

Contract Documents and Construction Specifications

Scotts Valley Transit Center Low Impact Development (LID) Retrofit Project- Phase 2



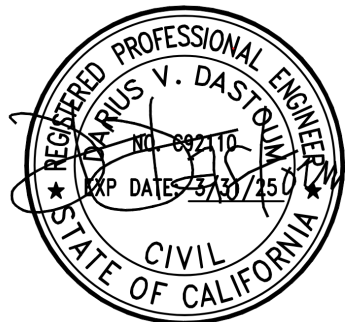
SCOTT'S VALLEY
WATER DISTRICT

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Scotts Valley Water District
Santa Cruz County, California

MAY 2024

FINAL BID DOCUMENTS



05/06/2024



Engineer: Kennedy/Jenks Consultants

Landscape Architect: JONI L. JANECKI & ASSOCIATES

PROJECT MANUAL

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1-A NOTICE INVITING BIDS**SCOTTS VALLEY WATER DISTRICT****SCOTTS VALLEY TRANSIT CENTER****LOW IMPACT DEVELOPMENT (LID) RETROFIT PROJECT – PHASE 2**

Date Issued: May 7, 2024

Date Published May 7, 2024

Notice is hereby given that sealed bids will be received by the Scotts Valley Water District (“District”) in the District Office at the time, date and place below for furnishing all labor, materials, equipment, and services for the construction of improvements designated as the Scotts Valley Transit Center Low Impact Development (LID) Retrofit Project – Phase 2 at which time and place bids will be publicly opened and read.

Location: Scotts Valley Water District
2 Civic Center Drive, Scotts Valley CA 95066

Time: **Before 2:00 PM, Wednesday May 29, 2024**

After bids are opened, they will be referred to staff for subsequent action. The District reserves the right to reject any or all bids and to waive any errors or discrepancies. Any bids received after the scheduled closing time for receipt of bids will be returned unopened.

PROJECT DESCRIPTION

The Project involves construction of the Scotts Valley Transit Center LID Project – Phase 2 project located at 246 Kings Village Road, Scotts Valley, California which includes, but is not limited to:

Base Bid

1. Three (3) 4-ft by 20-ft precast concrete modular biofiltration units each with associated field-poured concrete curbing, gravel and perforated pipe underdrain system, engineered soil mix, landscaping and irrigation, and overflow catch basin device.
2. One (1) 5-ft diameter prefabricated hydrodynamic separator for stormwater treatment.

3. Approximately 470-linear feet of 12-inch and 15-inch PVC or corrugated HDPE gravity drainage pipe, including associated trenching and removal and replacement of existing pavement, curb and gutter, sidewalk, landscaping, and irrigation
4. Connection to the existing infiltration gallery and associated work of restoring existing rock backfill, geotextile, pervious backfill, and pervious pavement from the work described.
5. All work ancillary to that described above.

Bid Add Alternate 1

1. Landscaping improvements over an area of approximately 7,000 square feet in several landscaping islands located between rows of parking as delineated on the Drawings, including soil amendment, wooden split rail fence, plantings, irrigation, and all ancillary work.

REQUIREMENTS

Contractor's License

To submit a bid the Contractor must possess a valid State of California **Class A** Contractor's License. In accordance with the provisions of California Business and Professions Code Section 7028.15, a bid submitted to the District by a Contractor who is not licensed in accordance with applicable laws shall be considered non-responsive.

Time Limit for Completion

The successful bidder will have one hundred and ten (110) calendar days to substantially complete the Project from the Notice to Proceed. Liquidated Damages in the amount of seven hundred dollars (\$700) per day will be assessed for each calendar day the work remains incomplete beyond the time fixed above for substantial completion pursuant to Section 2-F, Special Conditions and Liquidated Damages. Final Completion shall occur within one hundred and seventy (170) calendar days from the Notice to Proceed. Liquidated damages in the amount of two hundred and forty dollars (\$240) per day will be assessed for each calendar day the work remains incomplete beyond the time fixed for Final Completion pursuant to Section 2-F, Special Conditions and Liquidated Damages.

Mandatory Pre-Bid Conference

A mandatory pre-bid conference will be held at 1:00 PM, Tuesday May 14, 2024, at the Scotts Valley Transit Center, 304 Kings Village Road, Scotts Valley, CA 95060. Attendance at the pre-bid conference is mandatory for all prospective bidders.

Prevailing Wage and Labor Code Compliance

The District hereby advises all bidders that the successful bidder shall: (a) Employ the appropriate number of apprentices on the job site as set forth in California Labor Code 1777.5; (b) Provide Workers' Compensation coverage, as set forth in California Labor Code Sections 1860 and 1861; (c) Keep and maintain the records of work performed on the public works Project, as set forth in California Labor Code Section 1812; (d) Keep and maintain the records required under California Labor Code Section 1776 which shall be subject to inspection pursuant to California Labor Code Section 1776 and California Code of Regulations, Division 1, Chapter 8, Subchapter 3, Article 6, Section 16400(e); (e) Be subject to other requirements imposed by law; and (f) pay prevailing wages as required by Labor Code Sections 1770, 1773, 1773.1, 1773.6 and 1773.7 as amended.

Notice of Public Works Registration

Notice is hereby given that no contractor or subcontractor may be listed on a bid proposal for a public works project unless registered with the Department of Industrial Relations pursuant to Labor Code section 1725.5, with limited exceptions from this requirement for bid purposes only under Labor Code section 1771.1(a). No contractor or subcontractor may be awarded a contract for public work on a public works project unless registered with the Department of Industrial Relations pursuant to Labor Code section 1725.5.

This project is subject to compliance monitoring and enforcement by the Department of Industrial Relations. All contractors and subcontractors must furnish electronic certified payroll records directly to the Labor Commissioner (aka Division of Labor Standards Enforcement) if required by law.

OBTAINING DOCUMENTS

Electronic copies of all Contract Documents are available per request. All prospective bidders shall register with the District by calling 831-438-2363 or emailing engineering@svwd.org. The Contract Documents are also available on District website www.svwd.org.

CONTACT INFORMATION

Pre-Bid Inquiries. Bidders may submit pre-bid inquiries or clarification requests. Bidders are solely and exclusively responsible for submitting such inquiries or clarification requests not less than eight (8) days prior to the scheduled closing date for the receipt of Bid Proposals. The District will not respond to any bidder inquiries or clarification requests unless such inquiries or clarification requests are timely submitted.

QUESTIONS CONCERNING THIS PROJECT SHOULD BE SUBMITTED TO THE OWNER'S REPRESENTATIVE:

Kennedy Jenks

2530 Mission College Blvd, Suite 700

Santa Clara, CA 95054

Attn: Donald L. Ervin, Project Manager

(650) 852-2821

E-mail: DonErvin@KennedyJenks.com

END OF DOCUMENT

1-B INSTRUCTION TO BIDDERS**SCOTTS VALLEY WATER DISTRICT****SCOTTS VALLEY TRANSIT CENTER****LOW IMPACT DEVELOPMENT (LID) RETROFIT PROJECT – PHASE 2****GENERAL**

The work to be performed is described in the Bid Documents and Plans, Drawings and Specifications titled Scotts Valley Transit Center LID Retrofit Project – Phase 2. All bidders shall carefully examine the Contract Documents and satisfy themselves as to their sufficiency. Prior to submission of a bid, the bidder shall notify the District of any conflicts, errors or discrepancies in the Contract Documents prior to the submission of its bid. Intended bidders shall have visited the site of the work and familiarized themselves with the conditions there existing as well as all other conditions relating to the construction and labor under which the work will be performed and affecting cost, progress or performance of the work. The submission of a bid shall be considered an acknowledgment on the part of the Bidder of its familiarity with conditions at the site of work.

PRE-BID CONFERENCE

A mandatory pre-bid conference will be held at the time and place stipulated in the Notice Inviting Bids. The conference will be conducted by the District. Subcontractors and other interested parties are invited and encouraged to attend.

POSTPONEMENT OF BID OPENING

The District reserves the right to postpone the date and time for receiving and/or opening of bids at any time prior to the date and time established in the Notice Inviting Bids. Postponement notices may be faxed or emailed and will subsequently be mailed to registered plan holders of record in the form of addenda.

INTERPRETATIONS

No oral representations or interpretations will be made to any bidder as to the meaning of the Contract Documents. Requests for an interpretation shall be made in writing and delivered to the District's Representative at least eight (8) days before the bids are opened.

ADDENDA

Addenda may be issued to all known plan holders during the Bid period. Any and all addenda issued shall become a part of the Contract Documents shall be acknowledged on the Bid Form, and shall be fully considered by all bidders during their preparation of bids.

REQUIRED BID FORMS

Bids for the work shall be made on the forms contained in the section and shall include the following completed documents:

1-C Bid Form

1-D Bid Bond (or use form supplied by bonding company)

1-E Subcontractors List

1-F Statement of Qualifications

1-G Non-Collusion Affidavit

1-H Bidder Certifications

1-I Iran Contracting Act Certification

BID SUBMISSION

Before the deadline for the submission of bids, a complete set of bid forms listed above, shall be placed in an envelope, sealed, and addressed to the Owner's Representative:

Nate Gillespie
Scotts Valley Water District
2 Civic Center Drive, Scotts Valley CA 95066

The envelope shall reflect the name of the Project. Bids shall give the prices proposed in figures and words, shall give all other information requested herein, and shall be signed by the bidder or an authorized representative. By submission of a bid, the bidder certifies that the bidder has obtained a complete set of the Contract Documents and is aware of the entire contents thereof, including all addenda.

BID OPENING

After the expiration of the time for submission of bids, all bids will be publicly opened, read, declared, and referred to staff for action.

MODIFICATION OF BIDS

Modification of a bid already received will be considered only if the modification is received prior to the time established for receiving bids.

WITHDRAWAL OF BID

Any bid may be withdrawn prior to the time established for receiving bids, provided that a written request for withdrawal of bids, executed by the bidder or his duly authorized representative, is filed with the District. Upon the District's receipt of such request, the bid will be considered null and void and will be returned to the Contractor unopened. The withdrawal of a bid in such a manner will not prejudice the right of a bidder to file a new bid prior to the time established for receiving bids.

BID FORM

The Bid shall be submitted on Form 1-C-Bid Form.

BID PRICES

Bid prices shall include everything necessary for the completion of construction and fulfillment of the work described in the Contract Documents. Bid prices shall include all federal, state and local taxes including sales and use taxes. Costs for developing, submitting, and presenting bids are the sole responsibility of the bidder.

BID BOND

Bids shall be accompanied by a cashier's check, a certified check or a bidder's bond executed by an admitted surety in an amount not less than ten (10) percent of the aggregate of the bid amount, payable to the order of the District. The check or bond shall be a guarantee that the successful bidder, if awarded the work, will within ten (10) days after notice of its award to the successful bidder: (1) enter into a contract, (2) furnish a bond of faithful performance and a labor and material bond, (3) furnish insurance policies and endorsements and (4) prior to issuance of the final project payment the successful bidder must submit a warranty or maintenance bond. In case of refusal or failure to enter into the Contract, the bid guaranty check or bond, as the case may be, shall be forfeited to the District, the proceeds therefrom

being hereby agreed upon as liquidated damages to the District on account of the delay in the execution of the Contract and required bonds and the performance of the work thereunder, and the necessity of accepting a higher or less desirable bid resulting from such failure or refusal to execute the Contract and the bonds as required. Upon the execution of the Contract and the approval on behalf of the District of the accompanying bonds and insurance policies and endorsements, all certified checks that accompany bids and that have not heretofore been returned will be returned, each to its maker. Form 1-D Bid Bond Form

SUBCONTRACTORS

In accordance with California Public Contracting Code Section 4100, et. seq., each bid shall have listed the name, type or trade, portion of work to be performed, and location of the place of business of each subcontractor who will perform work or labor or render service to the bidder in or about the construction of the work or improvement, or of any subcontractor licensed by the State of California who, under subcontract to the bidder, will specifically fabricate and install a portion of the work or improvement according to detailed drawings contained in the Bid Documents, in an amount in excess of one-half of one percent of the bidder's total bid or \$10,000, whichever is greater. If the Contractor fails to designate in its proposal a subcontractor for any portion of the work as required above, the bidder shall be deemed to have agreed to perform such portion of the work itself and shall not be permitted to subcontract that portion of the work without the written permission of the District in accordance with applicable law. Form 1-E-Subcontractors List

BIDDER CERTIFICATIONS

The Contractor shall complete and submit with its bid the Statement of Qualifications Form 1-F – Statement of Qualifications

NON-COLLUSION AFFIDAVIT

In accordance with Public Contract Code Section 7106, the Contractor shall complete and file with its bid the Non-Collusion Affidavit. Form 1-G Non-Collusion Affidavit

BIDDER CERTIFICATIONS

The Contractor shall complete and submit with its bid the Bidder Certifications Form 1-H -- Bidder Certifications

Iran Contracting Certification

The Contractor shall complete and submit with its bid the Iran Contracting Certification Form 1-I – Iran Contracting Act Certification

BID IRREGULARITIES

Bids which contain omissions or material irregularities of any kind may be rejected. No oral, telegraphic, facsimile or telephonic bids or modifications will be considered. The District may, however, waive any irregularities in the bid process.

AWARD

If an award is made, it will be based on the lowest responsive, responsible bid that has a Total Bid Amount (the sum of the Total Base Bid and all Bid Alternate Prices) that yields the lowest Contract Price. The Bid Alternates are only utilized for determination of the lowest Contract Price and do not indicate that the District will select the Bid Alternates. Selection of any or all Bid Alternates shall be at the sole discretion of the District. If not selected and included in the awarded Contract, the Bid Alternate prices shall remain valid to the date of Notice to Proceed for incorporation into the Contract as a Change Order. Only one Contract will be awarded. No Base Bid Items will be excluded from the awarded Contract.

INSURANCE, PAYMENT BOND, AND PERFORMANCE BOND

The successful bidder shall, within ten (10) days of the notice of award, provide the insurance, and the payment and performance bonds as required in Section 4-of the Contract Award Documents.

LOCAL BUSINESS LICENSE

All Contractors shall have a local business license before performing work on the Project if required by the City of Scotts Valley.

END OF DOCUMENT

1-C BID FORM**SCOTTS VALLEY WATER DISTRICT****SCOTTS VALLEY TRANSIT CENTER****LOW IMPACT DEVELOPMENT (LID) RETROFIT PROJECT – PHASE 2**

Contractor: _____

Business Address: _____

Phone: _____ Email: _____

Contractor License: _____ Class: _____ Expiration Date: _____

DIR Registration _____

BASE BID

Bid Item	Quantity	Unit	Description	Unit Price	Bid Item Price
1	1	Lump Sum	Construction of the Scotts Valley Transit Center LID Retrofit Project – Phase 2	--	\$
2	1	Lump Sum	Mobilization	--	\$
3	1	Lump Sum	Sheeting, Shoring and Bracing	--	\$
4	1	Lump Sum	Builder's Risk Insurance	--	\$
Total Base Bid					\$

BID ALTERNATES

Bid Add Alternate	Quantity	Unit	Description	Unit Price	Bid Add Alternate Price
A	1	Lump Sum	Supplemental Landscaping	--	\$

Pursuant to the Notice Inviting Bids, and in compliance with the Instructions to Bidders, having obtained and reviewed the Contract Documents and the project site, the undersigned hereby proposes to furnish all work, labor, materials, transportation, equipment, and services necessary, including State of California and local sales or use taxes, license, and permit fees, for the Scotts Valley Transit Center LID Retrofit Project – Phase 2 Improvements project, all in

accordance with the Contract Documents together with addenda issued prior to or at the time of bidding, if any, now on file with the District Representative, for a **Total Bid Amount** (the sum of the Total Base Bid and the price for Bid Add Alternate A) of

_____ Dollars \$ _____

All Bid Item Prices and Bid Alternate Prices must be filled in.

BID ITEM DESCRIPTIONS

Descriptions of Base Bid Items and Descriptions of Bid Alternates are presented to indicate major categories of work for the purposes of comparative bid analyses and progress payments. The descriptions are not intended to be exclusive descriptions of the work categories and the Contractor shall determine and include in its pricing all materials, labor, and equipment necessary to complete each Bid Item and Bid Alternate as shown and specified in the Contract Documents.

DESCRIPTIONS OF BASE BID ITEMS

Bid Item 1 - Construction of the Scotts Valley Transit Center LID Retrofit Project – Phase 2

Bid Item 1 is a lump sum bid item that includes construction of the Scotts Valley Transit Center LID Project – Phase 2 including the following, but not including work included in Base Bid Items 2 through 4:

- a. A five-foot diameter prefabricated hydrodynamic separator for stormwater treatment.
- b. A stormwater conveyance system consisting of four 4-foot diameter manholes and approximately 470 linear feet of 12-inch and 15-inch PVC or corrugated HDPE gravity drainage pipe including associated trenching and removal and replacement of existing pavement, curb and gutter, sidewalk, landscaping, and irrigation.
- c. Three 4-ft by 20-ft precast concrete modular biofiltration units each with associated field-poured concrete curbing, gravel and perforated pipe underdrain system, engineered soil mix, landscaping and irrigation, and overflow catch basin device.
- d. Connection to the existing infiltration gallery and associated work of restoring existing rock backfill, geotextile, pervious backfill, and pervious pavement from the work described.
- e. All other ancillary Work items associated with the base bid improvements not included in other Bid Items listed herein, which may be shown or not shown on

the Drawings, but which are necessary for full and proper completion of the work.

Bid Item 2 – Mobilization

Bid Item 2 is a lump sum bid item that includes furnishing all labor, materials, tools, equipment, and incidentals and for doing all work necessary for the movement of personnel, equipment, supplies and incidentals to the project site; the establishment and maintenance of the project and Engineer's offices (including payment of regular utility charges); maintenance of record drawings; and for all other work and operations which must be performed prior to beginning work on the various contract items on the project site. The price for Mobilization shall conform to the requirements of Section 6-D SUBMITTALS - SCHEDULE OF VALUES.

Bid Item 3 – Sheeting, Shoring and Bracing

Bid Item 4 is a lump sum bid item that includes payment for sheeting, shoring and bracing including design, installation and removal of sheeting, shoring, bracing and other excavation supports necessary to complete all work associated with the Project in conformance with California Occupational Safety and Health (CAL-OSHA) standards and California Labor Code Section 6700-6708.

Bid Item 4 – Builder's Risk Insurance

Bid Item 4 is a lump sum item that includes payment for Builder's Risk Insurance as described in the General Conditions for the full value of the Total Base Bid.

DESCRIPTIONS OF BID ALTERNATES

Bid Add Alternate A – Supplemental Landscaping

Bid Add Alternate A is a lump sum bid item that includes supplemental landscaping improvements including the following:

- a. Landscaping improvements over an area of approximately 7,000 square feet in several existing landscape islands located between rows of parking as delineated on the Drawings, including soil amendment, wooden split rail fence, plantings, and irrigation.
- b. Mobilization for work associated with Bid Add Alternate A in conformance with the requirements of Section 6-D SUBMITTALS – SCHEDULE OF VALUES. Mobilization shall be limited to 1 percent of the amount bid for Bid Add Alternate A.
- c. Builder's Risk Insurance as described in the General Conditions for the full value of the amount bid for Bid Add Alternate A.

- d. All other ancillary Work items associated with Bid Add Alternate A and not included in other Bid Items listed herein, which may be shown or not shown on the Drawings, but which are necessary for full and proper completion of the work.

Addenda Received and Reviewed:

(Indicate with check marks in respective boxes)

Addenda Number and Date

	Reviewed	
	Reviewed	
	Reviewed	
	Reviewed	
	Reviewed	
	Reviewed	

The undersigned agrees that the enclosed cash deposit, cashier's check, certified check, or surety bond accompanying this bid shall be left on deposit with the District, that its amount is the measure of the liquidated damages which the District will sustain by the default of the undersigned through failure to execute and deliver the above agreement, insurance and bonds within ten (10) calendar days of written notice of the award of the contract and the money or surety bond so deposited by Contractor shall be collectible and become the property of the District in case of such default.

By submission of a bid, a bidder certifies possession of duly issued and valid contractor's license issued by the State of California, which license authorized bidder to contract to perform the type of work required by the Contract Documents. Should the bidder fail to provide below the number and classification of bidder's State of California Contractor's License, the District may reject this bid. Pursuant to Business and Professions Code 7028.15, the undersigned further certifies, under penalty of perjury under the laws of the State of California, that the representations made herein are true and correct.

This bid will remain subject to acceptance for sixty (60) days after the day of bid opening.

Whenever in this bid an amount is stated in both words and figures, in case of a discrepancy between words and figures, the words shall prevail; if all or any portion of the bid is required to

be given in unit prices and totals and a discrepancy exists between any such unit prices and totals so given, the unit prices shall prevail.

Signed: _____

Date: _____

Name: _____

Phone: _____

Email: _____

Signed: _____

Date: _____

Name: _____

Phone: _____

Email: _____

Signed: _____

Date: _____

Name: _____

Phone: _____

Email: _____

(NOTE TO BIDDERS: No bid shall be valid unless signed by the person making the bid. If the party is an individual, the same shall be signed by the individual; if the party is a partnership, the name of the partnership shall be given and signed by one of the partners; if the party is a corporation, the bid should be signed by the corporation by its properly authorized officer or officers.)

END OF DOCUMENT

1-D BID BOND**TO BE EXECUTED BY BIDDER AND****SUBMITTED WITH BID FORM**

Bid Bond to be 10% of Bid.

KNOW ALL MEN BY THESE PRESENTS: THAT

_____ as Contractor and

_____ as Surety,

hereinafter are jointly and severally held and firmly bound unto the Scotts Valley Water District ("District"), each in the penal sum of ten percent (10%) of the total amount of the bid of the Contractor for the work, this sum not to exceed _____ Dollars of lawful money of the United States to the District, the Contractor and Surety, jointly and severally, bind themselves forever firmly by these presents.

WHEREAS, the Contractor is herewith submitting its bid for the fulfillment of the project entitled:

SCOTTS VALLEY TRANSIT CENTER LID RETORFIT PROJECT- PHASE 2

NOW, THEREFORE, the condition of this obligation is such that if the Contractor is awarded the Contract, and if the Contractor within the time specified in the proposal for such Contract enters into, executes and delivers to the District an agreement in the form provided herein complete with evidence of insurance, and if the Contractor within the time specified in the proposal gives to the District the performance bond and the labor and material bond on the forms provided in the Contract Documents for the above-referenced Project, then this obligation shall be void; otherwise, the Contractor and Surety will pay unto the District the difference in money between the total amount of the proposal of the Principal and the amount which the District legally contracts with another party to fulfill the contract if the latter amount be in excess of the former, but in no event shall the Surety's liability exceed the penal sum hereof.

AND IT IS HEREBY DECLARED AND AGREED that the Surety shall be liable under this obligation as Contractor and that nothing of any kind or nature whatsoever that will not discharge the Contractor shall operate as a discharge or a release of liability of the Surety.

IT IS FURTHER DECLARED by the Surety herein that it is duly admitted and authorized as a Surety to do business in the State of California.

IT IS HEREBY FURTHER DECLARED AND AGREED that this obligation shall be binding upon and inure to the benefit of the Contractor, and Surety and the District and their respective heirs, executors, administrators, and successors and assigns.

CONTRACTOR

SURETY

Signed: _____

Signed: _____

Name: _____

Name: _____

Title: _____

Title: _____

Note: Surety signature must be notarized

END OF DOCUMENT

1-E SUBCONTRACTORS LIST

Name of Subcontractor and Location of Place of Business	Description of Work	Subcontractor's License No.	DIR Registration Number*

(Bidder to attach additional sheets if necessary)

*Pursuant to Division 2, Part 7, Chapter 1 (commencing with section 1720) of the California Labor Code.

END OF DOCUMENT

1-F NON-COLLUSION AFFIDAVIT

TO BE EXECUTED BY BIDDER AND SUBMITTED WITH BID FORM

State of California

County of Santa Cruz

_____(name), being first duly sworn, deposes

and says that he or she is the _____(title)

of _____ (name of bidder) , the party making the foregoing bid; that the bid is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization, or corporation; that the bid is genuine and not collusive or sham; that the bidder has not directly or indirectly induced or solicited any other bidder to put in a false or sham bid, and has not directly or indirectly colluded, conspired, connived, or agreed with any bidder or anyone else to put in a sham bid, or that anyone shall refrain from bidding; that the bidder has not in any manner, directly or indirectly, sought by agreement, communication, or conference with anyone to fix the bid price of the bidder or any other bidder, or to fix any overhead, profit, or cost element of the bid price, or of that of any other bidder, or to secure any advantage against the public body awarding the contract of anyone interested in the proposed contract; that all statements contained in the bid are true; and, further, that the bidder has not, directly or indirectly, submitted his or her bid price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, or paid, and will not pay, any fee to any corporation, partnership, company association, organization, bid depository, or to any member or agent thereof to effectuate a collusive or sham bid.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

Name: _____

Date: _____

Title: _____

END OF DOCUMENT

1-G STATEMENT OF QUALIFICATIONS**MINIMUM BIDDER QUALIFICATIONS**

Bidders must be duly licensed in accordance with the California Business & Professions Code and have a history of work performance sufficient to meet the requirements of a responsible bidder in the California Public Contract Code Section 1104.

Bidders must have three (3) years of recent experience in the performance of work similar to the Project.

Bidders must demonstrate successful experience with the type of work of this Project, to include, within the past year, completed three (3) projects of a similar nature and complexity with a contract dollar amount of at (i) least 75% of the amount of Bidder's Bid or (ii) 125% of such amount in the aggregate.

Provide at least three (3) references for each project completed by the contractor which demonstrate successful completion of projects of a similar nature and complexity to the Project which is the subject of this bid process:

REFERENCE INFORMATION

Name of Project: _____

Total Project Cost: _____

Total cost of work: _____

Performed by bidder: _____

Date Contract _____

Awarded: _____

Owner Name: _____

Contact Person: _____

Address: _____

Phone: _____

Fax: _____

E-mail: _____

REFERENCE INFORMATION

Name of Project: _____

Total Project Cost: _____

Total cost of work: _____

Performed by bidder: _____

Date Contract _____

Awarded: _____

Owner Name: _____

Contact Person: _____

Address: _____

Phone: _____

Fax: _____

E-mail: _____

REFERENCE INFORMATION

Name of Project: _____

Total Project Cost: _____

Total cost of work: _____

Performed by bidder: _____

Date Contract _____

Awarded: _____

Owner Name: _____

Contact Person: _____

Address: _____

Phone: _____

Fax: _____

E-mail: _____

The undersigned contractor hereby certifies it meets the Minimum Bidder Requirements and that the contact information listed above is true, complete and correct. I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

Dated: _____

Contractor: _____

END OF DOCUMENT

1-H BIDDER CERTIFICATIONS

TO BE EXECUTED BY ALL BIDDERS AND SUBMITTED WITH BID

The undersigned Bidder certifies to Owner:

STATEMENT OF CONVICTIONS

By my signature hereunder, I hereby swear, under penalty of perjury, that no more than one final, un-appealable finding of contempt of court by a Federal Court has been issued against Bidder within the past two years because of failure to comply with an order of a Federal Court or to comply with an order of the National Labor Relations Board.

CERTIFICATION OF WORKER'S COMPENSATION INSURANCE

By my signature hereunder, as the Contractor, I certify that I am aware of the provisions of Labor Code Section 3700 of the Labor Code which requires every employer to be insured against liability for worker's compensation or to undertake self-insurance in accordance with the provisions of that Code, and I will comply with such provisions before commencing the performance of the work of this Contract.

CERTIFICATION OF PREVAILING WAGE RATES AND RECORDS

By my signature hereunder, as the Contractor, I certify that I am aware of the provisions of Labor Code 1773 of the California Labor Code, which requires the payment of prevailing wage on public projects. Also, that the Contractor and any subcontractors under the Contractor shall comply with California Labor Code 1776, regarding wage records, and with California Labor Code 1777.5, regarding the employment and training of apprentices. It is the Contractor's responsibility to ensure compliance by any and all subcontractors performing work under this Contract.

CERTIFICATION OF COMPLIANCE WITH PUBLIC WORKS CHAPTER OF LABOR CODE

By my signature hereunder, as the Contractor, I certify that I am aware of Labor Code Sections 1777.1 and 1777.7 of the California Labor Code and that Contractor and Subcontractors are eligible to bid and work on public works projects.

CERTIFICATION OF NON-DISCRIMINATION

By my signature hereunder, as the Contractor, I certify that there will be no discrimination in employment with regard to race, color, religion, gender, sexual orientation, age or national origin; that all federal, state, and local directives and executive orders regarding non-discrimination in employment will be complied with; and that the principal of equal opportunity in employment will be demonstrated positively and aggressively.

CERTIFICATION OF NON-DISQUALIFICATION

By my signature hereunder, as the Contractor, I swear, under penalty of perjury, that the below-indicated Bidder, any officer of Bidder, or any employee of Bidder who has a proprietary interest in such Bidder, has never been disqualified, removed, or otherwise prevented from bidding on, or completing a Federal, State, or local government project because of a violation of law or safety regulation, except as indicated on the separate sheet attached hereto entitled "Previous Disqualifications." If a statement of "Previous Disqualifications" is attached, please explain the circumstances.

CERTIFICATION OF ADEQUACY OF CONTRACT AMOUNT

By my signature hereunder, as the Contractor, pursuant to Labor Code Section 2810(a), I certify that, if awarded the Contract based on the undersigned's Bid, the Contract will include funds sufficient to allow the Contractor to comply with all applicable local, state, and federal laws or regulations governing the labor or services to be provided. I understand that Owner will be relying on this certification if it awards the Contract to the undersigned.

CERTIFICATION REGARDING DIR CONTRACTOR / SUBCONTRACTOR REGISTRATION

By my signature hereunder, as the Contractor, I certify that Contractor and all Subcontractors listed on the Subcontractors List are the subject of current and active contractor registrations pursuant to Division 2, Part 7, Chapter 1 (commencing with section 1720) of the California Labor Code. Subcontractors' registration numbers are as indicated on the Subcontractors List.

CERTIFICATION OF BIDDER

By my signature hereunder, as the Contractor, I certify that the foregoing information is true and correct.

Bidder: _____ (Name of Bidder)

Date: _____ (Date)

By: _____ (Signature)

Name: _____ (Print Name)

Title: _____ (title)

END OF DOCUMENT

1-I IRAN CONTRACTING ACT CERTIFICATION

As specified in the INSTRUCTIONS TO BIDDERS, pursuant to Public Contract Code section 2204, each bidder submitting a Bid in which the Total Amount set forth on its Bid Schedule is \$1,000,000 or more must also submit with its bid this IRAN CONTRACTING ACT CERTIFICATION, and the failure to submit the IRAN CONTRACTING ACT CERTIFICATION may render the bid non-responsive.

