shall communicate with the video processor via data embedded on a video signal. The radar shall operate at a frequency of 24GHz (K-band), with an accuracy to detect vehicles from 0 to 150 mph, have the ability to track up to 20 objects, and be able to detect across (4) four lanes of traffic.

### *86-1.02F(1)CONDUCTORS*

### *86-1.02F(1)(A) GENERAL*

*ADD THE FOLLOWING*

All field installed wiring shall be Megger-Ohm tested. The Contractor shall provide documentation showing results that the wiring has passed the test.

Conductors for Safety Lighting shall be No. 10 THW as defined in Section 86-2.08B. The conductors shall be black and white.

All traffic signal field conductors shall have a 5-foot coil of extra wire in each pull box to allow for servicing. The signal conductors shall be organized in a bundle to allow for easy identification of wires and cables.

### *86-1.02F(1)(B) STREET LIGHT CONDUCTORS AND SERVICE RUNS*

*ADD THE FOLLOWING*

All conductors shall be stranded copper, THWN, #8 AWG minimum. Neither aluminum nor direct-burial cable shall be accepted.

Wire shall conform to the applicable portion of ASTM B3 and B8. Wire connectors shall be approved by the Engineer and shall bear the UL seal of approval. The installation procedure, connector size and crimping tools shall conform to the manufacturer's recommendations. Wire size shall be indicated on the "As-Built" plans.

Wire from the base of the pole to the luminaire shall be #10. For the 120-volt installations, the wires shall be black and white, with black being the hot wire and fused. For 240-volt installations, one hot wire shall be black and the other shall be red. Both hot wires shall be fused. Any ground wires shall be green and connected to a clamp attached to an anchor bolt.

Service runs parallel to the street shall be installed under the sidewalk where new sidewalk is being constructed or directly behind the existing sidewalk. Voltage drop shall not exceed five percent (5%).

## 86-1.02F(2)(D) COPPER CABLES

## 86-1.02F(2)(D)(II)CONDUCTOR SIGNAL CABLES

*ADD THE FOLLOWING*

Signal cable shall be labeled at the cabinet indicating the cable/wire type and signal standard to which it is connected and at the end of the run in the pull box nearest to the termination point.

#14 gauge/3 conductor and #14 gauge/12 conductor shall be continuous from the signal cabinet to the terminal block on the signal standard it services.

*REVISE TABLE TO READ AS FOLLOWS*

| Cable type[a] | Conductor quantity and type | Cable jacket thickness (mils) | | Maximum nominal outside diameter (inch) | Conductor color code |
|---|---|---|---|---|---|
| | | Average | Minimum | | |
| 3CSC | 3 no. 14 | 44 | 36 | 0.40 | Blue/black, blue/orange, white/black stripe |
| 12CSC | 11 no. 14<br>1 no. 12 | 60 | 48 | 0.80 | No. 12 - white,<br>no. 14 - red, yellow, brown, red/black stripe, yellow/black stripe, brown/black stripe, black/red stripe, black/white stripe, black, red/white stripe, brown/white stripe |

### *(86-1.02F(2)(D)(III)) DETECTOR LEAD IN CABLES*

*ADD THE FOLLOWING*

Loop detector lead-in cable shall be Type B Caltrans Standard 16 AWG and loop detector wire shall be Type 2 unless otherwise specified by the Engineer. All lead-in DLCs shall be labeled in the cabinet with lane number and phase assignment.

### *86-1.02F(2)(D)(V) SIGNAL INTERCONNECT CABLES*

*DELETE SECTIONAND REPLACE WITH THE FOLLOWING*

All traffic signal interconnect designs shall be fiber optic unless otherwise indicated on the plans or in the Project Special Provisions. Existing copper signal interconnect is to be retained unless otherwise indicated on the plans or in the Project Special Provisions.

*REPLACE THE SUBSECTION WITH THE FOLLOWING*

### *86-1.02F(2)(E) FIBER OPTIC CABLE FOR SIGNAL INTERCONNECT*

*ADD THE FOLLOWING SUBSECTIONS*

### *86-1.02F(2)(E)(1)GENERAL*

The cable shall not be shipped, stored, or placed in a location where temperatures will exceed the cables operating temperature range. No cable shall be stored or placed in a wet or moist location prior to installation. No cable will be allowed to be stored in direct sunlight.

Unless otherwise specified fiber optic cable will be single mode Corning Altos Gel-Free Cable, or approved equal.

All cables will be all-dielectric, single mode with 144 fiber count unless otherwise indicated on the plans or Project Special Provisions.

Fiber optic cable shall be suitable for direct installation in 1-1/4 inch to 3-inch conduit in an underground environment. Cable must conform to the latest issue of the following standards:

- EIA-455: Standard Test Procedures for Fiber Optic Fibers, Cables, Transducers, Connecting and Terminating Devices.
- EIA-359: Standard Colors for Color Identification and Coding.
- MIL-202: Test Methods for Electronic and Electrical Component Parts
- MIL-454: Standard General Requirements for Electronic Equipment
- MIL-810: Environmental Test Methods and Engineering Guidelines
- EIA-598: Color Coding of Fiber Optic Cables
- ANSI/ICEA Standard for Fiber Optic Outside Plant Communication Cable
- ANSI/ICEA S-87-640-2006
- Telcordia GR-20, Issue 3
- US Department of Agriculture Rural Utilities Service (RUS) 7 CFR 1755.900 (PE-90)

Unless otherwise specified, all fiber optic cable will be single mode, gel free loose tube cables.

Fiber optic cable shall only be spliced at the locations shown on the Plans or as indicated in the Project Special Provisions. Splices are to be made in splice enclosures in fiber optic vaults only. Signal interconnect cable shall be continuous and unspliced between cabinets.

Splicing shall be performed by the fusion technique. Cables shall prepared and sliced in accordance with the cable manufacturer's recommendations. Completed splices shall be protected by either heat-shrink tubing, or metal protective sleeves unless otherwise specified.

Completed splices shall be enclosed in re-enterable splice enclosures that seal to form a moisture resistant enclosure. Splice enclosures shall be as shown on the Plans or Standard Plans. The splice case or enclosure shall contain a removable splice organizer or crib that shall secure the individual fibers and protect the splices. The splice organizer or crib shall be attached to the steel strength members in the fiber optic cable an shall be bonded to a ground stud on the exterior of the splice case or enclosure. There shall be adequate space inside the enclosure to hold at least 5 feet of cable.

Cable installed in runs between splice enclosures and termination equipment shall be minimum 12 fiber count.

A patch panel shall be installed to terminate the 12" single-mode fiber optic cable.

Components for vaults and signal cabinets shall be terminated and/or spliced per assignment by the Engineer. Requests for assignment shall be submitted 5 days prior to signal turn-on at the latest. Components shall be per the table below or approved equal.

| Description | Manufacturer | Model |
|---|---|---|
| Splice Closures | Corning | SCF-6C22-02 |
| Splice Closure Splice Tray | Corning | SCF-ST-099 |
| Splice Housing | Corning | CSH-03U |
| 12 Port Panels | Corning | CCH-CP12-59 |
| Splice Trays | Corning | M67-048 |
| Cabinet Termination | Corning | CCS-01U |
| 6 Port Panels | Corning | CCH-CP06-3C |
| Fiber Optic Splice Tray | Corning | |
| Fiber Distribution Unit | Corning | C-MIC-012 |
| Prefabricated Panel | Corning | Zeux |
| Jumpers | Corning | |
| Connectors | Corning | SC |
| Connectors | Corning | SC |

### *86-1.02F(2)(E)(2)OPTICAL FIBER REQUIREMENTS*

Each optical fiber shall be glass and consist of a doped silica core surrounded by concentric silica cladding. All fibers shall be useable and shall be sufficiently free of surface imperfections and inclusions. The coating shall be a dual layered, UV cured acrylate. Optical fiber will conform to Table 86-2.08F(2)(E).

**TABLE 86-2.08F(2)(E)**
**OPTICAL FIBER PROPERTIES**

| **Properties** | **Requirement** |
|---|---|
| Core Mode Field Diameter (Petermann II) | |
| @1310 nm | 9.3 ± 0.5 mm |
| @1550 nm | 10.5 ± 1.0 mm |
| Core Diameter Variation | ± 3 mm |
| Core-to-Cladding Concentricity | ≤ 0.5 mm |
| Cladding Diameter | 125 mm ± 2 mm |
| Cladding Non-circularity | ≤ 1.0% * |
| Attenuation | |
| @ 1310 nm | ≤ 0.4 dB/km |
| @ 1550 nm | ≤ 0.3 dB/km |
| Chromatic Dispersion | |

| | |
|---|---|
| Zero Dispersion Wavelength | 1304 to 1324 nm |
| Zero Dispersion Slope | < 2.5 ps/(nm$^2$•km) |
| Total Dispersion | |
| @ 1550 nm | < 18.0 ps/(nm•km) |
| @ 1625 nm | < 22 ps/(nm•km) |
| Cut-off Wavelength | < 1260 nm |

*defined as: 1-(min cladding diameter/max cladding diameter) x100

Maximum short term and long term tensile loads shall be 600lbf and 200lbf, respectively.

### *86-1.02F(2)(E)(3)CABLE CONSTRUCTION*

Optical fibers shall be placed inside of loose buffer tubes. The nominal outer diameter of the buffer tube shall be 2.5 mm. Each buffer tube shall contain no more than 12 fibers. The buffer tubes shall not allow any adherence of the optical fiber to the inside of the buffer tube. Buffer tubes shall be color coded with distinct and recognizable colors in accordance with TIA/EIA-598-B, "Optical Fiber Cable Color Coding." Buffer tubes shall be stranded around the dielectric central member using the reverse oscillation, or "S-Z", stranding process.

Each buffer tube shall contain water blocking material embedded uniformly in the inside wall of the buffer tube to protect from water intrusion. The water blocking material shall be non-nutritive to fungus, electrically non-conductive, and homogenous. It shall also be free from dirt or foreign matter. Water blocking material will preclude the need for other water-blocking material such as gels, yarns, foams, or tables. All buffer tubes shall be gel-free.

Each fiber shall be distinguished by means of color coding in accordance with TIA/EIA-598-B, "Optical Fiber Cable Color Coding."

For cables containing more than 12 buffer tubes, standard colors shall be used for tubes 1 through 12 and striped tubes used to denote tubes 13 through 24. The color sequence applies only to tubes containing fiber. If fillers are required, they shall be placed in the inner layer of the cable.

All coloration of buffer tubes, cable and optical fiber must remain stable across operating temperatures and not subject to fading, smearing, or transferring.

Fillers may be included in the cable core to lend symmetry to the cable cross-section where needed. Fillers shall be placed so that they do not interrupt the consecutive positioning of the buffer tubers. In dual layer cables, any fillers shall be placed in the inner layer. Fillers shall be nominally 2.5 mm in outer diameter.

The central member shall consist of a dielectric, glass reinforced plastic (GRP) rod. The purpose of the central member is to provide tensile strength and prevent buckling. The central member shall be over coated with a thermoplastic when required to achieve dimensional sizing to accommodate buffer tube/filler. Water swellable

yarn(s) shall be applied longitudinally along the central member during stranding. The central member shall provide the cable with all its tensile strength.

Water swellable yarn(s) shall be applied longitudinally contra helically with sufficient tension to secure each buffer tube layer to the dielectric central member without crushing or deforming the buffer tubes. The binders shall be non-hygroscopic, non-wicking, and dielectric with low shrinkage.

Any tear feature shall allow for each sheath removal without the need for ripcords. Tear features shall open only when pulled apart at the ends of the sheath or a mid-span ring-cut openings. Tear features shall not open during handling, installation, or operation.

Cables shall be sheathed with polyethylene (PE). The minimum nominal jacket thickness shall be 1.3 mm and be of a consistent thickness. Jacketing material shall be applied directly over cable core and water swellable tape. Jacketing must resist ultraviolet damage and not promote the growth of fungus. PE material shall be as defined by ASTM D1248, Type II, Class C, Category 4 and Grades J4, E7, and E8. Jacket or sheath shall be free of holes, splits, and blisters. The jacket shall contain no metal elements. Markings on Cable jacketing or sheath shall have the communication handset symbol as required by Section 350G of the National Electrical Safety Code, fiber count, and fiber type. All markings will be a contrasting color to the sheath or jacketing material.

## 86-1.02J STANDARDS, POLES PEDESTALS, AND POSTS

## 86-1.02J(1)(A) IDENTIFICATION TAGS

*ADD THE FOLLOWING*

Standards tags shall be placed on the pole opposite from the pedestrian ramp.

## 86-1.02J(2) BOLTED CONNECTIONS

*ADD THE FOLLOWING*

Pole anchor bolts shall be cut and finished one-half inch (1/2") above the nut. Base plate bolt covers shall be installed for all standards.

## 86-1.02J(3) STANDARDS AND POLES

## 86-1.02J(3)(A) GENERAL

*ADD THE FOLLOWING*

All poles shall meet wind load specifications per the latest Caltrans Standard Plans.

Pole and pull boxes shall be located outside of the pedestrian ramps and ramp slopes.

Where modifications leave holes in the standard pole, the holes shall be repaired pursuant to State of California Standard Specifications, Section 86-2.04.