The undersigned Bidder certifies as follows (check the applicable circumstance):

_____The company submitting the accompanying bid is not on the current list of persons engaged in investment activities in Iran created by the California Department of General Services ("DGS") pursuant to Public Contract Code section 2203(b), and is not a financial institution extending twenty million dollars (\$20,000,000) or more in credit to another person, for 45 days or more, if that other person will use the credit to provide goods or services in the energy sector in Iran and is identified on the current list of persons engaged in investment activities in Iran created by DGS.

_____The company submitting the accompanying bid has previously received written permission from the District, pursuant to subdivision (c) or (d) of Public Contract Code section 2203, to submit a bid. A copy of the written permission from the District is submitted with the accompanying bid.

I, the person signing below, hereby certify that I am duly authorized to execute this certification on behalf of the Company identified below, and that I am aware that Public Contract Code section 2205 establishes penalties for providing false certifications, including civil penalties equal to the greater of \$250,000 or twice the amount of the contract for which the false certification was made; contract termination; and three-year ineligibility to bid on contracts.

Bidder: _____ (Name of Bidder)

Date: _____ (Date)

By: _____ (Signature)

Name: _____ (Print Name)

Title: _____ (title)

END OF DOCUMENT

SECTION 2 PROJECT SPECIFIC PLANS AND SPECIFICATIONS

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2-A DESCRIPTION OF WORK

The project includes furnishing all labor, materials, equipment, tools and services required to perform all work necessary to construct the Scotts Valley Transit Center LID Retrofit Project – Phase 2 which includes but is not limited to:

1. Three (3) 4-ft by 20-ft precast concrete modular biofiltration units each with associated field-poured concrete curbing, gravel and perforated pipe underdrain system, engineered soil mix, landscaping and irrigation, and overflow catch basin device.
2. One (1) 5-ft diameter prefabricated hydrodynamic separator for stormwater treatment.
3. Approximately 470-linear feet of 12-inch and 15-inch PVC or corrugated HDPE gravity drainage pipe, including associated trenching and removal and replacement of existing pavement, curb and gutter, sidewalk, landscaping, and irrigation
4. Connection to the existing infiltration gallery and associated work of restoring existing rock backfill, geotextile, pervious backfill, and pervious pavement from the work described.

END OF DOCUMENT

2-B REPORTS AND INFORMATION ON EXISTING CONDITIONS

Reports and information related to existing conditions on file with the Owner and/or attached herein include:

- Stormwater Infiltration Study for Scotts Valley Transit Center LID Retrofits Project, prepared by Pacific Crest Engineering, Inc. Consulting Geotechnical Engineers, December 2014

END OF DOCUMENT

2-C CEQA CONDITIONS AND MITIGATION MEASURES

List attached CEQA conditions and mitigation measures:

None.

END OF DOCUMENT

2-D PROJECT SPECIFIC PLANS AND SPECIFICATIONS

Project Specific Plans and Specifications:

- Contract Documents and Construction Specifications, Scotts Valley Transit Center LID Retrofits Project – Phase 2, May 2024
- Plans, Scotts Valley Transit Center LID Retrofits Project – Phase 2, May 2024

END OF DOCUMENT

2-E ADDENDA

See Specification Section 1-B INSTRUCTIONS TO BIDDERS, ADDENDA.

END OF DOCUMENT

2-F SPECIAL CONDITIONS AND LIQUIDATED DAMAGES**MODIFICATIONS TO THE GENERAL CONDITIONS****Time Allowed for Completion**

Due to time constraints on completing the Project, the Contractor shall submit all required bonds and evidence of insurance within ten (10) days of the date the Contract is awarded. The Owner intends to issue a Notice to Proceed within fifteen (15) days of the date the Contract is awarded.

Substantial Completion of this Project shall be completed within one hundred and ten (110) consecutive calendar days from the date established in the Notice to Proceed for the commencement of the work.

Final Completion shall occur within one hundred seventy (170) consecutive calendar days from the date established in the Notice to Proceed for the commencement of the work.

Damages for Delays

For the period of time that any portion of the work remains unfinished after the time fixed for an interim milestone and/or Substantial Completion, as modified by extensions of time granted by the Owner, it is understood and agreed by the Contractor and the Owner that the Contractor shall pay the Owner the damages listed below.

	Dollars Per Day Liquidated Damages (Amount in Dollars)
Substantial Completion	\$700
Final Completion	\$240

SUBSTANTIAL COMPLETION

Substantial completion of the Project requires that the following portions of the Work must be completed in accordance with the requirements of the Contract Documents.

Completion of the work as required by the Contract Documents to allow the Owner to occupy and utilize the Project for its intended purpose.

Completion of the Corrective Work Item List.

Training has been completed for all electrical, mechanical and instrumentation systems.

All testing required by the Contract and Specifications has been successfully completed.

All process equipment shall be installed and operational.

All instrumentation and control systems, local and remote, are fully tested and functional. All interlocked functions between equipment items are tested and documented.

All alarms are fully functional, tested and demonstrated to properly associate locally, remotely and in the SCADA system.

All items related to health and safety of Owner operations and maintenance staff, including warning signs, guardrails, and safety equipment shall be complete.

Portions of the Work not essential to the system operation, which can be completed without interruption of system operations, may be completed after the Work is substantially complete, and may include the following items:

Final Site Clean-Up

All record drawings have been submitted, updated, reviewed and approved.

Completion of the Final Punch List prepared by the Construction Manager.

CONTRACT ADMINISTRATION

The following project representatives are hereby designated by the Owner:

Owner Representative: David McNair (NAME)

Design Consultant: Kennedy Jenks (NAME)

Construction Manager: (NAME)

All communications to and from the Contractor shall be routed through the Owner's Representative.

END OF DOCUMENT

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3-A GENERAL TECHNICAL REQUIREMENTS**3-A.01 Mobilization****(A) General**

Mobilization shall include but not be limited to, all work necessary to move onto the job site all personnel, equipment, tools, and materials, establish all offices, buildings, and temporary site facilities, temporary sanitary facilities, prepare and maintain record drawings, provide emergency response, and generally prepare for construction.

(B) Project Office

The Contractor shall establish and maintain for the duration of the project, a project office located within an approximate one (1) hour drive of the project site. The project office shall be established and operational within five (5) working days of the effective date of the Notice to Proceed or prior to commencing work, whichever is the earlier.

The project office shall be equipped with electrical service; Wi-Fi service; a conference table and chairs seating not less than six (6) people; two (2) desks and a plan table each with appropriate chairs.

(C) Not Used**(D) Bulletin Board**

Where provided for in the Contract Documents, the Contractor shall install a bulletin board in a conspicuous location at the field office or on the job site for the posting of such notices as may be required by regulatory agencies. Said bulletin board shall be a minimum of 2-LF by 4-LF in size, constructed of substantial material such as plywood, mounted on posts and protected against the weather and vandalism. The Engineer shall have access to this bulletin board at all times for the posting of notices at such times as work is not in progress on the site.

(E) Record Drawings

Record drawings shall be kept on file in the project office. Record drawings shall be updated continuously throughout the course of the work. Record Drawings shall be reviewed monthly by the District Representatives to verify plans are being kept up-to-date. The District may withhold progress payment until Record drawings have been deemed current by District Representatives. Upon completion of work, the Contractor shall submit all copies of record drawings to the District in a hard copy and digital format.

(F) Emergency Response

The Contractor shall maintain an emergency telephone number and shall be able to have competent personnel to the project site within one (1) hour or that time provided for in the Contract Documents from the time a call is placed to the emergency telephone number.

(G) Measurement and Payment

Mobilization shall be considered a lump sum item. The contract lump sum price for Mobilization shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all work necessary for the movement of personnel, equipment, supplies and incidentals to the project site; the establishment and maintenance of the project and Engineer's offices (including payment of regular utility charges); maintenance of record drawings; and for all other work and operations which must be performed prior to beginning work on the various contract items on the project site. The method of establishing relative completion of this item for partial payments shall be as provided for in Section 5-A-General Conditions, "Contract Administration" of these contract documents.

3-A.02 Existing Facilities**(A) General**

The Contractor is hereby advised that certain facilities may exist within the limits of work. Such facilities may include but are not limited to, existing water works, sanitary sewerage, storm drainage, traffic signals, natural gas, electric, telephone, cable television, highway structures, and buildings. The Contractor shall at all times protect those facilities not indicated to be removed, whether or not shown to be protected, and shall only remove those facilities indicated to be removed in accordance with the Contract Documents, the directions of the Engineer, and the direction of the owner of the facilities. Where the existing facility interferes with the Contractor in the performance of his work under the Contract, the Contractor shall bear full responsibility for the location, protection, and relocation or restoration of such facility, in accordance with the requirements of the owner of such facility.

The presence of such facilities shown on the Project Plans and provided for in the Contract Documents is for the convenience of the Contractor in preparing his proposal and planning his work and is prepared from the best information available to the Engineer at the time of preparation. The District makes no warranty, expressed or implied, as to the adequacy, completeness, and accuracy of such information. The Contractor shall satisfy himself with regards to the existence of such facilities and their impact on his operation.

Where such facilities are found to exist in locations other than those marked by the owner of such facilities, the Engineer may consider the Contractors request for an extension in time or

additional compensation. Such compensation shall be contingent upon the Contractors conformance with the provisions of Section 5-A General Conditions "Differing Site Conditions" of these contract documents.

(B) Measurement and Payment

No separate measurement will be made for work relating to existing facilities. Payment for protecting and adjusting these facilities shall be considered as included in the contract unit or lump sum price for other items of work and no additional compensation will be allowed therefor.

3-A.03 Clearing and Grubbing

(A) General

Work under this section shall be performed in accordance with "Existing Highway Facilities" and "Clearing & Grubbing" in the current CALTRANS Standard Specifications.

Clearing and grubbing shall consist of removing and disposing of all objectionable material from within the limits of work as defined by the Contract Documents. Objectionable material shall be that material which interferes with the prosecution of or would otherwise be detrimental to the work, including but not limited to, paving materials, trees, brush and vegetation, unsuitable soils, debris, trash, rubbish, minor structures such as sheds, shelters and fences, and all extraneous water within the work limits.

(B) Preservation of Property

The Contractor shall take precautions to protect all public and private properties and improvements not indicated to be removed including but not limited to, utilities and structures, trees, landscaping, roadways, drainage courses, and buildings encountered within or adjacent to the project limits. The Contractor shall also protect all existing facilities indicated to be removed until the Engineer deems that the function of such facilities has passed to the improvements provided for under the Contract or that such function is no longer required.

Only those trees and plants designated for removal shall be removed.

(C) Final Cleaning Up

Nothing herein shall be construed as relieving the Contractor of his responsibility for final clean-up of the project. Items which are required to be salvaged, including traffic signs and any other items so noted on the Plans, shall be carefully removed and delivered to the District.

Except as otherwise provided in the Project Special Provisions, all other materials removed are the property of the Contractor and shall be disposed of by him at his expense in a manner approved by the Engineer.

Burning will not be permitted.

(D) Disposal

Surplus excavated material shall become the property of the Contractor and shall be disposed of outside the project boundary in accordance with the provisions outlined in "Disposal of Materials" in the current CALTRANS Standard Specifications.

(E) Drainage

Throughout the prosecution of the work under the Contract, the Contractor shall keep all the work areas free of all water including but not limited to, rainwater, groundwater, and leachate and shall take precautions to prevent runoff onto adjacent properties. These precautions shall include but not be limited to dikes, berms, channels, diversions, pumping equipment, and other facilities necessary to control runoff. All work areas shall be constructed or provided with proper and adequate drainage facilities to avoid trapped and/or ponded water which may cause failure of or damage to constructed improvements or adjacent properties.

(F) Measurement and Payment

Except where provided in the Contract Documents to be paid on a unit price or lump sum price basis, clearing and grubbing shall be considered as incidental to other items of work and no measurement will be made thereof.

Where provided in the Contract Documents to be paid for on a unit or lump sum price, the contract unit or lump sum price for Clearing and Grubbing shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all work in clearing work areas, disposing of objectionable materials, and providing drainage and no additional compensation will be allowed therefor.

Any change in the quantity or extent of work to be performed under clearing and grubbing caused by the issuance of a Contract Change Order will be paid in accordance with the provisions of Section 5 Contract Administration of these contract documents.

3-A.04 Safety**(A) General**

The Contractor shall bear full responsibility for compliance with all applicable safety and health standards, rules, regulations, and orders established by the State of California Department of Occupational Safety and Health (Cal-OSHA) and the Federal Department of Occupational Safety and Health (OSHA).

In the event of an emergency, the Engineer may direct the Contractor to use other equipment, personnel, or methods when, in the opinion of the Engineer, the use of improper or insufficient personnel, materials, or methods would present a hazard to the public or expose the Districts facilities to a risk of damage. The Engineers direction shall only be in the interest of stopping unsafe practices and shall not be construed as superintendence of the Contractors forces.

(B) Safety Plan

When provided for in the Contract Documents and whenever the Contract Documents provide for extended trenching operations in excess of 5-LF in depth, the Contractor shall have prepared by an engineer registered in the State of California (hereinafter referred to as the Safety Engineer), a Safety Plan for safety measures on the project. This Safety Plan shall include but not be limited to, the following:

- Traffic control requirements for the delivery of materials;
- Storage and handling of delivered materials, including but not limited to installation as required;
- Shoring plans for all excavations including but not limited to underground tanks, tank ventilation, retaining walls, vaults, and piping;
- Provisions for compliance with the OSHA requirements for Permit-Required Confined Spaces;
- Any other plans required for compliance with those regulatory agencies having jurisdiction over the work.

(C) Safety Inspections

The Safety Engineer for this Safety Plan shall make periodic inspections of the site and the work to ensure compliance with these requirements and to make any adjustment or revision to the original safety plan required by field conditions or the Contractor's work. A report of each inspection shall be submitted to the Engineer within one working day of the inspection. No work or element of work noted in the Safety Plan or this report shall be commenced without the approval of the Safety Engineer. Any work or condition not in compliance with these

requirements shall be immediately corrected to the Safety Engineers satisfaction or suspended until such time as compliance can be met. Suspended work shall not recommence until receipt of written notice from the Safety Engineer to the Engineer that corrective action has been taken to his satisfaction.

(D) Site Investigations

The Contractor and his Safety Engineer are encouraged to perform their own site investigations to satisfy themselves as to the conditions on-site including if desired, additional subsurface investigations. No additional compensation will be considered for changed conditions that might reasonably have been foreseen by such investigation. Arrangements for site investigations may be arranged through the Engineer or the District.

(E) Measurement and Payment

When the Contract Documents provide a proposal item for Safety Plan or Trench Safety, the contract lump sum price for Safety Plan or Trench Safety shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all work in preparing the Safety Plan, implementing the Safety Plan, constructing embankment shoring and performing safety inspections and no additional compensation will be allowed therefor.

When the Contract Documents do not provide a proposal item for Safety Plan or Trench Safety, compliance with applicable safety laws, regulations, and ordinances shall be considered as incidental to other items of work and included in the contract unit or lump sum price for such items of work and no additional compensation will be allowed therefor.

3-A.05 NOT USED

3-A.06 Erosion Control

(A) General

At all times during the prosecution of the work on a project, the Contractor shall take all measures necessary to prevent damage to the work areas or adjacent properties due to the erosion of materials caused by the effects of weather. Such measures shall include but not be limited to, channelization, berms, dikes, catchment structures, sedimentation basins, silt fences, and seeding in accordance with these Standard Specifications, the Contract Documents, and agencies having jurisdiction over the site of the work.

(B) Erosion Control Plan

The Contractor shall have an erosion control plan for the management of storm runoff within the work areas. Such plan for work involving the mass grading of soils shall include drawings

that show the overall site of work, the routing and control of runoff through the work areas, sedimentation basins, and other pertinent details.

The Contractor shall have the erosion control plan for mass grading areas prepared by a Registered Civil Engineer and comply with the Regional Water Quality Control Board's Storm Water Pollution Prevention Plan Requirements (SWPPP).

An erosion control plan will not be required for the construction of pipelines; however, the Contractor shall take such measures as are necessary to prevent the erosion of the trench line or adjacent property. Such measures shall be approved by the Engineer prior to commencing construction.

(C) Maintenance

The Contractor shall be responsible for the inspection and maintenance of all erosion control facilities constructed as part of the project. In anticipation of any forecast storm, the Contractor shall inspect and, as appropriate, restore all erosion control facilities to ensure that optimum protection is provided. During any storm or storms that continue more than one day, the Contractor shall inspect and restore all erosion control measures on a daily basis, including weekends and holidays as necessary. The Contractor shall provide all materials, equipment, and personnel necessary to accomplish erosion control.

Upon completion of all work on the project and, as appropriate, successful germination of erosion control seeding, the Contractor shall remove all erosion control measures and structures and restore the site to its original condition, insofar as practicable.

If the Engineer determines that the implementation of erosion control measures constitutes an emergency, the Contractor shall have responsible personnel on the site within one hour of verbal notification by the Engineer and shall immediately commence work on such erosion control measures as are required by current conditions. If the Engineer determines that forces other than the Contractors must be mobilized due to a condition posing an imminent hazard to life or property, he will authorize the mobilization of such forces as are necessary for the protection of life and property.

In determining unavoidable delays in accordance with Section 5-A General Conditions of these Contract documents, erosion control work will not be considered constructive work on the project in the calculation of the number of hours worked to make that determination.

(D) Seeding

Areas including but not limited to, cut slopes, fill slopes, building pads, and mass grading that are to be left in an exposed condition upon completion of all work shall be seeded by the

hydro-mulch process with a mixture of grasses and seed conforming with the requirements of the Santa Cruz County Erosion Control Mix in the proportions listed in Table 2-02.

TABLE 2-02
Santa Cruz Erosion Control Mix

Seed	Percentage by Weight
Blando Brome Grass	42.50%
Hycon Rose Clover	34.18%
Zorro Fescue	8.21%
Creeping Red Fescue	14.01%
Various	1.10%

If the Contractor wishes to use an alternative mixture, he shall submit the mixture to the Engineer for approval prior to proceeding with the seeding operation.

The seed shall be thoroughly mixed with inert fiber material, fertilizer (16-20-0) and water and applied under pressure with a nozzle. The selection of agitator, air pressure, and nozzle size shall be the responsibility of the Contractor. The total application rate for erosion control seeding shall not be less than 35 pounds per acre. Inert fiber shall be applied with the seeding at a rate of at least 2,000 pounds per acre. Fertilizer shall be applied at the rate of 350 pounds per acre.

Except as provided for in the Contract Documents, the Contractor shall be responsible for providing adequate watering of the seed mix until such time as the site evidences adequate germination. Such evidence shall be the presence of healthy, vigorous plants over the entire site. Areas in excess of 100 square-feet evidencing poor or non-existent germination shall be reseeded where directed by the Engineer.

(E) Measurement

Except where provided in the Contract Documents to be paid on a unit price or lump sum price basis, erosion control measures shall be considered as incidental to other items of work and no measurement will be made thereof.

Where provided in the Contract Documents to be paid for on a unit price basis by area, the quantities of erosion control will be determined by measurement of the area to be treated for erosion control to the nearest 10 square-feet or 1 square-yard.

(F) Payment

Where provided for in the Contract Documents to be paid for as a unit price or lump sum price item, the contract unit or lump sum price for Erosion Control shall include full compensation for providing all materials and equipment and for performing all work involved in Erosion Control including but not limited to, erosion control plans, grading, channelization, sedimentation basins, seeding, maintenance and inspection, and emergency response as provided for in these Standard Specification, the Contract Documents, and as directed by the Engineer.

3-A.07 Utility Marking Systems

(A) General

Wherever provided for in the Contract Documents, the Contractor shall mark the improvements in accordance with the colors shown in Table 2-03. Buried pipelines and facilities may be marked by the use of pigmented pipe materials, epoxy coated pipe and fittings, detectable locator tape, above grade flexible marking post, painted covers or such other marking system as may be provided for in the Contract Documents.

The Contractor shall submit color chips for approval in accordance with Section 6-D Submittals of the District Construction Documents prior to applying or installing any markings. All paint and coating materials shall be applied in accordance with the Manufacturer's recommendations. The specific color cited herein shall be considered as the basis of comparison by which the submitted color will be evaluated.

TABLE 2-03
Colors for Utility Marking

Product	Color	Equivalent Color Standard		
		Ameron	Carboline	Rust-Oleum ²
Raw Water	Med. Grey	GR-2	2713	V2188
Potable Water	OSHA Safety Blue	BL-6	S150	V2124
Recycled Wastewater	OSHA Safety Purple	--	--	V2167
Backwash Water	Buff Brown	BR-3	G243	V2171
Chlorine (NaCl)	Haze Green	GN-5	2369	--
Caustic (NaOH)	Deep Yellow	YE-4	56071	V2147
Meta-Bisulfite (H ₂ SO ₂)	OSHA Safety Black	BK-2	C900	V2176
Poly Ortho Phosphate (PO)	OSHA Safety White	WH-2	S800	V2192

Product	Color	Equivalent Color Standard		
		Ameron	Carboline	Rust-Oleum ²
Gaseous Product (Gas, Oil, Diesel, Steam, Chemical)	OSHA Safety Yellow	YE-3	S625	V2143
Electric	OSHA Safety Red	RD-2	S525	V2163
Communications (Telephone, CATV, Fiber Optic)	OSHA Safety Orange	OR-2	S401	V2155
Wastewater, Storm Drain	OSHA Safety Green	GR-6	S375	V2133
Compressed Air	Ivory	YE-2	0857 ¹	--

¹ Lead free

² Rust-Oleum Colors are for Labor Saver Hard Hat Industrial Coatings.

Underground utility installations shall be marked with a detectable underground utility marking tape in colors conforming with the American Public Works Association Uniform Color Code or that of the local One Call Locating Agency.

(B) Measurement and Payment

No separate measurement will be made for work relating to marking systems. Payment for installing and painting marking systems shall be considered as included in the contract unit or lump sum price for other items of work and no additional compensation will be allowed therefor.

END OF DOCUMENT

3-B NOT USED

END OF DOCUMENT

3-C NOT USED

END OF DOCUMENT

3-D SITE WORK**3-D.01 Bedding, Backfill, and Aggregate Bases****(A) Description**

Bedding shall be that material placed to a minimum depth of 4-inches below and 12-inches above all pipe, fittings, valves, and structures. Backfill shall be that material used to fill trenches and excavated areas above the depth of the bedding. Aggregate base shall be that material placed immediately below all paved surfaces and may be used as the final paving surface where provided for in the Contract Documents. All bedding, backfill and aggregate base shall be in accordance with these Standard Specifications, the Contract Documents, and the requirements of agencies having jurisdiction over the work.

(B) Sand Bedding

Except as provided for in the Contract Documents, bedding material shall be clean, washed, granular material derived from decomposed or crushed rock. Such material shall be free of organic material, mica, clay, silt, oils, and other deleterious material. Sand bedding shall have a maximum particle size of 1/4-inch with a gradation that allows 90 to 100 percent to pass a No. 4 sieve and 80 to 95 percent to pass a No. 8 sieve and not more than 5 percent to pass a No. 200 sieve.

3-D.02 Backfill**(A) General**

Except as provided for in the Contract Documents, the minimum backfill required within the District shall be as follows:

Longitudinal trenches	Sand
Transverse trenches	1-sack Sand/Cement Slurry (including but not limited to main crossings and service lines)
Structure excavations	2-sack Sand/Cement Slurry (including but not limited to, valves, meters, and vaults)

Unimproved areas not subject to vehicle travel

All excavations	Native Material (min. Sand Equivalent of 20)
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Unimproved areas subject to vehicle travel

All excavations	Sand
-----------------	------

At the Contractor's option and subject to the prior approval of the Engineer, the Contractor may use backfill materials of a higher grade than that shown herein. Except as provided for in the Contract Documents, no additional compensation will be allowed for the use of materials of a higher grade than these minimum requirements.

3-D.03 Sand Backfill**(A) Sand Backfill**

Sand backfill shall be a clean, washed, granular material conforming with the requirements of Section 3-D.03, "Sand Backfill" of these Standard Specifications.

(B) Crushed Aggregate Backfill

Crushed aggregate backfill shall be a crushed gravel or rock material free from organic material, mica, clay, silt, oils, and other deleterious material. For trench backfill, the maximum particle size shall be 3-inches and the gradation shall otherwise conform with the following:

Minimum Sand Equivalent	20
<u>Sieve Sizes</u>	<u>Percentage Passing</u>
3-inch	100
No. 4	35-100
No. 30	20-100

At the Contractor's option and subject to the approval of the Engineer, the Contractor may substitute aggregate base material otherwise conforming with [Section 3-D.04, "Aggregate Bases"](#) of these Standard Specifications.

(C) Permeable Backfill

Permeable backfill shall be a poorly graded gravel or crushed rock meeting the following minimum gradation:

Class 1, Type B

<u>Sieve Sizes</u>	<u>Percentage Passing</u>
2-inch	100
1-1/2 inch	95-100
3/4-inch	50-100
1/2-inch	---
3/8-inch	15-55
No. 4	0-25

No 8	0-5
No. 200	0-3
Durability Index	≥40
Sand Equivalent	≥75

The Contractor shall submit gradation curves and laboratory analysis for any permeable material required by these Standard Specifications and the Contract Documents as well as any permeable material proposed to be used that doesn't otherwise meet these requirements.

(D) Sand/Cement Slurry Backfill

Sand/cement slurry backfill shall consist of a fluid, workable mixture of aggregate, cement, and water. Aggregate for sand/cement slurry shall be a clean, washed fine aggregate conforming with the provisions of [Section 3-D.03, "Sand Backfill"](#) of these Standard Specifications.

Alternatively, fine aggregate may be clean mortar sand conforming with the provisions of ASTM C404. Cement shall be Type IP or Type II Modified in accordance with Section 3-B.05, "Portland Cement" of these Standard Specifications. Water shall be clean, potable water free of organic contaminants, oils, salts, or other deleterious materials.

(E) Controlled Density Fill (CDF)

Where provided for in the Contract Documents, trench backfill shall consist of Controlled Density Fill. CDF shall be an aggregate and water slurry with additives of Portland cement and pozzolan in accordance with the following mix design:

Design Strength.....	50-150 psi
Portland cement (Type II (ASTM C150)).....	40 lbs/CY
Pozzolan (International Class F (ASTM C 618)).....	202 lbs/CY
Total material (3.00 sacks/CY)	282 lbs/CY
Water/cement ratio	N/A
Coarse Aggregate	None
Fine Aggregate.....	San Benito Sand
Entrained Air	4.0-percent, dosage = □ox/cwt. (Daravair)

(Dosage may vary to attain desired air)

Chemical Admixture.....None

Proportions (Per Cubic Yard)

Ingredient	Volume (ft)	Weight (lbs)
Cement	0.41	80
Pozzolan	1.40	202
Water	7.34	4581
Air	1.08	0.0874
Fine Aggregate	16.77	2,731
Totals	27.00	3,471

3-D.04 Aggregate Bases

Aggregate base and subbase material shall be crushed rock or gravel free from organic material, oils, and other deleterious substances.

Aggregate base material for use under paved surfaces shall be Class 2 conforming with the following gradation:

Minimum Sand Equivalent.....25

Minimum Resistance (R-value)78

Minimum Durability Index.....35

Z Percentage Passing

<u>Sieve Sizes</u>	<u>1 ½" Max</u>	<u>¾" Max</u>
2-inch	100	
1 □-inch	90-100	
1-inch		100
¾-inch	50-85	90-100
No. 4	25-45	35-60
No. 3-0	10-25	10-30
No. 200	2-9	2-9

3-D.05 Installation and Construction**(A) General**

All bedding, backfill, and aggregate base material shall be delivered to the work areas in such a manner as to protect them from the introduction of organic material, oils and salts, native soils, cement, and concrete and other deleterious materials. The Contractor shall bear full responsibility for the transportation of materials including but not limited to, weight limits, vehicle dimensions, vehicle condition, and load covers.

Upon arrival at the work area, materials shall be incorporated into the work as soon as practicable. Materials not immediately incorporated into the work shall be stored in a suitable area where the material shall be protected from the introduction of any deleterious materials. The storage area shall be protected from traffic at all times except as required for the delivery of materials or work related to their incorporation into the work.

The Contractor shall provide such measures as may be required by the field conditions to prevent such conditions as, but not limited to, excessive dust, ponding of water, rerouted runoff that causes erosion, unsafe conditions, and any other condition that poses a hazard to the public or the quality and sufficiency of the material.

(B) Moisture Conditioning

The Contractor shall bring the bedding, backfill, and aggregate base material to the optimum moisture content as determined from laboratory analysis of the samples provided for in Section 6-D, "Submittals" of these Standard Specifications.

Adjustments to the moisture content shall be a means selected by the Contractor that will ensure full and even distribution of moisture throughout the material. Such means shall include but not be limited to, windrowing, irrigating, misting, spreading, and sprinkling. Except as provided for in the Contract Documents, jetting and ponding will not be permitted. Jetting is hereby defined as the injection of large volumes of water directly into the material with a nozzle under pressure. Ponding is hereby defined as flooding the work area with water to facilitate moisture content and compaction.

(C) Bedding

Bedding shall be placed in the trench in such a manner as to prevent the introduction of deleterious materials. The trench shall be cleared of all loose native soils, debris, trash, and water and the sand bedding spread in a smooth layer to the required depth. The bedding shall

then be compacted to 90-percent relative density by the use of vibratory plate compaction equipment. The Contractor may use alternative equipment to achieve compaction subject to the prior approval of the Engineer. Such approval shall require the Contractor to demonstrate to the Engineer's satisfaction that the proposed method will achieve the required compaction without jeopardizing the integrity of the rest of the improvements being constructed.

After installing the pipe or structure, the Contractor shall place bedding material on both sides of the pipe to the spring line. The bedding shall be thoroughly worked under the haunches of the pipe and hand tamped or compacted with a piston type compaction tool to achieve a 90-percent relative density. Care shall be taken to prevent displacing the pipe by placing more material on one side than the other. Care shall be taken to prevent dropping heavy loads of material directly on the pipe.

Before proceeding with the next lift of bedding, the material along the pipe shall be thoroughly tamped to achieve 90-per cent relative compaction, taking care to prevent damage or displacement of the pipe. The material shall be compacted using a piston type compaction tool and hand tamping. Extra water may be used, above that necessary for optimum moisture content, to facilitate full bearing contact and compaction. Jetting and ponding will not be permitted.

Upon completion of placing and compacting bedding to the top of the pipe, sand bedding at the optimum moisture content shall be placed in one lift to a depth of 12-inches and spread uniformly throughout the trench. The bedding shall then be compacted by vibratory plate compaction equipment to a relative density of 90-percent. The Contractor may use alternative equipment to achieve compaction subject to the prior approval of the Engineer. Such approval shall require the Contractor to demonstrate to the Engineer's satisfaction that the proposed method will achieve the required compaction without jeopardizing the integrity of the rest of the improvements being constructed.