*ADD THE FOLLOWING SUBSECTIONS*

## 86-1.02J(5) CONCRETE POLES

When telecommunications ("telecom") facilities are to be placed on a pole, the pole to be used will comply with the corresponding telecom pole standard as indicated by location adjacent to functional classification.

RESIDENTIAL STREETS: Ameron DWG. 1203-036 Rev. 4

COLLECTOR AND ARTERIAL STREETS: Ameron DWG 1203-037 Rev. 4

RESIDENTIAL STREETS (TELECOM): Ameron DWG 1203-035

COLLECTOR AND ARTERIAL STREETS (TELECOM): Ameron DWG 1203-023

Note: Use 8' arm poles located adjacent to the sidewalk on residential, collector and arterial streets

Concrete poles shall be tapered, centrifugally cast and prestressed. Poles shall be round black and white marble aggregate or natural exposed aggregate. Pole shape and color shall be uniform for any one project. Replacement poles shall match existing.

The ultimate strength of a pole shall be calculated in accordance with the latest revision of American Concrete Institute (A.C.I.) standard 318. Under working loads (including wind loading, as specified in the latest edition of AASHTO standards), the pole must not be stressed beyond the cracking strength. The pole and mast arm must be capable of handling the EPA and weight of the luminaire.

Aggregates shall conform to current requirements of ASTM C33, except that abrasion requirements therein shall not apply and that no more than seven percent (7%) shall pass a #100 mesh sieve. No dye or sealer shall be used.

The centrifugal casting process shall produce a center duct throughout the length of the pole, which shall be free from sharp projections or edges and shall be a minimum of one and one-half inch (1-1/2") in diameter. All reinforcing steel shall have a minimum cover of five-eighths inch (5/8") of concrete. After curing, the surface of the pole shall be treated to remove cement laitance and to develop the surface texture. When finished, poles shall be without cracks or crazing and shall have a uniform surface (without objectionable mold marks) and texture throughout the entire length. Maximum deviation from string line at any point shall not exceed 0.03" per foot of length.

Hand hole cover plates shall be aluminum and securing bolts shall be stainless steel tamper-proof bolts of the type installed with a pent-head wrench. Anti-seize shall be used.

All poles shall be provided with a clear, factory applied Amershield Anti-Graffiti coating, or equal.

## *86-1.02J(6) STREET LIGHT POLE FOUNDATIONS*

Street lighting pole foundations will be as shown on SDRSD E-1 and E-2, Anchor base foundation. For E-2, use No. 4 for ground wire in place of ground rods shown.

Anchor bolts shall be the type and size shown on SDRSD E-1 and shall conform to the specifications of ASTM A 307 and be provided with two nuts and two washer each. Bolts, nuts and washers shall be galvanized by the hot-dip process conforming to ASTM A 153.

## *86-1.02J(7) STREET LIGHT MAST ARMS*

Mast arms will be 8-foot long and made of aluminum.

Mast arms shall be two inch (2") I.P.S. galvanized steel or aluminum and shall be self-supporting without braces, scrolls or rods. Mounting shall be perpendicular to the street centerline unless otherwise directed by the City Engineer. They shall have a minimum of six inches (6") of horizontal straight section at the end of the arm to mount a two inch (2") I.P.S. slipfitter type luminaire mount.

Mast arms shall be eight feet (8') long for all luminaires unless otherwise specified in the plans and shall be capable of handling the EPA and weight of the luminaire. Steel arms shall conform to ASTM A 120. Aluminum arms shall be corrosion resistant alloys such as Aluminum Association wrought alloys 6061 or 6062 or cast alloys 319 or 356.

All exposed hardware shall be stainless steel. All protected hardware not visible after installation shall be cast aluminum and / or stainless steel, hot-dipped galvanized. Anti-seize shall be used .

## *86-1.02K LUMINAIRES*

### 86-1.02K(1) GENERAL

*DELETE AND REPLACE WITH*

Luminaire must be Light Emitting Diode (LED) type.

### 86-1.02K(2) LED LUMINAIRES

*DELETE FIRST SENTENCE AND REPLACE WITH:*

Luminaires shall conform to the latest City of San Marcos Street Lighting Standards and Specifications manual. Unless otherwise specified on the plans or Project Special Provisions the operating voltage shall be 120V(ac) and be mounted to 15' long mast arm. All luminaires shall have NEMA twist –lock receptacle integral to the luminaire with type IV photoelectric control unit, per section 86-1.02M, installed.

*ADD THE FOLLOWING*

LED streetlight luminaries shall meet the applicable requirements of the following industry standards:

- ANSI/NEMA/ANSLG C78.377-2011-Specifications for the Chromaticity of Solid-State Lighting (SSL) Products
- IES LM-79-08 – Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products
- IESNA LM-80-08 – Approved Method measuring Lumen Maintenance of LED chips / Fixture Manufacturer must provide extrapolation explanation for Lumen Maintenance derived from In-Situ testing upon request.
- IEEE C62.41.2-2002-IEEE Recommended Practice on Characterization of Surges in Low-Voltage (1000 V and less) AC Power Circuits
- IESNA TM-15-11 & Addendum A (replaces TM-15-07 and TM-15-07 Addendum A) – Luminaire Classification System for Outdoor Luminaires; Backlight, Uplight, and Glare (BUG) Ratings
- ANSI/UL 1598 – Poles & luminaires; UL

- ANSI/UL 8750: Additional requirements for LED luminaires as well as drivers and LED arrays

Test data that establishes compliance with the industry standards listed above shall be provided with the project approval submittals.

Each LED luminaire shall have the manufacturer's name, trademark, model number, serial number, date of manufacture (month-year), and lot number as identification permanently marked inside each unit and the outside of each packaging box.

The operation characteristics such as rated voltage and rated power in watts and Volt-Ampere shall be permanently marked inside each LED luminaire unit.

LED luminaire manufacturer shall provide a 10.5 year warranty on LED luminaires that includes LEDs, housing, drivers, and finish.

LED luminaire manufacturer shall use IESNA LM-80 data to predict luminaire lifetime and shall demonstrate a suitable testing program incorporating high heat, high humidity and thermal shock test regimens to ensure system reliability and to substantiate lifetime claims.

Electrical and light technical properties shall be recorded for each LED luminaire during manufacture. This should include lumen output, CCT, and CRI at a minimum. Each luminaire shall utilize a unique serial numbering scheme. Technical properties must be made available for a minimum of 5 years after the date of manufacture.

Luminaires shall be fully assembled and individually electrically tested prior to shipment.

Fixtures shall be one of the following or approved equal:

STREET LIGHTING (3,000K)

GE Evolve Catalog #: ERL1004B330AGRAYL (LED System watts = 45; residential)

GE Evolve Catalog #: ERL1004D330AGRAYL (LED System watts = 45; tilted 2.5 degrees up; cul-de-sacs)

GE Evolve Catalog #: ERL1007C330AGRAYL (LED System watts = 95; Type 5; collectors)

GE Evolve Catalog #: ERLH011D330AGRAYL (LED System watts = 148; arterials)

SAFETY LIGHTING AT SIGNALIZED INTERSECTIONS (4,000K)

GE Evolve Catalog #: ERLH010C340AGRAYL (LED System watts = 90; residential/residential intersections)

GE Evolve Catalog #: ERLH011C340AGRAYL (LED System watts = 108; collector/residential, collector/collector, collector/major, residential/major intersections)

GE Evolve Catalog #: ERLH013C340AGRAYL (LED System watts = 125; major/major intersections)

General description of LED – Standard fixture utilizes terminal block for power input suitable for #6 - #14 AWG wire operates at 700mA. Drive current is not field switchable. A three-pole terminal block capable of accepting #14 to #10 AWG shall be mounted to the housing inside the electrical compartment. Luminaire shall be provided with capability for optional backlight control. Complete assembly weight shall not exceed 45 lbs. Fixture is

designed to mount on a schedule 40, 2" nominal pipe size (NPS) horizontal tenon (minimum 8' in length) and is adjustable +/- 5 degrees to allow for fixture leveling (includes two axis T-level to aid in this process). Fixture, including the LEDs, drivers and electrical components, shall carry a limited ten year warranty and housing paint and finish shall carry a ten year warranty.

Color temperature and CRI:

3000K color temperature for street lighting, minimum 70 CRI

4000K color temperature for safety lighting, minimum 70 CRI

OPTICAL DISTRIBUTION METHOD & CONFIGURATIONS

Optical configurations shall meet the following criteria:

1. Close contact refractors to be employed for optical distribution.
2. Refractors are to be polymeric material rated 5VA, f1 rating
3. Lumen maintenance at 50,000 hours of life to be no less than 88% of initial lumen output
4. Shall have 95% survival rate at 50,000 hours
5. Integral 10K surge suppressor for diode and entire system protection

**STREET LIGHTING (3,000K)**

| Fixture Application (@100 hours) | LED Fixture Wattage | Minimum Lumens | Light Distribution Type |
|---|---|---|---|
| Residential Streets | 45 Watts | 3,500 Lumens | IESNA Type V |
| Cul-de-sacs | 45 Watts | 3,400 Lumens | IESNA Type III |
| Collectors | 95 Watts | 5,600 Lumens | IESNA Type V |
| Arterials | 148 Watts | 8,600 Lumens | IESNA Type V |

**SAFETY LIGHTING (4,000K)**

| Fixture Application (@100 hours) | LED Fixture Wattage | Minimum Lumens | Light Distribution Type |
|---|---|---|---|
| Residential/Residential Intersections | 95 Watts | 8,000 Lumens | IESNA Type III |
| Collector/Residential Intersections | 130 Watts | 9,100 Lumens | IESNA Type III |
| Collector/Collector Intersections | 130 Watts | 9,100 Lumens | IESNA Type III |
| Collector/Major Intersections | 130 Watts | 9,100 Lumens | IESNA Type III |
| Residential/Major Intersections | 130 Watts | 9,100 Lumens | IESNA Type III |
| Major/Major Intersections | 148 Watts | 10,300 Lumens | IESNA Type III |

## 86-1.02K(3) LOW PRESSURE SODIUM LUMINAIRES

*DELETE SECTION*

*REPLACE THE SUBSECTION WITH THE FOLLOWING*

## 86-1.02K(4) LUMINAIR HOUSINGS

Luminaire housing shall be furnished with an optical assembly, be powder-coated silver, include a level bubble to facilitate installation, allow for tool-less entry and shall include an integral twistlock type receptacle for photoelectric cell control in accordance with the latest EEI-NEMA standards which is adjustable with respect to north and pre-wired to the terminal board.

Luminaire external housing shall have a minimum rating of IP56 as specified in IEC 60529, with the ability to shed water from inside the housing (i.e. weep holes).

The LED luminaire shall be designed for horizontal mounting. The LED assembly shall have a slip-fitted mounting bracket capable of attaching to a two-inch (2") pipe without the need for special mounting parts. They shall be installed in a horizontal position with leveling and clamping to the mast arm pipe accomplished by tightening mounting bolts, which are externally or internally accessible. Bolts shall be minimum 5/8" x2" size stainless steel.

Luminaire circuitry shall include quick connect / disconnects to allow easy separation and removal of driver and power door. See City of San Marcos Standard Drawing ELE-3. Grounding requirements: ANSI/UL Standards and NFPA 70.

The luminaire power unit assembly shall consist of an integral driver, capacitor, 10K surge suppressor, and heavy-duty terminal block. The power unit assembly shall be mounted on a separate component of the luminaire to facilitate replacement.

The luminaire optical chamber shall have a minimum rating of IP66 as specified in IEC 60529.

The luminaire housing cooling system shall consist of a passive heat sink with no fans, pumps, or liquids and shall be designed and constructed to accept a standard plug type, locking, three-pole, three-wire, streetlight photocontrol. The fixture and finish endurance tested to withstand 5,000 hours of elevated ambient salt fog conditions as defined in ASTM Standard B 117.

All fasteners shall be stainless steel and all polycarbonate components shall be UV stabilized.

An easily-viewable nameplate shall be permanently affixed to the inside of each luminaire housing. The nameplate shall contain the following information: manufacturer's name, manufacturer's catalog number, date of manufacture (month and year), plant location, input power consumption, driver output current, IEC IP Rating, correlated color temperature (CCT), IES light distribution type, IESNA TM-15 BUG ratings, and serial number. Utility approved luminescent name plate with light source and wattage shall be permanently affixed on the exterior of the Luminaire to be visible from the ground.

The driver assembly shall be enclosed in a separate compartment from the optical assembly. The entire fixture shall be 'wet listed' with the optical assembly compartment being rated at IP66. The LED Luminaire shall be constructed to provide the required light distribution with the lower edge of the Luminaire housing below the entire light source close contact refractors. The Luminaire must be Dark Sky Compliant with U0 bug rating. The light distribution pattern shall be per Section 86-1.02(K)2.

## 86-1.02K(5) DRIVERS

*ADD THE FOLLOWING SUBSECTION*

Light Emitting Diode (LED) drivers shall be component-type consisting of precision wound coils and welded magnetic steel laminations assembled together and impregnated with baked-on, insulating, weatherproof varnish; and metal-cased, hermetically-sealed capacitor, suitable for use on multiple distribution circuits with 60Hz, 120 or 240 Volt rating. The operating sound pressure noise level shall not exceed the ambient noise level by more than five (5) decibels at a 30 feet when measured by a sound level meter conforming to the American Standards for Sound Level Meters. Where the ambient noise level is less, a minimum of 40 decibels shall be assumed.