(D) Sand and Crushed Aggregate Backfill

After sand bedding has been brought to a depth of 12-inches over the pipe or the structure placed or constructed on the bedding, sand or crushed aggregate shall be placed in lifts not to exceed 8-inches in depth at the optimum moisture content and compacted by vibratory plate compaction equipment to a relative density of 95-percent. The Contractor may use alternative equipment to achieve compaction subject to the prior approval of the Engineer. Such approval shall require the Contractor to demonstrate to the Engineer's satisfaction that the proposed method will achieve the required compaction without jeopardizing the integrity of the rest of the improvements being constructed. Each lift shall be adequately compacted prior to placing

the next lift of backfill. Backfill shall be brought to a minimum depth of 6-inches below the final paving surface.

(E) Native Backfill

Native backfill shall be constructed in the same manner as provided for in [Section 3-D.03 "Sand Backfill"](#), [\(B\) Crushed Aggregate Backfill](#) of these Standard Specifications. Except as provided for in the Contract Documents, native backfill shall be compacted to 95-percent relative density and continued to a depth of 6-inches above the surrounding ground surface. Provision shall be made to prevent adverse runoff conditions from developing as a result of the final surface plane of the trench. The Contractor shall install such erosion control measures as water bars and berms as are necessary to prevent erosion of the backfill surface.

The surface shall then be seeded with a mix conforming with Santa Cruz County Erosion Control Mix or restore any landscaping to an equal or better condition than found prior to commencing work.

(F) Sand/Cement Slurry Backfill and CDF

Where called for in the Contract Documents or when approved by the Engineer, sand/cement slurry backfill may be placed to the full depth of the trench without first constructing a sand bedding. In such cases, the pipe or structure shall be supported on blocks as provided for elsewhere in these Standard Specifications or the Contract Documents.

The trench shall be cleared of all debris, loose soils, trash, and other deleterious material immediately prior to placing the sand/cement slurry backfill.

The Contractor shall place an anchor of sand/cement slurry over the pipe at intervals not to exceed 10-feet to prevent floating the pipe. Sand/cement slurry shall then be placed in such a manner as to ensure full contact with the pipe or structure and complete filling of all void spaces under the pipe or structure. The sand/cement slurry shall be shoveled and rodded or vibrated until there is evidence that the void is filled. After placing either sand bedding or sand/cement slurry bedding, as provided for in the Contract Documents or approved by the Engineer, the Contractor shall place the sand/cement slurry backfill in the trench or excavation.

The trench or excavation shall be filled to the surface less the thickness of the final paving surface in one continuous operation. The sand/cement slurry shall be shoveled and rodded to ensure full contact with the walls of the trench or excavation. At the Contractor's option and subject to the approval of the Engineer, the sand/cement slurry may be brought to the surface and then excavated later to permit placement of the final paving surface.

Upon completion of backfilling operations, the Contractor shall place steel plates over the trench or excavation for a minimum period of 24-hours or that time provided for in the Contract Documents. The plates shall be fabricated of steel conforming with ASTM A36 and a minimum of 1-inch thick and capable of supporting an H20 traffic load. The plates shall extend a minimum of 2-feet on each side of the trench or excavation. The plates shall be so placed as to prevent rocking or displacement due to traffic and the edges shall be sealed with cold-mix asphalt paving material. The cold mix shall be so placed as to provide a smooth transition on to and off of the plates.

The Contractor shall protect the sand/cement slurry surface from damage due to traffic, construction operations, and weather until such time as the final paving may be constructed. Paving operations shall not commence prior to 7-days following placement of sand/cement slurry or CDF to permit shrinkage to achieve equilibrium in the final trench backfill.

(G) Aggregate Base

Upon completion of backfilling operation, the Contractor shall construct an aggregate base to a minimum depth of 8-inches below the underside of the final paving surface or that depth called for in the Contract Documents. In no case shall the depth of aggregate base be less than that of the existing pavement section. The Contractor shall protect the aggregate base surface from damage due to traffic, construction operations, and weather until such time as the final paving may be constructed.

3-D.06 Paving

(A) Description

The Contractor shall pave or repave all road surface within public rights-of-way, private rights-of-ways, driveways, drainage courses, and other surfaces as provided for in the Contract Documents. Except as provided for in the Contract Documents, all paving materials shall be constructed of asphalt concrete or an asphaltic emulsion, with or without aggregate.

3-D.07 Asphalt Concrete Pavement

(A) General

Asphalt concrete pavement shall be in accordance with the provisions of [Section 3-D.07, "Asphalt Concrete Pavement"](#) of these Standard Specifications. Except as provided for in the Contract Documents, a Certificate of Compliance in accordance with Section 6-B Information and Procedures Instructions "Certificates of Compliance" of these Standard Specifications shall be submitted in lieu of the testing and reporting requirements of the CALTRANS Standard Specifications.

(B) Aggregate

Except as provided for in the Contract Documents, all asphalt concrete used in the construction of asphalt concrete pavements shall be Type "B" meeting the gradation requirements for $\frac{1}{2}$ -inch maximum, medium of [Section 3-D.04, "Aggregate Bases"](#) of these Standard Specifications.

(C) Asphalt Binder

Asphalt binder for asphalt concrete shall be a steam refined asphalt, Grade AR4000, conforming with the requirements of Section 92, "Asphalts" of the CALTRANS Standard Specifications. The percentage of asphalt binder in asphalt concrete pavement shall be between 5-1/2 percent and 6 percent by weight.

3-D.08 Cold-Mix Asphalt Concrete**(A) General**

Cold-mix asphalt concrete used in temporary paving applications shall be a plant mixed product conforming with the requirements of this [Section 3-D.08, "Cold-Mix Asphalt Concrete"](#) of these Standard Specifications. Cold-mix may be supplied directly from the batch plant or stockpiled on the job-site.

(B) Aggregate

Aggregate shall meet the following gradation requirements:

Sieve Size	Percentage Passing
1/ $\frac{1}{2}$ -inch	100
3/8-inch	95-100
No. 4	58-72
No. 8	34-48
No. 3-01	8-32
No 50	13-23
No. 200	2-9

(C) Asphalt Binder

Asphalt binder for cold-mix shall be Type SC-800 in accordance with the requirements of Section 93, "Liquid Asphalts" of the State Specifications. The percentage of asphalt binder shall be between 4.8 and 7.5 percent.

3-D.09 Paint Binder and Prime Coat**(A) General**

Paint binder (tack coat) shall be applied to the vertical surface of all structures to which new asphalt concrete will abut. Additionally, where the Contract Documents provide for the placement of new asphalt concrete over existing pavement surfaces, a tack coat shall be applied to the surface of the old pavement. Where called for in the Contract Documents, the surface of aggregate base shall receive a prime coat of liquid asphalt immediately prior to commencing paving operations.

(B) Paint Binder (Tack Coat)

Paint binder shall be Type RS-1 asphaltic emulsion conforming with the provisions of [Section 3-D.07, "Asphaltic Concrete Pavement"](#) of these Standard Specifications.

3-D.10 Miscellaneous Areas**(A) General**

Miscellaneous areas shall be those areas or structures called for in the Contract Documents to be surfaced or constructed of asphalt concrete. Such areas shall include but not be limited to, drainage ditches, equipment pads, walkways, and asphalt dike.

(B) Materials

The gradation of aggregate for surfacing of miscellaneous areas shall be in accordance with [Section 3-D.07, "Asphalt Concrete Pavement"](#) of these Standard Specifications. The percentage of asphalt binder shall be increased by 1-percent by weight over that percentage for asphalt concrete placed in roadways.

(C) Asphalt Dikes

Asphalt dikes shall be constructed to the line and grade provided for in the Contract Documents. Asphalt dikes whose continuous length exceeds 5-LF shall be constructed by the use of an extrusion machine.

3-D.11 Construction**(A) General**

Upon completion of all pipe construction, including but not limited to trench backfill and aggregate base, the contractor shall construct the final asphalt concrete surface. Such asphalt

concrete surface shall be of the same depth, or greater, as the existing surface material. In no case shall the new asphalt concrete be less than 2-inches in depth.

(B) Structures

All structures located within the limits of paving including but not limited to, valve boxes, manholes, monument boxes, and other adjustable structures shall be brought to the grade of the final paving plane prior to placing the final lift of asphalt concrete. Where the distance between the edge of the new pavement and the existing edge of pavement, existing curb or gutter lip, or asphalt dike is less than 2-LF, the existing pavement shall be removed and replaced to the edge of pavement, existing curb or gutter lip or asphalt dike.

Failure to bring all structures to the final plane of the pavement surface prior to placing the final lift of asphalt concrete may be cause for rejection of the paving and the Contractor shall then be directed to bring the structures to the proper plane and place an additional 1-inch lift of asphalt concrete, after proper preparation, all at no expense to the District.

(C) Preparation

All temporary paving material, loose aggregate base, and other deleterious material shall be removed from the trench line. as directed by the Engineer, a final pass shall be made with compaction equipment to ensure full compaction of the underlying surface. The surface of the aggregate base or sand cement slurry backfill and all abutting surfaces shall be prepared by spraying with a paint binder at a rate of 0.25 gallons per square yard. The Contractor shall prevent over spray onto adjacent pavement surfaces and other surfaces not scheduled to be paved. Paint binder shall not be tracked out of the trench line by vehicles or equipment.

(D) Placement

Hot asphalt concrete shall be placed in the area to be paved and compacted by the use of rollers or vibratory plate type compaction equipment. The use of vibratory plate compaction equipment shall be limited to projects whose area totals less than 100-SF and those areas on other projects where insufficient space is available for the operation of vibratory rollers. All spreading and compacting operations shall be in accordance with the provisions of [Section 3-D.07, "Asphalt Concrete Pavement"](#) of these Standard Specifications except that tolerances will be measured by the use of a straight edge of sufficient length to span the full width of the trench plus 2-feet on each side of the trench line.

If the total depth of asphalt paving exceeds 2-1/2 inches, the asphalt shall be laid in a minimum of 2 lifts with the maximum lift equaling 2-1/2 inches. the minimum thickness of any lift of asphalt shall be equal to twice the maximum size aggregate in the asphalt concrete mix. Each

lift shall be fully compacted and finished prior to placing the next lift except that the grade tolerances shall apply for the final lift only.

All new asphalt concrete surfaces shall be abutted to adjoining surfaces along a neat saw cut line. In no case shall new asphalt be feathered over existing surface material, placed against damaged surfaces, or over or against any material not adequately prepared as defined herein. The final surface of the asphalt concrete shall be no more than 1/8-inches above the adjacent existing surface nor shall the final surface be below the level of the adjacent surface. In areas of paving other than trench repairs, the plane of the surface shall not vary more than 1/8-inches above or below the average plane of the surface when measured with an 8-foot straight edge.

Skin patching shall not be considered an acceptable method of achieving the tolerances herein. Skin patching is hereby defined as a mix of asphaltic concrete whose maximum aggregate size is less than or equal to the No. 4 sieve used to fill depressions in the pavement plane.

The final lift of asphalt concrete shall be placed in one continuous operation as the final order of work for the project. Where trenches do not form an unbroken line throughout the project, asphalt concrete shall be placed in one continuous operation for each continuous trench.

All paving not conforming with the provisions of these Standard specifications, the Contract Documents, or any public agency having jurisdiction over the work shall be immediately removed and replaced in accordance with the provisions of these Standard Specifications, the Contract Documents, and the directions of such agencies having jurisdiction over the work.

3-D.12 Measurement

(A) Trench Repairs

Except as provided for in the Contract Documents, the costs associated with all asphalt concrete and other asphaltic products as part of trench repair or reconstruction shall be considered as included in the contract unit or lump sum prices for other items of work and no additional compensation will be allowed therefor.

(B) Miscellaneous Areas

Except as provided for in the Contract Documents, the costs of all asphalt concrete and other asphaltic products used in the construction of miscellaneous areas shall be considered as included in the contract unit or lump sum prices for the construction of such miscellaneous areas and no additional compensation will be allowed therefor.

(C) Measurement by Area

Where provided for in the Contract Documents, asphalt concrete will be paid for by the square foot. The total area shall be calculated to the minimum neat line dimension of the improvements as provided for in the Contract Documents or as approved by the Engineer. Measurements of square footage of asphalt concrete surfaces shall be measured to the nearest 1 square foot.

(D) Measurement by Weight

Where provided for in the Contract Documents, asphalt concrete will be paid for by the ton. The tonnage to be paid for shall be calculated to the minimum neat line dimensions of the surface being paved, to the depth provided for in the Contract Documents or agreed to by the Engineer and Contractor. The tonnage of asphalt concrete per inch of compacted thickness shall be as provided for in [Table 5-01 Asphalt Spread Rate¹](#) of these Standard Specifications.

TABLE 5-01
Asphalt Concrete Spread Rate¹

Depth (inches)	Square Yards per Ton	Tons per Square Yard
1	17.64	0.057
1½	11.76	0.085
2	8.82	0.113
2½	7.35	0.142
3	5.88	0.170
4	4.41	0.227
5	3.53	0.284
6	2.94	0.340

¹ Assumes a unit weight of 150 lb/ft³ for asphalt concrete

(E) Payment

Where provided to be paid as a separate pay item, the contract unit price per ton or per square foot for asphalt concrete shall include full compensation for all labor, materials, equipment, and tools and for doing all work required in constructing asphalt concrete pavement including but not limited to, saw cutting and removing existing pavement, preparation of the underlying surface, tack coat, prime coat, hauling, traffic control, spreading, and compacting complete in place as provided for in the Contract Documents, as provided for in these Standard

Specifications, and as directed by the Engineer and no additional compensation will be allowed therefor.

3-D.13 Fog Seal

(A) Description

Where provided for in the Contract Documents, the Contractor shall apply a fog seal that covers the repaved trench section and the adjacent street pavement. The Engineer shall determine the limits of the fog seal application. Such fog seal shall be constructed in accordance with the provisions of 37-1, "Seal Coats" of the CALTRANS Standard Specifications. The exact proportion of water to asphaltic emulsion shall be determined by the Contractor up to a maximum of one part water to one part asphaltic emulsion.

(B) Measurement

Where provided for in the Contract Documents, fog seal will be paid for by the square yard. The total area shall be calculated to the minimum neat line dimension of the improvements as provided for in the Contract Documents or as approved by the Engineer. Measurements of square yardage of fog sealed surfaces shall be measured to the nearest 0.1 square yard.

(C) Trench Repairs

Except as provided for in the Contract Documents, the costs associated with fog seal application as part of trench repair or reconstruction shall be considered as included in the contract unit or lump sum prices for other items of work and no additional compensation will be allowed therefor.

(D) Miscellaneous Areas

Except as provided for in the Contract Documents, the costs of fog seal application used in the construction of miscellaneous areas shall be considered as included in the contract unit or lump sum prices for the construction of such miscellaneous areas and no additional compensation will be allowed therefor.

(E) Measurement by Area

Where provided for in the Contract Documents, fog seal application will be paid for by the square yard. The total area shall be calculated to the minimum neat line dimension of the improvements as provided for in the Contract Documents or as approved by the Engineer. Measurements of square yardage of fog seal shall be measured to the nearest 0.1 square yard.

(F) Payment

Where provided to be paid as a separate pay item, the contract unit price per square yard for fog seal shall include full compensation for all labor, materials, equipment, and tools and for doing all work required in applying fog seal including but not limited to, preparation of the underlying surface, hauling, traffic control and applying fog seal complete in place as provided for in the Contract Documents, as provided for in these Standard Specifications, and as directed by the Engineer and no additional compensation will be allowed therefor.

3-D.14 Seal Coat**(A) Description**

Where provided for in the Contract Documents, the Contractor shall construct a seal coat of asphaltic emulsion and screenings that covers the repaved trench section and the adjacent street pavement. The Engineer shall determine the limits of the seal coat application. Such seal coat shall be constructed in accordance with the provisions of Section 37-1, "Seal Coats" of the CALTRANS Standard Specifications for a coarse seal coat. A Certificate of Compliance shall be submitted for all materials used in constructing the coarse seal coat.

(B) Measurement

(1) Trench Repairs - Except as provided for in the Contract Documents, the costs associated with constructing a coarse seal coat as part of trench repair or reconstruction shall be considered as included in the contract unit or lump sum prices for other items of work and no additional compensation will be allowed therefor.

(2) Miscellaneous Areas - Except as provided for in the Contract Documents, the costs associated with constructing a coarse seal coat used in the construction of miscellaneous areas shall be considered as included in the contract unit or lump sum prices for the construction of such miscellaneous areas and no additional compensation will be allowed therefor.

(3) Measurement by Area - Where provided for in the Contract Documents; the construction of a coarse seal coat will be paid for by the square yard. The total area shall be calculated to the minimum neat line dimension of the improvements as provided for in the Contract Documents or as approved by the Engineer. Measurements of square yardage of double seal coat shall be measured to the nearest 0.1 square yard.

(4) Payment - Where provided to be paid as a separate pay item, the contract unit price per square yard for coarse seal coat shall include full compensation for all labor, materials, equipment, and tools and for doing all work required in constructing a coarse seal coat including but not limited to, preparation of the underlying surface, hauling, sweeping, and

traffic control necessary to construct the coarse seal coat complete in place as provided for in the Contract Documents, as provided for in these Standard Specifications, and as directed by the Engineer and no additional compensation will be allowed therefor.

3-D.15 Concrete Structures

(A) Description

Minor concrete structures shall include but not be limited to, all precast concrete structures, cast-in-place concrete for thrust blocks, valve and hydrant pads, walks, curbs, and driveways, and pipe supporting structures.

Major concrete structures shall include but not be limited to retaining walls, sound/screen walls, floor slabs, pump buildings, pump pedestals, and other structures intended to support significant structural loads, vibrations, or where the failure of such structures could result in a significant risk to life, property, or equipment. Such structures shall be designed by a registered Civil or Structural Engineer licensed by the State of California.

The Contractor shall submit copies of mix designs, structural details, structural calculations and testing, Certificates of Compliance and other data and documents in accordance with the provisions of Section 6-D, "Submittals" of these Standard Specifications and the Contract Documents.

(B) Materials

(1) Portland Cement - Except as provided for elsewhere in the Contract Documents, Portland cement used in concrete structures shall be Type IP (MS) Modified or Type II Modified cement conforming with the requirements of ASTM C595, ASTM C150, and Section 90-2, "Materials" of the CALTRANS Standard Specifications.

(2) Aggregate - Except as provided for elsewhere in the Contract Documents, aggregate shall conform with the provisions of Section 90-2, "Materials" of the CALTRANS Standard Specifications.

(3) Reinforcement - Except as provided for elsewhere in the Contract Documents, all reinforcement shall conform with the requirements of Section 52, "Reinforcement" of the CALTRANS Standard Specifications.

(C) Classes of Concrete

All Portland cement concrete shall be one of the following classes, except as provided for elsewhere in these Special Provisions and the Contract Documents:

Class "A": 564 pounds of cement per cubic yard (minimum)

Class "B": 470 pounds of cement per cub yard (minimum)

Generally, all major concrete structures shall be constructed of Class "A" concrete except as provided elsewhere in the Contract Documents. All minor structures exposed to traffic loads including but not limited to, drainage inlets, manholes and bases, curb and gutter, and driveway approaches shall be constructed of Class "A" concrete.

Minor structures not exposed to traffic loads may be constructed of Class "B" concrete. Such minor structures shall include but are not limited to, pipe and valve supports, sidewalks, hydrant pads, sanitary seals, post bases, thrust blocks, and channel linings.

3-D.16 Minor Concrete Structures

(A) Precast Concrete Structures - Precast concrete structures shall include but not be limited to, valve boxes, meter boxes, vaults, drainage inlets, and manholes. Precast structures shall be manufactured by experienced manufacturers having a minimum of 5-years' experience in the manufacture of precast concrete structures of the type called for in the Contract Documents. Precast structures shall be as follows:

Meter BoxesOld Castle Concrete Products Model B-9

Valve BoxesOld Castle Concrete Products Model G5

Valve Vaults.....Old Castle Concrete Products "R" Series

ManholesHanson Concrete Products

Drainage InletsOld Castle Products V64 or U-Series

Lids and covers shall be as follows:

Meter Boxes	Non-Traffic: Old Castle Products Model B9D Traffic: Old Castle Products Model B9C
Valve Boxes	Old Castle Products Model G5C
Manhole Frame and Cover	Phoenix Iron Works Model P-1090
Drainage Inlets	Phoenix Iron Works Model P-63-01 or P-63-02 Old Castle Products RHD Series

All valve vaults larger than 2-feet square shall be equipped with torsion-assisted lids. All lids within the traveled way shall be designed for an AASHTO H20 traffic load. Each such lid shall be equipped with a bolt down system or other approved security system to prevent unauthorized entry.

The citing of specific models herein is solely for the purpose of demonstrating the type, style, function, method of operation, and level of performance desired for precast concrete products by the District. The Contractor shall provide the appropriate model of structure provided for in the Contract Documents with regard to size, depth, traffic loads, opening size, lids and covers, and wall penetrations and other special provisions dictated by the service condition. All drainage inlets shall be supplied with welded and riveted reticulate type grates (Phoenix Iron Works Model P-63-01 or P-63-02, Christy V1-71C Cast Iron, or approved substitute.) All grates shall be designed for an AASHTO H20 traffic load except those in non-traffic areas. The dimensions of the grate shall be as provided for in the Contract Documents.

Insofar as practicable, all precast concrete structures shall be provided with precast openings for the installation of pipe through the wall. Where provided for in the Contract Documents, such wall openings shall be sized to permit sealing the annular space with a mechanical seal (Calpico Pipe Lynx, Thunderline Link-Seal, or approved substitute).

Where provided for in the Contract Documents, drainage inlets and manholes shall be provided with panels cast in the walls for removal to insert the drainage pipe.

3-D.17 Construction and Installation

(A) Description

The Contractor and the supplier shall provide all equipment, tools, materials, and labor, including but not limited to, trucks, transporters, drivers, operators, cranes, slings, hooks, and other facilities and tools as are necessary to transport plastic concrete or precast structures to the site of work and install it as called for in the Contract Documents. Such equipment, tools, materials, and labor shall be sufficient to move the structure to the point of installation and to install such structure safely and efficiently.

(B) Bedding and Backfill

Except for meter boxes or valve boxes, all precast structures shall be bedded on a minimum of 6-inches of clean sand or aggregate base rock compacted to 95-percent relative compaction. The excavation, including that for valve boxes, shall then be backfilled with a sand-cement slurry mix in accordance with [Section 3-D.01, "Bedding, Backfill, and Aggregate Bases"](#) of these Stan

Standard Specifications. In non-traffic areas such as under slabs, sand bedding may be substituted for the sand/cement slurry backfill with the prior approval of the Engineer.

(C) Cast-In-Place Bases

Where precast concrete structures are to be installed over cast-in-place bases, the excavation shall be made and a minimum of 6-inches of clean sand or aggregate base compacted to 95-percent shall be installed prior to pouring concrete. The base shall be cast to the dimensions and of the class of concrete called for in the Contract Documents. The base shall have a keyway cast to conform with the dimensions of the precast structure. The precast structure shall not be installed prior to the base achieving a curing level that will support the structure without deformation or damage. Indentation of the base surface will not be considered deformation. If the base visibly deforms or is otherwise damaged when loaded with the structure, the structure shall be removed and the base repaired or removed, at the Engineer's direction. Prior to placing the structure on the base, the Contractor shall install a self-sealing joint compound such as Ram-Nek to the interface. Each succeeding riser of the structure shall also be placed on such a sealing compound.

(D) Grouting

Where provided for in the Contract Documents, the Contractor shall grout the annular space between the pipe wall and the structure opening. Grout may also be required to provide a smooth finished surface. Such grout shall consist of equal amounts of Portland cement and mason's sand. White glue suitable for use as a concrete adhesive may be substituted for all or part of the water used in mixing the grout. Grout shall be of a stiff enough consistency to conform to the shape of the space or surface being grouted while still being workable. The surface being grouted shall be thoroughly cleaned of all deleterious material and wetted to the point where no water is readily absorbed but with no standing water on the surface. A thin layer of white glue may be applied to the surface immediately prior to commencing the grouting.

Grout shall be laid on smoothly with a steel trowel in thin lifts. Where the weight of the grout pulls the grout away from the structure wall, the grout shall be removed and a thinner lift applied. The final lift of grout shall conform to or provide a smooth transition to the surfaces being grouted. Grout shall extend to the full depth of annular spaces. Grout shall be kept moist for a minimum of 24-hours to facilitate proper curing. Quick curing cements may be used upon prior approval by the Engineer.

(E) Cast-In-Place Minor Concrete Structures

Cast-in-place minor concrete structures shall include but not be limited to drainage inlets, valve vaults, curb or curb and gutter, sidewalk, channel linings, and other minor structures as provided for in the Contract Documents.

(F) Surface Finishes

All minor concrete structures shall receive the following surface finishes:

1. Buried surfacesOrdinary surface finish
2. Exposed vertical surfaces.....Class 1 surface finish
3. Sidewalks.....Fine broom finish
4. Face of curbsFine broom finish
5. Gutter linesSteel trowel finish
6. Channel linings.....Steel trowel or fine broom finish
7. Manhole and inlet shelves.....Medium broom finish
8. Floor SlabsFine broom finish

Finishes required above are hereby defined as follows:

Ordinary surface finish:	That finish resulting from direct contact with form materials without any additional treatment.
Class 1 surface finish:	That finish resulting from direct contact with form materials that has additionally been treated to remove blemishes including but not limited to, form marks, pockets, depressions, honeycombs bulges and other unsightly surface defects. Such additional treatment shall include but not be limited to, grinding, sacking, troweling, packing, and grout patching. The method of treatment shall be at the Contractor's discretion. The Engineer shall be the sole judge of the final condition of the finish.
Fine broom finish:	That finish resulting from lightly brooming the concrete surface with a fine horsehair broom perpendicular to the long axis of the surface. The surface shall first be floated and troweled to a smooth surface and edges and joints finished. When the

concrete

has taken its initial set and no additional paste worked to the surface, the surface shall be broomed. Care shall be taken to prevent filling any joints or breaking the radius of finished edges. All such defects shall be promptly retooled. All broom marks shall be continuous across the entire width of the surface. Deficiencies in the brooming shall be corrected by brooming the entire width of that area in one pass.

Medium broom finish: This finish shall be constructed in the same manner as that for a fine broom finish except that a stiffer broom shall be used. In no case shall the Contractor accomplish this finish by working an excess of paste to the surface to increase the relief of the finish surface.

Steel trowel finish: This finish shall be constructed in the same manner as that for the broom finishes except that the final surface shall be accomplished by use of a steel trowel of sufficient length to create a smooth surface across the full width of the concrete being finished. In no case shall the Contractor accomplish this finish by working an excess of paste to the surface to increase the polish of the finish surface.

3-D.18 Preparation and Forms

In preparing the area of work to receive cast-in-place concrete structures, the Contractor shall excavate the area to sound native material, removing all deleterious material found. The excavation shall be of sufficient depth to accommodate the structure plus the bedding or leveling course.

All existing concrete and asphalt surfaces to which the proposed concrete structure shall be joined or abutted shall be saw cut to a minimum of one-half the depth of the existing material. The existing surface shall be cleaned and wetted prior to placing new concrete. Where called for in the Contract Documents, dowels shall be inserted into existing concrete and grouted in place.

Where the Contract Documents provide for new concrete to bond to existing concrete, unless specified elsewhere in the Contract Documents, the existing concrete shall be prepared in accordance with the provisions for grouting in [3-D.17 "Construction and Installation", \(D\) Grouting](#) of these Standard Specifications. A thin coat of white glue or other approved bonding adhesive shall be applied to the existing surface immediately prior to placing new concrete.

Forms shall be constructed of either sound structural grades of lumber and plywood or steel, as required by the structure to be constructed. The forms shall be securely staked and braced to maintain the lines and grades called for in the Contract Documents when filled with plastic concrete. When major structures are provided for in the Contract Documents, all forms and false work shall be in accordance with such provisions. All forms shall be coated with a form releasing agent before placing concrete. Care shall be taken to prevent release agent from coating any materials embedded in the concrete except as called for in the Contract Documents.

All reinforcing steel shall be securely tied in the configuration called for in the Contract Documents and placed to grade in the forms using epoxy coated chairs or other supports. If appropriate, the steel may be suspended from the top of the forms for such structures as light pole bases.

All anchor bolts, conduit, pipe, and ductwork shall be secured within the forms in the final configuration such that the placement of concrete does not disturb the position of such devices.

All forms and embedment including but not limited to, reinforcing steel, bedding and leveling courses, pipe, anchor bolts, and ductwork shall be inspected and approved by the Engineer prior to placing concrete. Failure to obtain this approval prior to placing concrete may be cause for rejection of the structure by the Engineer and all costs associated with such rejection, including but not limited to, removal and replacement or remedial work shall be borne by the Contractor and no additional compensation will be allowed therefor.

Immediately prior to placing concrete, all surfaces within the forms shall be thoroughly wetted. The bedding or base course shall be saturated up to the point that standing water appears.

3-D.19 Minor Concrete Jointing and Tooling

The Contractor shall construct expansion joints between adjacent concrete structures as called for in the Contract Documents or as required by agencies having jurisdiction over the work.

Expansion joints shall be constructed using $\frac{1}{4}$ -inch preformed, impregnated fiber filler material conforming with the provisions of ASTM D1751. The filler shall extend the full depth of the concrete and in one continuous piece across the full width of the structure.

Contraction joints shall be constructed by driving a steel trowel or similar tool to at least half the depth of the concrete in curbs and sidewalks.

On larger cast-in-place slabs, the contraction joints shall be constructed in accordance with the provisions of Section 40-1.08B, Weakened Plane Joints of the CALTRANS Standard

Specifications. Alternatively, weakened plane joints may be created by the Soff-Cut method wherein the contraction joint is sawn within 4-hours of finishing the concrete.

All joints shall be finished by use of a grooving tool or radius trowel with a $\frac{1}{4}$ -inch radius.

(A) Placement

All concrete shall be placed in a continuous operation to the limits that can be properly finished in the normal workday. As required by the structure being constructed, the Contractor shall use such methods and devices as are necessary to prevent segregation of aggregates within the mix. Such methods and devices shall include but not be limited to, pumping, chutes, and buggies.

Concrete shall be placed from the lowest point in the forms to the highest and struck off flush to the top of the forms preparatory to finishing. As required by the structure being constructed, concrete shall be tamped, rodded, or vibrated within the forms to ensure full face contact with the forms and all embedments with no pockets of aggregate being formed. Care shall be taken to prevent any displacement of the forms and embedments while agitating the plastic concrete. Concrete vibrators shall not be permitted to contact reinforcing steel or other embedments.

Where work will recommence at a later date, the interface shall be defined by a form as provided for herein. Dowels shall be installed where provided for in the Contract Documents. No concrete shall be placed until sufficient trained personnel are available to place and finish the concrete properly. Failure to provide sufficient personnel to accomplish the work shall be cause to delay the placement and the Contractor shall bear all costs associated with such delay.

Concrete shall be delivered with a sufficient water/cement ratio to permit a slump of 2-inches to 4-inches at the design strength specified in the Contract Documents. The addition of water to cool the mix or otherwise influence the curing rate shall be cause for rejection of all such altered concrete.