Power supply / driver shall be field replaceable by means quick-disconnect connectors and easy access mounting hardware. Power supply / driver shall be wet-listed in the US and Canada, UL, ROHS compliant, meet Caltrans 611 vibration testing and GR-63-CORE section 4.4.1/5.4.2 earthquake zone 4.

DRIVER SPECIFICATIONS

Electronic; voltage range = universal 120 – 277 v +/- 10%; frequency = 50/60 Hz; power factor > 90% @ full load; THD < 20% @ full load; output ripple < 10%; output shall be isolated; case temperature rated for -40 to 60C; fully encased and potted; overheat protection, self limited short circuit protection, and overload protected – minimum integral 10k surge protection tested in accordance with IEEE C62.41 and ANSI standard 62.41.2; Driver Life Rating not less than 100,000 hours.

## 86-1.02K(6) FUSES

*ADD THE FOLLOWING SUBSECTION*

Fuses shall be slow blow 13/32" x 1 ½" in-line type in 10 amp size unless specified otherwise in the project special provisions. The fuse shall be installed in the hot leg of the lighting conductor. The circuit shall be fused in the base of the pole. 240-volt installations require each leg to be fused using a double fuse holder and two fuses of appropriate size. Heat shrink both crimp ends.

Fuseholders shall be completely waterproof, shall grip the fuse in the load side section when opened, and be able to take a 13/32" x 1 ½" fuse, with crimp-type tubular terminals of a proper size for the cable in the particular light.

## 86-1.02L CONFLICT MONITOR

*ADD THE FOLLOWING*

The conflict monitor shall be model 2212-HV-MC or approved equal. The monitor shall have 32 channel capability with a 10/100 Ethernet port, be capable of monitoring 5 section heads, display active colors independently during operation and at time of fault, and shall e compatible with Omni eX software.

## 86-1.02M PHOTOELECTRIC CONTROLS

*ADD THE FOLLOWING*

Unless otherwise specified by the Project Special Provisions the photoelectric control units for City street and safety lighting shall be a Type IV control, Fisher-Pierce # TRS-2 105-305 VAC LED control or approved equal.

The control unit shall contain a uniformly coated cadmium-sulfide photoelectric cell suitable for operation with 120 or 240 volt line supply with surge protection to prevent damage and made to fail in the "ON" position. The unit shall have a HID load rating of 1,800 VA with a Tungsten load rating of 1,000 watts.

The response level of the unit to changing light levels shall remain stable throughout the life of the unit (5,000 operations).

Type IV photoelectric unit shall consist of a photoelectric cell in a weatherproof housing which plugs into an EEI-NEMA twist-lock receptacle integral with the luminaire and shall be installed with the clear UV-stabilized photocell window facing north.

## 86-1.02N FUSED SPLICE CONNECTORS

*DELETE AND REPLACE WITH*

Install a fuse splice connector in each ungrounded conductor for luminaires mounted on standards. The connector must be located in the hand hole to the standard.

Crimp the connector terminals onto the ungrounded conductors using a tool under the manufacturer's instructions. Insulate the terminals and make them watertight.

## 86-1.02P(2) SERVICE EQUIPMENT ENCLOSURE

*ADD THE FOLLOWING*

Unless specified on the Plans or Project Special provisions new or replaced service equipment enclosures must be a Type III-C dual meter electrical service enclosure.

## 86-1.02P(3) LIGHTING AND SIGN ILLUMINATION ENCLOSURES

*DELETE SECTION*

## 86-1.02Q(2) DEPARTMENT FURNISHED CONTROLLER CABINETS

*DELETE SECTION*

### *86-1.02Q(3) CONTROLLER CABINETS*

*DELETE SECTION AND SUBSECTIONS AND REPLACE WITH:*

Controller cabinet shall be McCain 352i ATC with anodized aluminum finish and front and back door switches, or approved equal. The cabinet shall be wired for full 8-phase capability.

The controller cabinet shall have an internal rack mounted document drawer assembly for the purposes of document storage, writing surface, and laptop computer placement. The document drawer shall have a minimum depth of 1.5 inches, drawer glides made of anodized aluminum, mounting brackets made of stainless steel, and have a hinged lift top writing area with textured powder coat surface.

The controller cabinet shall be equipped with two LED lights activated by door switches and equipped with fuses (AVA Technology Part #US2324 or approved equal).

The controller cabinet shall be wired for red monitoring and door alarm monitoring.

## 86-1.02Q(4) TELEPHONE DEMARCATION CABINETS

*DELETE SECTION AND SUBSECTIONS*

## 86-1.02Q(5) BATTERY BACKUP SYSTEM CABINETS

*DELETE SECTION AND REPLACE WITH*

The battery back-up system (BBS) cabinet shall:

1. Be housed in a standalone City approved cabinet in a location approved by the Engineer.
2. When being installed as a modification to an existing signal, the BBS can be installed as a side mounted piggy back cabinet, subject to approval by the Engineer.
3. The BBS cabinet shall have an auxiliary generator plug installed.
4. Be Ethernet/IP compatible and wires for communication to the City Traffic Management Center and for an alarm output to the controller unit.

*ADD THE FOLLOWING SUBSECTION*

## 86-1.02Q(6) SERVICE AND ELECTRIC SERVICE CABINET

The electrical service cabinet shall:

1. Be fabricated with an anodized aluminum finish.
2. Provide Type III-C dual meter electrical service for all new signal installation.
3. Meet the SDG&E Service Guide service requirements and the Caltrans Standard Plan Drawing ES-2C cabinet specifications.
5. Have separate main disconnect circuit breakers for metered and unmetered sections.
6. Have plug-in type circuit breakers. Cable bussing is not allowed.
7. Be a model, part, class or type number fabricated by a manufacturer listed in the City's Manual for Traffic Signal Design and Installations, or approved equal.

## 86-1.02R SIGNAL HEADS

## 86-1.02R(1) GENERAL

*ADD THE FOLLOWING*

Except for anodized components, all exposed metal signal housings, doors, visors, backplates and framework parts shall have a powder coated finish and be a City approved process. The minimum requirements are as follows:

1. A 3-5 stage pretreatment consisting of: Degrease, Rinse, Iron Phosphate, Rinse, and Seal.

Note: Degrease and Iron Phosphate can be combined, thereby eliminating Rinse, making this a 3-stage process.

2. A dry off cycle for at least 10 minutes at 300° to 400° F.
3. Electrostatically applied powder at 75-90KV.
4. Thermal setting cycle for 20 minutes at 400° F.
5. All parts shall be coated with an ultraviolet resistant polyester powder. The only exception is for items of flat black, which can be coated with a self-cleaning flat black epoxy.

The CONTRACTOR shall furnish manufacturer's certificate of compliance with City approved powder coating process prior to installation of equipment.

## 86-1.02R(4)B SIGNAL MODULES

*ADD THE FOLLOWING*

All signal modules shall be manufactured by either GE or Dialight. All signal modules shall be certified by the Intertek LED Traffic Signal Modules Program. Proof of certification must be submitted to the City as part of material submittal.

All (red, yellow, and green) LED signal modules shall be Type 1 and meet the following specifications:

1. LED signal modules for all balls and arrows shall be twelve-inch diameter (12").
2. LED signal modules shall be complete and factory installed in aluminum signal sections
3. LED signal modules shall be mounted and soldered onto a printed circuit board

The normal failure of one LED signal module shall not deactivate any other LED signal module.

LED signal module shall have a minimum 5-year warranty beginning after traffic signal system has been accepted by the City.

When modifying existing signalized intersections, if the mast arms do not currently extend to within site of the midpoint of a single left-turn lane or to the dividing lane line between dual left-turn lanes, and it is cost prohibitive to replace the pole and mast arm, Programmed Visibility (PV) heads shall be used. All PV heads shall have LED lamps. GE Lamination DR3-RCFB-01A (Red), DR3-YCFB-01A (Yellow), and DR3-GCFB-01A (Red) or approved equals shall be used.

All signal faces shall have one-piece retro-reflective backplates and tunnel visors.

Left turn signal modules shall be all arrows

## 86-1.02S PEDESTRIAN SIGNAL HEADS

## 86-1.02S(3)(A) GENERAL

Pedestrian heads shall not be plastic.

Pedestrian indication shall be “countdown type”.

## 86-1.02U PUSH BUTTON ASSEMBLIES

*REPLACE THE 1$^{ST}$ PARAGRAPH WITH THE FOLLOWING*

Pedestrian push button housings shall be a telescoping, vandal-proof design, painted a Federal Standard color approved by the Traffic Engineer, and shall be die cast aluminum.

*ADD THE FOLLOWING*

Pedestrian push buttons shall ne 2-inch minimum in diameter.

The assembly shall be Type B with a five inch (5") by seven inch (7") international symbol push button per the latest edition of the Caltrans Standard Specifications. Fasteners for the sign plate shall be installed with anti-seize compound.

A dedicated 3 conductor signal cable shall be wired for each push button.

Push button actuator shall be a Polara Model #BDLM2-G or approved equal.

The push button frame shall include adjustable mounting brackets to accommodate standard Caltrans traffic signal poles.

### *86-1.02T ACCESSIBLE PEDESTRIAN SIGNALS*

*ADD THE FOLLOWING*

Accessible Pedestrian Signals shall be field wired models utilizing pedestrian head mounted control boards, Polara 2-wire Navigator or approved equal. Such systems shall be installed per the manufacturer's instructions. When installing a system requiring a programmer unit, one such programmer unit shall be provided to the City with each installed system.

### 86-1.02V EMERGENCY VEHICLE PREEMPTION

*ADD THE FOLLOWING*

Emergency vehicle pre-emption shall conform to the provisions in Section 86-3.08B, *Preemption Equipment,* of the State Standard Specifications and these Special Provisions.

The emergency vehicle preemption (EVPE) detector shall be an Opticom Model no. 721 or approved equal.

The emergency vehicle preemption (EVPE) discriminator module shall be an Opticom Model No. 764 or approved equal.

The detector shall be mounted on the mast arm using an astro bracket with threaded nipple and lock washers.

### 86-1.02W(4) HOT-MELT RUBBERIZED ASPHALT SEALANT

*ADD THE FOLLOWING*

Loop detectors in asphalt shall use rubberized Brewer/Flex hot melt type sealant or approved equal.

### 86-1.02X MISCELLANEOUS SIGNS

*ADD THE FOLLOWING*

## 86-1.02X(A) RADAR FEEDBACK SIGNS

Signs shall be Information Display Company SpeedCheck SC-15 or approved equal.

Signs shall be solar powered and capable of fully autonomous operation and shall adhere to CA MUTCD requirements. Signs shall be 30" wide by 42" high with 15-inch display digits. A "slow-down" message shall be LED characters approximately 6-inches in heights formed with amber or red LEDs.

## 86-1.02X(B) LED BLANCK-OUT SIGNS

Window dimensions shall be 24"x24" for near side signs and 30"x30" for far side signs. All signs shall be compliant with the latest CA MUTCD requirements.

## 86-2.01A(4) QUALITY CONTROL AND ASSURANCE

*DELETE SECOND TO LAST PARAGRAPH AND REPLACE WITH:*

Start the operational test of the system between the hours of 9:00 a.m. to 3:00 p.m., Tuesday or Wednesday, with exception to any working hour restrictions as defined in Section 6-1.7 & 6-1.8.

### *86-2.01C CONSTRUCTION*

### *86-2.01C(1) GENERAL*

*ADD THE FOLLOWING:*

Service points shall be located within the City's right-of-way.

### *86-2.01C(2) CONDUIT INSTALLATION*

### *86-2.01C(2)(A) GENERAL*

*REVISE THE 2ND PARAGRAPH TO READ:*

Limit the number of bends in a conduit run to no more than 270 between pull points. Sweep radii shall be a minimum of 24".

*REVISE PARAGRAPH 6 TO READ:*

Install 3-4 inch conduits between controller cabinet base and adjacent home run pull box. Install the signal cable in the first conduit, interconnect conductors in the second, and the balance of conductors in the third.

*DELETE PARAGRAPHS 7 AND 8*

*ADD THE FOLWING*

Conduit sweep radii shall be a minimum of 24".

All conduit entering pull boxes, vaults and cabinets and at all street light conduit terminations shall be protected with duct seal. No open holes are allowed.

All conduit for use in traffic signal systems in the traveled way (including driveways) shall be buried a minimum of thirty inches (30") of total cover from the top of pipe to finished grade. All Conduits shall be sealed upon completion.

All legs of the intersection shall have a conduit crossing installed (one spare with pull rope).

All conduits shall contain "detectable mule tape" pull rope per State of California Standard Specifications 86-2.05C and a No.8 THWN stranded insulated green trace wire.

All conduits with three or more conductors shall not exceed 40% fill unless approved by the Engineer.

All conduits must be buried beneath the structural pavement section.

### *86-2.01C(2)(C) CONDUIT INSTALLATION UNDERGROUND*

### 86-2.01C(2)(C)(i) GENERAL

*REVISE PARAGRAPH 1 TO READ:*

Install conduit to a minimum depth measured from top of pipe to finished grade as follows:

1. 14 inches for the trench-in-pavement method
2. 18 inches, minimum, under raised sidewalk and curbed paved median areas
3. 42 inches, minimum, below the bottom of the rail of railroad tracks
4. 30 inches, minimum, everywhere else below grade, including the traveled way and driveways

*ADD THE FOLLOWING*

All conduits within the traveled way of roadways or driveways shall be four inch (4") schedule 80 rigid PVC, encased in 560-C-3250 concrete, with a minimum of 30" of cover.