Concrete shall be freshly mixed and placed prior to the commencement of the curing reaction. Concrete that has experienced in excess of 250 revolutions in a transit mix truck, has not been discharged within 1- $\frac{1}{2}$ hours of batching out, or that has attained a temperature in excess of 90 degrees Fahrenheit shall be rejected. The load ticket accompanying the load shall show the date and time of batching out, initial revolution counter reading, and the project name. Any concrete placed exceeding these conditions shall be removed and disposed of in accordance with Section 3-708, Disposal of Material Outside the Highway Right-of-Way of the CALTRANS Standard Specifications. The Contractor shall bear all costs associated with the rejection of such defective concrete including but not limited to, standby time, disposal of defective

concrete not yet incorporated in the work, removal of such defective concrete from the site of work, and replacement of such defective concrete.

The Contractor shall cure the concrete by use of a curing compound conforming with the provisions of ASTM C309. The selection of the compound shall be the Contractors.

Alternatively, the Contractor may choose to use a wet curing method wherein the surface of the concrete is kept continuously wet for a minimum period of 72-hours. This may be accomplished by the use of sand blankets, burlap sacking, carpeting, and polyethylene sheeting at the Contractor's discretion and subject to the Engineer's prior approval.

The Contractor shall protect the finish of the concrete from all damage during curing including but not limited to vandalism, shrinkage cracks due to improper curing, footprints and wheel tracks, and marks from the wet curing method, if used. All vehicular traffic shall be kept off the fresh concrete for a minimum period of 7-days and vehicles in excess of 3-tons GVW for a period of 28-days. The Contractor shall not commence structural work that will load the concrete for a minimum period of 7-days or until the concrete has attained 2/3 of the 28-day compressive strength, whichever is earliest.

(B) Precast Sound/Screening Wall

Precast sound/screen walls shall consist of cast-in-drilled hole piers, structural steel columns, reinforced concrete pilasters, and precast, reinforced concrete panels. Precast sound/screening walls shall be as manufactured by Sierra Precast, Inc. or approved substitute. Concrete for precast sound/screening walls shall be Class "A" in accordance with [3-B.05 "Thrust Restraint"](#), (C) [Portland Cement Concrete Thrust Blocks](#) of these Standard Specifications. The exterior finish shall be ship lap or as provided for in the Contract Documents. The interior shall be fine broom finished or approved substitute.

3-D.20 Minor Concrete Placement

(A) Description

Cast -in-place floor slabs shall be constructed to the dimensions and of the materials provided for in the Contract Documents. All subsurface construction shall be completed and the work approved by the Engineer prior to commencing the concrete pour. Approval of the Engineer shall only be for the completeness of the work and its general conformance with the intent of the Contract Documents. The Contractor shall retain full responsibility for the condition and performance of such substructures until the completion of the project in accordance with the provisions of the Contract Documents. All concrete shall be Class "A" in accordance with [3-B.05 "Thrust Restraint"](#), (C) [Portland Cement Concrete Thrust Blocks](#) of these Standard Specifications.

(B) Construction

Where a precast sound/screening wall is provided for in the Contract Documents, the precast sound/screening wall shall be erected prior to casting the floor slab. The wall shall be set to provide a 4-inch overlap between the top of the slab and the bottom of the wall.

The excavation shall be carried to a depth to permit the placement of a minimum of 4-inches of 3/4-inch to 1 ½ inch drain rock against the native subgrade which has been excavated to sound competent material. Over the drain rock, a 10-mil polyethylene sheet shall be placed to act as a vapor barrier. The sheeting shall extend to at least the bottom of the sound/screening wall where provided for in the Contract Documents.

A 2-inch leveling course of sand shall then be placed over the sheeting.

Where a precast sound/screening wall is provided for in the Contract Documents, immediately prior to placing the plastic concrete, the Contractor shall place a water seal of Volclay tape against the interface of the precast wall and the floor slab. The floor slab shall be cast to the lines and grades provided for in the Contract Documents. The surface shall be graded to drain as provided for in the Contract Documents. The finish shall be a fine broom finish.

3-D.21 NOT USED

END OF DOCUMENT

SECTION 4 AWARD DOCUMENTS

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4-A NOTICE OF INTENT TO AWARD

DATED: [Date]

TO: [Contractor]

ADDRESS: [Street, City, State, Zip]

CONTRACT WITH: Scotts Valley Water District

PROJECT NAME: Scotts Valley Transit Center LID Retrofit Project – Phase 2

The Contract Sum of your contract is [sum in words] Dollars [(\$xxxx)].

You must comply with the following conditions precedent by 5.00 p.m. of the 10th Day following the date of this Notice of Award.

Deliver to Owner one (1) fully executed counterpart of the Contract (4-B) executed by you.

Deliver to Owner one (1) original of the Performance Bond (4-C), executed by you and your surety.

Deliver to Owner one (1) original of the Payment Bond (4-D), executed by you and your surety.

Deliver to Owner one (1) original of the Maintenance Bond (4-E), executed by you and your surety.

Deliver to Owner one (1) original set of the insurance certificates with endorsements required under the Supplementary Conditions - Insurance.

Deliver to Owner one (1) original of the Guaranty, executed by you.

Failure to comply with these conditions within the time specified will entitle Owner to consider your Bid abandoned, to annul this Notice of Award, and to declare your Bid security forfeited.

After you comply with the conditions in this Notice of Award, Owner will return to you one fully signed counterpart of the Agreement.

Before you may start any work at the site, you must attend a preconstruction conference. The preconstruction conference may be arranged through Scotts Valley Water District staff.

Questions regarding bonds and insurance may be directed to David McNair, General Manager of Scotts Valley Water District. All other inquiries regarding the Project should be directed to

[Name of SVWD Employee] _____ with Scotts Valley Water District.

Upon commencement of the Work, you and each of your Subcontractors shall certify and provide Owner copies of payroll records on forms provided by the Division of Labor Standards Enforcement, in accordance with California Labor Code §1776.

OWNER

Scotts Valley Water District

By:

David McNair, General Manager

END OF DOCUMENT

4-B AGREEMENT

This agreement, dated this [date] day of [Month], [202__], by and between [Name of Contractor] whose place of business is located at [Address of Contractor] ("Contractor"), and the Scotts Valley Water District ("Owner"), acting under and by virtue of the authority vested in Owner by the laws of the State of California.

WHEREAS, Owner, on the [date] day of [Month, Year] awarded to Contractor the following Contract:

SCOTTS VALLEY TRANSIT CENTER LID RETROFIT PROJECT – PHASE 2

at

304 Kings Village Road
Scotts Valley, CA 95060

Now, therefore, in consideration of the mutual covenants hereinafter set forth, Contractor and Owner agree as follows:

SCOPE OF WORK OF THE CONTRACTWork of the Contract

Contractor shall complete all Work specified in the Contract Documents, in accordance with the Specifications, Drawings, and all other terms and conditions of the Contract Documents (Work).

Price for Completion of the Work

Owner shall pay Contractor the following Contract Sum (Contract Sum) for completion of Work in accordance with Contract Documents as set forth in Contractor's Bid, attached hereto.

The Contract Sum includes all allowances (if any). [ATTACHMENT]

COMMENCEMENT AND COMPLETION OF WORK

Contractor shall commence Work on the date established in the Notice to Proceed (Commencement Date).

Owner reserves the right to modify or alter the Commencement Date.

COMPLETION OF WORK

Contractor shall achieve Substantial Completion of the entire Work within one hundred and ten (110) Days from the Commencement Date.

Contractor shall achieve Final Completion of the entire Work one hundred and seventy (170) Days from the Commencement Date.

PROJECT REPRESENTATIVES

Owner's Project Manager

Owner has designated [_____] or other] as its Project Manager to act as Owner's Representative in all matters relating to the Contract Documents.

Project Manager shall have final authority over all matters pertaining to the Contract Documents and shall have sole authority to modify the Contract Documents on behalf of Owner, to accept work, and to make decisions or actions binding on Owner, and shall have sole signature authority on behalf of Owner.

Owner may assign all or part of the Project Manager's rights, responsibilities, and duties to a Construction Manager, or other Owner Representative.

Contractor's Project Manager

Contractor has designated [_____] or other] as its Project Manager to act as Contractor's Representative in all matters relating to the Contract Documents.

Architect/Engineer

Kennedy Jenks furnished the Plans and Specifications and shall have the rights assigned to Architect/Engineer in the Contract Documents.

Architect/Engineer has designated Donald L. Ervin as its project manager, to act as its representative for receiving and making communications authorized under the Contract Documents.

LIQUIDATED DAMAGES FOR DELAY IN COMPLETION OF WORK

As liquidated damages for delay Contractor shall pay Owner seven hundred dollars (\$700.00) for each Day that expires after the time specified herein for Contractor to achieve Substantial Completion of the entire Work, until achieved.

As liquidated damages for delay Contractor shall pay Owner two hundred and forty dollars (\$240.00) for each Day that expires after Substantial Completion is achieved and after the time specified herein for Contractor to achieve Final Completion of

the entire Work, until achieved.

Measures of liquidated damages shall apply cumulatively.

Limitations and stipulations regarding liquidated damages are set forth in Document 2-F.

CONTRACT DOCUMENTS

Contract Documents consist of the following documents, including all changes, Addenda, and Modifications thereto:

SECTION 1 BID DOCUMENTS

- 1-A Notice Inviting Bids
- 1-B Instruction to Bidders
- 1-C Bid Form
- 1-D Bid Bond
- 1-E Subcontractors List
- 1-F Non-Collusion Affidavit
- 1-G Statement of Qualifications
- 1-H Bidder Certifications
- 1-I Iran Contracting Act Certification

SECTION 2 PROJECT SPECIFIC PLANS AND SPECIFICATIONS

- 2-A Description of Work
- 2-B Reports and Information on Existing Conditions
- 2-C CEQA Conditions and Mitigation Measures
- 2-D Project Specific Plans and Specifications
- 2-E Addenda
- 2-F Special Conditions and Liquidated Damages

SECTION 3 DISTRICT STAND SPECIFICATIONS

- 3-A General Technical Requirements
- 3-B Potable Water System
- 3-C Recycled Water System
- 3-D Site Work

SECTION 4 AWARD DOCUMENTS

- 4-A Notice of Intent to Award
- 4-B Agreement
- 4-C Performance Bond
- 4-D Payment Bond
- 4-E Maintenance Bond

4-F Contractor's Insurance Certificates and Endorsements
4-G Warranty and Guaranty
4-H Contractor's W-9 Form
4-I Notice to Proceed

SECTION 5 GENERAL CONDITIONS

5-A General Conditions
5-B Prevailing Wages & Labor Compliance
5-C Insurance and Indemnification

SECTION 6 CONTRACT ADMINISTRATION

6-A Pre-Award Substitution
6-B Information and Procedures Instructions
6-C Modification Procedures
6-D Submittals
6-E Measurement and Payment
6-F Project Meetings
6-G Progress Meeting
6-H Testing and Inspection
6-I Contract Close-Out
6-J Dispute Resolution Procedures

SECTION 7 PROJECT FORMS

7-A Pre-Bid Request for Substitution
7-B Proposal Request
7-C Submittal Transmittal
7-D Change Order Request
7-E Field Order
7-F Change order
7-G Escrow Agreement for Security Deposits In lieu of Retention

There are no Contract Documents other than those listed above. The Contract Documents may only be amended, modified or supplemented as provided in the Contract Documents.

MISCELLANEOUS

It is understood and agreed that in no instance are the persons signing this Agreement for or on behalf of Owner or acting as an employee, agent, or representative of Owner, liable on this Agreement or any of the Contract Documents, or upon any warranty of authority, or otherwise, and it is further understood and agreed that liability of Owner is limited and confined to such liability as authorized or imposed by the Contract Documents or applicable law.

Pursuant to Labor Code Section 1771.1(a), Contractor represents that it and all of its Subcontractors are currently registered and qualified to perform public work pursuant to Labor Code Section 1725.5. Contractor covenants that any additional or substitute Subcontractors will be similarly registered and qualified.

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

Notice of prevailing wage requirements. Notice is hereby given that pursuant to labor code 1771, prevailing wages are required to be paid for any work which is a “public work” as defined in labor code section 1720(a). The work of this contract is a public work.

Copies of the general prevailing rates of per diem wages for each craft, classification, or type of worker needed to execute the Contract, as determined by Director of the State of California Department of Industrial Relations, are deemed included in the Contract Documents and on file at Owner’s Office, and shall be made available to any interested party on request. Pursuant to California Labor Code 1860 and 1861, in accordance with the provisions of Section 3700 of the Labor Code, every contractor will be required to secure the payment of compensation to his employees. Contractor represents that it is aware of the provisions of Section 3700 of the Labor Code which require every employer to be insured against liability for workers’ compensation or to undertake self-insurance in accordance with the provisions of that Code, and Contractor shall comply with such provisions before commencing the performance of the Work of the Contract Documents.

This Agreement and the Contract Documents shall be deemed to have been entered into in the County of Santa Cruz, State of California, and governed in all respects by California law (excluding choice of law rules). The exclusive venue for all disputes or litigation hereunder shall be in the Superior Court for the County of Santa Cruz, State of California.

IN WITNESS WHEREOF the parties have executed this Agreement in quadruplicate the day and year first above written.

CONTRACTOR: [CONTRACTOR'S NAME]

By: _____ (Signature)

(Print Name)

(Title)

By: _____ (Signature)

(Print Name)

(Title)

OWNER: SCOTTS VALLEY WATER DISTRICT

By: _____ (Signature)

(Print Name)

(Title)

END OF DOCUMENT

4-C PERFORMANCE BOND

Whereas, the Scotts Valley Water District ("District") and _____ ["Contractor"]
have entered into a Construction Contract dated _____ [Date]
whereby Contractor has agreed to construct certain improvements for the project known as
Scotts Valley Transit Center LID Retrofit Project – Phase 2 _____ ; and

WHEREAS, Contractor desires to construct, install and complete the Work as described in the Contract; and

WHEREAS, Contractor is required under the terms of the Contract to furnish and maintain a bond for the faithful performance of the Work described in the Contract.

NOW THEREFORE, we, Contractor and _____
a California admitted surety ("Surety"), are held and firmly bound unto the District, and
for the benefit of any and all persons who may suffer damages by breach of the conditions
hereof, in the penal sum of _____ [WRITE OUT DOLLAR AMOUNT] dollars,
\$ _____ (100% of the Contract Amount) lawful money of the United States,
for the payment of which sum well and truly to be made, we bind ourselves, our heirs,
successors, executors and administrators, jointly and severally, firmly by these presents.

The condition of this obligation is such that if the Contractor, his or its heirs, executors, administrators, successors or assigns, shall in all things stand to and abide by, and well and truly keep and perform the terms, covenants, conditions, and provisions of the Contract, which is incorporated herein and any alteration thereof made as therein provided, on his or their part, to be kept and performed at the time and in the manner therein specified, as to installation and completion of said public improvements and in all respects according to their true intent and meaning, and shall indemnify and save harmless District, its officers, agents and employees, as therein stipulated, then this obligation shall become null and void; otherwise, it shall be and remain in full force and effect.

As part of the obligation secured hereby and in addition to the face amount specified therefor, there shall be included costs and reasonable expenses and fees, including reasonable attorneys' fees, incurred by District in successfully enforcing such obligations, all to be taxed as costs and included in any judgment rendered.

The Surety hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the Contract or to the work to be performed thereunder or the

specifications accompanying the same shall in anywise affect its obligations on this bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the Contract or to the work or to the specifications.

IN WITNESS WHEREOF, the Contractor and Surety have duly executed this instrument on the date and year set forth below.

CONTRACTOR

SURETY

Signed: _____

Signed: _____

Name: _____

Name: _____

Title: _____

Title: _____

Note: Surety signature must be notarized

END OF DOCUMENT

4-D PAYMENT BOND

WHEREAS, the Scotts Valley Water District ("District") and _____ ["Contractor"]
have entered into a Construction Contract dated, _____ ["Contract"]
whereby Contractor has agreed to construct certain improvements for the project known as
Scotts Valley Transit Center LID Retrofit Project – Phase 2 _____ ; and

WHEREAS, Contractor desires to construct, install and complete the Work as described in the Contract; and

WHEREAS, under the terms of said Contract, Contractor is required, before entering upon the performance of the work, to file a good and sufficient payment bond with the District to secure the claims to which reference is made in Civil Code Section 9550 et seq.

NOW THEREFORE, we, Contractor and _____
a California admitted surety ("Surety"), are held and firmly bound unto the District, and all
contractors, subcontractors, laborers, material, men and other persons employed in the
performance of the aforesaid Contract and referred to in the aforesaid Civil Code in the sum of
[WRITE OUT DOLLAR AMOUNT] _____ dollars, \$ _____
(100% of the Contract Sum), lawful money of the United States, for materials furnished or labor thereon of
any kind, or for amounts due under the Unemployment Insurance Act with respect to such work or labor, that
said Surety will pay the same in an amount not exceeding the amount hereinabove set forth, and also in case
suit is brought upon this bond, will pay, in addition to the face amount thereof, costs and reasonable
expenses and fees, including reasonable attorneys' fees, incurred by the District in successfully enforcing such
obligation, to be awarded and fixed by the court, and to be taxed as costs and to be included in the judgment
therein rendered.

It is hereby expressly stipulated and agreed that this bond shall inure to the benefit of any and all persons,
companies and corporations entitled to file claims under Civil Code Section 9550 et seq, so as to give a right of
action to them or their assigns in any suit brought upon this bond. Should the condition of this bond be fully
performed, then this obligation shall become null and void, otherwise, it shall be and remain in full force and
effect.

The Surety hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms
of the Contract or to the work to be performed thereunder or the specifications accompanying the same shall
in any manner affect its obligations on this bond, and it does hereby waive notice of any such change,
extension of time, alteration or addition to the terms of the Contract or to the work or to the specifications.

IN WITNESS WHEREOF, the Contractor and Surety have duly executed this instrument on the date and year set forth below.

CONTRACTOR

SURETY

Signed: _____

Signed: _____

Name: _____

Name: _____

Title: _____

Title: _____

Note: Surety signature must be notarized

END OF DOCUMENT

4-E MAINTENANCE BOND

WHEREAS, the Scotts Valley Water District ("District") and _____ ["Contractor"]
have entered into a Construction Contract dated, _____ ["Contract"]
whereby Contractor has agreed to construct certain improvements for the project known as

Scotts Valley Transit Center LID Retrofit Project – Phase 2 _____ ; and

WHEREAS, the Contractor is required under the terms of the Contract to furnish a Maintenance Bond for the correction of any defects due to defective materials or workmanship in the work performed under the Contract.

NOW THEREFORE, we, Contractor and _____
a California admitted surety ("Surety"), are held and firmly bound unto the District, and for the benefit of any and all persons who may suffer damages by breach of the conditions hereof, in the penal sum of _____ [WRITE OUT DOLLAR AMOUNT] _____ dollars, \$ _____
lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, successors, executors and administrators, jointly and severally, firmly by these presents.

The conditions of this obligation are such that if, during the maintenance period of two (2) years from the date of acceptance by the District of the work required to be performed under the Contract, the Contractor, upon receiving written notice of a need for repairs which are directly attributable to defective materials or workmanship, shall diligently take the necessary steps to correct said defects within ten (10) days from the date of said notice, then this obligation shall be null and void; otherwise it shall remain in full force and effect.

If any action shall be brought by the District upon this bond, a reasonable attorneys' fee, to be fixed by the Court, shall be and become a part of the District's judgment in any such action.

IN WITNESS WHEREOF, the Contractor and Surety have duly executed this instrument on the date and year set forth below.

CONTRACTOR

SURETY

Signed: _____

Signed: _____

Name: _____

Name: _____

Title: _____

Title: _____

Note: Surety signature must be notarized

END OF DOCUMENT

4-F CONTRACTOR'S INSURANCE CERTIFICATES AND ENDORSEMENTS

[Contractor to Provide]

Insurance Certificates and Endorsements shall comply with the requirements in

Section 5 Insurance and Indemnification

END OF DOCUMENT

4-G WARRANTY AND GUARANTY

TO: The Scotts Valley Water District ("Owner"), in connection with the construction of the:
Scotts Valley Transit Center LID Retrofit Project – Phase 2

project located at: _____ California ("Project"),
the undersigned Contractor guarantees all construction performed on this Project and also guarantees all
labor, materials, equipment incorporated therein.

Contractor hereby grants to Owner for a period of two (2) years following the date of Final Acceptance of the Work completed, or such longer period specified in the Contract Documents, its unconditional warranty of the quality and adequacy of all of the Work including, without limitation, all labor, materials and equipment provided by Contractor and its Subcontractors of all tiers in connection with the Work.

Neither final payment nor use nor occupancy of the Work performed by the Contractor shall constitute an acceptance of Work not done in accordance with this Guaranty or relieve Contractor of liability in respect to any express warranties or responsibilities for faulty materials or workmanship. Contractor shall remedy any defects in the Work and pay for any damage resulting therefrom, which shall appear within two (2) years, or longer if specified, from the date of Final Acceptance of the Work completed.

If within two (2) years after the date of Final Acceptance of the Work completed, or such longer period of time as may be prescribed by laws or regulations, or by the terms of Contract Documents, any Work is found to be Defective, Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions, correct such Defective Work. Contractor shall remove any Defective Work rejected by Owner and replace it with Work that is not Defective, and satisfactorily correct or remove and replace any damage to other Work or the work of others resulting therefrom. If Contractor fails to promptly comply with the terms of such instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the Defective Work corrected or the rejected Work removed and replaced. Contractor shall pay for all claims, costs, losses, and damages caused by or resulting from such removal and replacement. Where Contractor fails to correct Defective Work, or defects are discovered outside the correction period, Owner shall have all rights and remedies granted by law.

Inspection of the Work shall not relieve Contractor of any of its obligations under the Contract Documents. Even though equipment, materials, or Work required to be provided under the

Contract Documents have been inspected, accepted, and estimated for payment, Contractor shall, at its own expense, replace or repair any such equipment, material, or Work found to be Defective or otherwise not to comply with the requirements of the Contract Documents up to the end of the guaranty period.

The foregoing Guaranty is in addition to any other warranties of Contractor contained in the Contract Documents, and not in lieu of, any and all other liability imposed on Contractor under the Contract Documents and at law with respect to Contractor's duties, obligations, and performance under the Contract Documents. In the event of any conflict or inconsistency between the terms of this Guaranty and any warranty or obligation of the Contractor under the Contract Documents or at law, such inconsistency or conflict shall be resolved in favor of the higher level of obligation of the Contractor.

Dated: _____

Contractor: _____

Signature: _____

Print Name: _____

Title: _____

Street Address: _____

END OF DOCUMENT

4-H CONTRACTOR'S W-9 FORM

[Contractor's W-9 form is attached]

END OF DOCUMENT

4-I NOTICE TO PROCEED

Date: _____, 202_____
To: _____ (Contractor)
Address: _____

CONTRACT FOR: SCOTTS VALLEY WATER DISTRICT

You are notified that the Contract Time under the above Contract will commence to run on _____, 202_____. On that date, you are to start performing your obligations with respect to Work at the project site described in the Contract Documents. In accordance with the Agreement, the dates of Substantial Completion and Final Completion for the entire Work are _____, 202_____, and _____, 202_____, respectfully.

Before you may start any Work at the Site, you must:

1. Submit certified Safety Program
2. Submit copies of applicable permits
3. Submit encroachment permit, where applicable
4. Submit Business Permit issued by the City of Scotts Valley

OWNER

By: _____

Its: _____

END OF DOCUMENT

SECTION 5 GENERAL CONDITIONS

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5-A GENERAL CONDITIONS**NOTICE TO PROCEED**

The Contractor shall not commence Work on the Project until the Owner issues a Notice to Proceed with the Work. The Contractor shall complete the Work within the time set forth in the Construction Contract, time being of the essence, subject to the delay provisions set forth in this Contract.

CONTRACT ADMINISTRATION

The Owner Representative will provide administration of the Contract as hereinafter described. Hereinafter, the term Owner Representative is the General Manager of the Owner and any and all representatives working under the direction of the Owner Representative.

The Owner Representative has the authority to act on behalf of the Owner on change orders, field orders, progress payments, Contract decisions, the acceptability of the Contractor's work, or early possession.

The Owner Representative has the authority to accept or reject requests for progress payments which have been submitted by the Contractor and recommended by the Owner Representative.

The Owner Representative has the authority to make the final determination of the acceptability of the Work. The Owner's Representative also has the authority to accept or reject recommendations regarding correction of defective work.

The Owner Representative will observe the progress, quality, and quantity of the Work to determine, in general, if the Work is proceeding in accordance with the provisions of the Contract Documents. The Owner Representative shall not be responsible for construction means, methods, appliances techniques, sequences, or procedures, or for safety precautions and programs in connection with the work.

In accordance with the provisions detailed elsewhere in these General Conditions, the Owner's Representative will make decisions relative to all matters of interpretation or execution of the Contract Documents.

ORDER OF PRECEDENCE

In case of conflict between different parts of the Contract Documents, the order of precedence shall be as follows:

1. Contract Change Orders and Supplemental Agreements (the one dated most recently having precedence over another dated earlier);

2. Agreement;
3. Addenda;
4. All permits from outside agencies required by law;
5. General Requirements (Division 1);
6. Special Conditions;
7. General Conditions;
8. Project-Specific Specifications (Technical Specifications – Divisions 2 through 17);
9. District Standard Specifications;
10. Project-Specific Plans;
 - a. Stated dimensions take precedence over scaled dimensions;
 - b. Larger-scale drawings take precedence over smaller-scale drawings;
 - c. Detailed drawings take precedence over general or typical drawings;
 - d. Specific notes on the drawings take precedence over schedules; and
 - e. Notes, descriptions or schedules take precedence over graphic representations on drawings.
11. District Standard Details;
12. Reference/Standard Specifications;
13. Reference/Standard Plans;
14. Geotechnical Report;
15. Appendices.

DEFINITION OF TERMS

Whenever in the Contract Documents the following terms are used, the intent and meaning shall be interpreted as follows, unless the context otherwise requires.

Acceptable

“Acceptable” means acceptable to or favorably reviewed by the Engineer.

Addenda

Written or graphic instruments issued prior to the opening of Bids which clarify, correct or change the Bid Documents or the Contract Documents.

Approved

Acceptable to or favorably reviewed by the Engineer.

Agency

“Agency” or “Agencies” shall mean those public entities including but not limited to cities, counties, special districts, state agencies, and federal agencies having jurisdiction over the Work in its entirety or any element thereof, but excluding the Scotts Valley Water District.

Construction Limits

"Construction Limits" shall be that area wherein construction activities actually take place. Such limits may be the same as Project Limits.

Construction Observer

"Construction Observer" shall mean the person(s), firm(s), or agency(ies) employed by the District to perform inspection during construction of the work, under the direction of Engineer. It shall also mean any representative of the District who will perform inspections of the work for code compliance and quality assurance reporting in addition to those inspections performed by Engineer. This inspector may be the Engineer or may be another representative of the District. Inspector and Engineer are not the same - Inspector will have only that authority as specifically stated herein.

Contract

"Contract" refers to a single identified portion of the construction which may be the whole or a part of the Project. The Project is the total construction and consists of one or more Contracts performed by the same or separate contractors or by the District. A single set of drawings, specifications and contract conditions may include more than one Contract; when combined with the Agreement for an individual Contract they become the Contract Documents for that Contract. The construction performed under a set of Contract Documents is the Work required by an individual Contract.

Contract Documents

"Contract Documents" shall be those documents referenced in the Agreement.

Contract Drawings

"Contract Drawings" or "Drawings" means and includes (a) all drawings which have been prepared on behalf of the District and which are included in the Contract Documents and all modifying drawings issued by addenda thereto; (b) all drawings submitted pursuant to the terms of the Contract by the Contractor with his bid and by the Contractor to the District during the progress of work when accepted in writing by the Engineer; and (c) all drawings submitted by the Engineer to the Contractor during the progress of the work (when approved in writing by the Engineer).

Contract Price

"Contract Price" refers to the Contract Sum.

Contract Sum

"Contract Sum" refers to the total monies payable to the Contractor for completion of the Work in accordance with the Contract Documents.

Contractor

"Contractor" refers to the person or persons, co-partnership or corporation, who have entered into a contract with the District for the performance of the work contemplated in the Contract.

Contractor's Plant and Equipment

"Contractor's Plant and Equipment" means everything, except labor, brought onto the site by the Contractor in order to carry out the work, but not to be incorporated in the work.

Day

"Day" means a calendar day of 24 hours, except when preceded by the term "work" as defined below.

Defective Work

"Defective Work" whenever used shall be understood to mean workmanship, materials, equipment or tools furnished by the Contractor which, in the opinion of the Engineer, do not conform to the drawings and specifications or are otherwise unsatisfactory.

Design Consultant

"Design Consultant" refers to the Design Engineer.

Design Engineer

"Design Engineer" refers to the firm that prepared the Contract Documents and includes all of their officers, directors, shareholders, employees and consultants.

District

"District" whenever and wherever found shall mean the Scotts Valley Water District.

Drawings

"Drawings" refers to the graphic and pictorial portion of the Contract Documents, showing the design, location, dimensions, details, scope and character of the Work. Drawings may include plans, elevations, sections, schedules, details and diagrams.

Engineer

"Engineer" refers to the person or entity designated by the District to provide administration of the Contract.

Inspector

"Inspector" means the person(s), firm(s), or agency(ies) employed by the District to perform inspection during construction of the work, under the direction of Engineer. It shall also mean any representative of the District who will perform inspections of the work for code compliance and quality assurance reporting in addition to those inspections performed by Engineer. This

inspector may be the Engineer or may be another representative of the District. If Inspector and Engineer are not the same, Inspector will have only that authority as specifically stated herein.

Line and Grade

Line and grade shall mean that information shown on the Project Plans that controls the final horizontal and/or vertical alignment of the works to be constructed. Unless otherwise provided for in the Contract Documents, that information not dimensioned, annotated, or detailed on the Plans for the purposes of controlling the work shall not be considered as line and grade without the express written permission of the Engineer for the purposes of the Contract Documents.

May

"May", whenever used, is permissive.

Notice to Proceed

"Notice to Proceed" refers to a written notice by the District to the Contractor authorizing it to proceed with the Work and establishing the date of commencement from which the Contract Time is measured.

Owner

"Owner" shall mean the Scotts Valley Water District.

Perform

"Perform" means to perform all operations required to complete the work referred to in accordance with the intent of the Contract Documents.

Person

"Person" includes firms, companies and corporations, as well as individuals.

Plans

"Plans", "Plan", "Drawing" and similar terms shall have the same meaning as the term "Drawings."

Project

"Project" means the entire public improvement proposed by the District to be constructed in whole or in part, pursuant to the Contract Documents.

Project Engineer

"Project Engineer" shall mean that person designated by the District to function as adviser and consultant to the District on engineering matters relating to the Contract. Said Project Engineer shall be the Engineer of Record for the project.