As much as practical, conduit crossing streets for use with a signal system shall be laid out perpendicular to the curb line of the street crossing under the center of the crosswalk.

### 86-2.01C(2)(G) CONDUIT INSTALLATION BY THE JACKING OR DRILLING METHOD

*ADD THE FOLLOWING*

Installation of conduits by directional boring are subject to approval by the Engineer.

### *86-2.01C(2)(H)* CONDUIT INSTALLATION BY THE TRENCH-IN-PAVEMENT METHOD

*DELETE PARAGRAPH 7 AND ADD:*

When conduit sits within the roadway including driveways, the Contractor shall backfill the trench with concrete in the pipe zone. Trench backfill will conform to Section 217. Concrete shall be 560-C-3250. Concrete used to encase fiber optic systems owned by the agency shall be colored dark red or orange through the addition of 2 lbs

of pigment per sac of concrete. Concrete encasement for traffic signal system conduit located behind the curb is not required.

## 86-2.01C(3) INSTALLATION OF PULL BOXES

## 86-2.01C(3)(A) GENERAL

*ADD THE FOLLOWING*

No poles or pull boxes are allowed within the limits of pedestrian ramps including the ramp slopes.

Pull boxes shall not be placed in raised or painted medians, in a paved shoulder, in the traveled way, in driveways, or within one foot of a sidewalk access ramp or flares unless otherwise indicated in the Project Special Provisions.

Pull boxes shall be located beyond the door opening paths of traffic signal controller cabinets and service cabinets.

When retrofitting pedestrian ramps and relocating existing boxes is cost prohibitive, existing pull boxes must be replaced with traffic-rated models and non-skid steel lids and re-installed flush with the concrete surface.

The tops of pull boxes installed in the sidewalk area shall be flush with the surrounding grade or the top of the adjacent curb.

Electrical power pull box shall be No. 5 and shall be placed no more than 20 feet from the service cabinet

*REPLACE THE SUBSECTION WITH THE FOLLOWING*

## 86-2.01C(4) GROUNDING AND BONDING

The grounding jumper shall be attached by a 3/16 inch or larger brass bolt in the signal standard or controller pedestal and shall be run to the conduit, ground rod, or bonding wire in the adjacent pullbox. The grounding jumper shall be visible after the cap has been poured on the foundation. Equipment grounding conductor #8 AWG is required in all conduit.

*ADD THE FOLLOWING SUBSECTION*

## 86-2.01C(12)(B)(IV) ELECTRICAL SERVICE FOR STREET LIGHTS

Contractor shall coordinate with SDG&E for a service point. SDG&E will identify what service is available and where it is located. A new streetlight can be connected to an existing streetlight circuit only with express written permission from the Engineer. New voltage drop calculations shall be required to verify that existing circuit can handle additional load.

The service point shall be in the City's right-of-way or easement.

When the street light is being installed for the purposes of telecommunication use, all telecommunication equipment electrical power shall be separated from street light connections. Separate circuits shall be provided and any necessary pull box will be installed, to provide a point of connection. Equipment fusible disconnect

must be within the equipment enclosure or within pull box. No fusible disconnect will be allowed within the pole.

Electrical connections will be metered separately from Public Street Lights. Wireless telecommunication facilities must utilize SDG&E wireless metering.

Upon completion of all street light construction, the Contractor shall submit one (1) digital and two (2) sets of professionally drafted streetlight "As-Built" plans on 11" x 17" size mylar sheets to the Engineering Department, showing the following information:

**a.** Layout of curbs, gutter, sidewalks, driveways and other improvements, drawn to scale
**b.** Location of street lights, with dimensions from the nearest cross street intersection and between streetlights
**c.** Location of pull boxes dimensioned from the streetlights, curbs or other features
**d.** Location of service point (power source) and SDG&E identification number
**e.** Location of conduit service runs dimensioned from face of curb, edge of pavement or back of sidewalk as applicable
**f.** Size and type of wire used
**g.** Size (wattage and voltage rating) and type (LED) of each lamp and number of lamps used
**h.** North arrow
**i.** Contractor's name, address and telephone number
**j.** Identifying project name and number

Contractor shall provide a minimum of 5 working days for City review and approval of submittal.

## 86-2.01C(17) CABINETS

### 86-2.01C(17)(A) GENERAL

*REVISE SECOND SENTENCE TO READ*

Apply polyurethane caulking compound before installing the cabinet on the foundation to seal the openings.

*ADD THE FOLLOWING*

Controller cabinet foundations shall be installed per 2015 Caltrans Standard Plan ES-3C.

### 86-2.01C(17)(D) TELEPHONE DEMARCATION CABINETS

*DELETE SECTION*

## 86-2.01C(18) SIGNAL HEADS

## 86-2.01C(18)(A) GENERAL

*ADD THE FOLLOWING*

Signal heads for the trough movement shall be visible within a 40 degree cone measures at the center of the approach at a point 10' behind the minit line (20 degrees to the right and 20 degrees to the left of the center of the approach, See CAMUTCD, Figure 4D-4)

Terminal block shall be mounted in red section on MAS/MAT signal heads. There shall be a drip loop for field installed signal wires.

## 86-2.01C(22) DETECTORS

## 86-2.01C(22)(A) GENERAL

*ADD THE FOLLOWING*

If an approach has advance detection, install two loops per lane spaced 10 feet apart starting 1' behind the crosswalk or stop bar. Install four loops spaced 10 feet apart in advance of the crosswalk or limit line in left-turn lanes and for approach lanes without advance detection.

Right-turn only lanes shall have 2 loops spaced 10 feet apart. If there is no right-turn only lane, install on loop at the limit line, adjacent to the curb for sneak-by traffic.

Install a single loop per lane with one DLC per loop for advance detection.

Single speed and count detection shall be installed on the departure side of the major street. The departure side system detection shall be one loop per lane grouped separately and located approximately 150 feet from the approach limit line. All speed and count detection cables and cards shall be labeled in the cabinet with lane number and phase assignment.

Loop detector splices shall be soldered and sealed with heat-shrink containing waterproof sealant.

Sensor unit shall be Reno Model C-1101 SS Vehicle Detector or approved equal. Four (4)-channel senso units shall not be used.

Sealant shall be placed into and over the loop cut with a sealing disc. The final band shall be no more than one-eighth of an inche thick and shall be between 2 and 4 inches wide.

After installation of the loops, pavement shall be repaired and a type 2 slurry seal coat shall be applied to the area unless otherwise indicated by the Engineer.

## 86-2.01C(22)(B) INDUCTIVE LOOP DETECTORS

*ADD THE FOLLOWING*

Vehicle loops shall be circular Type E (6' diameter) installed per California Standard Plans ES-5.

Loops at the crosswalk or stop bar (limit line) shall be Modified Type "E" loops per City of San Diego Drawing SDE-104. Loops shall be installed 1-foot behind the limit line.

All bicycle lane detector loops shall be Type Q, six feet long. Width varies 6" to 12" inside bike lane line and 6" to 12" outside gutter or other channelization line, providing a 3-foot wide to 4-foot wide loop.

Loop detectors shall have 3 clockwise turns of loop wire for each detector. The "home-run" part of the loop wore which is the segment from the 3 clockwise turns of the loop detection zone to the pullbox, shall be twisted clockwise with a minimum of 2 turns per foot.

The “home-run” saw cut shall be a minimum of 5” deep and no more than 8 wires per sawcut slot.

Loop detector saw cut shall be a minimum of 3” deep for the detection zone loop detector wire.

## 86-2.03 SIGN ILLUMINATION SYSTEMS

*DELETE SECTION AND SUBSECTIONS*

## 86-2.04 SIGNAL AND LIGHTING SYSTEMS

## 86-2.04A(1) SUMMARY

*ADD THE FOLLOWING*

Safety Lighting conductors may be spliced to branch the circuit as it progresses around the intersection. Fused splice connectors shall be installed in the pole hand hole for each luminaire.

Splices for street lighting shall be permitted in pull boxes and lighting standard bases only. All splices shall be waterproof. Penatrox, or approved equal, shall be used with butt splice and adhesive lines heat shrink tubing.

## 86-2.04A(4)(B) BATTERY BACKUP SYSTEM

*REVISE SECTION TO READ AS FOLLOWS*

Notify the Engineer 48 hours before testing the battery backup system.

Test the system in the presence of the Engineer by turning off the power to the signal system at the service equipment enclosure. The signal system must run continuously for 30 minutes. If the battery backup system fails, correct the problem and retest the system for another 30 minutes. After successful completion of the test, turn the power on for the signal system.

## 86-2.04B(3) INTERNALLY ILLUMINATED STREET NAME SIGNS

*DELETE SECTION AND SUBSECTIONS*

## 86-2.04C(3) INTERNALLY ILLUMINATED STREET NAME SIGNS

*DELETE SECTION AND SUBSECTION*

## 86-2.05 RAMP METERING SYSTEMS

*DELETE SECTION AND SUBSECTIONS*

## 86-2.06 TRAFFIC MONITORING STATION SYSTEMS

*DELETE SECTION AND SUBSECTIONS*

## 86-2.12 CHANGEABLE MESSAGE SIGN SYSTEMS

*DELETE SECTION AND SUBSECTIONS*

## 86-2.18 INTERCONNECT CONDUIT AND CABLE

## 86-2.18(C) CONSTRUCTION

*ADD THE FOLLOWING*

The Contractor will be responsible for ensuring the operability and quality of the SIC delivered from the manufacturer before installation. SIC shall not be removed from the reel or installed until it has been successfully tested by the Contractor. The pre-installation test results shall be documented and provided to the Engineering Department Inspector for approval. SIC found to be defective or damaged shall be returned to the source for replacement by the Contractor.

Fiber optic SIC shall be installed, spliced, terminated, and tested in accordance with NECA/FOA 301-2009 standards. This includes pre-installation and post installation testing of the cable.

Pre-installation testing shall be performed on all fibers using an Optical Time-Domain Reflectometer (OTDR) to preclude manufacturing and shipping damage. The Contractor shall perform such testing either on-site or at a holding facility prior to installing the cable into conduit.

Post-installation testing of all terminated fibers shall be performed using launch cables at both ends as specified in NECA/FOA 301-2009 Annex B.3. The contractor shall perform such testing on-site after all termination and splicing work is completed.

Test results, in the form of pre-installation test data and post installation OTDR traces, shall be provided to the Engineering Division Inspector in a bound hard copy format along with the electronic file and appropriate viewing software, for review and approval after installation and splicing/termination work is completed.

The pre-installation test results shall be in the form of a spreadsheet detailing the length and loss/km for each fiber as well as the parameters used for testing. The post-installation OTDR traces shall clearly show each continuous fiber, the connectors on each end, and the loss for each event.

The Engineering Division Inspector shall approve the test results before final acceptance.

# *PART 8 – LANDSCAPING AND IRRIGATION*

## SECTION 800 – MATEIRALS

### *800-1.1 TOPSOIL*

#### *800-1.1.1 GENERAL*

*ADD THE FOLLOWING:*

Where topsoil is specified or indicated on the plans or specification without further qualification, the Contractor shall supply Class A topsoil.

*ADD THE FOLLOWING SUBSECTION*

#### *800-1.1.5 BIORETENTION SOIL MEDIA*

#### *800-1.1.5.1 GENERAL*

Soil media will be for use in basins designed for water quality and comply achieve long-term, in-place infiltration rates of at least 5 inches per hour at 85% compaction. Soil media will support plant growth and provide pollutant treatment. All soil media provided will comply with the County of San Diego LID handbook for bioretention media specifications.

#### *800-1.1.5.2 COMPOSITION*

Soil media shall be composed of sand, sandy loam, and compost as shown in Table 800-1.1.5.2(A). Media quantities prepared in accordance with the City of San Marcos BMP design manual may be used subject to approval of the Engineer.

**TABLE 800-1.1.5.2 (A)**

| Material | Quantity by Volume |
|---|---|
| Sand | 65% |
| Sandy Loam | 20% |
| Compost | 15% |

Sand shall conform to ASTM C33 for fine aggregates. Sandy Loam will conform to the gradation requirements of the USDA soil textural classification for sandy loam. Compost shall conform to Type 1 Mulch.

Blended soil media shall have no particles exceeding 3/8". Soil gradation shall conform to Table 800-1.1.5.2 (B)

**TABLE 800-1.1.5.2 (B)**

| Sieve Size | Percent Passing |
|---|---|
| 3/8” | 100% |
| #4 | 95%-100% |
| #8 | 40%-60% |
| #200 | <15% |

### *800-1.1.5.3 QUALITY*

Soil media shall meet the following quality requirements.

| Parameter | Method | Requirement | Units |
|---|---|---|---|
| Organic Matter | Loss on Ignition | 2-5% | Dry weight |
| pH | Saturation Paste | 6.0-8.5 | _ |
| Carbon: Nitrogen Ratio | _ | 15:1-40:1 | _ |
| Cation Exchange Capacity (CEC) | _ | ≥ 10 | Meq/100g of dry soil |
| Salinity (Electrical Conductivity) | Saturation Extract | 0.5-3 | dS/m |
| Chloride | Saturation Extract | < 800 | Ppm |
| Sodium Absorption (SAR) | _ | < 5 | _ |
| *Extractable Nutrients* | | | |
| Phosphorus | Ammonium Bicarbonate/DPTA extraction method | <1 | mg/L dry weight |
| Lead | | <0.025 | |
| Arsenic | | < 0.02 | |
| Cadmium | | < 0.01 | |
| Zinc | | < 1 | |
| Copper | | <0.04 | |

| | | | |
|---|---|---|---|
| Mercury | | < 0.01 | |
| Selenium | | < 0.01 | |

### *800-1.1.6 SOIL FOR BACKFILL IN TREE WELLS*

[Reserved]

### *800-1.2 SOIL FERTILIZING AND CONDITIONING MATERIALS*

### *800-1.2.2 MANURE*

*ADD THE FOLLOWING:*

Manure will not be used unless indicated in the Project Special Provisions or approved by the Engineer.

### *800-1.2.3 COMMERCIAL FERTILIZER*

*ADD THE FOLLOWING*

Commercial fertilizer shall be a slow release with a nutrient release over an 8- to 12-month period, and shall have a chemical analysis as indicated in table 800-1.2.3.

**TABLE 800-1.2.3**

| **Ingredient** | **Percentage (%)** |
|---|---|
| Nitrogen | 16% - 21% |
| Phosphoric Acid | 6% - 8% |
| Water Soluble Potash | 4% - 10% |

### *800-1.2.4 ORGANIC SOIL AMENDMENT*

*ADD THE FOLLOWING*

Unless otherwise specified the organic soil amendments shall be Type 1.

### *800-1.2.5 MULCH*

*DELETE SECTION AND REPLACE WITH*

Mulch shall be designated by Type in accordance with the requirements herein. Much shall be provided in bales or bags unless Engineer approves a bulk source. Bulk material will be free of excessive moisture. If unspecified on the project plans, Type 1 mulch shall be used.

Mulch shall be free of putrid smell, having a salt content less than 3.0 mmhos/cm and have less than 0.1% by volume of inert contaminants (glass, plastic, paper, etc.). Mulch shall comply with US EPA, 40 CFR 503 for trace contaminants (heavy metals, pathogens, etc).

a) Type 1 Mulch (ground wood product) shall conform to Type 1 organic soil amendment.
b) Type 2 Mulch (sewage sludge product) shall conform to Type 2 organic soil amendment.
c) Type 3 Mulch (mushroom compost) shall conform to Type 3 organic soil amendment.
d) Type 4 Mulch (peat) shall be brown compressed sphagnum or hypnum.
e) Type 5 Mulch (fir bark chips) shall be firm bark chips in the gradation specified.
f) Type 6 Mulch (straw) shall be either threshed new straw or stable bedding material derived from rice, oats, or barley. Straw in an advanced state of decomposition shall not be acceptable.
g) Type 7 Mulch (wood chips) shall be wood chips in the size and type specified.
h) Type 8 Mulch (shredded redwood or cedar bark) shall be either redwood or incense cedar bark which knits in a manner to minimize sloughing, floating or being kicked away.
i) Type 9 Mulch (recycled) shall be recycled and clean green material processed in accordance with California Code of Regulations, Title 14, Chapter 3, Article 7, Section 17868.3. Clean green material shall be tree and landscape materials that have never been mixed with other waste materials and have been processed by a permitted compost facility. Type 9 Mulch size shall be as specified in the Project Special Provisions.
j) Type 10 Mulch (rock product) shall be rock, decomposed granite, gravel or cobble in the size specified in the Contract Documents.
k) Type 11 Hydro-mulch (wood fiber) shall be of clean natural non-recycled wood fibers processed to contain non germination or growth inhibiting factors using non-toxic dye to facilitate the metering of materials. Type 11 Hydro-Mulch shall be manufactured in such a manner that, after its addition to and agitation in slurry tanks with fertilizer, seed, water, stabilizing emulsion, and other approved additives, fibers in the material shall be uniformly suspended and shall form homogeneous slurry. When hydraulically sprayed on the ground, the homogeneous slurry shall form a blotter-like ground cover impregnated uniformly with seed which shall allow moisture and rainfall to percolate to the underlying soil after application. Suppliers shall certify their product meets all foregoing requirements based on testing.
l) Type 12 Hydro-mulch (stabilizing emulsion) shall be a concentrated liquid chemical that forms a plastic film upon drying and allows water and air to penetrate. The films shall be non-flammable and shall have an effective life of at least 1 year after application. Stabilizing emulsion shall be non-toxic to pant or animal life and non-staining to concrete or painted surfaces. In its cured state, the stabilizing emulsion shall not be capable of being re-emulsified. The material shall be registered with and licensed by the State of California, Department of Food and Agriculture, as an “Auxiliary Soil Chemical”.
m) Type 13 Hydro-mulch (bonded fiber matrix) shall be wood fiber, long strand, and whole wood fiber thermomechanically processed from clean whole wood chips. The fibers shall:
    i. Disperse into a uniform slurry when mixed with water.
    ii. Contain ¾ inch fiber strands for at least 25% by total volume.
    iii. Be retained 100% when passes through a No. 25 sieve.

iv. Have an initial moisture content of no more than 15% of its dry weight when tested under CA Test 226. The moisture content shall be marked on the packaging.
v. Have a water holding capacity by weight of at least 1,200% when tested under the procedure designated in the CalTrans report No. CA-DOT-TL-2176-1-76-36.
vi. Be non-toxic to plan and animal life.
vii. Be free of synthetic or plastic materials, lead paint, printing ink, varnish, petroleum products, seed germination inhibitors, and chlorine bleach.
viii. Contain less than 250 ppm of boron.
ix. Contain less than 7% ash when tested under Technical Association of the Pulp and Paper Industry, TAPPI Standard T 413.
x. Be colored to contrast with the area on which the fiber is to be applied. The coloring agent shall be biodegradable, nontoxic, free from copper, mercury, and arsenic, and shall not stain concrete or painted surfaces.

The bonding agent for the fiber material shall be al liquid formulations with polyacrylamide as the primary active ingredient with the following requirements:

i. Linear, anionic copolymer of acrylamide and sodium acrylate.
ii. Anionic with residual monomer content that is at most 0.05% by weight.
iii. Formulated and labeled as one of the following:
    a. Water-in-oil emulsion containing at least 2.6 pounds of pure polyacrylamide per gallon (0.3 kg/L). Pure polyacrylamide shall be at least 30% active.
    b. Liquid dispersed polyacrylamide containing at least 4.4 pounds pure polyacrylamide per gallon (0.5 KL/L). Pure polyacrylamide shall be at least 35% active.

*ADD THE FOLLOWING SUBSECTION*

### *800-1.2.6 INORGANIC SOIL AMENDMENTS*

Inorganic soil amendments shall be of iron sulfate or gypsum.

Iron sulfate shall be ferric or ferrous sulfate in pellet or granular form containing not less than 18% metallic iron. It shall conform to the Agricultural Code of the State of California.

Gypsum shall be commercially processed and packaged $CaSo_4 - 2H_2O$ with a minimum 80% grade containing 14% minimum combined sulfur.

### *800-1.4 PLANTS*

### *800-1.4.2 TREES*

*ADD THE FOLLOWING:*

Trees supplied to the Project shall meet the minimum standards established by the American Association of Nurseryman and the following criteria.

1. Trees hall have a straight trunk with symmetrical crown.
2. Trees shall have a substantial, single, central leader.
3. Tree park shall not be discolored, sunken or swollen. Cuts or scrapes measuring 1/8 of the trunk circumference or grater will not be accepted
4. Trees showing galleries, sun scald, or frost damage will on be accepted.
5. The caliper of the tree shall be in proportion to the rootball.
6. No branches shall extend from the trunk at a vertical angle greater than 45 degrees.

7. Trees with girdling roots wrapping around the trunk will not be accepted.
8. Tree trunks more than 10% off center will not be accepted.
9. Trees shall be free of crossing branches and branches growing too close to one another.
10. Freshly pruned trees will not be accepted.

Trees specified on the Plans by box size shall meet the minimum height and spread requirements per table 800-1.4.2 (A). Box trees in excess of 36", or of different species than those shown in table 800-1.4.2(A), shall have a height and spread as indicated in the Project Special Provisions.

**TABLE 800-1.4.2(A)**
**TREE HEIGHT AND SPREAD**

| Botanical Name | Common Name | Nursery Stock Size Specifications Height x Width | | |
|---|---|---|---|---|
| | | 15 gl. | 24" Box | 36" Box |
| Acacia aneura | Mulga | 4' x 3' | 6' x 4' | 8' x 5' |
| Acacia baileyana | Bailey Acacia | 7' x 2' | 9' x 3' | 12' x 4' |
| Acacia fragesiana (smallii) | Sweet Acacia | 6' x 3' | 8' x 4' | 10' x 5' |
| Acacia stenophylla | Shoe-string Acacia | 7' x 3' | 9' x 4' | 12' x 5' |
| Acer paxii | Evergreen Maple | 7' x 2' | 9' x 3' | 12' x 4' |
| Agonis flexuosa | Peppermint Willow | 6' x 3' | 8' x 4' | 12' x 5' |
| Albizia julibrissin | Silk Tree | 6' x 3' | 8' x 4' | 10' x 5' |
| Arbutus unedo | Strawberry Tree | 6' x 3' | 7' x 4' | 8' x 5' |
| Arbutus unedo 'Marina' | Marina Madrone Tree | 6' x 3' | 8' x 4' | 9' x 5' |
| Archontophoenix cunninghamiana | King Palm | 6' | 8' | 12' |
| Bauhinia purpurea | Purple Orchid Tree | 7' x 3' | 9' x 4' | 12' x 5' |
| Bauhinia v. candida | White Orchid Tree | 7' x 3' | 9' x 4' | 10' x 5' |
| Bauhinia x blakeana | Hong Kong Orchid Tree | 7' x 3' | 9' x 4' | 10' x 5' |
| Beaucarnea recurvata | Bottle Palm | 4' x 3' | 6' x 4' | 8' x 5' |
| Brachychiton acerifolius | Flame Tree | 7' x 3' | 9' x 4' | 12' x 5' |
| Brachychiton discolor | Pink Flame Tree | 7' x 3' | 9' x 4' | 12' x 5' |
| Brachychiton populneus | Bottle Tree | 7' x 2' | 9' x 3' | 10' x 5' |
| Brahea armata | Mexican Blue Fan Palm | 1' | 2' | 3' |
| Brahea edulis | Guadalupe Palm | 1' | 2' | 3' |
| Butia capitata | Pindo Palm | 1' | 2' | 3' |
| Callistemon citrinus | Lemon Bottlebrush | 6' x 3' | 8' x 4' | 10' x 5' |
| Callistemon salignus | White Bottlebrush | 6' x 3' | 8' x 4' | 10' x 5' |
| Callistemon viminalis | Weeping Bottle Brush | 7' x 2' | 9' x 3' | 12' x 4' |
| Callistemon violaceus | Violet Bottlebrush | 4' x 3' | 6' x 4' | 8' x 5' |
| Calodendrum capense | Cape Chestnut | 6' x 3' | 8' x 4' | 10' x 5' |
| Cassia leptophylla | Golden Medallion Tree | 6' x 2' | 8' x 3' | 10' x 4' |