Project Limits

"Project Limits" shall mean the limits within which the total work related to the Project is conducted. Project Limits may coincide with the Construction Limits. However, there may multiple areas of work with distinct Construction Limits within the Project Limits.

Project Superintendent

"Project Superintendent" shall mean that person designated by the Contractor to function as his representative in the field with full authority to direct the work and act for the Contractor.

Provide

"Provide" means to furnish and install the work referred to including proper anchorage, connection to required utilities or other work, testing, adjustment and startup ready to put in service and perform the intended function.

Registered <Civil, Structural, Safety, Electrical, Mechanical, Traffic> Engineer or Land Surveyor

"Registered Engineer" shall mean a person licensed by the State of California Department of Consumer Affairs, State Board of Registration for Professional Engineers and Land Surveyors to practice engineering and/or land surveying within the engineering discipline for which they are licensed.

Required

"Required" means as required by the Contract Documents or required to complete the Work and produce the intended results.

Satisfactory

"Satisfactory" means acceptable to or favorably reviewed by the Engineer

Shall or Will

"Shall" or "Will", whenever used, is mandatory.

Shown

"Shown" means "as indicated on the Drawings."

Site

"Site" means the geographical location of the Project and land within the work area shown on the Plans and within which the Work will be installed or built.

Soils (Geotechnical) Engineer

"Soils Engineer" or "Geotechnical Engineer" means the person designated by the District to function as adviser and consultant to the District on soils and/or geotechnical engineering matters relating to the design of the Project.

Specified

"Specified" means as written in the Contract Documents including the Specifications and the Drawings.

Standard Specifications

References to "Standard Specifications" shall a reference to the Standard Specifications of the District which form a part of the Contract Documents except as otherwise defined in the General Requirements or Technical Specifications.

Subcontractor

"Subcontractor" means a person, firm, partnership or corporation having a direct contract with Contractor and not with District, for the performing of work or labor or the rendering of service to Contractor for the work.

Submit

"Submit" means "submit to the Engineer."

Sub-Subcontractor

"Sub-subcontractor" means a person, firm, partnership or corporation having a direct contract with a Subcontractor and not with District, for the performing of work or labor or the rendering of service to Subcontractor for the work.

Surety

"Surety" means any persons, firm, partnership or corporation that executes as Surety on Contractor's Performance Bond, Payment Bond, Maintenance Bond, or Bid Bond.

Traveled Way

"Traveled Way" shall mean that portion of any roadway or driveway, public or private, readily accessible to vehicular traffic including bicycles. The traveled way shall include but not be limited to, paved surfaces between curbs, shoulders, unpaved access roads and an area 10 feet in width adjacent to roadways or driveways not otherwise closed or obstructed to vehicular traffic.

Work

"Work" means the entire construction required by the Contract Documents completed or in progress and includes all labor, materials, equipment and services necessary to fulfill the Contractor's obligations. The Work does not include the Contractor's tools, equipment, scaffolding, shoring, barricades, guardrails or any other temporary construction or safety devices employed by the Contractor to complete the Work.

Work Area

"Work Area" means "right-of-way", "roadway", "roadbed", and as applied to non-highway work, it may refer to easements or job sites.

Work Day

A "Work Day" is any day except Saturdays, Sundays, or District legal holidays, on which the normal working forces of the Contractor may proceed with regular work on the controlling operation or operations on the accepted work schedule for at least six hours toward completion of the Contract, unless work is suspended for causes beyond the Contractor's control.

CONSTRUCTION SCHEDULE

The Owner Representative has the authority to review and recommend acceptance of the progress schedule submitted by the Contractor at the start of the Work and subsequent significant revisions for conformance to the specified sequence of work and logic.

The Owner Representative, with the assistance of the Design Consultant, will conduct inspections to determine the dates of substantial completion of the Work and final completion of the Work, and will receive and forward to the Owner, for the Owner's review, written warranties, and related documents required by the Contract and assembled by the Contractor.

OWNER'S RIGHT TO USE OR OCCUPY

The Owner reserves the right, prior to Substantial Completion, to occupy, or use, any completed part or parts of the Work, providing these areas have been approved for occupancy by the Owner. Subject to applicable laws, the exercise of this right shall in no way constitute an acceptance of such parts, or any part of the Work, nor shall it in anyway affect the dates and times when progress payments shall become due from the Owner to the Contractor or in any way prejudice the Owner's rights in the Contract, or any bonds guaranteeing the same. The Contract shall be deemed completed only when all the Work contracted has been duly and properly performed and accepted by the Owner.

Prior to such occupancy or use, the Owner and Contractor shall agree in writing regarding the responsibilities assigned to each of them for payments, security, maintenance, heat, utilities, damage to the Work, insurance, the period for correction of the Work, and the commencement of warranties required by the Contract Documents.

In exercising the right to occupy or use completed parts of the Work prior to the Substantial Completion thereof, the Owner shall not make any use which will materially increase the cost to the Contractor, without increasing the Contract Amount, nor materially delay the completion of the Contract, without extending the time for completion.

OWNER'S RIGHT TO CARRY OUT THE WORK

If the Contractor should neglect to prosecute the work properly or fail to perform any provision of the Contract, and fails within five (5) days after receipt of written notice from the Owner to commence and continue correction of such neglect or deficiency with diligence and promptness, the Owner may, and without prejudice to any other remedy, make good such default, neglect or failure.

The Owner also reserves the right to perform any portion of the work due to an emergency threatening the safety of the Work, public, Owner, and any property or equipment.

In either case, a Change Order shall be issued unilaterally deducting from the payments then or thereafter due the Contractor the cost of correcting such deficiencies and/or for performing such work, including compensation for the Design Consultant's, the Owner Representative's, and Owner's additional services made necessary by such default, neglect, failure or emergency.

OWNER'S RIGHT TO PERFORM WORK AND TO AWARD SEPARATE CONTRACTS

The Owner reserves the right to perform work related to the Project with the Owner's own forces and to award separate contracts in connection with the Project or other work on the Project site. If the Contractor claims that delay, damage, or additional cost is involved because of such action by the Owner, the Contractor shall make such claim as provided elsewhere in the Contract Documents.

When separate contracts are awarded for different portions of the Project or other work on the Project site, the term "Contractor" in the Contract Documents in each case shall mean the contractor who executes each separate Contract.

RESPONSIBILITY OF THE OWNER

The Owner shall not be held responsible for the care or protection of any material or parts of the work under this Contract prior to final acceptance.

STATUS OF CONTRACTOR AND SUBCONTRACTORS

It is stipulated and agreed that the Contractor shall be an independent contractor in the performance of this Contract and shall have complete charge of persons engaged in the performance of the Work. The Contractor shall perform the Work in accordance with its own means, methods, and appliances subject to compliance with the requirements of the Contract.

Subcontractors will not have or be recognized as having a direct relationship with the Owner. The persons engaged in the work, including employees of subcontractors and suppliers, will be

considered employees of the Contractor and their work shall be subject to the provisions of the Contract. References in the Contract Documents to actions required of subcontractors, manufacturers, suppliers, or any person other than the Contractor, the Owner or the Owner Representative shall be interpreted as requiring that the Contractor shall require such subcontractor, manufacturer, supplier or person to perform the specified action.

The Contractor shall not employ any subcontractors that are not properly licensed in accordance with State law. Prior to commencement of any work by a subcontractor, the Contractor shall submit verification to the Owner Representative that the subcontractor is properly licensed for the work it will perform.

Contractor shall be fully responsible to Owner for the performance, acts, and omissions of its subcontractors, and of persons directly or indirectly employed by them. Each subcontract shall expressly incorporate by reference the terms of this Contract, including the following provisions:

Each subcontractor shall carry insurance as required by the Contract Documents, and provide evidence of such insurance, as provided herein.

Each subcontractor shall be obligated to defend, indemnify, and hold the Owner harmless from all claims arising from the subcontractor's portion of the Work in the same manner as Contractor.

Each subcontract shall acknowledge the Owner's right to suspend or terminate the Contract and waive any right to anticipate profits in the event of such termination.

USE AND PROTECTION OF OWNER'S SITE AND ADJACENT PROPERTY

Subject to the approval of the Owner, the Contractor may use portions of the Owner's site for storage of construction equipment, materials and field offices. The Owner will not accept any responsibility for damage to or loss of the Contractor's equipment or materials stored on any Project related site caused by vandalism, nature, or otherwise, suffered by the Contractor. Protection of all construction equipment, stores, and supplies shall be the sole responsibility of the Contractor. Where additional workspace is desired by the Contractor or where the Owner cannot provide the space to the Contractor, it shall be the Contractor's sole responsibility and expense to obtain such a space for its use.

All workers or representatives of the Contractor, subcontractors or suppliers are admitted to the Site only for the proper execution of the Work in accordance with the Contract Documents. Furthermore, no persons may occupy property owned by the Owner outside the limit of the Work without the express written permission of the Owner Representative.

The Contractor shall enforce any instructions from the Owner Representative regarding combustible materials, placement of signs, danger signals, barricades, radios, noise, dust, and smoking. Upon completion of the Work, the Contractor shall remove all temporary barricades, signs and related materials.

The Contractor shall determine safe loading capacities and shall not overload any structure, building, pipe or other existing facility beyond its safe capacity during construction. In addition to any requirements imposed by law, the Contractor shall shore up, brace, underpin and protect as may be necessary all foundations and other parts of all existing structures, facilities and improvements on the Site or adjacent to the Site which are in any way affected by the Contractor's excavations or other operations connected with the Work. Prior to commencing any work which in any way affects adjoining or adjacent land or buildings thereon, or public utilities, the Contractor shall notify the Owner Representative to discuss responsibilities for properly notifying the owners/occupants of adjacent land and the protective measures taken by the Contractor. Upon request of the Owner Representative, the Contractor shall meet with the recipient of any notice or attend local public meetings as proper public outreach on local impacts caused by the completion of the Work.

The Contractor shall take all necessary precautions to protect existing facilities against the effects of all weather and environmental elements and Contractor shall be strictly liable for failure to protect any facility.

All existing improvements and facilities shall be protected from any damage resulting from the operations, equipment or workers of the Contractor.

The Contractor shall take all steps necessary to protect all structures, buildings, land and other facilities from fires and sparks originating from the Work. The Contractor shall comply with all laws and regulations regarding fire protection and shall comply with all instructions given by the fire department with jurisdiction.

Any damage to existing conditions, or to any other improvement or property above or below the ground surface, whether public or private, arising from the Contractor's operations or performance of the Work shall be repaired within forty-eight (48) hours by the Contractor without expense to the Owner, unless disruption of the Owner's operations or creation of a safety hazard has occurred, in which case damage will be repaired immediately. The forty-eight (48) hour non-emergency repair response time may be extended only if agreed to in writing by the Owner and/or private property owner. Any delays to the project completion times caused by such repairs shall be considered non-compensable and no further extension of the Contract Time will be granted therefor. Should the Contractor fail to timely repair damage caused by its operations or performance in accordance with this section, the Owner may take steps to

protect property and life, in its sole discretion, and deduct the entire cost of such work from amounts due or that may become due to the Contractor. No prior notice to the Contractor shall be necessary for the Owner to take such action.

COMPLIANCE WITH LAWS

Public Works Contract

The Owner is a public agency and is subject to the provisions of law relating to public contracts. It is agreed that all provisions of law applicable to public contracts are a part of these Contract Documents to the same extent as though set forth herein.

Compliance with Laws

The Contractor, shall at its own cost and expense, observe and keep itself and its subcontractors fully informed of all existing and future legislated State and Federal Laws and City and County ordinances and regulations which in any manner affect those engaged or employed in the Work, or the materials and equipment used in the Work, or which in any way affect the conduct of the Work, and all such orders and decrees of bodies or tribunals having any jurisdiction or authority over the same. If any discrepancy or inconsistency is discovered in the Drawings, Specifications, or in any other part of this Contract, in relation to any such law, ordinance, regulation, order or decree, the Contractor shall immediately report the same to the Owner Representative in writing. The Contractor shall at all times observe and comply with all such existing and future laws, ordinances, regulations, orders and decrees; and shall protect, indemnify, defend and hold harmless the Owner, the Owner Representative, the Design Consultant, and all of their officers, officials, employees, agents, volunteers, and servants against any claim or liability arising from or based upon the violation of any such law, ordinance, regulation, order, or decree, whether by the Contractor itself, its employees, subcontractors, suppliers or others acting on the Contractor's behalf.

Prevailing Wages, Labor Compliance, Apprenticeship

All Contractors and Subcontractors providing workers or performing work on the Project shall comply with California Labor Code Sections 1771.1, 1771.7 and all other applicable labor requirements in Section 5-B Prevailing Wages and Labor Compliance.

Workers' Compensation Insurance

The Contractor and all subcontractors are required to comply with the requirements of California Labor Code Section 3700 concerning Workers Compensation Insurance in accordance with the Workers' Compensation Insurance and Safety Act and all other applicable requirements in Section 5-C Workers' Compensation Insurance.

SAFETY

The Contractor shall be solely and completely responsible for conditions of the job site, including the safety of all persons and property during the performance of the Work. This requirement shall apply continuously and not be limited to normal working hours. Safety provisions shall conform to U.S. Department of Labor (OSHA), the California Occupational Safety and Health Act (CalOSHA), and all other applicable Federal, State, County, and local laws, ordinances, codes, including but not limited to the requirements set forth below, and any regulations that may be detailed in other parts of these Contract Documents. In the event of conflicting requirements, the most stringent requirement as it pertains to the Contractor's safety responsibility shall be followed by the Contractor. The Contractor shall indemnify, defend and hold Owner and Owner Representative, Design Consultant and their respective officers, officials, employees, agents, and volunteers or other authorized representatives harmless to the full extent permitted by law concerning liability related to the Contractor's safety obligations.

The Contractor shall maintain a Drug-Free workplace policy within the Project site for the safety of its employees, the Owner's, Owner Representative's, and Design Consultant's employees and the public. The Drug-Free workplace policy shall be posted on the Construction site. The Contractor shall notify the Owner Representative of any criminal drug statute violation occurring on the site not later than five (5) days after the Contractor becomes aware of such violation.

The Contractor's compliance with requirements for safety and/or the Owner Representative's review of the Contractor's Safety Program shall not relieve or decrease the liability of the Contractor for safety. The Owner Representative's review of the Contractor's Safety Program is only to determine if the above-listed elements are included in the program.

SAFETY STANDARDS

Asbestos-Related Work - All work involving asbestos-containing material must be performed in accordance with California Labor Code, Sections 6501.5 through 6510, inclusive, and California Administrative Code, Title 8, Section 5208 and all other pertinent laws, rules, regulations, codes, ordinances, decrees and orders.

PUBLIC SAFETY AND CONVENIENCE

In accordance with the provisions of Section 6500 of the Labor Code, the Contractor shall conduct his work so as to ensure the least possible obstruction to traffic and inconvenience to the general public and the residents in the vicinity of the Work and to ensure the protection of persons and property. No road or street shall be closed to the public except with the

permission of the Owner's Representative and the proper governmental authority. Fire hydrants on or adjacent to the Work shall be accessible to firefighting equipment. Temporary provisions shall be made by the Contractor to ensure the use of sidewalks, private and public driveways and proper functioning of gutters, sewer inlets, drainage ditches and culverts, irrigation ditches and natural watercourses. To the maximum extent permitted by law, Contractor shall indemnify, hold harmless and defend Owner from any and all liability, including attorneys' fees and costs of litigation, arising from any failure to comply with this section by Contractor or its privities.

COMPLIANCE WITH ENVIRONMENTAL LAWS

During construction, the Contractor shall comply with all pertinent requirements of Federal, State, and local environmental laws and regulations, including, but not limited to, the Federal Clean Air Act, State and local air pollution and noise ordinances, and construction site erosion control regulations, if applicable.

PROVISIONS FOR HANDLING EMERGENCIES

It is possible that emergencies may arise during the progress of the Work, which may require special treatment or make advisable extra shifts of labor forces to continue the Work for twenty-four (24) hours per day. These emergencies may be caused by damage or possible damage to nearby existing structures or property by reason of the work under construction, or by storm, accidents, or leakage. The Contractor shall be prepared in case of such emergencies to make all necessary repairs and shall promptly execute such work when required by the Owner Representative. The determinations made by the Owner Representative for handling emergencies shall be final and conclusive upon the parties. Upon start of the Work, Contractor shall provide means for immediate emergency notification of Contractor's designated representative and designated emergency alternates.

COOPERATION WITH OTHER CONTRACTORS

This Section shall serve as notice to the Contractor that the Owner may let other contracts for other work at or near the site of this work. The Contractor shall afford other contractors reasonable opportunity for the delivery and storage of their materials and the execution of their work, and shall properly connect and coordinate its work with theirs. Should construction be underway by other forces or by other contractors within or adjacent to the limits of the work or in the vicinity of the work to be done under this Contract, the Contractor shall so conduct its operations as to interfere to the least possible extent with the work of such other forces or contractors. Any difference or conflicts which may arise between the Contractor and any other

forces or contractors, creating delays or hindrance to each other, shall be adjusted as determined by the Owner's Representative.

CONTROL OF WORK AND MATERIAL

The means, methods, and appliances adopted by the Contractor shall be planned and executed to produce the highest-grade quality of work and will enable the Contractor to complete the Work in the time agreed upon. The Owner and the Owner Representative shall not supervise, direct, or have control over, or be responsible for, Contractor's means, methods and appliances of construction or for the safety precautions and programs incident thereto, or for any failure of Contractor to comply with laws and regulations applicable to the furnishing or performance of Work. However, if at any time the means, methods and appliances appear inadequate or of inferior quality, the Owner Representative may order the Contractor to improve their character or efficiency, and the Contractor shall conform to such order; failure of the Owner Representative to order such improvement of methods of efficiency will not relieve the Contractor from its obligation to perform satisfactory work and to finish the Work in the time agreed upon.

CHARACTER OF WORKERS

None but competent superintendents, forepersons and workers shall be employed on the Work. The Contractor shall remove from the Work any person who commits trespass, possesses firearms or other weaponry, is under the influence or is in the possession of alcohol or other illegal drugs/controlled substance, or is, in the opinion of the Contractor or Owner Representative, disorderly, dangerous, insubordinate, incompetent, or otherwise objectionable. Such discharge shall not be the basis of any claim for compensation or damages against the Owner, its officers, officials, employees, agents, and volunteers, the Design Consultant, the Owner Representative, and their partners, officers, employees, agents or any of its officers or representatives.

SUPPLY OF SUFFICIENT WORKERS

The Contractor shall at all time employ qualified workers sufficient to prosecute the Work at a rate and in a sequence and manner necessary to complete the Work within the Contract Time(s). This obligation shall remain in full force and effect notwithstanding disputes or claims of any type.

MATERIALS AND WORKMANSHIP

Unless otherwise indicated in these Specifications, or favorably reviewed by the Design Consultant, materials and equipment for the construction work shall be the best grade in

quality of a manufacturer regularly engaged in the production of such materials and equipment or materials and equipment of comparable character. All materials must be of the specified quality and equal to approved samples, if samples have been submitted. All work shall be done and completed in the best workmanlike manner, obtainable in the local market. All permanent materials and equipment shall be new unless otherwise specified.

All defective work or materials shall be promptly removed from the premises by the Contractor, whether in place or not, and shall be replaced or renewed in such manner as the Owner Representative may direct. All materials and workmanship of whatever description shall be subjected to the inspection of and rejection by, the Owner Representative if not in conformance with the Contract Documents. The decision of the Owner Representative is final and conclusive upon the parties.

Any defective material or workmanship, or any unsatisfactory or imperfect work which may be discovered before the final acceptance of the work or within two (2) years thereafter, shall be corrected immediately upon the receipt of notice from the Owner Representative, without extra charge, notwithstanding that it may have been overlooked in previous inspections and estimates. Failure to inspect work shall not relieve the Contractor from any obligation to perform sound and reliable work as herein described.

UTILITY LOCATION

It shall be the Contractor's responsibility to determine the exact location and depth of all utilities, including service connections. The Contractor shall not be entitled to additional compensation or time extensions for work necessary to avoid interferences nor for repair to damaged utilities if the Contractor does not expose all such existing utilities as required by this section. Temporary or permanent relocation or alteration of utilities desired by the Contractor for its own convenience shall be the Contractor's responsibility and it shall make arrangements and bear all costs for such work.

PROGRESS OF THE WORK

Time is of the essence in the performance of this Contract. The Contractor shall prosecute the work so that the various portions of the project shall be complete and ready for use within the time specified in the Contract Documents. It is expressly understood and agreed by and between the Contractor and the Owner that the Contract Time for completion of the work described herein is a reasonable time taking into consideration the general climatic and economic conditions and other factors prevailing in the locality and the nature of the work. The Contractor is hereby advised that the Contractor's bid is to be based on the entire Contract

Time and the Contractor shall include its field and home office overhead costs in the bid for the entire Contract Time.

NOTICE OF DELAYS

When the Contractor foresees a delay in the prosecution of the Work and, in any event, immediately upon the occurrence of a delay, the Contractor shall notify the Owner Representative in writing of the probability of the occurrence of the delay, and its cause. The Contractor shall provide this notice no later than two (2) calendar days after the occurrence of such delay, including weather delays as specified herein. The Contractor shall take immediate steps to prevent, if possible the occurrence or continuance of the delay. The Contractor agrees that no claim shall be made for delays which the Owner Representative is not notified of within the time specified herein. Contractor further agrees that Contractor shall not be permitted any additional time for completion of the Work or any additional compensation as a result of delay unless Contractor notifies the Owner Representative of the delay within the time specified herein.

Non-Excusable Delays

Non-excusable delays in the prosecution of the Work shall include delays which could have been avoided by the exercise of care, prudence, foresight, and diligence on the part of the Contractor or its subcontractors, at any tier level, or suppliers. The Contractor shall receive no compensation or time extension for such delay.

Excusable Delays

Excusable delays in the prosecution or completion of the Work shall include delays which result from causes beyond the control of the Contractor and Owner and which could not have been avoided by the exercise of care, prudence, foresight, and diligence on the part of the Contractor or its subcontractors, at any tier level, or suppliers. The Contractor shall receive no compensation for such delay.

Abnormal Delays

Delays caused by fire, unusual storms, floods, tidal waves, earthquakes, strikes, labor disputes, freight embargoes, and shortages of materials shall be considered as excusable delays insofar as they prevent the Contractor from proceeding with the Work for at least five (5) hours per day toward completion of the current critical activity item(s) on the latest favorably reviewed progress schedule.

Weather Delays

Should inclement weather conditions or the conditions resulting from weather prevent the Contractor from proceeding with seventy-five (75%) percent of the normal labor and

equipment force for at least five (5) hours per day toward completion of the current critical activity item(s) on the latest favorably reviewed progress schedule it shall be a weather delay day. The Contractor may be granted a time extension for such delay.

Material Shortages

Upon the submission of satisfactory proof to the Owner Representative by the Contractor, shortages of material may be acceptable as grounds for granting a time extension. In order that such proof may be satisfactory and acceptable to the Owner Representative, it must be demonstrated by the Contractor that the Contractor has made every effort to obtain such materials from all known sources within reasonable reach of the proposed Work. Only the physical shortage of material, caused by unusual circumstances, will be considered under these provisions as a cause for extension of time, and no consideration will be given to any claim that material could not be obtained at a reasonable, practical, or economical cost or price, unless it is shown to the satisfaction of the Owner Representative that such material could have been obtained only at exorbitant prices entirely out of line with current rates, taking into account the quantities involved and usual practices in obtaining such quantities. A time extension for a shortage of material will not be considered for material ordered or delivered late or whose availability is affected by virtue of the mishandling of procurement. The above provisions apply equally to equipment to be installed in the work.

TIME EXTENSIONS

Non-Excusable Delays

The Owner, at its sole option, may grant an extension of time for milestone or completion dates for non-excusable delays if the Owner deems it is in its best interest. If the Owner grants an extension of time for non-excusable delays, the Contractor agrees to pay the Owner's actual costs, arising from the delay, including charges for engineering, inspection, and administration incurred during the extension, as determined by Owner.

Excusable or Compensable Delays

If the Contractor is delayed in the performance of its work due to Excusable or Compensable Delays, then milestone and Contract completion dates may be extended by the Owner for such time that, in the Owner Representative's determination, the Contractor's completion dates will be delayed, provided that the Contractor strictly fulfills the following: The Contractor shall provide timely notification and submit in writing a request for an extension of time to the Owner Representative stating at a minimum the probable cause of the delay and the number of days being requested. The Owner may require a time impact analysis. If requested by the Owner Representative, the Contractor shall promptly provide sufficient information to the Owner Representative to assess the cause or effect of the alleged delay, or to determine if other concurrent delays affected the Work.

Weather Delays

The Contractor may be granted a non-compensable time extension for weather caused delays which meet the criteria above. Should the Contractor fail to fulfill any of the foregoing, which are conditions precedent to the right to receive a time extension, the Contractor waives the right to receive a time extension.

It is understood and agreed by the Contractor and Owner that time extensions due to excusable or compensable delays will be granted only if such delays involve an impact to the critical path that would prevent completion of the whole Work within the specified Contract time.

LIQUIDATED DAMAGES

Should the Contractor fail to complete the Work within the time specified in the Contract, as extended in accordance with this section if applicable, the Contractor shall forfeit and the Owner may recover liquidated damages. Owner and the Contractor recognize that time is of the essence of this Contract and that the Owner will suffer financial loss if the Work is not completed within the time specified in the Contract. It is hereby understood and agreed that it is and will be difficult and/or impossible to ascertain and determine the actual damage which the Owner will sustain in the event of and by reason of the Contractor's failure to fully perform the Work or to fully perform all of its contractual obligations that have accrued by the time for completion. It is, therefore, agreed in accordance with California Government Code Section 53069.85 that the Contractor will forfeit and pay to the Owner liquidated damages in the amount set forth in the Contract Documents, per day for each and every calendar day that expires after the time for completion in the Contract Documents. It is further understood and agreed in accordance with California Government Code Section 53069.85 that the liquidated damages sum specified in this provision is not manifestly unreasonable under the circumstances existing at the time this Contract was made, and that the Owner may deduct liquidated damages sums in accordance with this provision from any payments due or that may become due the Contractor. Liquidated damages will continue to accrue at the stated rate until substantial completion of the Work. Accrued liquidated damages may be deducted by the Owner from amounts due or that become due to the Contractor for performance of the Work.

SUSPENSION OF WORK

If the Contractor fails to correct defective work, Supply of Sufficient Workers, or fails to carry out the Work in accordance with the Contract Documents or any other applicable rules and regulations, the Owner, by a written order of the Owner's representative or signed personally by an agent specifically so empowered by the Owner, in writing, may order the Contractor to stop the work, in its entirety or any portion thereof. In the event of a suspension of only a portion of the work, the Contractor is obligated to perform the portion of the work not

suspended. The Suspension of Work shall remain in effect until the condition or cause for such order has been eliminated. The Owner's concurrence that the condition or cause has been eliminated will be provided to the Contractor in writing. This right of the Owner to stop and suspend the Work shall not give rise to any duty on the part of the Owner to exercise this right for the benefit of the Contractor or any other person or entity. All delays in the Work occasioned by such stoppage shall not relieve the Contractor of any duty to perform the Work or serve to extend the time for its completion. Any and all necessary corrective work done in order to comply with the Contract Documents shall be performed at no cost to the Owner.

In the event that a suspension of Work is ordered, as provided in this paragraph, the Contractor, at its expense, shall perform all work necessary to provide a safe, smooth, and unobstructed passageway through construction for use by public, pedestrian, and vehicular traffic, during the period of such use by suspension. Should the Contractor fail to perform the Work as specified, the Owner may perform such work and the cost thereof may be deducted from partial payments and/or final payment due to the Contractor under the Contract.

The Owner shall also have authority to suspend the Work wholly or in part, for such period as the Owner may deem necessary, due to unsuitable weather, or to such other conditions as are considered unfavorable for the suitable prosecution of the Work. Such temporary suspension of the Work will be considered justification for time extensions to the Contract in an amount equal to the period of such suspension if such suspended work includes the current critical activity on the latest favorably reviewed progress schedule.

RIGHT TO TERMINATE CONTRACT

If at any time the Contractor is determined to be in material breach of the Contract, notice thereof in writing will be served upon the Contractor and its sureties, and should the Contractor neglect or refuse to propose and effect a means for a satisfactory compliance with the Contract, as directed by the Owner Representative, within the time specified in such notice, the Owner or the Owner's Representative in such case shall have the authority to terminate the operation of the Contract.

Upon such termination, the Contractor shall discontinue the Work or such parts of it as the Owner may designate. Upon such termination, the Contractor's control shall terminate and thereupon the Owner or its fully authorized representative may take possession of all or any part of the Contractor's materials, tools, equipment, and appliances upon the premises and use the same for the purposes of completing the Work and hire such force and buy or rent such additional machinery, tools, appliances, and equipment, and buy such additional materials and supplies at the Contractor's expense as may be necessary for the proper conduct of the Work and for the completion thereof; or the Owner may employ other parties to carry the Contract

to completion, employ the necessary workers, substitute other machinery or materials and purchase the materials contracted for, in such manner as the Owner may deem proper; or the Owner may annul and cancel the Contract and release the Work or any part thereof. Any excess of cost arising therefrom over and above the Contract Price will be charged against the Contractor and its sureties, who will be liable therefor.

In the event of such termination, all monies due to the Contractor or retained under the terms of this Contract shall be held by the Owner; however, such holdings will not release the Contractor or its sureties from liability for failure to fulfill the Contract. Any excess cost over and above the Contract Amount incurred by the Owner arising from the termination of the operations of the Contract and the completion of the Work by the Owner as above provided shall be paid for by the Contractor. The Contractor shall be entitled to credit against such excess costs and contract funds held by the Owner. Any contract funds remaining after all valid claims for completion of the Work have been paid shall be paid to the Contractor sixty (60) days after completion of the Work.

If at any time before completion of the work under the Contract, it shall be determined by the Owner that reasons beyond the control of the parties hereto render it impossible, impractical, undesirable, or otherwise against the interests of the Owner to complete the work, or if the work shall be stopped by an injunction of a court of competent jurisdiction or by order of any competent authority, the Owner may, upon ten (10) days written notice to the Contractor, discontinue the work and terminate the Contract for its convenience. Upon service of such notice of termination, the Contractor shall discontinue the work in such manner, sequence, and at such times as the Owner Representative may direct. The Contractor shall have no claim for damages for such discontinuance or termination, nor any claim for anticipated profits on the work thus dispensed with, nor any other claim except for the work actually performed in accordance with the Contract Documents up to the time of discontinuance, including any extra work ordered by the Owner Representative to be done, nor for any claim for liquidated damages.

CHANGE ORDERS

Without invalidating the Contract and without notice to sureties or insurers, the Owner through the Owner Representative, may at any time or from time to time, order additions, deletions, or revisions in the Work; these will be authorized by Field Order or Change Order. By the acceptance of a Change Order, the Contractor waives any claim for additional time, not included in the Change Order, for the work covered by that Change Order. Additional or extra work performed by the Contractor without written authorization of a Field Order or Change Order will not entitle the Contractor to an increase in the Contract Amount or an extension of the Contract Time.

Compensable extra work shall be that work required for the completed project, but not shown, detailed or specified in the Contract Documents. Such work shall be governed by all applicable provisions of the Contract Documents. In giving instructions, the Owner Representative shall have authority to make minor changes in the Work, not involving extra cost, and not inconsistent with the purposes of the Work; but otherwise, except in an emergency endangering life or property, no extra work or change shall be made unless in pursuance of a written order by the Owner through the Owner Representative, and no claim for an addition to the Contract Amount and/or Contract Time shall be valid unless so ordered.

In case any change increases or decreases the work shown, the Contractor shall be paid for the work actually done at a mutually agreed upon adjustment to the Contract Price.

If the Contractor refuses to accept a Change Order, the Owner may issue it unilaterally. The Contractor shall comply with the requirements of the Change Order. The Owner shall provide for an equitable adjustment to the Contract Price and/or Contract Time, and compensate the Contractor accordingly. If the Contractor does not agree that the adjustment is equitable, it may submit claim through a dispute resolution procedure.

DIFFERING SITE CONDITIONS

Pursuant to Public Contract Code Section 7104, the Contractor shall promptly, and before such conditions are disturbed, notify the Owner Representative in writing, of any:

Material that the Contractor believes may be material that is hazardous waste, as defined in Section 25117 of the Health and Safety Code that is required to be removed to a Class I, Class II, or Class III disposal site in accordance with provisions of existing law.

Subsurface or latent physical conditions at the site differing from those indicated in the Contract Documents.

Unknown physical conditions at the site of any unusual nature, differing materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract.

The Owner shall promptly investigate the conditions, and if it finds that the conditions do materially differ, or do involve hazardous waste, and cause a decrease or increase in the Contractor's cost of, or the time required for, performance of any part of the Work the Owner shall cause to be issued a change order under the procedures relating to Change Orders.

In the event that a dispute arises between the Owner and the Contractor whether the conditions materially differ, or involve hazardous waste, or cause a decrease or increase in the Contractor's cost of, or time required for, performance of any part of the work the Contractor

shall not be excused from any scheduled completion date provided for by the Contract, but shall proceed with all work to be performed under the Contract. The Contractor shall retain any and all rights provided either by Contract or by law which pertain to the resolution of disputes and protests between the contracting parties.

PAYMENT

General

The Contractor shall accept the compensation, as herein provided, as full payment for furnishing all labor, materials, tools, equipment, and incidentals necessary to the completed Work and for performing all work contemplated and embraced under the Contract; also for loss or damage arising from the nature of the Work, or from the action of the elements, or from any unforeseen difficulties which may be encountered during the prosecution of the Work, also for all expenses incurred in consequence of the suspension or discontinuance of the Work as herein specified; and for completing the Work according to the Contract Documents. Neither the payment of any estimate nor of any retained percentage shall relieve the Contractor of any obligation to make good any defective work or material.

No compensation will be made in case of loss of anticipated profits. Increased or decreased work involving supplemental agreements will be paid for as provided in such agreements.

Full compensation for conforming to all of the provisions of the Contract Documents shall be considered as included in the prices paid for the various Contract items of work and no additional compensation will be allowed therefor.

Payment of Taxes

The Contractor shall pay and shall assume exclusive liability for all taxes levied or assessed on or in connection with its performance of this Contract, whether before or after acceptance of the work, including, but not limited to, State and local sales and use taxes, Federal and State payroll taxes or assessments, and excise taxes, including any taxes or assessments, levied or increased during the performance period of the work. No separate allowance will be made therefor, and all costs in connection therewith shall be included in the total amount of the Contract price.

Progress or Partial Payments

In consideration of the faithful performance of the Work prosecuted in accordance with the Contract Documents, the Owner will pay the Contractor for all such work installed on the basis of unit prices and/or percentage completion.

Payments will be made by the Owner to the Contractor on estimates duly certified and approved by the Owner Representative, based on the Lump Sum or unit price value of equipment installed and tested, labor and materials incorporated into said permanent work by

the Contractor during the preceding month, and acceptable materials and equipment on hand (materials and equipment furnished and delivered to the site by the Contractor and not yet incorporated into the work accompanied by an approved invoice). Payments will not be made for temporary construction unless specifically provided for in the Contract Documents.

Partial payments will be made monthly based on work accomplished as of a day mutually agreed to by the Owner and the Contractor.

The Contractor shall submit a completed and signed progress payment request form with its estimate of the work completed during the prior month and the work completed to date in a format corresponding to the unit price schedule and accepted cost breakdown. Additionally, the Contractor shall submit a detailed statement of the Contractor's request for payment of acceptable materials and equipment on hand. Each payment request shall list each Change Order executed prior to date of submission, including the Change Order Number.

Contractor shall certify each payment request stating that the Contractor has met all requirements of the Contract Documents for all amounts included in the payment request and that all work included in the payment request has been performed in accordance with the Contract Documents.

Upon receipt of Contractor's requests for payment, the Owner shall act in accordance with the following: The Owner Representative shall review the submitted estimates, as soon as practicable after receipt for the purpose of determining that the estimates are a proper request for payment, and shall prepare a certified estimate of the total amount of work done and acceptable materials and equipment on hand.

If requested, the Contractor shall provide such additional data as may be reasonably required to support the partial payment request. The Owner Representative will adjust or correct the payment request and will be available to meet and discuss the partial payment request prior to its resubmittal(s). When the Contractor's estimate of amount earned conforms to the Owner Representative's evaluation, the Contractor shall submit to the Owner Representative a properly completed and signed progress payment request. The Owner Representative will submit the recommended progress payment request for the Owner's approval and processing. Payment will be made by the Owner to the Contractor in accordance with Owner's normal accounts payable procedures; the Owner shall retain retention from the payment.

Each progress payment request and the final payment request shall be deemed "proper" only if it is submitted on the form approved by the Owner, with all of the requested information completely and accurately provided by the Contractor and such completed progress payment request form or final payment request form is accompanied by (i) certified payrolls of the

Contractor and all Subcontractors, of any tier, for laborers performing any portion of the Work for which a progress payment or final payment is requested; (ii) duly completed and executed Conditional Waiver and Release Upon Progress Payment or Final Payment forms in accordance with California Civil Code 8132 for all Subcontractors of any tier, and Material Suppliers covering the progress payment or final payment requested; (iii) duly completed and executed Unconditional Waiver and Release Upon Progress Payment forms in accordance with California Civil Code 8136 and 8138 for all Subcontractors of any tier, and Material Suppliers covering the Progress Payment received by the Contractor under the prior progress payment request.

Right to Withhold Amounts

The Owner will withhold from each of the partial payments and retain as part security, five (5) percent of the amount earned until the final payment in accordance with Public Contract Code Section 7201.

Other Withholds

In addition to the amount which the Owner may otherwise retain under the Contract, the Owner may withhold a sufficient amount or amounts of any payment or payments otherwise due to the Contractor, as in its judgment may be necessary to cover:

- A. For defective work not remedied.
- B. A reasonable doubt that the Contract can be completed for the balance then unpaid.
- C. Damage to another contractor or third party, or to property.
- D. Cost of insurance arranged by the Owner due to cancellation or reduction of the Contractor's insurance.
- E. Failure to make proper submissions, as specified herein.
- F. Payments due to the Owner from the Contractor.
- G. Reduction of Contract Amount because of modifications.
- H. The Contractor's neglect or unsatisfactory prosecution of the Work including additional engineering and administrative costs related to construction and/or shop drawing errors and the failure to clean up.
- I. Provisions of law that enable or require the Owner to withhold such payments in whole or in part.
- J. Stop Notice claims filed by Contractor's subcontractors, of any tier, or its material suppliers.
- K. Failure of Contractor to submit Operation and Maintenance Manuals.

- L. Failure to comply with legal, environmental or other regulatory requirements.
- M. When the above reasons for withholding amounts are removed, payment will be made to the Contractor for amounts withheld because of them.
- N. The Owner in its discretion may apply any withheld amount or amounts to the payment of valid claims. In so doing, Owner shall be deemed the agent of Contractor, and any payment so made by the Owner shall be considered as a payment made under the Contract by the Owner to the Contractor and the Owner shall not be liable to the Contractor for such payment made in good faith. Such payments may be made without prior judicial determination of the claim or claims. The Owner will render to the Contractor a proper accounting of such funds disbursed in behalf of Contractor.

AUDIT AND EXAMINATION OF RECORDS

The Owner may examine and audit at its own cost and expense all books, estimates, records, contracts, documents, bid documents, bid cost data, subcontract job cost reports and other Work related data of the Contractor, subcontractors engaged in performance of the Work, and suppliers providing supplies, equipment and other materials required for the Work, including computations and projections related to bidding, negotiating, pricing or performing the Work or Contract modifications and other materials concerning the Work, including, but not limited to, Contractor daily logs, in order to evaluate the accuracy, completeness, and currency of cost, pricing, scheduling and any other Work-related data. The Contractor will make available all such Work-related data at all reasonable times for examination, audit, or reproduction at the Contractor's business office at or near the Worksite, and at any other location where such Work-related data may be kept until three years after final payment under the Contract. Pursuant to California Government Code Section 8546.7, if the amount of public funds to be expended is in excess of \$10,000, this Contract will be subject to the examination and audit of the State Auditor, at the request of the Owner, or as part of any audit of the Owner, for a period of three (3) years after final payment under the Contract.

SECURITY SUBSTITUTION FOR WITHHOLDS

Pursuant to Public Contract Code Section 22300 (the provisions of which are hereby incorporated herein by reference), the Contractor may substitute securities for any moneys withheld by the Owner as retention. Section 7 – Project Forms.

WARRANTY OF TITLE

No material, supplies, or equipment for the Work under this Contract shall be purchased subject to any chattel mortgage, security agreement, or under a conditional sale or other agreement by which an interest therein or any part thereof is retained by the seller or supplier.

The Contractor warrants good title to all material, supplies, and equipment installed or incorporated in the work and agrees upon completion of all work to deliver the premises, together with all improvements and appurtenances constructed or placed thereon by the Contractor, to the Owner free from any claims, liens, security interests, or charges. The Contractor further agrees that neither the Contractor nor any person, firm, or corporation furnishing any materials or labor for any work covered by this Contract shall have any right to a lien upon the premises or any improvement or appurtenances thereon, provided that this shall not preclude the Contractor from installing metering devices and other equipment of utility companies or of municipalities, the title of which is commonly retained by the utility company or the municipality. In the event of the installation of any such metering device or equipment, the Contractor shall advise the Owner as to the legal Owner thereof.

WARRANTY AND GUARANTY

The Contractor guarantees all construction performed on this Project and also guarantees all material and equipment incorporated therein. Contractor hereby grants to Owner for a period of two years following the date of Final Acceptance of the Work completed, or such longer period specified in the Contract Documents, its unconditional warranty of the quality and adequacy of all of the Work including, without limitation, all labor, materials and equipment provided by Contractor and its Subcontractors of all tiers in connection with the Work. Neither final payment nor use nor occupancy of the Work performed by the Contractor shall constitute an acceptance of Work not done in accordance with this Guaranty or relieve Contractor of liability in respect to any express warranties or responsibilities for faulty materials or workmanship. Contractor shall remedy any defects in the Work and pay for any damage resulting therefrom, which shall appear within two years, or longer if specified, from the date of Final Acceptance of the Work completed. If within two years after the date of Final Acceptance of the Work completed, or such longer period of time as may be prescribed by laws or regulations, or by the terms of Contract Documents, any Work is found to be Defective, Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions, correct such Defective Work. Contractor shall remove any Defective Work rejected by Owner and replace it with Work that is not Defective, and satisfactorily correct or remove and replace any damage to other Work or the work of others resulting therefrom. If Contractor fails to promptly comply with the terms of such instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the Defective Work corrected or the rejected Work removed and replaced. Contractor shall pay for all claims, costs, losses, and damages caused by or resulting from such removal and replacement. Where Contractor fails to correct Defective Work, or defects are discovered outside the correction period, Owner shall have all rights and remedies granted by law. Inspection of the Work shall not relieve Contractor of any of its obligations under the Contract Documents. Even though

equipment, materials, or Work required to be provided under the Contract Documents have been inspected, accepted, and estimated for payment, Contractor shall, at its own expense, replace or repair any such equipment, material, or Work found to be Defective or otherwise not to comply with the requirements of the Contract Documents up to the end of the guaranty period. The foregoing Guaranty is in addition to any manufacturer's warranty. In the event of any conflict or inconsistency between the terms of this Guaranty and any warranty or obligation of the Contractor under the Contract Documents or at law, such inconsistency or conflict shall be resolved in favor of the higher level of obligation of the Contractor. Contractor shall provide a Warranty Bond to secure the performance of the Warranty and Guaranty set forth herein.

PUBLIC RECORDS ACT

Except as otherwise provided herein, all records, documents, drawings, plans, specifications, and all other information relating to the conduct of Owner's business, including information submitted by the Contractor ("Records"), shall become the exclusive property of Owner and shall be deemed public records. Said Records are subject to the provisions of the California Public Records Act (Government Code § 6250 et. seq.). The Owner's use and disclosure of its records are governed by this Act.

END OF DOCUMENT

5-B PREVAILING WAGES AND LABOR COMPLIANCE

Contractor and Subcontractors are responsible for complying with each and every applicable prevailing wage law and labor compliance requirements.

LABOR COMPLIANCE PROGRAM

Pursuant to public contract code section 221600, owner's labor compliance shall be monitored by the California Department of Industrial Relations.

All Contractors and Subcontractors providing workers or performing work on the Project shall comply with California Labor Code Sections 1771.1, 1771.7 and all other applicable labor requirements.

All contractors and subcontractors providing workers or performing work on the project shall comply with all applicable wage and hour laws.

WAGE RATES

Copies of the general prevailing rates of per diem wages for each craft, classification, or type of worker needed to execute the contract, as determined by director of the state of California Department of Industrial Relations, are on file at owner's offices located at 2 Civic Center Drive, Scotts Valley, CA 95066. Upon request, the owner will make available copies to any interested party.

Contractor shall post the applicable prevailing wage rates at each Project construction site.

NO DUTY TO CONTRACTOR OR SUBCONTRACTOR

The duty of owner to carry out its labor compliance program runs solely to the director of the California Department of Industrial Relations and not to any worker, contractor, subcontractor or other party.

PAYMENT OF PREVAILING WAGE RATES

Contractor shall pay to persons performing labor in and about Work provided for in the Contract Documents an amount equal to or more than the general prevailing rate of per diem wages for (1) work of a similar character in the locality in which the Work is performed and (2) legal holiday and overtime work in said locality. The per diem wages shall be an amount equal to or more than the stipulated rates contained in a schedule that has been ascertained and determined by the Director of the State Department of Industrial Relations and Owner to be the general prevailing rate of per diem wages for each craft or type of workman or mechanic needed to execute this Contract.

Contractor shall insert in every subcontract or other arrangement which Contractor may make for performance of Work or labor on Work provided for in the Contract, a provision that each Subcontractor shall pay persons performing labor or rendering service under subcontract or other arrangement not less than the general prevailing rate of per diem wages for work of a similar character in the locality in which the Work is performed, and not less than the general prevailing rate of per diem wages for holiday and overtime work fixed in the California Labor Code.

The Contractor is responsible for ascertaining and complying with all current general prevailing wage rates for each craft, classification, or type of worker needed to execute the Contract including any rate changes that take effect during the term of the Contract.

The Contractor shall insert in every subcontract or other arrangement which Contractor may make for performance of Work or labor on Work provided for in the Contract, a provision that each Subcontractor shall ascertain and comply with all current general prevailing wage rates for each craft, classification, or type of worker needed to perform the Work, including any rate changes that take effect during the term of such contract.

The limited exemption from paying prevailing wage rates pursuant to California Labor Code §1771.5 shall be applied to this Contract if the exemption criteria set forth therein are met.

LABOR CODE COMPLIANT PAYROLL RECORDS

Contractor must maintain accurate payroll records showing the name, address, social security number and work classification of each employee and owner performing Work on the Project. Contractor's payroll records shall also set forth the straight time and overtime hours worked each day and each week, the fringe benefits and the actual per diem wage paid to each owner, journeyman, apprentice worker or other employee employed in connection with the Project.

Each of Contractor's payroll record shall be verified by a written declaration that it is made under penalty of perjury and stating that the information contained in the payroll record is true and correct and that the Contractor has complied with the requirements of California Labor Code §§1771, 1811 and 1815 for any Work performed by the Contractor's employees on the Project.

The Contractor shall insert in every subcontract or other arrangement which Contractor may make for performance of Work or labor on Work provided for in the Contract, a provision that each Subcontractor shall maintain accurate payroll records showing the name, address, social security number and work classification of each employee and owner performing Work on the Project. Subcontractor's payroll records shall also set forth the straight time and overtime hours worked each day and each week, the fringe benefits and the actual per diem wage paid

to each owner, journey person, apprentice worker or other employee employed in connection with the Project.

The Contractor shall insert in every subcontract or other arrangement which Contractor may make for performance of Work or labor on Work provided for in the Contract, a provision that each Subcontractor shall verify by a written declaration that it is made under penalty of perjury and stating that the information contained in the payroll record is true and correct and that the Subcontractor has complied with the requirements of California Labor Code §§1771, 1811 and 1815 for any Work performed by the Subcontractor's employees on the Project.

PAYROLL RECORD AVAILABILITY

The Contractor shall make available for inspection at all reasonable hours at the principal office of the Contractor, or shall furnish a certified copy, of all Contractor's payroll records for its employees employed in connection with the Work upon request by an employee, employee representative, Owner, the Compliance Administrator or any other Owner representative, The Division of Labor Standards.

The Contractor shall insert in every subcontract or other arrangement which Contractor may make for performance of Work or labor on Work provided for in the Contract, a provision that each Subcontractor shall make available for inspection at all reasonable hours at the principal office of the Subcontractor, or shall furnish a certified copy of all Subcontractor's payroll records for its employees employed in connection with the Work upon request by an employee, employee representative, Owner, the Compliance Administrator or any other Owner representative, The Division of Labor Standards.

If the principal office of the Contractor or Subcontractor is more than twenty-five miles from the Project site, upon request from Owner, the Compliance Administrator or any other Owner representative or a worker employee, Contractor or Subcontractor shall make a certified copy of all Contractor's or Subcontractor's payroll records for its employees employed in connection with the Work available for inspection at Owner's office located at 2 Civic Center Dr, Scotts Valley, CA 95066.

SUBMISSION OF WEEKLY PAYROLL RECORDS

Contractor shall submit to the Compliance Administrator in the manner required by the Department of Industrial Relations a certified copy of all the Contractor's payroll records for its employees employed in connection with the Work on a weekly basis. The certified payroll records for the preceding week shall be submitted on the Wednesday of the following week. In the event that a legal holiday falls on Wednesday, the certified payroll records shall be submitted on the next business day.

- A. If there was no work performed during a given week, Contractor's certified payroll record shall be annotated: "no work" for that week.
- B. Contractor shall mark "final" on its last submitted payroll for the Project.

The Contractor shall insert in every subcontract or other arrangement which Contractor may make for performance of Work or labor on Work provided for in the Contract, a provision that each Subcontractor shall submit to the Compliance Administrator a certified copy of all the Subcontractor's payroll records for its employees employed in connection with the Work on a weekly basis. The certified payroll records for the preceding week shall be submitted on the Wednesday of the following week. In the event that a legal holiday falls on Wednesday, the certified payroll records shall be submitted on the next business day.

- A. If there was no work performed during a given week, Subcontractor's certified payroll record shall be annotated: "no work" for that week.
- B. Subcontractor shall mark "final" on its last submitted payroll for the Project.

AUDIT AND INVESTIGATION OF COMPLIANCE

Owner may conduct reasonable investigation of Contractor's and/or Subcontractor's compliance with the requirements of California Labor Code §§1771, 1775, 1777, 1811, 1813 and 1815 and any other applicable state or federal labor law. Not more than ten days after a written or oral request from Owner, Compliance Administrator or any other Owner representative, Contractor and/or Subcontractor shall provide legible copies of time cards, personnel sign-in sheets, daily logs payroll registers, paycheck stubs, cancelled paychecks or any other document requested to authenticate or corroborate compliance with prevailing wage rate laws. Contractor and/or Subcontractor shall make the originals of the requested documents available for inspection upon request by Owner, the Compliance Administrator or any other Owner representative at all reasonable hours at the principal office of the Contractor or Subcontractor or if the principal office of the Contractor or Subcontractor is more than 25 miles from the Project site, at Owner's offices at 2 Civic Center Dr, Scotts Valley, CA 95066.

Contractor and/or Subcontractor shall assist Owner, the Compliance Administrator or any other Owner representative with any investigation or audit of Contractor and/or Subcontractor regarding compliance with the prevailing wage rate laws.

Contractor and/or Subcontractor shall make its employees available for interviews by Owner, the Compliance Administrator or any other Owner representative.

Neither Contractor nor Subcontractor shall take retaliatory measures against any worker on the Project for informing Owner or Compliance Administrator or Owner representative of, or

responding to, any monitoring, investigation or audit of any violation or suspected violation of the prevailing wage rate laws.

Contractor shall insert in every subcontract or other arrangement which Contractor may make for performance of Work or labor on Work provided for in the Contract, the same terms as set forth in this Document and each subpart thereto.

INADEQUATE OR DELINQUENT PAYROLL RECORDS

Payment under this Contract shall not be made when Contractor or Subcontractor payroll records are delinquent or inadequate.

Payroll records shall be considered delinquent if they are not submitted in compliance with this Document.

Payroll records shall also be considered delinquent if they are not submitted within ten days of any written request by Owner or Compliance Administrator or other Owner representative.

Payroll records shall be considered inadequate if one or more of the following conditions exist:

- A. The record lacks the information required by California Labor Code §1776; or
- B. The record contains the information required by California Labor Code §1776 but is not certified, or is certified by someone that is not an agent of the Contractor; or
- C. A non-conforming record remains uncorrected for one payroll period after Owner or its designee has given Contractor notice of inaccuracies detected by Owner or its designee.

NAME AND ADDRESS OF BONDING COMPANY

Contractor shall provide Owner with the name and address of any bonding company issuing a bond that secures the payment of wages by the Contractor. If the name or address of any such bonding company changes over the term of this Contract, Contractor shall provide the new name and/or address of the bonding company to Owner in writing within ten days of such change. The writing shall be clearly identified as "Notice of Change in Bonding Company for Payment of Wages."

The Contractor shall insert in every subcontract or other arrangement which Contractor may make for performance of Work or labor on Work provided for in the Contract, a provision that each Subcontractor shall provide Owner with the name and address of any bonding company issuing a bond that secures the payment of wages by the Subcontractor. If the name or address of any such bonding company changes over the term of the Project, Subcontractor shall provide the new name and/or address of the bonding company to Owner in writing within ten days of

such change. The writing shall be clearly identified as "Notice of Change in Bonding Company for Payment of Wages."

NOTICE TO BONDING COMPANY

Contractor acknowledges and agrees that in the event that Owner or its Compliance Administrator or any other Owner representative, provides notice of withholding contract payment to the Contractor or Subcontractor, a copy of the notice may also be served on any of Contractor's or Subcontractor's bonding companies that issued a bond to securing payment of wages.

The Contractor shall insert in every subcontract or other arrangement which Contractor may make for performance of Work or labor on Work provided for in the Contract, a provision that each Subcontractor shall acknowledge and agrees that in the event that Owner or its Compliance Administrator or any other Owner representative, provides notice of withholding contract payment to the Contractor or Subcontractor, a copy of the notice may also be served on any of Contractor's or Subcontractor's bonding companies that issued a bond to securing payment of wages.

NOTICE OF WITHHOLDING

Owner shall provide Contractor with notice of withholding contract payments.

Owner shall provide Contractor and Subcontractor with notice of withholding if withholding is due to Subcontractor.

REQUEST FOR REVIEW

The exclusive and only means for Contractor or Subcontractor to receive review of a decision by Owner to withhold payment for violations of the prevailing wage requirements is through the procedure set forth herein.

Contractor or Subcontractor may contest a finding that it has violated the prevailing wage requirement laws by submitted a writing clearly identified as "Request for Review" to Owner's Labor Compliance Program personnel as identified in Paragraph 2 of this Document within sixty (60) days after service of the Notice to Withhold of Contract Payments.

The Request for Review must clearly identify the Notice of Withholding Contract Payments from which review is sought, including the date of the Notice of Withholding Contract Payments or it shall include a copy of the Notice of Withholding Contract Payments as an attachment.

The Request for Review must contain a complete statement of the basis for the protest.

The Request for Review must refer to the specific portion of the Notice to Withhold that forms the basis for the protest.

The Request for Review must include the name, address, and telephone number of the person representing the protesting party.

Contractor shall insert in every subcontract or other arrangement which Contractor may make for performance of Work or labor on Work provided for in the Contract, the same terms as set forth in this section.

Failure to Request Review Shall Result in Final Judgment

Failure by the Contractor to submit a timely Request for Review may result in a final order which shall be binding on the Contractor, and which shall also be binding, with respect to the amount due, on the bonding company issuing a bond that secures the payment of wages by the Contractor and a surety on the bond.

Failure by the Subcontractor to submit a timely Request for Review may result in a final order which shall be binding on the Subcontractor, and which shall also be binding, with respect to the amount due, on the bonding company issuing a bond that secures the payment of wages by the Subcontractor and a surety on the bond.

No Interim Payment of Withheld Contract Payments

Pending a final order, or the expiration of the time period for seeking review of the Notice of Withholding of Contract Payments, Owner shall not disburse any Contract payments that have been withheld.

Failure to Comply with Labor Laws May Result in Penalties

Failure by Contractor or Subcontractor to pay every employee performing Work prevailing wages may result in the Contractor and/or Subcontractor being prohibited from bidding on public works projects for up to three years.

Failure by Contractor or Subcontractor to pay every employee performing Work prevailing wages may result in the Contractor and/or Subcontractor being prohibited from being awarded public works projects for up to three years.

Failure by Contractor or Subcontractor to pay every employee performing Work prevailing wages may result in a forfeiture of the unpaid wages by the Contractor or Subcontractor.

Failure by Contractor or Subcontractor to pay every employee performing Work prevailing wages may result in a forfeiture of up to \$50.00 per each calendar day, or portion thereof, for each worker paid less than the prevailing wage rates.

Failure by Contractor or Subcontractor to submit certified copies of payroll records within ten days of a written request from Owner, the Compliance Administrator or any other Owner representative may result in a forfeiture of up to \$25.00 per each calendar day, or portion thereof, for each worker until strict compliance is effectuated.

Failure by Subcontractor to pay every employee performing Work prevailing wages may result in withholdings, penalties and forfeitures being assessed against Contractor.

CONTRACTOR MUST MONITOR SUBCONTRACTOR COMPLIANCE

Contractor shall monitor the payment of the specified general prevailing rate of per diem wages to employees by each Subcontractor by periodically reviewing the certified payroll records of each Subcontractor.

Corrective Action by Contractor Regarding Subcontractor

Once the Contractor is aware that any Subcontractor has failed to pay its workers the specified prevailing rate of wages, the Contractor shall diligently take corrective action to halt or rectify the failure, including but not limited to, retaining sufficient funds due to the Subcontractor for Work performed on the Project.

AFFIDAVIT PRIOR TO FINAL PAYMENT TO SUBCONTRACTOR

Prior to making final payment to any Subcontractor for Work performed on the Project, Contractor shall obtain an affidavit signed under penalty of perjury from each Subcontractor that each Subcontractor has paid the specified general prevailing rate of per diem wages to its employees on the Project and any amounts due under California Labor Code §1813.

NOTICE OF PRIOR VIOLATIONS OF THE PREVAILING WAGE RATES

Contractor shall promptly notify Owner if Contractor has been barred from bidding for or working on public works projects for any reason.

Contractor shall promptly notify Owner if Contractor or a firm, corporation, partnership, or association in which the Contractor has any interest has been found to have willfully violated the prevailing wage rate laws.

Contractor shall promptly notify Owner if Contractor or a firm, corporation, partnership, or association in which the Contractor or has any interest has been found to have violated the public works chapter of the California Labor Code with an intent to defraud.

The term “any interest” shall have the meaning set forth in California Labor Code §1777.1(f) or any amendment thereto.

Notice shall be given by the Contractor to Owner before bidding closes or if Contractor is unaware until after bidding has closed, before the Contract is awarded or if the Contractor is unaware until after the Contract has been awarded then before it is executed and if the Contractor is unaware until after the Contract has been executed then not more than five calendar days after Contractor has notice of any kind that it has been found to have willfully violated the prevailing wage rate laws or found to have violated the public works chapter of the California Labor Code with an intent to defraud.

APPRENTICES

Contractor and Subcontractors shall comply with the requirements of California Labor Code §§1776, 1777.5, and 1777.6 concerning the employment of apprentices by Contractor or Subcontractors.

Willful failure to comply may result in penalties, including loss of the right to Bid on or receive public works contracts. The requirements of Labor Code §1777.5 do not apply to contracts of general contractors or to contracts of specialty contractors not bidding for work through a general or prime contractor when the contracts of general contractors or those specialty contractors involve less than thirty thousand dollars (\$30,000).

CERTIFICATION OF APPROVAL

California Labor Code §1777.5, as amended, requires a Contractor or Subcontractor employing tradespersons in any apprenticeable occupation to apply to the joint apprenticeship committee nearest the site of a public works project and which administers the apprenticeship program in that trade for a certification of approval. The certificate shall also fix the ratio of apprentices to journeypersons that will be used in performance of the Contract. The ratio of work performed by apprentices to journeypersons in such cases shall not be less than one hour of apprentice’s work for every five hours of labor performed by journeypersons (the minimum ratio for the land surveyor classification shall not be less than one apprentice for each five journeypersons), except:

- A. When unemployment for the previous three-month period in the area exceeds an average of 15 percent;

- B. When the number of apprentices in training in the area exceeds a ratio of one to five;
- C. When a trade can show that it is replacing at least 1/30 of its membership through apprenticeship training on an annual basis statewide or locally; or
- D. Assignment of an apprentice to any work performed under a public works contract would create a condition which would jeopardize his or her life or the life, safety, or property of fellow employees or the public at large or if the specific task to which the apprentice is to be assigned is of such a nature that training cannot be provided by a journeyman.

FUND CONTRIBUTIONS

If Contractor or any Subcontractor employs journeymen or apprentices in any apprenticeable craft to perform any of the Work under the Contract, they shall make apprenticeship training contributions, to the California Apprenticeship Council, in an amount determined by the Director of the Department of Industrial Relations, or as otherwise required by law.

APPRENTICESHIP STANDARDS

Information relative to apprenticeship standards, wage schedules, and other requirements may be obtained from the Director of the California Department of Industrial Relations, or from the Division of Apprenticeship Standards and its branch offices.