| | | | | |
|---|---|---|---|---|
| Cedrus atlantica | Blue Atlas Cedar | 5' x 2' | 7' x 3' | 9' x 4' |
| Celtis sinensis | Chinese Hackberry | 7' x 3' | 9' x 4' | 12' x 5' |
| Cercidium hybrid Desert Mueseum | Desert Mueseum Palo Verde | 6' x 3' | 8' x 4' | 10' x 5' |
| Cercis canadensis | Eastern Redbud | 7' x 3' | 9' x 4' | 10' x 5' |
| Cercis canadensis 'Forest Pansy' | Forest Pansy Redbud | 6' x 3' | 8' x 4' | 9' x 5' |
| Cercis mexicana | Mexican Redbud | 6' x 3' | 8' x 4' | 9' x 5' |
| Cercis occidentalis | Western Redbud | 6' x 3' | 8' x 4' | 9' x 5' |
| Chamaerops humilis | Mediterranean Fan Palm | 2' x 3' | 3' x 4' | 5' x 6' |
| Chamaerops humilis cerifera | Blue Mediterranean Fan Palm | 2' x 2' | 3' x 3' | 4' x 4' |
| Chilopsis linearis 'Art's Seedless' | Desert Willow Art's Seedless | 5' x 3' | 6' x 4' | 8' x 6' |
| Chilopsis linearis 'Bubba' | Desert Willow Bubba | 5' x 3' | 6' x 4' | 8' x 6' |
| Chiltalpa tashkentensis 'Pink Dawn' | Chitalpa Pink Dawn | 7' x 3' | 9' x 4' | 10' x 5' |
| Chiltalpa tashkentensis 'White Cloud' | Chitalpa White Cloud | 7' x 3' | 9' x 4' | 10' x 5' |
| Chorisia speciosa | Floss Silk Tree | 7' x 2' | 10' x 4' | 12' x 5' |
| Cinnamomum camphora | Camphor Tree | 7' x 3' | 9' x 4' | 12' x 5' |
| Cordyline indivisa | Cabbage Tree/ Dracaena Palm | 3' x 2' | 5' x 3' | 7' x 4' |
| Cupaniopsis anacardioides | Carrotwood Tree | 7' x 3' | 9' x 4' | 12' x 5' |
| Cupressus arizonica | Arizona Cypress | 6' x 3' | 7' x 4' | |
| Cupressus forbesi | Tecate Cypress | 6' x 3' | 7' x 4' | |
| Cupressus sempervirens Glauca | Italian Cypress | 6' x 1' | 9' x 1' | 15' x 2' |
| Dalbergia sissoo | Rosewood | 7' x 3' | 9' x 4' | 12' x 5' |
| Draceana draco | Dragon Tree | 3' x 3' | 4' x 3' | 6' x 5' |
| Eriobotrya deflexa | Bronze Loquat | 7' x 3' | 9' x 4' | 12' x 5' |
| Erythrina caffra | Kaffirboom Coral Tree | 4' x 4' | 7' x 6' | 9' x 7' |
| Erythrina crista-galli | Cockspur Coral Tree | 4' x 4' | 7' x 6' | 9' x 7' |
| Eucalyptus (Corymbia) ficifolia | Red-flowering Gum | 7' x 3' | 10' x 4' | |
| Eucalyptus citriodora | Lemon-scented Gum | 7' x 3' | 10' x 4' | |
| Eucalyptus nicholii | Willow-Leaved Peppermint | 7' x 3' | 10' x 4' | |
| Eucalyptus papuana | Ghost Gum | 7' x 3' | 10' x 4' | |
| Feijoa sellowiana | Pineapple Guava | 4' x 3' | 6' x 4' | 8' x 5' |
| Ficus benjamina | Weeping Fig | 6' x 3' | 8' x 4' | 10' x 5' |
| Ficus rubiginosa | Rusty Leaf Fig | 7' x 3' | 9' x 4' | 12' x 5' |
| Fraxinus greggii | Little Leaf Ash | 4' x 3' | 6' x 4' | 8' x 5' |
| Fraxinus griffithi | Evergreen Ash | 6' x 3' | 8' x 4' | 10' x 5' |
| Fraxinus uhdei | Evergreen Ash | 7' x 4' | 10' x 5' | 12' x 6' |
| Fraxinus velutina | Arizona Ash | 7' x 3' | 9' x 4' | 12' x 5' |
| Geijera parviflora | Australian Willow | 7' x 3' | 9' x 4' | 12' x 5' |
| Ginkgo biloba (male) | Maidenhair Tree | 6' x 2' | 8' x 3' | 10' x 4' |
| Gleditsia triacanthos 'Shademaster' | Shademaster Honeylocust | 7' x 2' | 9' x 3' | 12' x 4' |
| Heteromeles arbutifolia | Toyon | 4' x 3' | 5' x 4' | |
| Hymenosporum flavum | Sweet Shade | 7' x 2' | 9' x 3' | |

| | | | | |
|---|---|---|---|---|
| Jacaranda mimosifolia | Jacaranda | 7' x 2' | 9' x 3' | 12' x 4' |
| Juniperus chinensis 'Blue Point' | Blue Point Juniper | 4' x 3' | 6' x 4' | |
| Juniperus chinensis 'Torulosa' | Torulosa Juniper | 4' x 3' | 6' x 4' | |
| Koelreuteria bipinnata | Chinese Flame Tree | 7' x 2' | 9' x 3' | 12' x 4' |
| Koelreuteria paniculta | Golden Rain Tree | 7' x 2' | 9' x 3' | 12' x 4' |
| Lagerstroemia indica x 'Arapaho' | Arapaho Crape Myrtle (deep red) | 7' x 2' | 9' x 3' | 12' x 4' |
| Lagerstroemia indica x 'Muskogee' | Muskogee Crape Myrtle (light lavender) | 7' x 2' | 9' x 3' | 12' x 4' |
| Lagerstroemia indica x 'Natchez' | Natchez Crape Myrtle (white) | 7' x 2' | 9' x 3' | 12' x 4' |
| Lagerstroemia indica x 'Tuscarora' | Tuscarora Crape Myrtle (dark pink) | 7' x 2' | 9' x 3' | 12' x 4' |
| Ligustrum lucidum (japonicum) | Glossy Privet/ Japanese Privet | 7' x 2' | 9' x 3' | 12' x 4' |
| Lyonathamnus floribundus | Catalina Ironwood | 5' x 2' | 7' x 3' | 9' x 4' |
| Magnolia grandiflora | Southern Magnolia | 7' x 2' | 9' x 3' | 12' x 4' |
| Magnolia grandiflora 'Little Gem' | Dwarf Southern Magnolia | 5' x 2' | 7' x 3' | 8' x 4' |
| Markhamia hildebrandtii | Markhamia | 7' x 2' | 9' x 3' | |
| Maytenus boaria | Mayten Tree | 7' x 2' | 9' x 3' | 12' x 4' |
| Melaleuca linariifolia | Flaxleaf Paperbark | 7' x 2' | 9' x 3' | 12' x 4' |
| Melaleuca quinquenervia | Cajeput Tree | 6' x 2' | 8' x 3' | 12' x 4' |
| Metrosideros excelsus | New Zealand Christmas Tree | 7' x 2' | 9' x 4' | 10' x 5' |
| Morus alba | White Mulberry Tree | 6' x 3' | 8' x 4' | 10' x 5' |
| Parkinsonia aculeata | Mexican Palo Verde | 5' x 3' | 7' x 5' | 9' x 6' |
| Phoenix dactylifera | Date Palm | | | |
| Phoenix robellenii | Pygmy Date Palm | 2' x 3' | 3' x 4' | 5' x 6' |
| Pinus canariensis | Canary Island Pine | 7' x 2' | 9' x 3' | 12' x 4' |
| Pinus eldarica | Eldarica Pine | 6' x 2' | 9' x 4' | 12' x 6' |
| Pinus pinea | Italian Stone Pine | 4' x 3' | 6' x 4' | 8' x 6' |
| Pinus torreyana | Torrey Pine | 7' x 4' | 9' x 5' | 12' x 6' |
| Pistacia chinensis | Chinese Pistache | 7' x 3' | 9' x 4' | 12' x 6' |
| Pittosporum angustifolium | Willow Pittosporum | 4' x 3' | 6' x 4' | 8' x 5' |
| Pittosporum rhombifolium | Diamond-leaf Pittosporum | 6' x 4' | 8' x 5' | 10' x 6' |
| Platanus mexicana | Mexican Sycamore | 8' x 4' | 10' x 5' | 14' x 6' |
| Platanus racemosa | California Sycamore | 8' x 4' | 10' x 5' | 14' x 6' |
| Podocarpus (Afrocarpus) gracilior | Fern Pine | 7' x 2' | 9' x 3' | 12' x 4' |
| Podocarpus elongatus 'Icee Blue' | Icee Blue Podocarpus | 4' x 2' | 6' x 3' | 8' x 4' |
| Podocarpus henkelii | Long-Leafed Yellow-Wood | 6' x 3' | 8' x 4' | 10' x 5' |
| Podocarpus macrophyllus | Yew Pine | 6' x 2' | 8' x 3' | |
| Podocarpus macrophyllus maki | Shrubby Yew Pine | 5' x 2' | 7' x 3' | |
| Podocarpus nagi | Broadleaf Podocarpus | 5' x 3' | 7' x 4' | 9' x 5' |
| Populus fremontii | Western Cottonwood | 8' x 3' | 12' x 4' | |
| Populus nigra 'Italica' | Lombardy Popular | 8' x 3' | 10' x 4' | |
| Prosopis chilensis | Thornless Chilean Mesquite | 7' x 4' | 9' x 5' | 12' x 6' |
| Quercus agrifolia | Coast Live Oak | 7' x 3' | 8' x 4' | 12' x 5' |

| | | | | |
|---|---|---|---|---|
| Quercus ilex | Holly Oak | 7' x 3' | 8' x 4' | 12' x 5' |
| Quercus suber | Cork Oak | 7' x 3' | 8' x 4' | 12' x 5' |
| Quercus virginiana | Southern Live Oak | 7' x 3' | 8' x 4' | 12' x 5' |
| Rhus lancea | African Sumac | 7' x 3' | 9' x 4' | 12' x 5' |
| Sambucus mexicana | Mexican Elderberry | 4' x 3' | 6' x 4' | |
| Sapium (Triadica) sebiferum | Chinese Tallow Tree | 7' x 3' | 9' x 4' | 12' x 5' |
| Schinus molle | California Pepper | 7' x 2' | 9' x 3' | 12' x 4' |
| Schinus terebinthifolius | Brazilian Pepper | 7' x 2' | 9' x 3' | 12' x 4' |
| Spathodea campanulata | African Tulip Tree | 4' x 3' | 6' x 4' | 8' x 5' |
| Stenocarpus sinuatus | Firewheel Tree | 6' x 2' | 8' x 3' | 10' x 4' |
| Strelitzia nicolai | White Bird-of-Paradise | 5' x 3' | 7' x 4' | 9' x 6' |
| Syagrus romanzoffiana | Queen Palm | 6' | 8' | 12' |
| Tabebuia impetiginosa | Pink Trumpet Tree | 7' x 2' | 9' x 3' | 12' x 4' |
| Tipuana tipu | Tipu Tree | 7' x 4' | 9' x 5' | 12' x 6' |
| Tristania (Lophostemon) conferta | Brisbane Box | 7' x 2' | 10' x 3' | 12' x 4' |
| Tupidanthus calyptratus (Schefflera) | Umbrella Tree | 4' x 3' | 6' x 5' | 9' x 7' |
| Ulmus parvifolia 'Sempervirens' | Chinese Evergreen Elm | 7' x 2' | 9' x 3' | 12' x 4' |
| Washingtonia robusta | Mexican Fan Palm | 3' | 5' | 8' |
| Yucca rostrada | Beaked Yucca | 1.5' | 2' | 3' |
| Zelkova serrata 'Village Green' | Japanese Zelkova | 7' x 2' | 9' x 3' | 12' x 4' |

### *800-1.4.5 SOD AND STOLONS (TURF GRASS)*

*DELETE SECTION AND REPLACE WITH*

Stolons shall be fresh, clean, living, sections of runners of grass. They shall be free of turf disease, insects, or weeds, and capable of healthy vigorous growth.

Sod shall be provided in at least 42” wide rolls for areas larger than five thousand (5000) square feet. When not otherwise specified all sod shall be have 1” of soil base. Where sod is indicated on the plans or specification without further qualification, the Contractor shall supply Bandera Bermuda for sports fields or Bullseye Bermuda for passive areas, or approved equal.

Sod being planted in the fall/winter will be over seeded with a cool season grass as recommended by the grower. Over seeded sod will be approved by the Engineer prior to use.

*ADD THE FOLLOWING SUBSECTION*

### *800-1.6 EROSION CONTROL MATERIALS*

### *800-1.6.1 GENERAL*

Erosion control materials shall only be used as directed by the manufacturer and as indicated within the SWPPP/WPCP, CASQA or other regulating document per Section 7-8.6.

### *800-1.6.2 EROSION CONTROL MATTING*

Erosion control matting shall be made of 100-percent-biodegradable, weed-free wheat straw of thickness and density yielding 270 grams per square meter (0.50 lb./sy) with photodegradable polypropylene netting with a density of 0.89 grams per square meter (1.64 lb/1000 sy) having an approximate mesh interval of 50 mm x 50 mm (2“ x 2“) on each face of the straw mat. The straw mat shall be sewn together with unidirectional lines of cotton or polypropylene thread spaced approximately 50 mm (2”) apart. Erosion control matting shall be “North American Green, DS150”, “BonTerra S2”, or approved equal.

Erosion control matting will be secured with 25 mm x 150 mm (1” x 6”), U-shaped, 11-gauge mild steel staples.

### *800-1.6.3 FIBER ROLL*

Fiber rolls shall be weed-free wheat, oat, barley, or rice straw enclosed in a tube of biodegradable netting or fabric. Photodegradable plastic netting material will not be allowed. Fiber rolls used on the site shall be a minimum of 25’ in length and be the nominal diameter specified in CASQA or in the approved erosion control document per Section 7-8.6.

### *800-1.6.4 SILT FENCE*

Silt fence shall conform to ASTM D6461/D6461M and CASQA requirements.

*ADD THE FOLLOWING SUBSECTION*

### *800-1.7 MISCELLANEOUS LANDSCAPE MATERIALS*

### *800-1.7.1 ROOT BARRIERS*

Root barriers shall be one of the following:

a. Biobarrier 19.5 inch root control fabric, or approved equal, shall be provided where specified on the plans and within 10’ of hardscape improvements..

## 800-2 IRRIGATION SYSTEM MATERIALS

### *800-2.1 PIPE AND FITTINGS*

*ADD THE FOLLOWING SUBSECTION*

### *800-2.1.6 BRASS PIPE AND FITTINGS*

Brass pipe shall be IPS standard weight 125 LB 85 percent copper and 15 percent zinc, trade designation seamless red brass pipe conforming to the requirements of ASTM B43-91. Brass pipe fittings and connections shall be Standard 125 LB class 85 percent red brass fittings and connections.

### *800-2.2 VALVES AND VALVE BOXES*

*REPLACE SECTION WITH*

### *800-2.2.7 ISOLATION VALVES*

Isolation valves in sizes of 2 ½" and smaller shall be two-peice bronze full port ball valve with stainless steel handle.