EIGHT HOUR DAY LIMITATION

In accordance with the provisions of Division 2, Part 7, Chapter 1, Article 3 of the Labor Code, State of California, and in particular Sections 1810 to 1815 inclusive, thereof, eight (8) hours labor shall constitute a days' work and no laborer, worker, or mechanic in the employ of said Contractor, or any subcontractor doing or contracting to do any part of the Work contemplated by this Contract, shall be required or permitted to work more than eight (8) hours in any one calendar day, and forty (40) hours in any one calendar week unless compensated at not less than time and a half as set forth in California Labor Code Section 1815. However, if the prevailing wage determination requires a higher rate of pay for overtime than is required under said Section 1815, then the overtime rate must be paid, as specified in California Code of Regulation Title 8, Group 3, Section 16200(a)(3)(F). The Contractor and each subcontractor shall also keep an accurate record showing the names and actual hours worked of all workers employed by them in connection with the work contemplated by this Contract, which record shall be open at all reasonable hours for the inspection of the District or its officers or agents and by the Division of Labor Standards Enforcement of the Department of Industrial Relations, their deputies or agents; and it is hereby further agreed that said Contractor shall forfeit as a

penalty to the District, the sum of Twenty-Five and No/100 Dollars (\$25.00) for each laborer, worker or mechanic employed in the execution of this Contract by the Contractor or by any subcontractor for each calendar day during which such laborer, worker or mechanic is required or permitted to labor more than eight (8) hours in any one calendar day and forty (40) hours in one calendar week in violation of these provisions.

LABOR DISCRIMINATION

Attention is directed to Section 1735 of the Labor Code, which reads as follows:

"A contractor shall not discriminate in the employment of persons upon public works on any basis listed in subdivision (a) of Section 12940 of the Government Code, as those bases are defined in Sections 12926 and 12926.1 of the Government Code, except as otherwise provided in Section 12940 of the Government Code. Every contractor for public works who violates this section is subject to all the penalties imposed for a violation of this chapter."

END OF DOCUMENT

5-C INSURANCE AND INDEMNIFICATION**PAYMENT, PERFORMANCE AND MAINTENANCE BONDS**

The Contractor shall within ten (10) days after notice of award of the Contract, furnish surety bonds (Payment Bond, Performance Bond, and Maintenance Bond) executed by a surety authorized to conduct business in California using the bond forms approved by the Owner. The payment bond shall be in the amount equal to one hundred percent (100%) of the Contract Amount and shall be for payment of claims for materials, equipment, labor, and subcontractors employed by the Contractor thereon. The faithful performance bond shall be in an amount equal to one hundred percent (100%) of the Contract Amount and shall be for the faithful performance of the Contract, and for the fulfillment of such other requirements as may be provided by law. The performance bond shall remain in effect or a maintenance bond in the amount of 10% of the contract amount shall be provided to guarantee the repair and replacement of defective equipment, materials, and workmanship, and payment of damages sustained by the Owner on account of such defects, discovered within two (2) years after the date of final payment. The surety company shall waive the right of special notification of any change or modification of this Contract or of extension of time, or of decreased or increased Work, or of the cancellation of the Contract, or of any other act or acts by the Owner or its authorized agents under the terms of this Contract; and failure to so notify the surety of changes shall not relieve the surety of its obligations under this Contract.

INSURANCE

Within ten (10) days after the Award of Contract, the Contractor shall promptly obtain, at its own expense, all the insurance required by this section. The Contractor shall not allow any subcontractor to commence work on its subcontract until all similar insurance required of the subcontractor, except Builder's Risk Insurance, has been obtained and verified by the Contractor.

Companies writing the insurance under this article shall be licensed to do business in the State of California except as otherwise approved by the District. Insurance is to be placed with insurers with a current A.M. Best's rating of no less than A-VII.

Contractor shall include all costs for insurance in its bids. Nothing contained in these insurance requirements is to be construed as limiting the extent of the Contractor's responsibility for payment of damages resulting from its operations under this Contract. For any claims related to this project, the Contractor's insurance coverage shall be primary insurance as respects the District, the Design Consultant and the District's Representative, and their officers, officials, employees, agents, and volunteers. Any insurance or self-insurance maintained by the District,

its officers, officials, employees, agents or volunteers shall be in excess of the Contractor's insurance and shall not contribute with it.

Within ten (10) days after award of the Contract, Contractor shall furnish to Scotts Valley Water District ("Owner") satisfactory proof that Contractor has taken out for the entire period covered by the Contract the following classes of insurance in the form and with limits and deductibles specified below, unless otherwise specified in Contract Documents.

- A. Comprehensive General Liability Insurance covering claims for personal injury, bodily injury and property damage arising out of the Work and in a form providing coverage not less than that of a Standard Commercial General Liability Insurance policy ("Occurrence Form"). Such insurance shall provide for all operations and include independent contractors, products liability, and completed operations for one year after Final Completion and acceptance of the final payment for the Work, contractual liability, and coverage for explosion, collapse, and underground hazards. The limits of such insurance shall not be coverage of less than [\$2,000,000] each occurrence, [\$3,000,000] general aggregate limit, and [\$3,000,000] aggregate for products and completed operations. The policies shall be endorsed to provide Broad Form Property Damage Coverage.
- B. Comprehensive Automobile Liability Insurance covering all owned, non-owned, and hired vehicles. Such insurance shall provide coverage not less than the standard Comprehensive Automobile Liability policy with limits not less than [\$1,000,000] each person Bodily Injury, [\$1,000,000] each occurrence Bodily Injury, and [\$1,000,000] each occurrence Property Damage.
- C. All-Risk Course of Construction Insurance including damage to property owned by Owner, Contractor or third parties caused by fire. Insurance shall be in the amount of 100 percent of the completed value of the Work to be performed under this Contract. Deductible shall not exceed [\$10,000.00]. Each loss shall be borne by Contractor.
- D. Workers' Compensation Insurance for all persons whom the Contractor may employ in carrying out Work contemplated under Contract Documents, in accordance with the Act of Legislature of State of California, known as "Workers' Compensation Insurance and Safety Act," approved May 26, 1913, and all acts amendatory or supplemental thereto, in the statutory amount.

INSURANCE REQUIREMENTS

Insurance Company Ratings

All policies of insurance shall be placed with insurers acceptable to Owner. The insurance

underwriter(s) for all insurance policies except Workers' Compensation shall have an A. M. Best Company rating of A-VII or better, unless otherwise specified in the Contract Documents. Required minimum amounts of insurance may be increased should conditions of Work, in opinion of Owner, warrant such increase. Contractor shall increase required insurance amounts upon direction by Owner.

Required Endorsements

The policies required under this Document shall be endorsed as follows: Name the Owner, its elected and/or appointed governing body and boards, employees, representatives, consultants, and agents, and Project Manager as additional insureds, but only with respect to liability arising out of the activities of the named insured.

Separate Application

Each such policy shall apply separately to each insured against whom claim is made or suit is brought, except with respect to the limit of the insurance company's liability required hereunder. Should any of the policies identified herein contain a "cross-suits" exclusion, such exclusion must not apply to any additional insureds.

Contractor's Insurance is Primary

Contractor's Insurance shall be primary and no other insurance or self-insured retention carried or held by Owner shall be called upon to contribute to a loss covered by insurance for the named insured.

Proof of Coverage

Before the Notice to Proceed with the Work under this Contract is issued, the Contractor shall furnish the Owner with certificate(s) evidencing issuance of all insurance mentioned herein, copies of the policy declaration or information page(s) and additional insured endorsements. The certificate(s) and endorsements for each insurance policy are to be signed by a person authorized by that insurer to bind coverage on its behalf. The endorsements are to be on the forms approved by the District. The certificate(s), policy declaration or information page(s), and endorsements are to be received and approved by the Owner before work commences. Contractor shall also provide certificate(s) evidencing renewals of all insurance required herein, at least thirty (30) days prior to the expiration date of any such insurance.

Evidence of Insurance

Certificates of insurance and endorsements shall have clearly typed thereon Owner information and the name of the Project.

Deductibles

Any deductibles or self-insured retentions must be declared to and approved by the District. At

the option of the District, either: the insurer shall reduce or eliminate such deductibles or self-insured retentions or procure a bond in a form satisfactory to the District guaranteeing payment of losses and related investigations, claim administration and defense expenses.

Notice of Cancellation or Non-Renewal

Written notice of cancellation, non-renewal, or reduction in coverage of any policy shall be mailed to Owner, 60 Days in advance of the effective date of the cancellation, non-renewal, or reduction in coverage. Written notice of cancellation for non-payment shall be mailed within 10 Days of cancellation.

Continuous Coverage

Contractor shall maintain insurance in full force and effect during the entire period of performance of the Work. Contractor shall keep insurance in force during warranty and guarantee periods, except that Contractor may discontinue All-Risk Course of Construction Insurance after Final Payment. At the time of making application for extension of time, and during all periods exceeding the Contract Time resulting from any cause, Contractor shall submit evidence that insurance policies will be in effect during the requested additional period of time. Upon Owner's request, Contractor shall submit to Owner, within 10 Days, copies of the actual insurance policies or renewals or replacements.

Waiver of Subrogation

Evidence of coverage shall be accompanied by an endorsement from the insurer agreeing to waive all rights of subrogation against the District, its officers, officials, employees, agents or volunteers; the Design Consultant, the Construction Manager and each of their partners, officers, officials, employees, agents and volunteers which might arise by reason of any payment under the policy in connection with the Work performed by Contractor.

Requirement to Maintain Insurance

Contractor shall pay all insurance premiums, including any charges for required waivers of subrogation or the endorsement of additional insureds.

Workers Compensation

If injury occurs to any employee of Contractor, Subcontractor or sub-subcontractor for which the employee, or the employee's dependents in the event of employee's death, is entitled to compensation from Owner under provisions of the Workers' Compensation Insurance and Safety Act, as amended, or for which compensation is claimed from Owner, Owner may retain out of sums due Contractor under Contract Documents, amount sufficient to cover such compensation, as fixed by the Act, as amended, until such compensation is paid, or until it is determined that no compensation is due. If Owner is compelled to pay compensation, Owner

may, in its discretion, either deduct and retain from the Contract Sum the amount so paid, or require Contractor to reimburse Owner.

No Limitation

Nothing herein shall be construed as limiting in any way the extent to which Contractor or any Subcontractor may be held responsible for payment of damages resulting from their operations.

Subcontractor's Insurance

All Subcontractors shall maintain the same insurance required to be maintained by Contractor with respect to their portions of the Work unless otherwise indicated in Contract Documents, and Contractor shall cause the Subcontractors to furnish proof thereof to Owner within ten Days of Owner's request.

Failure to Obtain and Maintain Insurance

In the event of the breach of any provision of this paragraph, or in the event of any notices received which indicates any required insurance coverage will be diminished or canceled, Owner, at its option, may, notwithstanding any other provisions of this Agreement to the contrary, immediately declare a material breach of this Agreement and suspend all further work pursuant to this Agreement. If Contractor fails to maintain insurance, Owner may (but is not required to do so) take out comparable insurance, and deduct and retain the amount of premium from any sums due Contractor under Contract Documents.

Contractor and all sub-contractors will provide to the District a Certificate of Insurance (Col) naming the State of California, Department of Water Resources as an additionally insured Certificate Holder. The Col must include: State of California, Department of Water Resources, its officers, agents, employees, as required by written contract or permit. The state of California Department of Water Resources address to be used on the Col is the following:

State of California DWR
P.O Box 942836
Sacramento, CA 95899-7405

INDEMNIFICATION

Contractor shall indemnify, defend with counsel acceptable to Owner and hold harmless to the full extent permitted by law, Owner, the Design Consultant and the Construction Manager, their consultants, sub consultants, and their officers, officials, employees, agents and volunteers, (collectively "the Indemnified Parties"), from and against any and all liability, loss, damage, claims, expenses and costs (including, without limitation, attorney fees and costs and fees of litigation) (collectively, "Liability") of every nature arising out of or in connection with

Contractor's performance of the Work or its failure to comply with any of its obligations contained in this Agreement. Such obligation shall not be construed to negate, abridge, or otherwise reduce any other right or obligation of indemnity which would otherwise exist. Such indemnification by the Contractor shall include, but not be limited to, the following:

- A. Liability or claims resulting directly or indirectly from the negligence or carelessness of the Contractor, its subcontractors, employees, or agents in the performance of the Work, or in guarding or maintaining the same, or from any improper materials, implements, or appliances used in its construction, or by or on account of any act or omission of the Contractor, its employees, or agents.
- B. Liability or claims arising directly or indirectly from bodily injury, occupational sickness or disease, or death of the Contractor's, or Supplier's own employees, or agents engaged in the Work resulting in actions brought against the Indemnified Parties;
- C. Liability or claims arising directly or indirectly from or based on the violation of any Laws or Regulations, whether by the Contractor, its subcontractors, employees, or agents.
- D. Liability or claims arising directly or indirectly from the use or manufacture by the Contractor, its subcontractors, employees, or agents in the performance of this Agreement of any copyrighted or non-copyrighted composition, secret process, patented or unpatented invention, article, or appliance, unless otherwise specified stipulated in this Agreement.
- E. Liability or claims arising directly or indirectly from the breach of any warranties, whether express or implied, made to the Owner or any other parties by the Contractor, its subcontractors, employees, or agents;
- F. Liability or claims arising directly or indirectly from the willful misconduct of the Contractor, its subcontractors, employees, or agents.
- G. Liability or claims arising directly or indirectly from any breach of the obligations assumed in this Agreement by the Contractor.
- H. Liability or claims arising directly or indirectly from, relating to, or resulting from a hazardous condition created by the Contractor, Subcontractors, Suppliers, or any of their employees or agents, and;
- I. Liability or claims arising directly, or indirectly, or consequentially out of any action, legal or equitable, brought against the Indemnified Parties, their consultants, sub-consultants, and the officers, directors, employees, agents and volunteers of each or any of them, to the extent caused by the Contractor's use of any premises acquired by

permits, rights of way, or easements, the Site, or any land or area contiguous hereto or its performance of the Work thereon.

Liability arising directly or indirectly from exposure to hazards in violation of the California Labor Code that may be asserted by any person or entity, including, but not limited to, the Contractor, arising out of or in connection with the negligent activities of the Contractor, its agents, employees or privities pursuant to this Contract, whether or not there is concurrent negligence on the part of the Indemnified Parties.

The Contractor shall reimburse the Indemnified Parties for all costs and expenses, (including but not limited to fees and charges of engineers, architects, attorneys, and other professionals and court costs of appeal) incurred by said Indemnified Parties in enforcing the provisions of this Paragraph.

The indemnification obligation under this Section shall not be limited in any way by any limitation on the amount or type of insurance carried by Contractor or by the amount or type of damages, compensation, or benefits payable by or for the Contractor or any Subcontractor or other person or organization under workers' compensation acts, disability benefit acts, or other employee benefit acts.

Pursuant to California Public Contract Code Section 9201, Owner shall timely notify Contractor of receipt of any third-party claim relating to this Agreement.

The Contractor's obligations pursuant to this provision will survive the expiration or earlier termination of this Contract.

The Contractor's duty to indemnify and save harmless shall include the duty to defend as set forth in California Civil Code Section 2778; provided, that nothing herein contained shall be construed to require Contractor to indemnify the Indemnified Party against any responsibility or liability in contravention of California Civil Code Section 2782. The duty to defend and indemnify hereunder is not limited by the insurance coverage required under the Contract Documents and is separate and apart from such coverage.

The Contractor shall furnish the District with a copy of the Employer's Report of Injury immediately following any incident requiring the listing of said report on the OSHA Log during the prosecution of the work under this Contract. The Contractor shall also furnish the Construction Manager with a copy of the Employer's Report of injury involving any subcontractor on this project.

The Contractor shall advise all insurance companies to familiarize themselves with all of the Conditions and provisions of this Contract, and they shall waive the right of special notification

of any change or modification of this Contract or of extension of time, or of decreased or increased work, or of the cancellation of the Contract, or of any other act or acts by the Indemnified Parties, under the terms of this Contract, and failure to so notify the aforesaid insurance companies of changes shall in no way relieve the insurance companies of their obligation under this Contract.

For all work the Contractor or its subcontractors perform during the guarantee period, worker's compensation, and commercial general liability insurance and insurance in the amounts and format required herein, shall remain in force and be maintained for five (5) years after final completion.

END OF DOCUMENT

SECTION 6 CONTRACT ADMINISTRATION

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6-A PROPOSED EQUIVALENTS**DEFINITION OF TERMS**

A "Proposed Equivalent" is an item proposed for use by the Contractor in lieu of the first specified item and warranted by the Contractor as being at least equal in quality, utility, function and appearance to the first specified item. The Contractor shall assume all costs and be fully and solely responsible for the Proposed Equivalent.

"Favorable Review" by the Engineer means that based on information submitted by the Contractor the Contractor may provide the Favorably Reviewed item or work subject to the limitations in this Section and the Engineer's review comments.

The term "first specified item" or "first named maker" refers to the first product identified in the Specifications by a model number or trade name and/or by a maker's name for a specified item.

PROPOSED EQUIVALENTS AND SUBSTITUTES OF MATERIALS AND EQUIPMENT

All proposed equivalent and substitute requests shall be submitted after Award and within thirty-five (35) days of the Notice to Proceed.

Catalog numbers and specific brands or trade names followed by the designation "or equal" are used in conjunction with material and equipment required by the Specifications to establish the standards of required quality, utility, and appearance.

When the first specified item is followed by a second maker's name and "or equal," the Contractor may submit Proposed Equivalent items for the Engineer's review. Proposed Equivalent items that are in the Engineer's judgment equal to the first specified item in quality, utility, and appearance, may be Favorably Reviewed subject to the provisions of this Section. Where a product description and first maker's name are followed by "or equal" with no second maker's name, it means the specifier knows of no equivalent product and the Contractor may submit Proposed Equivalent products by other makers for review. Where the term "or equal" is omitted, it means that the named item is required to meet the Owner's needs; no products or makers other than those specified will be considered.

Inclusion of a second maker's name in a specification indicates the maker is acceptable but does not necessarily indicate the maker offers a standard product equal to the first specified item. Items by the second named maker are subject to the same conditions of review and compatibility as other Proposed Equivalent items. Inclusion of a maker's name and/or model number after a specification description is not a representation that the maker will furnish an

item meeting the Contract requirements at bid time or at time of need. It is the Contractor's sole responsibility to furnish items meeting the Contract requirements

Where items are specified with a description followed by a maker's name and trade name or model number, the item shall be provided with all the custom modifications, special features, accessories and options described even though such things may not normally be included by the maker or provider as part of the model specified. Where there is a conflict between the written description of an item and maker's trade name and/or model number, the written description shall take precedence.

The design is based on first-specified items including all described custom modifications, special features, accessories and options as made by the first named maker.

Proposed Equivalents and substitutes which are equal in quality, utility, and appearance to those of the first-named item may be accepted, subject to the following provisions:

Contractor shall provide supporting data required by this Section. The supporting data must be submitted in reasonable promptness and in a sequence as to cause no delay in the Work, or in activities of the Owner or of separate Contractors. Submittals of Proposed Equivalent and substitute items that are not made within 35 days of the Notice to Proceed will be rejected unless the Engineer has agreed in writing to a later submittal date and the Contractor agrees to comply with all conditions of the Engineer for the late submittal.

The Engineer's review of Proposed Equivalent and substitute items is based solely on information provided by the Contractor and on the Contractor's warranty that the proposed item is at least equal in quality, utility, function and appearance to the first specified item. Favorable Review of a Proposed Equivalent or substitute item has the same meaning and is subject to the same limitations that apply to the Favorable Review of first named items.

The Owner will accept, in writing, Proposed Equivalents and substitutes that are in the Owner's Representative's opinion equal in quality, utility, and appearance to the material or equipment specified, after a complete submittal of all supporting data, as required by this Section, is received by the Owner, the Contractor must allow at least ten (10) working days for the Owner's review.

Such acceptance shall not relieve Contractor from complying with the requirements of the Drawings and the Specifications.

Contractor shall be responsible for all costs (including additional design and engineering costs) of any changes required to accommodate Contractor's Proposed Equivalents and substitutions

including items by the second named maker. This shall include the cost of changes to other parts of the Work or the work of Separate Contractors. Contractor is responsible for coordination of all other work effected by the Proposed Equivalent or substitute, including but not limited to vibration, isolation, and acoustical requirements and criteria, at no additional cost to the Owner.

The decision of the Owner shall be final.

If a non-equivalent substitute is submitted for review, it shall be accompanied by a proposed reduction in Contract Price which shall include the increased cost of Engineering service required to evaluate the proposed substitute (which shall be paid to the Owner whether or not the substitute is accepted) plus the greater of 1) the difference in price between the first specified item and the item submitted and 2) the difference in value to the Owner between the two items.

Requests for Proposed Equivalents and substitutes will only be considered if Contractor submits the following minimum supporting data:

COMPLETED PROPOSED EQUIVALENT FORM (Section 7-A)

Complete technical data including drawings, performance specifications, samples, and test reports of the article proposed; and any additional information required by the Owner's Representative to fully describe the function and quality of the item.

Statement by Contractor that the Proposed Equivalent or substitute is in full compliance with the requirements of the Contract Documents and applicable Code requirements, and that any costs as a result of delay in the Work related to the proposed equivalent or substitute will be borne by the Contractor.

List of Subcontractors, if any, that may be affected by the substitution.

If the Proposed Equivalent or substitute requires that portions of the Work be redesigned or removed in order to accommodate the substituted item, submit design and engineering calculations prepared by a properly licensed design professional.

Failure of the Contractor to submit proposed equivalents and substitutes in the time limits and manner described within this Section shall be sufficient cause for the Owner to reject and disapprove any substitutions otherwise proposed.

Wherever more than one (1) manufacturer's product is specified, the first named product is the basis for the design used in the work and all other listed products and/or manufacturers are

considered substitutions. The use of alternative-named manufacturers' products or substitutes may require modifications in the design. If such substitutions are proposed by Contractor and are approved by the Owner, Contractor shall assume all costs required to make necessary revisions and modifications to the design, including additional costs to the Owner for evaluation of revisions and modifications of the design resulting from the substitutions submitted by Contractor to the Owner.

If the Owner, in reviewing the list of proposed equivalent or substitute materials and equipment, requires revisions or corrections to be made to previously accepted Shop Drawings and supplemental supporting data to be resubmitted, Contractor shall promptly do so. If any proposed equivalent or substitute is judged by the Owner to be unacceptable, the specified material or equipment shall be provided.

Samples may be required. Tests required by the Owner for the determination of quality and utility shall be made by Contractor's Testing Laboratory and at the expense of Contractor, with acceptance of the test procedure first given by the Owner.

In reviewing the supporting data submitted for proposed equivalents and substitutes, the Owner will use, for purposes of comparison, all the characteristics of the first listed material or equipment as they appear in the manufacturer's published data even though all the characteristics may not have been particularly mentioned in the Specifications. If the Contractor's second attempt to obtain Favorable Review of a Proposed Equivalent or substitute item is unsuccessful, the Contractor shall submit the first specified item.

END OF DOCUMENT

6-B INFORMATION AND PROCEDURES INSTRUCTIONS**GENERAL**

This Section contains the procedures to be followed by the Contractor upon discovery of any apparent conflicts, omissions, or errors in the Contract Documents or upon having any question concerning interpretation.

NOTIFICATION BY CONTRACTOR

Submit all requests for clarification or additional information in writing to the Owner's Representative using a Request for Information (RFI) form as acceptable to the Owner's Representative.

Request for Information

Number RFIs sequentially. Follow RFI number with sequential alphabetical suffix as necessary for each resubmission. For example, the first RFI would be "001." the second RFI would be "002." The first resubmittal of RFI "002" would be "002a."

Limit each RFI to one (1) subject.

Submit a RFI if one of the following conditions occur:

- A. The Contractor discovers an unforeseen condition or circumstance that is not described in the Contract Documents.
- B. The Contractor discovers an apparent conflict or discrepancy between portions of the Contract Documents that appears to be inconsistent or cannot be reasonably inferred from the intent of the Contract Documents.
- C. The Contractor discovers what appears to be an omission from the Contract Documents that cannot be reasonably inferred from the intent of the Contract Documents.

RFIs will not be recognized or accepted if, in the opinion of the Owner's Representative, one of the following conditions exists:

- A. The Contractor submits the RFI as a request for substitution.
- B. The Contractor submits the RFI as a submittal.
- C. The Contractor submits the RFI under the pretense of a Contract Documents discrepancy or omission without thorough review of the Contract Documents.

- D. The Contractor submits the RFI in a manner that suggest that specific portions of the Contract Documents are assumed to be excluded or by taking an isolated portion of the Contract Documents in part rather than whole.
- E. The Contractor submits an RFI in an untimely manner without proper coordination and scheduling of Work of related trades.
- F. The Contractor submits an RFI solely to clarify Contractor-prepared Construction Documents.

Ask for any clarification or request for information immediately upon discovery. Submit RFIs in a reasonable time frame so as not to affect the Contract Schedule while allowing the full response time described below.

Contractor must submit time-critical RFIs at least 30 Days before scheduled start date of the affected Work activity. Contractor shall reference each RFI to an activity of Progress Schedule and shall note time criticality of the RFI, indicating time within which a response is required. Contractor's failure to reference RFI to an activity on the Progress Schedule and note time criticality on the RFI shall constitute Contractor's waiver of any claim for time delay or interruption to the Work resulting from any delay in responding to the RFI.

Contractor shall be responsible for its costs to implement and administer RFIs throughout the Contract duration. Regardless of the number of RFIs submitted, Contractor shall not be entitled to additional compensation for the effort required to submit the RFIs. Contractor shall be responsible for Owner's administrative costs for answering RFIs where the answer could reasonably be found by reviewing the Contract Documents, as determined by Owner; at Owner discretion, such costs may be deducted from progress payments or final payment.

RESPONSE TIME

The Owner's Representative, whose decision will be final and conclusive, shall resolve such questions and issue instructions to the Contractor within a reasonable time frame. In most cases, RFIs will receive a response within 10 working days. In some cases, this time may need to be lengthened for complex issues, or shortened for emergency situations, as mutually agreed in writing. Contractor shall distribute RFI responses to all appropriate Subcontractors.

Should the Contractor proceed with the Work affected before receipt of a response from the Owner's Representative, within the response time described above, any portion of the Work which is not done in accordance with the Owner's Representative's interpretations,

clarifications, instructions, or decisions is subject to removal or replacement and the Contractor shall be responsible for all resultant losses.

If Contractor is satisfied with the response and does not request a change in Contract Sum or Contract Time, then the response shall be executed without a change.

If Contractor believes the response is incomplete, Contractor shall issue another RFI (with the same RFI number with the letter "A" indicating it is a follow-up RFI) to Owner clarifying original RFI. Additionally, Owner may return RFI requesting additional information should original RFI be inadequate in describing condition.

END OF DOCUMENT

6-C MODIFICATION PROCEDURES**GENERAL**

This section contains the procedures for modifying the Contract Documents and determining costs for changes in contract amounts.

CONTRACTOR INITIATED CHANGE ORDER REQUEST (COR) PROCEDURES

Whenever Contractor elects or is entitled to submit a COR, Contractor shall prepare and submit to Owner for consideration a COR using the form included in these Contract Documents as Section 7-D Change Order Request (COR). All CORs must contain a complete breakdown of costs, of credits, deducts and extras; itemizing materials, labor, taxes, Markup and any requested changes to Contract Time. All Subcontractor Work shall be so indicated. Individual entries on the COR form shall include applicable Schedule of Values code, with all amounts determined as provided herein. After receipt of a COR with a detailed breakdown, Owner will act promptly thereon.

If Owner accepts a COR, Owner will prepare a Change Order for Owner and Contractor signatures.

If COR is not acceptable to Owner, Owner will provide comments thereto. Contractor will then, within seven (7) Days (except as otherwise provided herein), submit a revised COR.

When necessity to proceed with a change does not allow Owner sufficient time to conduct a proper check of a COR (or revised COR), Owner may issue a Change Directive (CD) as provided below.

CONTRACTOR-INITIATED REQUEST FOR INFORMATION (RFI) PROCEDURES, REQUIREMENTS AND LIMITATIONS

Contractor may submit RFI's for clarifications in Owner-prepared Contract Documents, which may result in the Contractor submitting a COR.

RFIs and RFI submittals shall comply with the provisions of Section 6-B INFORMATION AND PROCEDURES INSTRUCTIONS.

TIME REQUIREMENTS

If Contractor believes that an Owner response to an RFI, submittal or other Owner direction, results in change in Contract Sum or Contract Time, Contractor shall notify Owner with the issuance of a preliminary COR within seven Days after receiving Owner's response or direction,

and in no event after starting the disputed work or later than the time allowed in the General Conditions. If Contractor also requests a time extension, or has issued a notice of delay or otherwise requests a time extension with a COR, then Contractor shall submit the Time Impact Evaluation (TIE) required herein concurrently with the COR.

If Contractor requires more time to accurately identify the required changes to the Contract Sum or Contract Time, Contractor may submit an updated and final COR and TIE within 14 days of submitting the preliminary COR.

If Owner agrees with Contractor, then Contractor must submit a COR within fourteen (14) Days of receiving the response to the RFI and COR. If Owner disagrees with Contractor, then Contractor may give notice of potential claim and proceed thereunder.

Contractor must submit CORs, Cost Proposals (CPs), notices of potential claim or Claims within the required time periods. Any failure to do so waives Contractor's right to submit a COR, CP or file a Claim.

COST ESTIMATE INFORMATION

Contractor and subcontractors shall, upon Owner's request, permit inspection of the original unaltered cost estimates, subcontract agreements, purchase orders relating to the change, and documents substantiating all costs associated with its COR or Claims arising from changes in the Work.

PROCEDURES FOR OWNER INITIATED CHANGE DIRECTIVES (CD) CHANGE ORDERS (CO) OR REQUEST FOR QUOTATION (RFQ)

Owner Initiated Change Directives (CD)

Owner may, by Change Directive ("CD") or initially by Supplemental Instruction or by following the procedures for disputed work herein, order changes in the Work within the general scope of the Contract consisting of additions, deletions, or other revisions, with or without adjustment to Contract Sum or Contract Time.

If at any time, Owner believes in good faith that a timely Change Order will not be agreed upon using the foregoing procedures, or at any other time, Owner may issue a CD with its recommended cost and/or time adjustment (if any). Upon receipt of CD, Contractor shall promptly proceed with the change of work involved and respond to Owner within ten (10) Days.

Contractor's response must be any one of following:

- A. Return CD signed, thereby accepting Owner response, including adjustment to time and cost (if any).
- B. Submit a (revised if applicable) COR with supporting documentation (if applicable, reference original COR number followed by letter A, B, etc. for each revision), if Owner so requests.
- C. Give notice of intent to submit a claim and submit its claim as provided therein.

If COR or the CD provides for an adjustment to any Contract Sum, the adjustment shall be based on one of the following methods:

- A. Mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation.
- B. Contractor to proceed on cost reimbursable (force account) basis while negotiating towards a firm price.
- C. Cost to be determined in a manner agreed.