Ball valve sizes greater than 3" shall be resilient wedge valve, non-rising stem (NRS), full body ductile iron with epoxy coating.

Ball valves shall have bottom-loaded pressure-retaining stems, glass-reinforced seats, and reinforced TFE stem packing seals. Valves sizes 13 mm (½") to 50 mm (2") shall be pressure rated at 4140 kPa (600 PSI) WOG and 1030 kPa (150-PSI) saturated steam. Each valve shall be tested, air under water, in the opened and closed position by the manufacturer. Ball valve must conform to Federal Specification WW-V-35B, Type II, Class A, Style 3, End Connection A or C.

*ADD THE FOLLOWING SUBSECTION*

### *800-2.2.8 PRESURE REGULATOR VALVES*

Pressure regulating valves for the drip irrigation system shall conform to the following:

1. Regulate and maintain constant outlet pressure between 15 and 100 psi (1.0 to 6.9 bars) within +/- 3 psi (+/- 0.2 bars).
2. Have an adjustment knob which permits fine-tune setting in 1/3 psi (0,02 bars) increments.
3. Have an ergonomic design with snap-tight cover to prevent vandalism.
4. Have a waterproof dial cartridge to eliminate fogging and binding.
5. Corrosion-resistant glass-filled nylon for rugged performance.
6. Operate in up to 200 psi (13.8 bars) and temperatures up to 150˚F (66˚C).
7. Regulate pressure from 15 psi to 100 psi (1,0 to 6,9 bars).
8. Be accurate to +/- 3 psi (+/- 0,2 bars).

*ADD THE FOLLOWING SUBSECTION*

### *800-2.2.9 VALVE BOXES*

All valve boxes shall be branded with two inch (2") tall lettering based on the configuration of valves contained within. Lettering shall be neat and legible using the initials below to identify the contents.

- "RCV" for Remote Control Valves
- "BV" for Ball Valves
- "QC" for Quick-coupling Valves
- "PB" for irrigation wires

In addition, remote control valves shall branded with station numbers. Remote control valve boxes shall have locking covers with stainless steel bolts.

Landscape valve boxes shall be high density polyethylene plastic with UV inhibitors except for those located in trails and in pavement. Valve boxes in trails and in paved areas shall be concrete with traffic rated locking covers.

Valve box size for any particular application shall be approved by the Engineer.

## 800-3 ELECTRICAL MATERIALS

### *800-3.1 GENERAL*

*ADD THE FOLLOWING*

All electrical materials shall conform to the requirements of the National Electrical Code in effect at time of bid.

### *800-3.2 CONDUIT AND CONDUCTORS*

### *800-3.2.2 CONDUCTORS*

*ADD THE FOLLOWING*

Low voltage electric wiring running from controller to the automatic control valves shall be no smaller than No. 14 solid single conductor, copper wire, 0.015 mm (60 mil) insulation, 0.015 mm (60 mil) neoprene jacket, style UF (Direct Burial), or equal, color code wires to each valve. Neutral wires shall be white, no smaller than No. 12 solid single conductor wire, 0.015 mm (60 mil) insulation, 0.015 mm (60 mil) neoprene jacket, style UF (Direct Burial). 2-wire irrigation systems shall consist of two (2) solid copper no. 14 direct burial conductors with high density polyethylene outer jacket.

Control wiring shall be color-coded to correspond with stations.

*ADD THE FOLLOWING SUBSECTION*

### *800-3.3 CONTROLLER UNIT*

*DELETE SECTION AND REPLACE WITH*

Irrigation controller shall be as shown on the plans. Controllers shall be fully automatic, have computerized central control capability, have provisions for manual operation, and be sized to accommodate the number of stations or control valves included in the system. Each controller assembly shall include:

- Remote receiver card
- Web-based remote access

*ADD THE FOLLOWING SUBSECTION*

### *800-3.3.1 CERTIFICATION*

The Contractor shall submit the controller assembly fabricator's installation certification per Section prior to coverage test.

*ADD THE FOLLOWING SUBSECTION*

### *800-3.4 IRRIGATION ELECTRICAL SERVICE EQUIPMENT AND ENCLOSURES*

#### *800-3.4.1 ELECTRICAL SERVICE EQUIPMENT*

Electrical service equipment shall incorporate the following elements:

1. One 100-amp, 120/240 volt, single-phase load center, as approved by the Engineer;
2. One 100-amp rated commercial meter socket suitable for the San Diego Gas and Electric Company meter, with provision for test block bypass having a UL listing and EUSERC approval;
3. One 15-amp circuit breaker for each irrigation controller energized by the service;
4. One 20-amp circuit breaker for the duplex receptacle.
5. The design, assembly, grounding, wiring, and components of the irrigation electrical service equipment and enclosure shall meet the requirements of the 1996 edition of the National Electrical Code.

#### *800-3.4.2 ELECTRICAL SERVICE ENCLOSURE*

1. Electrical service equipment shall be enclosed in a cabinet constructed entirely of anodized aluminum; anchoring points shall be inside the enclosure.
2. The cabinet shall have an aluminum or 304 stainless steel interior bulkhead separating the 120/240 volt electrical service section from the irrigation controller section.
3. No wood components shall be used in the enclosure.
4. Each section of the cabinet shall have full front opening doors with piano hinges, integral key lock and hasp and staple, or other provision, for padlock.
5. The cabinet shall be provided with cross flow ventilation. Ventilation openings shall be located and designed to preclude rain, irrigation splash, vermin, and insects from entering the cabinet.
6. The controller side door shall have provision for mounting control schematics without the use of adhesives or fasteners. The service side door shall have a clear acrylic plastic window to allow the electrical meter to be read.
7. Concrete footings and pads supporting the Electrical service equipment shall be 520-C-2500 and shall be no less than 12" thick.
8. Anchor bolts to secure the service equipment to the concrete pad shall be 10 mm (3/8") diameter by 150 mm (6") long hot dip galvanized or stainless steel headed bolts with washers, without sleeves,

conforming to section 304-1.7. Anchor bolts to secure the service equipment to the concrete pad shall be embedded in the concrete slab between 65 mm and 100 mm (2½" and 4").

9. Base of meter pedestal to be sealed with polyurethane caulking.

## 800-4 SYNTHETIC LANDSCAPE MATERIALS

### *800-4.1 GENERAL*

The Contractor shall furnish, install, and handle all synthetic landscape materials in conformance with manufacturer requirements.

### *800-4.2 SYNTHETIC TURF*

#### *800-4.2.1 GENERAL*

[reserved]

#### *800-4.2.2 SOCCER, FOOTBALL AND MULTI-PURPOSE FIELDS*

[reserved]

#### *800-4.2.3 BASEBALL FIELDS*

[reserved]

#### *800-4.2.4 DOG PARKS*

[reserved]

#### *800-4.2.5 GENERAL LANDSCAPING PURPOSES*

[reserved]

# SECTION 801 – INSTALLATION

## 801-1 GENERAL

### *801-1.1 PROTECTION OF EXISTING LANDSCAPE*

When excavating within the drip lines of all trees the Contractor will exercise extreme caution. No mechanical trenching shall be allowed within the drip lines of existing trees. Use of an air spade or hand-digging is allowable. Proposed excavations within the drip line of existing trees shall be marked out by the Contractor and approved by the Engineer prior to start of work.

## 801-2 EARTHWORK AND TOPSOIL PLACEMENT

### *801-2.2 TOPSOIL PREPARATION AND CONDITIONING*

### *801-2.2.1 GENERAL*

*DELETE SECTION AND REPLACE WITH*

All landscape areas will have appropriate topsoil to accommodate the plants to be planted. The type and thickness of topsoil shall be as shown on the Plans or Project Special Provisions. If no depth of top soil is indicated the Contractor will provide topsoil to the depth specified in Table 801-2.2.1.

**TABLE 801-2.2.1**

| **Application** | **Topsoil Depth (in)** | **Topsoil Type** |
|---|---|---|
| General Landscape Areas (Flatter than 3.5:1, H:V) | 12” | Class A |
| General Landscape Areas (Steeper than 3.5:1, H:V) | 6” | |
| Turf Area | 12” | Class A |
| Sports Fields | 18” | Class A |
| Bioretention Basins | 18” | Bioretention Soil Media |
| Hydroseeded Areas | -* | Class C |

*when possible, or as directed by the Engineer, existing soil to be scarified 6” deep prior to hydroseeding

### *801-2.2.2 FERTILIZATION AND CONDITIONING PROCEDURES*

*ADD THE FOLLOWING*

After cultivation the Contractor shall clear the planting areas of stones to the depth of cultivation and shall rake the planting areas to a smooth friable and plantable surface. The Contractor shall cultivate all planting areas, except slopes steeper than 3-1/2:1 (horizontal to vertical), to a depth of 12”. The planting areas that are slopes steeper than 3-1/2:1, shall be cultivated to a depth of 6”.

The contractor shall cultivate the surface of all areas to be planted or hydroseeded by disking, ripping or scarifying the finish grade.

*ADD THE FOLLOWING SUBSECTION*

### *801-2.2.3 WEED CONTROL*

Top soil will be maintained free of weeds until such time as planting is to occur.

Prior to planting the Contractor will control weeds by irrigating for three (3) weeks to germinate weed seeds followed by a post-emergent herbicide application by a licensed applicator..

### *801-2.3 FINISH GRADING*

*ADD THE FOLLOWING*

Slopes to be hydroseeded shall be prepared with a moderately rough texture to provide a suitable surface for adherence of the hydroseed mix.

*ADD THE FOLLOWING SUBSECTION*

### *801-2.5 BIORETENTION SOIL MEDIA PLACEMENT*

Bioretention soil media shall conform to Section 800-1.1.5. The bioretention soil media shall be placed in the area excavated for the basin or drainage structure as shown in the Contract Documents. Soil shall be loosely placed in the basin and spread to line and grade shown on Plans. Heavy equipment will not be allowed to drive or track over bioretention soil media. No mechanical compaction of Bioretention Soil media will be allowed.

Bioretention soil media placed will be protected from construction runoff entering the system until all areas tributary to the basin are fully constructed. Boiretention soil media shall not be used as part of the Contractor's construction BMP's.

*DELETE AND REPLACE SUBSECTION WITH*

## 801-3 GENERAL LANDSCAPE MATERIAL INSTALLATION

### *801-3.1 HEADERS*

[reserved]

### *801-3.2 ROOT BARRIERS*

Root barriers are required for all trees planted within ten (10) feet of hardscape such as, but not limited to, tree wells in paved areas, DG trails, walks, walls, curbs, roads, brow ditches, drainage structures, etc.

All root barriers will be installed in conformance with the manufacturer's recommendations. Backfill will be clean native soil screened of any material larger than three inches (3") or larger.

### *801-3.3 EROSION CONTROL MATTING*

Before installation of erosion control matting the Contractor shall complete all soil preparation, fine grading, and hydroseeding of the areas to receive erosion control matting. All other plant material shall be planted through the matting.

The Contractor shall install erosion control matting using the following techniques:

1. Begin at the top of the slope by placing the erosion control matting into a 150 mm (6“) wide by 150 mm (6“) deep trench with the end of the matting laid flat in the bottom of the trench

2. Anchor the end of the erosion control matting with erosion control mat staples spaced no more than 300 mm (12”) on centers placed at the intersection of the bottom and the downhill vertical face of the trench.

3. Roll the erosion control matting down the slope.

4. Staple the erosion control matting on an alternating grid consisting of three across and two across lines of staples in horizontal lines spaced 900mm (3’) on centers.

5. Erosion control mat so stapled shall be spaced such that no less than 1 ¾ staples per square meter (1½ staples per square yard) are provided to anchor the erosion control matting.

6. Start the adjacent erosion control mat as in Item 1. of this section, overlapping the previously placed mat by no less than 50 mm (2”).

7. Staple placement may be such as to use the staples used to secure the adjacent mat to secure both mats along their edges.

Erosion control matting shall be installed by the Contractor immediately after the first application of hydroseed materials. In all cases the Contractor shall place the erosion control matting within three days after the first hydroseed material application. Should any seed in the hydroseed materials begin to germinate within the three-day period after application or before the installation of the erosion control matting, the installation of the erosion control matting shall be considered as late and the Contractor shall disc the hydroseed materials into the top 100m (4”) of the underlying soil, condition the soil for hydroseeding, apply hydroseeding materials at the rates and of the type specified and then install the erosion control matting. Additional hydroseeding applications due to late installation of matting shall be at the Contractor’s expense.

## 801-4 PLANTING

### *801-4.1 GENERAL*

*ADD THE FOLLOWING*

The Contractor shall perform actual planting during those periods when weather and soil conditions are suitable and in accordance with locally accepted horticultural practice and as approved by the Engineer. No planting shall be done in any area until it has been satisfactorily prepared in accordance with the Contract Documents.

Soil moisture level prior to planting shall be no less than 75 percent of field capacity.

The Contractor shall obtain the Engineer's approval of planting pits before planting operations begin. For pit planted vegetation when the soil moisture level is found to be insufficient for planting, the Contractor shall fill the planting pits with water and allow them to drain before starting planting operations.

No plants shall be distributed in the planting area other than those which can be planted and watered on that day. The Contractor shall plant and water all plants as herein specified immediately after removal from their containers. Containers shall not be cut prior to placing the plants in the planting area. It shall be the responsibility of the Contractor to provide continuous horticultural services and temporary and/or permanent irrigation to all planted and hydroseeded areas so that the planted and hydroseeded vegetation is 100 percent healthy and thriving through final acceptance of the project.

All plant material shall meet the minimum standards set by the American Association of Nurseryman and these specifications.

### *801-4.2 PROTECTION AND STORAGE*

*ADD THE FOLLOWING*

The Contractor shall provide a sheltered and secure location for on-site plant storage area for the Engineer's approval prior to the delivery of any plant materials. Any plant determined by the Engineer 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.

### *801-4.3 LAYOUT AND PLANT LOCATION*

*DELETE FIRTST PARAGRAPH AND ADD THE FOLLOWING*

Planting areas shall be staked by the Contractor and the Contractor shall obtain the Engineer's approval of the planting layout before planting operations begin.

Trees and shrubs shall not be planted within five (5) feet of irrigation heads (excluding bubblers) for all slope applications.

### *801-4.5 TREE AND SHRUB PLANTING*

*ADD THE FOLLOWING*

Percolation tests shall be performed on all tree planting pits for fifteen gallon or larger trees prior to tree and hardscape installation. Excavations for trees shall be filled with eighteen inches (18") of water and allowed to completely drain. Pits shall then be filled with twelve inches (12") of water and allowed to drain. The second fill must drain at a minimum rate of one inch (1") per hour for 4 hours. If the second fill fails to drain at the specified rate then the Contractor shall install a tree drainage system per San Marcos Standard Drawings L-3 and L-4.

### *801-4.7 GROUND COVER AND VINE PLANTING*

*ADD THE FOLLOWING*

Soil preparation and fine grading shall be completed prior to planting. Vines shall be planted in moist soil and spaced as indicated on the Plans.

Following planting, vine areas shall be regraded to restore smooth finish grade and to ensure proper surface drainage. A three (3) inch layer of Type 1 or 5 mulch shall be spread over the planted areas. Watering shall begin immediately following mulching.

Vines shall be splayed and tied to walls, fences, etc., in the manner prescribed on the Plans or approved by the Engineer. Temporary staking shall be removed at the end of the plant establishment period.

### *801-4.9 EROSION CONTROL PLANTING*

*ADD THE FOLLOWING SUBSECTION*

### *801-4.9.6 HYDROSEEDING*

[reserved]

## 801-5 IRRIGATION SYSTEM INSTALLATION

### *801-5.1 GENERAL*

*ADD THE FOLLOWING*

Existing irrigation facilities being connected to new facilities shall be checked for missing or damaged components and proper operation in the presence of the Engineer prior to performing new irrigation system work, and at least once every 30 days thereafter until Date of Completion. A written list of existing irrigation system deficiencies shall be submitted to the Engineer within 2 working days after the initial check of the existing facilities. Failure of the Contractor to submit a list of deficiencies within the specified time frame shall constitute the Contractor's declaration and acknowledgment that the system is in working order and free of defects.

Points of connection for water service and controller electrical service shall be as shown on the plans. The Contractor shall be responsible for ensuring that services points are in correct locations prior to installation of irrigation system.

### *801-5.2 TRENCH EXCAVATION AND BACKFILL*

*ADD THE FOLLOWING*

The Contractor shall not backfill any lines until such time as they have been tested and inspected and approved by the Engineer for tightness, quality of workmanship, and materials.

### *801-5.3 IRRIGATION PIPELINE INSTALLATION*

### *801-5.3.1 GENERAL*

All threaded fittings will have polytetrafluoroethylene (PTFE) thread seal tape applied to the fittings before assembly.

### *801-5.3.3 PLASTIC PIPELINE*

*ADD THE FOLLOWING*

The Contractor shall store all pipe and fittings under cover until used, and all pipe and fittings shall transported in a vehicle with a bed long enough to allow the length of pipe to lay flat so as not to be subjected to undue bending or concentrated external load at any point. Pipe ends and fittings shall be wiped with MEK, or equal, before welding solvent is applied. Welded joints shall be given a minimum of 15 minutes to set before moving or handling. All field cuts shall be beveled to remove burrs and excess before fitting and gluing together. The Contractor shall center load pipe with small amount of backfill to prevent arching and slipping under pressure. Joints shall be exposed for inspection during testing. Plastic-to-plastic joints shall be solvent-welded, using only solvent recommended by pipe manufacturer.

*ADD THE FOLLOWING SUBSECTION*

### *801-5.3.5 BRASS PIPELINE*

The Contractor shall cut brass piping by power hacksaw, circular cutting machine using an abrasive wheel, or hand hacksaw. No piping shall be cut with metallic wheel cutter of any description. The Contractor shall ream and remove rough edges or burrs on all pipe so that smooth and unobstructed flow is obtained, place Teflon tape, Teflon dope, or approved equal on male threads only, and tighten to prevent any leakage. The Contractor shall tighten screwed joints with tongs or wrenches. Caulking is not permitted.

### *801-5.4 INSTALLATION OF VALVES, VALE BOXES, AND SPEICAL EQUIPMENT*

*ADD THE FOLLOWING*

The Contractor shall install quick couplers at 150’ maximum spacing or as approved by Agency.

The Contractor shall install each control valve in a separate valve box with a minimum of 12” separation between valves and 6” from any fixed object or structure.

*ADD THE FOLLOWING SUBSECTION*

### *801-5.4.1 BACKFLOW PREVENTER*

The Contractor shall install backflow preventer assembly in accordance with manufacturer's specifications and the Contract Documents. The backflow device shall include a pressure regulator and enclosure per the Approve Material List for Parks and Landscape. Exact location and positioning shall be approved by the Engineer.

### *801-5.5 SPRINKLER HEAD INSTALLATION AND ADJUSTMENT*

### *801-5.5.1 GENERAL*

*DELETE SECTION AND ADD THE FOLLOWING*

Prior to installation of irrigation lateral lines and valves, the Contractor shall have performed a pressure test of the irrigation system per Section 801-5.7.2.

### *801-5.5.2 LOCATION, ELEVATION, AND SPACING*

*DELETE SECTION AND ADD THE FOLLOWING*

Irrigation head and drip emitter spacing shall not exceed the maximum shown on the drawings or recommended by the manufacturer.

Irrigation heads within ten (10) feet of walkways, roads, trails, walls, fences, concrete drainage ditches, and toe of slopes shall be pop-up body heads.

Irrigation heads shall be located 24 inches away from curbs, sidewalks, trails, fences and similar improvements.

Sub-surface drip irrigation tubing shall be installed 3" below grade with 3" of Type 1 mulch on top. Drip tubing shall be installed on surface with 3" of Type 10 mulch.

Trees shall be irrigated with their own, independent, pop-up bubbler system, or drip system.

### *801-5.5.4 SPRINKLER HEAD ADJUSTMENT*

*ADD THE FOLLOWING*

The Contractor shall flush and adjust all irrigation heads and valves for optimum performance and to prevent overspray onto walks, roadways, buildings, walls, and other structures.

*ADD THE FOLLOWING SUBSECTION*

### *801-5.5.5 DRIP EMITTER ADJUSTMENT*

When all drip emitters are installed and the irrigation system is operating, each unit shall be adjusted and balanced, with all section control valves fully open to obtain uniform and adequate coverage.

### *801-5.6 AUTOMATIC CONTROL SYSTEM INSTALLATION*

*ADD THE FOLLOWING*

The Contractor shall install all portions of the electrical installation with materials and methods conforming to the requirements of the latest edition of the National Electrical Code in effect at time of bid. The Contractor shall provide no less than one control wire and one common ground wire to service each valve in system.

The Contractor shall install three (3) additional control wires and one (1) additional common wire from the controller to the end of each mainline run leaving three feet (3') minimum slack at both ends.

*ADD THE FOLLOWING SUBSECTION*

### *801-5.6.1 CONTROLLER AND COMMUNICATION SPLICES*

Controller and communication wire splices shall only be made if approved by the Engineer. When approved, wire splices will be made in an irrigation pull box. There shall be a minimum of three feet (3') of slack at each end of wire. If slack at each end of wire is unavailable, new controller wire must be installed.

Irrigation controllers shall be installed in stainless steel enclosures by Strong Box or approved equal.

### *801-5.7.2 PIPELINE PRESSURE TEST*

### *801-5.7.2.1 GENERAL*

*ADD THE FOLLOWING*

The contractor shall supply accurate and current as-built drawings at the time of the mainline pressure test to facilitate inspection.

## 801-6 MAINTENANCE AND PLANT ESTABLISHMENT

*DELETE PARAGRAPH 5 AND REPLACE WITH*

The Agency shall not begin the maintenance and establishment period until the Contractor has completed all final project punch lists and provided all required submittals for landscaping. The Contractor is required to request the start of the Maintenance and Establishment period in writing. The Agency will provide the Contractor with written notice designating the official start date of the maintenance and establishment period.

All landscape areas will have a maintenance and establishment period of 60-days for City initiated public improvement project. Landscaping installed by private development that will be turned over to the Agency for ongoing maintenance will have a maintenance and establishment period of two years.

Prior to the initiation of the maintenance and establishment period for landscaping installed by a Private Development, the Developer will be responsible for submitting a purposed two year maintenance contract for review and approval by the Public Works Department. Upon approval of the maintenance contract the Developer will be required to provide a performance bond for 150% of the cost to maintain for two years and enter into an agreement for the maintenance period with the Agency.

During the maintenance and establishment period the Contractor will be notified by the Agency immediately upon discovery of defects in irrigation, landscaping, and workmanship. The Contractor shall take immediate action, as demanded by the Agency to remedy said defects. Failure of the Contractor to respond within the required time shall be cause for the Agency to suspend the maintenance and establishment period.

Routine maintenance shall include but is not limited to:

- Regular monitoring, adjustment, and repair of the irrigation system
- Proper water management of turf and landscape
- Weed management program to maintain weed free conditions of the landscape and turfgrass.Prompt replacement of dead, dying or damaged plant material
- Annual tree trimming as directed by the Public Works Department Filling and compacting settled trenches and eroded areas
- Daily (7days/week) removal and disposal of trash, litter, and foreign debris.
- Weekly mowing of turf areas and removal of grass clippings. This is dependent upon turf type and time of year
- Removal of turf by shovel cutting within 12”-18” of the tree trunk and maintaining a 3” layer of approved mulch

- Necessary pest control by licensed pest control applicator
- Fertilizing as necessary to maintain plant material in a healthy, vigorous condition
- Maintain fuel management zones (100' from structures) as shown
- Regular cleaning of drainage structures on site
- Proper trimming of shrubs to leave them in a natural form typical of the particular plant. Poodling, boxing, or balling of shrubs is not permitted
- Maintenance of all appurtenant improvements included in the Project.
- Replacement or repair of improvements shall be in accordance with the approved plans or as approved by the Public Works Department.

The Agency will provide written acknowledgement that all maintenance and plant establishment conditions have been satisfied and it assumes responsibility for that portion of the Work.

*DELETE SECTION AND REPLACE WITH*

## 801-7 CARE AND MAINTENANCE

### *801-7.1 GENERAL*

[reserved]

### *801-7.2 TREE TRIMMING*

[reserved]

### *801-7.3 TREE ROOT PRUNING*

[reserved]

### *801-7.4 [RESERVED}*

[reserved]

*DELETE SECTIONAND REPLACE WITH*

801-8 measurement

*ADD THE FOLLOWING SUBSECTION*

## 801-8 PAYMENT

The lump-sum or unit prices set forth in the Contract Documents shall include, but not be limited to, full compensation for furnishing all labor, materials, tools, and equipment to perform all work necessary to comply with the Contract Documents.

Erosion control materials installation shall be deemed paid within the lump sum unit bid price for "Erosion Control."

*ADD THE FOLLOWING SECTION*

# SECTION 802 – HABITAT PROTECTION, INSTALLATION MAINTENACE AND MONITORING

## SECTION 802-1 CONSTRUCTION FENCING

### *802-1.1 GENERAL*

Environmental fencing shall be installed where shown on the Plans. The Contractor shall not encroach into environmentally sensitive areas.

### *802-1.2 MATERIALS*

Environmental fence shall be minimum 4' high, orange colored plastic construction fencing, and shall be installed prior to performing any Work. Environmental fence shall be constructed of non-toxic, non-conductive polyethylene capable of withstanding temperatures from –58F degrees to 194F degrees. Color shall be non-fading. Posts shall be 6'-6" long, shall be spaced no more than 10'-0" apart and buried portion shall be no less than 2'-6" deep. Used materials may be installed providing the used materials are good, sound, and are suitable for the purpose intended, as determined by the Engineer. Materials may be commercial quality providing the dimensions and sizes of the materials are equal to, or greater than, the dimensions and sizes specified herein. Posts shall be either metal or wood at the Contractor's option. Galvanizing and painting of steel items will not be required. Treating wood with wood preservatives will not be required. Concrete footings for metal posts will not be required.

## 802-2 PAYMENT

Payment for "Environmental Fencing" shall be made at the unit price bid and shall include all labor, equipment, and materials necessary to install, maintain, and remove the fence and no additional payment shall be made therefor.

If no bid line item is provided, Environmental Fencing as shown on the plans shall be deemed included within other items of work, and no additional payment shall be made therefor.