Change Directive signed by Contractor indicates the agreement of Contractor therewith, including adjustment in Contract Sum or the method for determining them. Such agreement shall be effective immediately and shall be finalized as a Change Order. Where Owner authorizes CD work on a time and materials basis up to a maximum amount, then Contractor shall promptly advise Owner upon reaching 75% of such maximum amount, otherwise Contractor shall accept fully the risk of completing the CD work without exceeding such maximum amount.

If Contractor does not respond promptly or disagrees with the method for adjustment (or non-adjustment) in the Contract Sum, the method and the adjustment shall be determined by Owner on the basis of the Contract Documents and the reasonable expenditures and savings of those performing the Work attributable to the change. If the parties still do not agree on the proper adjustment due to a Change Directive, Contractor may file a claim and/or Owner may direct the changed work through a unilateral change order. Contractor shall keep and present an itemized accounting in a manner consistent with the Schedule of Values (SOV), together with appropriate supporting data. Unless otherwise provided in the Contract Documents, costs for the purposes of this paragraph shall be limited to those provided herein.

Pending final determination of cost to Owner, Contractor may include amounts not in dispute in its Applications for Payment. The amount of credit to be allowed by Contractor to Owner for

a deletion or change which results in a net decrease in the Contract Sum shall be actual net cost as confirmed by Owner. When both additions and credits covering related Work or substitutions are involved in a change, the allowance for Markup shall be figured on the basis of net increase, if any, with respect to that change.

Owner Initiated Change Order (CO) or Request for Quotation (RFQ):

Owner may initiate changes in the Work or Contract Time by issuing a Request for Quotation ("RFQ") or Change Order ("CO") to Contractor.

Owner may issue an RFQ to Contractor. Any RFQ will detail all proposed changes in the Work and request a quotation of changes in Contract Sum and Contract Time from Contractor.

In response to an RFQ, Contractor shall furnish a COR within twenty-one (21) Days of Owner's RFQ. Upon approval of COR, Owner may issue a Change Directive directing Contractor to proceed with extra Work.

If the parties agree on price and time for the work, the Owner will issue a Contact Change Order. If the parties do not agree on the price or time for a CP, Owner may either issue a CD or decide the issue per the claim process. Contractor shall perform the changed Work notwithstanding any claims or disagreements of any nature.

Supplemental Instruction

Owner may issue Supplemental Instruction to Contractor.

If Contractor is satisfied with Supplemental Instruction and does not request change in Contract Sum or Contract Time, then Supplemental Instruction shall be executed without a Change Order.

If Contractor believes that Supplemental Instruction results in change in Contract Sum or Contract Time, then Contractor must submit a COR with the appropriate Cost Proposal to Owner within fourteen (14) Days of receiving the Supplemental Instruction.

Procedures that Apply to Contractor- and Owner-Initiated Change Orders

Adjustment of Schedules to Reflect Change Orders or CDs:

- A. Contractor shall revise Schedule of Values and Application for Payment forms to record each authorized Change Order or CD as a separate line item and adjust the Contract Sum as shown thereon prior to the next monthly pay period.

- B. Contractor shall revise the Progress Schedules prior to the next monthly pay period, to reflect CO or CD.
- C. Contractor shall enter changes in Project Record Documents prior to the next monthly pay period.

Required Documentation for Adjustments to Contract Amounts

For all changes and cost adjustments requested, Contractor shall provide documentation of change in Contract Amounts asserted, with sufficient data to allow evaluation of the proposal.

On all requests for compensation, cost proposals, estimates, claims and any other calculation of costs made under the Contract Documents, Contractor shall breakout and quantify costs of labor, equipment and materials identified herein, for Contractor and subcontractors of any tier.

Contractor shall, on request, provide additional data to support computations for:

- A. Quantities of products, materials, labor and equipment.
- B. Taxes, insurance, and bonds.
- C. Justification for any change in Contract Time and new Progress Schedule showing revision due, if any.
- D. Credit for deletions from Contract, similarly documented.

Contractor shall support each claim or computation for additional cost, with additional information including:

- A. Origin and date of claim or request for additional compensation.
- B. Dates and times Work was performed and by whom.
- C. Time records and wage rates paid.
- D. Invoices and receipts for products, materials, equipment and subcontracts, similarly documented.
- E. Credit for deletions from Contract, similarly documented.

Responses and Disputes

For all responses for which the Contract Documents do not provide a specific time period, recipients shall respond within a reasonable time.

For all disputes arising from the procedures herein, Contractor shall follow the claims procedures.

COST DETERMINATION FOR CHANGES IN CONTRACT AMOUNTS

Calculation of Total Cost of Extra Work

Total cost of changed Work, extra Work or of Work omitted shall be the sum of three components defined immediately below as: Component A Direct Cost(s); Component B Markup; and, Component C Bonds, Insurance, Taxes.

Component A is Direct Cost(s) of labor, equipment and materials, is calculated based upon actually incurred (or omitted) labor costs, material costs and equipment rental costs, as defined herein;

Component B: Markup on such actually incurred Direct Costs, is applied in the percentages identified below; and

Component C is actual additional costs for any additionally required insurance, bonds, and/or taxes, defined herein, is calculated without Markup.

COMPONENT A: MEASUREMENT OF DIRECT COST OF CONSTRUCTION

Component A has four subcomponents, also referred to as “LEMS”:

Labor (Component 1)

Equipment (Component 2)

Materials (Component 3)

Subcontractors (Component 4)

Measurement of Cost of Labor (Component 1)

Cost of Labor shall be calculated as: Cost of labor for workers (including forepersons when authorized by Owner) used in actual and direct performance of the subject work, whether employer is Contractor, Subcontractor or other forces, in the sum of the following:

- A. Actual Wages: Actual wages paid shall include any employer payments to or on behalf of workers for health and welfare, pension, vacation, and similar purposes.
- B. Labor surcharge: Payments imposed by local, county, state, and federal laws and ordinances, and other payments made to, or on behalf of, workers, other than actual wages as defined, such as worker’s compensation insurance. Such labor surcharge shall not exceed generally accepted standards in the State for labor rates in effect on date upon which extra Work is accomplished.
- C. Cost of labor shall include no other costs, fees or charges.

Labor cost for operators of equipment owned and operated by Contractor or any Subcontractor, shall be no more than rates of such labor established by collective bargaining agreements for type of worker and location of Work, whether or not owner-operator (i.e., Contractor or Subcontractor) is actually covered by such an agreement.

Cost of labor shall be recorded and documented in certified payroll records, maintained in the form customary and/or required in the State, delivered to Owner weekly.

Measurement of Cost of Equipment (Component 2)

Cost of Equipment shall be calculated as: Cost of Equipment used in actual and direct performance of the subject work, whether by Contractor, Subcontractor or other forces. Cost of Equipment shall be calculated as herein described:

- A. For rented equipment, cost will be based on actual rental invoices, appropriate for the use and duration of the work. Equipment used on extra Work shall be of proper size and type. If, however, equipment of unwarranted size or type and cost is used, cost of use of equipment shall be calculated at rental rate for equipment of proper size and type, as determined by Owner.
- B. Equipment rental cost for Contractor or Subcontractor-owned equipment, shall be determined by reference to, and not in excess of, the generally accepted standards in the State for equipment rental rates in effect on date upon which extra Work is accomplished. If there is no applicable rate for an item of equipment, then payment shall be made for Contractor- or Subcontractor-owned equipment at rental rate listed in the most recent edition of the CalTrans Standard Schedules and Specifications, and absent a rental rate therein, then the Association of Equipment Distributors (AED) book.

In all cases, rental rates paid shall be deemed to cover cost of fuel, oil, lubrication, supplies, small tools, necessary attachments, repairs and maintenance of any kind, depreciation, storage, insurance, and all incidentals.

Unless otherwise specified, manufacturer's ratings, and manufacturer-approved modifications, shall be used to classify equipment for determination of applicable rental rates. Individual pieces of equipment or tools not listed in said publication and having a replacement value of \$700 or less, whether or not consumed by use, shall be considered to be small tools and no payment will be made therefore as payment is included in payment for labor. Rental time will not be allowed while equipment is inoperative due to breakdowns.

For equipment on Site, rental time to be paid for equipment shall be time equipment is in operation on extra Work being performed or on standby as approved by Owner. The following shall be used in computing rental time of equipment:

- A. When hourly rates are listed, less than 30 minutes of operation shall be considered to be ½ hour of operation.
- B. When daily rates are listed, less than four hours of operation shall be considered to be ½ Day of operation.
- C. Rates shall correspond to actual rates paid by Contractor, i.e., if Contractor pays lower weekly or monthly rates, then same shall be charged to Owner.

For equipment that must be brought to Site to be used exclusively on extra Work, cost of transporting equipment to Site and its return to its original location shall be determined as follows:

- A. Owner will pay for costs of loading and unloading equipment.
- B. Cost of transporting equipment in low bed trailers shall not exceed hourly rates charged by established haulers.
- C. Cost of transporting equipment shall not exceed applicable minimum established rates of California Public Utilities Commission or appropriate State Dept. of Transportation.
- D. Owner will not make any payment for transporting and loading and unloading equipment if equipment is used on Work in any other way than upon extra Work.
- E. Rental period may begin at time equipment is unloaded at Site of extra Work and terminate at end of the performance of the extra Work or Day on which Owner directs Contractor to discontinue use of equipment, whichever first occurs. Excluding Saturdays, Sundays, and Owner legal holidays, unless equipment is used to perform extra Work on such Days, rental time to be paid per Day shall be four hours for zero hours of operation, six hours for four hours of operation and eight hours for eight hours of operation, time being prorated between these parameters. Hours to be paid for equipment that is operated less than eight hours due to breakdowns, shall not exceed eight less number of hours' equipment is inoperative due to breakdowns.

Employee vehicles are not part of Component 2, rather, are included within Component B (Markup).

Equipment costs shall include no other costs, fees or charges.

Measurement of Cost of Material (Component 3)

Cost of Material shall be calculated as herein described. Cost of such materials will be cost to purchaser (Contractor, Subcontractor or other forces) from supplier thereof, except as the following are applicable:

If cash or trade discount by actual supplier is offered or available to purchaser, it shall be credited to Owner notwithstanding fact that such discount may not have been taken.

For materials salvaged upon completion of Work, salvage value of materials shall be deducted from cost, less discounts, of materials.

If cost of a material is, in opinion of Owner, excessive, then cost of material shall be deemed to be lowest current wholesale price at which material is available in quantities concerned delivered to Site, less any discounts as provided in this Paragraph.

Material costs shall include no other costs, fees or charges.

Measurement of Cost of Subcontractors (Component 4)

Where reimbursed or calculated per the terms of the Contract Documents, change order or Change Directive, cost of Subcontractors shall be calculated as amounts earned by Subcontractors procured in compliance with the Contract Documents and approved by the Owner, provided such subcontractor earned amounts meet the following requirements:

Such amounts are earned under the terms of the Subcontracts and the Work complies with the terms of the Contract Documents;

Such amounts are properly requested, documented and permitted under the terms of the subcontract(s) and the Contract Documents;

Total cost to Owner of Direct Costs of Construction (labor, equipment, materials), Markup, and costs of bonds, insurance and taxes, conform to contract limitations (i.e., totals paid by Owner do not exceed the 20% Markup limitation.)

COMPONENT B: MEASUREMENT AND PAYMENT OF MARK UP

Markup on Direct Cost of labor and materials for extra Work shall be 15%. Markup on Direct Cost of equipment for extra Work shall be 15%.

When extra Work is performed by Subcontractors, regardless of the number of tiers, total Markup on "Component A" Direct Costs shall not exceed 20%. Contractor and its Subcontractors shall divide the 20% as they may agree.

Under no circumstances shall the total Markup on any extra Work exceed twenty (20) percent, stated as a percent of the Direct Cost of labor, equipment and materials. This limitation shall apply regardless of the actual number of subcontract tiers.

On proposals covering both increases and decreases in Contract Sum, Markup shall be allowed on the net increase only as determined above. When the net difference is a deletion, no percentage for Markup shall be allowed, but rather an appropriate percentage deduction shall be issued in the amount of the net difference.

Measurement and Payment of Component B Mark Up

Component B Mark Up provides complete compensation to Contractor for:

- A. All Contractor profit;
- B. All Contractor home-office overhead;
- C. All Contractor assumption of risk assigned to Contractor under the Contract Documents;
- D. Subject to the qualifications below regarding self-performed work, all General Conditions and General Requirements.

Profit Compensation for profit included within Component B (Mark Up), includes without limitation: Fees of all types, nature and description; and Profit and margins of all types, nature and description.

Home Office Expenses. Compensation for home office expenses included within Component B Mark Up, includes without limitation: Salaries and other compensation of any type of Contractor's personnel (management, administrative and clerical), and all direct and indirect operating, travel, payroll, safety, storage, quality control, maintenance and overhead costs of any nature whatsoever, incurred by Contractor at any location other than the Project specific site office, including without limitation, Contractor's principal or branch offices; insurance premiums other than those for Project specific insurance directed by the Owner in a change order; all hardware, software, supplies and support personnel necessary or convenient for Contractor's capture, documentation and maintenance of its costs and cost accounting data and cost accounting and control systems and work progress reporting.

Assumption of Risk. Compensation for Contractor's assumption of risk under the Contract Documents, included within Component B Mark Up, includes without limitation loss, cost, damage, expense or liability resulting directly or indirectly from any of the following causes ("unallowable costs"), for Contractor and subcontractors of any tier: noncompliance with the Contract Documents, fault or negligence, defective or non-conforming Work, by Contractor or

any Subcontractor or Vendor of any tier or anyone directly or indirectly employed by any of them, or for whose acts or omissions any of them are responsible or liable at law or under the Contract Documents; cost overruns of any type; costs in excess of any lump sum, not to exceed amount or GMP; costs resulting from bid or “buy out” errors, unallocated scope, or incomplete transfer of scope or contract terms to subcontractors; any costs incurred by Contractor relating to a Change in the Work without a Change Order or Change Directive in accordance with the Contract Documents; costs for work or materials for which no price is fixed in the Contract Documents, unless it is expressly specified that such work or material is to be paid for as extra work.

General Conditions and Division 1 General Requirements. Compensation for Contractor’s General Conditions and General Requirements Costs included within Component B Mark Up, includes compensation to Contractor for: Contractor’s direct costs, without overhead or profit, for salaries and related forms of compensation and employer’s costs for labor and personnel costs, of Contractor’s employees and sub-consultant’s employees (if any), while and only to the extent they are performing Work at the Project Site. Personnel and Work compensated by this Component include without limitation: All required Project management responsibilities; all on-site services; monthly reporting and scheduling; routine field inspection of Work; general superintendence; general administration and preparation of cost proposals, schedule analysis, change orders and other supporting documentation as necessary; salaries of project superintendent, project engineers, project managers, safety manager, other manager, timekeeper, and secretaries; all cost estimates and updates thereto; development, validation and updates to the project schedule; surveying; estimating. Compensation for Contractor’s General Requirements Costs included within Component B Mark Up, compensates Contractor for its “General Requirements” Costs, including without limitation: all scheduling hardware, software, licenses, equipment, materials and supplies; purchase, lease or rental, build out, procurement, supporting equipment and maintenance of temporary on-Site facilities, Project field and office trailers and other temporary facilities, office equipment and supporting utilities; platforms, fencing, cleanup and jobsite security; temporary roads, parking areas, temporary security or safety fencing and barricades, etc.; all Contractor’s motor vehicles used by any Contractor’s personnel, and all costs thereof; all health and safety requirements, required by law or Owner procedures; all surveying; all protection of Work; handling and disposal fees; final cleanup; repair or maintenance; other incidental Work; all items, activities and function similar to any of those described above; all travel, entertainment, lodging, board and the like.

Personnel compensated by the Markup Component do not include workers of foreman level or below in the case of self-performed work; rather, such personnel shall be treated as a Direct Cost of Construction. Costs compensated by the Markup component do not include temporary

measures specifically required by the changed work, not otherwise required or ongoing in the prosecution of the Work, that commences specifically to support the changed work and conclude with the completion of the changed work. Such costs shall be treated as Direct Costs of Construction. Examples of General Requirements costs that this component may not cover are the following: temporary barricades or fencing of specific areas required specifically for the changed work; cranes required specifically for the changed work; extra security required specifically for the changed work.

COMPONENT C: MEASUREMENT AND PAYMENT OF BONDS INSURANCE TAXES

Component C Bonds, Insurance, Taxes) consists of the cost of bonds, insurance and taxes, also referred to as "BIT". All State sales and use taxes, applicable County and applicable City sales taxes, shall be included. Federal and Excise tax shall not be included.

There is no mark up on BIT.

Bonds and Insurance cost shall not exceed 1 ½% of the cost of the price change.

EFFECT OF PAYMENT

Change Order Compensation is All Inclusive

Except as provided expressly below regarding changes that extend the Contract Time, payment of calculated cost of extra work constitutes full and complete compensation for costs or expense arising from the extra Work, and is intended to be all inclusive.

Payment for Direct Cost of Construction (Component A Labor or LEMS) is intended to be all-inclusive. Any costs or risks not delineated within cost of labor, equipment or materials herein, shall be deemed to be within the costs and risks encompassed by the applicable Markups and unallowable in any separate amount.

Payment of Markup (Component B Markup) is intended to be all-inclusive. Contractor waives claims for any further or different payment of cost and risk items delineated herein, other than the allowable percentage markup on costs set forth in the Contract Documents; such separate, further or different cost or risk items shall be unallowable, waived and liquidated within the allowable percentage markup.

Contractor shall recover no other costs or markups on extra work of any type, nature or description.

Exception for Changes Extending the Contract Time

Where a change in the Work extends the Contract Time, Contractor may request and recover

additional, actual direct costs, provided Contractor can demonstrate such additional costs are actually incurred performing the Work, not compensated by the Markup allowed, and directly result from the extended Contract Time. Contractor shall make such request and provide such documentation following all required procedures, documentation and time requirements in the Contract Documents, and subject to all contract limitations of liability. Contractor may not seek or recover such costs using formulas (e.g., Eichleay).

Limits of Liability / Accord and Satisfaction

The foregoing limits of compensation apply in all cases of claims for changed Work, whether calculating Change Order Requests, Change Orders or CDs, or calculating claims and/or damages of all types, and applies even in the event of fault, negligence, strict liability, or tort claims of all kinds, including strict liability or negligence. Contractor may recover no other costs arising out of or connected with the performance of extra Work, of any nature.

Under no circumstances may Contractor claim or recover special, incidental or consequential damages against Owner, its representatives or agents, whether arising from breach of contract, negligence, strict liability or other tort or legal theory, unless specifically and expressly authorized in the Contract Documents.

No change in Work shall be considered a waiver of any other condition of Contract Documents. No claim shall be made for anticipated profit, for loss of profit, for damages, or for extra payment whatever, except as expressly provided for in Contract Documents.

Accord and Satisfaction: Every Change Order and accepted CD shall constitute a full accord and satisfaction, and release, of all Contractor (and if applicable, Subcontractor) claims for additional time, money or other relief arising from or relating to the subject matter of the change including, without limitation, impacts of all types, cumulative impacts, inefficiency, overtime, delay and any other type of claim. Contractor may elect to reserve its rights to disputed claims arising from or relating to the changed Work at the time it signs a Change Order or approves a CD, but must do so expressly in a writing delivered concurrently with the executed Change Order or approved CD, and must also submit a Claim no later than thirty (30) Days after Contractor's first written notice of its intent to reserve rights. Execution of any Change Order or CD shall constitute Contractor's representation of its agreement with this provision.

MISCELLANEOUS REQUIREMENTS

Owner-Furnished Materials

Owner reserves right to furnish materials as it deems advisable, and Contractor shall have no claims for costs and Markup on such materials.

Records and Certification

All charges shall be recorded daily and summarized in Change Order Request form attached hereto. Contractor or authorized representative shall complete and sign form each day. Contractor shall also provide with the form: the names and classifications of workers and hours worked by each; an itemization of all materials used; and a list by size type and identification number of equipment and hours operated.

Owner shall have the right to audit all records in possession of Contractor relating to activities covered by Contractor's claims for modification of Contract, including CD Work. This right shall be specifically enforceable, and any failure of Contractor to voluntarily comply shall be deemed an irrevocable waiver and release of all claims then pending that were or could have been filed.

END OF DOCUMENT

6-D SUBMITTALS**TIMELY SUBMITTAL**

The Contractor shall have submitted the following data as required in these Specifications before request is made for first progress payment. Submittal of the following data shall be regarded as an essential part of the construction operation that is required before any progress payment will be made.

Schedule of Values (Cost Breakdown) as specified herein and in the General Conditions.

Bill of Materials, which shall itemize the quantity of all materials for the Project correlated with each item in the cost breakdown.

Schedule of submittals as specified herein.

List of materials as specified herein.

Construction Schedule.

Contractor may expect submittal turnaround in fifteen (15) working days' maximum for most submittals. Some submittals may take longer than fifteen (15) working days depending on the volume and complexity of the submittals.

PROGRESS REPORTS**Daily Reports**

The Contractor shall prepare a Daily Report for every working day giving brief particulars of work accomplished, number of workers employed for each trade, and weather conditions.

Distribution

One (1) copy of the Daily Report shall be mailed to the Owner's Representative no later than one day after the day covered by the report. One copy shall be delivered to the Owner's Inspector no later than 8:15 a.m. on the day after the day covered by the report. The Contractor's delivery of complete and accurate daily reports on a daily basis is a material obligation of the Contractor under the Contract Documents.

SCHEDULE OF VALUES

Provide cost breakdown of the Contract Price, itemizing estimated cost of each class of Work.

Include line item amounts for mobilization, bonds and insurance. Mobilization shall be limited to one percent of the total contract amount.

An amount equal to one percent of the total contract amount shall be designated for punch list work. Values will be assigned to individual punch list items as the punch list is compiled. If the aggregate value of these items is less than the one percent designated for this work, the difference will be included in the next payment to the Contractor.

An amount equal to one percent of the total contract amount shall be assigned to the Contract Closeout items.

SCHEDULE AND FORM OF SUBMITTALS

Schedule

Submit Schedule of Submittals within thirty (30) days after the date of commencement specified in the Notice to Proceed. Schedule shall list submittals and indicate date submittal will be made.

Form

Number each submittal beginning with the applicable 5-digit specification section followed by a 3-digit number ie: 001, 002, etc., representing the order in which the submittals were submitted. Re-submittals shall use original submittal number followed by "R." For additional re-submittals, use the original submittal number followed by "R2," "R3," etc.

CONSTRUCTION SCHEDULE FORMAT

Prepare Construction Schedules as a horizontal bar chart or CPM with separate bar for each major portion of Work operation, identifying first work day of each week.

The Contractor shall develop a Critical Path Method Construction Schedule demonstrating fulfillment of all contract completion milestone requirements. The project schedule shall be kept current to be utilized for scheduling, coordinating, monitoring work progress, and for preparation of the monthly payment application for payment under the Contract including all Work of Subcontractors and equipment and material suppliers.

Sequence of Listings

The chronological order of the start of each item of Work.

Scale and Spacing

To provide space for notations and revisions.

CONSTRUCTION SCHEDULE CONTENT

Show complete sequence of construction by activity, with dates for beginning and completion of each element of construction.

Schedule shall include activities pertaining to long lead delivery items, fabrication items and submittal of shop drawings and product samples.

Show coordination with Owner work and other contractors.

OFFICIAL CONTRACT SCHEDULE (AKA "PROJECT CONSTRUCTION SCHEDULE")

Project Construction Schedule

The Critical Path Method Schedule to be prepared by the Contractor pursuant to this section will be a part of a total system for scheduling, reporting work progress, and preparing the monthly payment application.

Within ten (10) working days after the Notice to Proceed, the Contractor shall submit to the Owner's Construction Manager four original prints of the complete project construction schedule for approval or disapproval. In the event the complete project schedule is disapproved; the Contractor shall resubmit a correct schedule within five (5) working days after the notice of disapproval is received by the Contractor.

Should the Project Construction Schedule not be accepted within thirty (30) calendar days after Notice to Proceed, the Contractor may be due provisional progress payment(s) on work performed. It is the responsibility of the Contractor to reconcile such cost information and payments with the Project Construction Schedule. However, no payment shall be approved after the thirty (30) calendar day period, until the Project Construction Schedule has been accepted by the Owner.

The initial submittal of the Project Construction Schedule shall not reflect contract changes or delays. These changes shall be added within the first schedule revision.

Project Construction Schedule Elements

The Project Construction Schedule shall include, in addition to construction activities, the following:

- A. The submittal and approval of construction drawings, shop drawings and materials, the procurement and fabrication of major materials and equipment, and their installation and testing.

- B. Contract required dates of all or parts of the Work will be shown including all activities of the Owner that affect the progress of the work.
- C. Activities of completed work ready for use by next trade, etc.
- D. Activities relating to different areas of responsibility, such as sub-contracted Work which is distinctly separate from that being done by Contractor directly.
- E. Different categories of Work as distinguished by craft or crew requirements.
- F. Different categories of Work as distinguished by materials.
- G. Location of Work within the project that necessitates different times or crew to perform.
- H. Outage schedules of limiting times that existing utility services may be interrupted to construct the Project.
- I. Acquisition and installation of equipment and materials supplied and/or installed by Owner or separate Contractors.
- J. Material stored on site.

Major Equipment/Materials

For all major equipment and materials fabricated or supplied for Project, the Construction Schedule shall show a sequence of activities including:

- A. Preparation of shop drawings and sample submissions.
- B. Review of shop drawings and samples.
- C. Shop fabrication, delivery, and storage.
- D. Erection or installation.
- E. Test of equipment and materials.
- F. Required dates of completion.

Early Completion: Include in Project Construction Schedule an early completion date for the Project that is no later than Project's required date of completion.

Construction activities are to be delineated separately for off-site sewer, site development, earthwork, utilities, roads, parking lots, fences and like Work and each building, separately.

The network diagrams shall clearly indicate any work that is planned to be accomplished on a work schedule other than eight (8) hours per day and forty (40) hours per week.

The basic concept of CPM network diagramming will be followed to show how the start of a given activity is dependent on the completion of preceding activities and its completion restricts the start of following activities. The diagrams shall show a continuous flow of left-to-right sequences.

The following information will be provided in a report for each network activity:

- A. Activity description.
- B. Activity duration in work days.
- C. Activity cost. The Contract Price shall be broken down with the appropriate values distributed to the network diagram activities. The Contractor's overhead and profit shall be uniformly pro-rated over all values.
- D. Working activities and General Conditions activities shall be identified separately.
- E. Activity predecessors.
- F. Activity successors.

Schedule review by the Owner and its agents is limited to ensuring the logic of sequencing and distribution of Contract Price is reasonable and Contractor has demonstrated ability to meet contractual milestone and completion dates. Approval of schedule should not be constructed as direction from the Owner to Contractor on how to schedule the work.

After Completion and Acceptance of the Official Project Construction Schedule: The Contractor will provide initial computer reports and weekly and monthly reports thereafter, as follows.

Three-week Window: Weekly, for the progress meeting, the Contractor shall produce a three-week window of the current schedule, indicating activities completed the previous week and activities scheduled for the current and following week.

Payment Progress Reporting

Owner and Contractor shall select a specified time for updating the Project Schedule at the jobsite each month.

- A. The Owner and Contractor and his/her designated scheduling representatives will attend the meeting to review the project progress.

- B. The schedule shall be the basis for monthly pay requests derived from the joint review of the cost loaded schedule.
- C. All progress and status information provided by the Contractor shall clearly define the reporting period for which the status is provided.

At the monthly progress review meeting, the Contractor will provide “actual start” and “actual completion” dates for activities that were started or completed during the reporting period. The Contractor and the Owner will agree upon and assign percent complete values to activities in progress. In the event of a disagreement, the Owner, or its designated representative, shall make the final decision as to percent completion of each activity.

After joint review, Owner will process the Contractor’s pay request based on progress from the schedule.

Payment to the Contractor shall be made from the progress reflected by the Interim or the Contract Schedule.

Time is of the Essence: Whenever it becomes apparent from the current monthly progress review that phases of Work or the Contract Completion Date will not be met, through no fault of the Owner, the Contractor will take the following actions with no change in the contract amount:

- A. Increase construction manpower to eliminate an adverse backlog of work.
- B. Increase the number of working hours per shift, shifts per day, working days per week, the amount of construction equipment, or any combination of the foregoing to eliminate the adverse backlog of Work.

The Official Project Construction Schedule as approved by the Owner will be an integral part of the Contract, and will establish interim Contract Completion Dates or milestone dates for the various activities.

Should any activity fall fifteen (15) work days or more behind the Official Project Construction Schedule approved by the Owner, the Owner will have the right to order the Contractor to expedite completion of that activity using whatever means are appropriate and necessary, without additional compensation to the Contractor.

Should any activity fall twenty (20) or more work days behind the Official Contract Schedule approved by the Owner, through no fault of the Owner, the Owner will have the right to perform the activity or have the activity performed by whatever method the Owner deems

appropriate. All costs incurred by the Owner in connection with expediting such activity under this subparagraph shall be reimbursed promptly to the Owner by the Contractor.

It is expressly understood and agreed that the failure by the Owner to either order the Contractor to expedite an activity or to expedite the activity by other means, pursuant to the two preceding paragraphs, shall not be considered precedent setting with respect to any other activities which may fall behind the Official Contract Schedule approved by the Owner; nor will it relieve the Contractor from completion of the Project Work in accordance with the Official Contract Schedule and the Contract Completion Date.

Owner's acceptance of, or its review of, comments about any schedule or scheduling data shall not relieve the Contractor from its sole responsibility to plan for, perform, and complete the Work within the Contract Time. Acceptance of or review of comments about any schedule shall not transfer responsibility for any schedule to Owner nor imply their agreement with (1) any assumption upon which such schedule is based, or (2) any matter underlying or contained in such schedule.

Failure of Owner to discover errors or omissions in schedules that it has reviewed, or to inform Contractor that Contractor, Subcontractors, or others are behind schedule, or to direct or enforce procedures for complying with the Contract Schedule shall not relieve Contractor from its sole responsibility to perform and complete with Work within the Contract Time and shall not be a cause for an adjustment of the Contract Time or the Contract Sum.

Schedule Revisions

General: Revisions to approved Construction Schedule must be approved in writing by the Owner and Contractor.

Contractor: Submit requests for revision to schedule to the Owner together with written rationale for revisions and description of logic for researching Work and maintaining Specific Contractual Milestone Dates listed in Contract Documents.

Proposed revisions acceptable to Owner will be incorporated into next update of Construction Schedule.

Acceptance: Acceptance of revised schedule by Owner does not relieve Contractor of meeting contractual milestone and completion dates.

Changes initiated by Owner and implemented by Change Orders which have potential to affect critical dates will require the Contractor to prepare revised schedule for Owner's concurrence. Once Owner agrees to revision, Contractor will incorporate it into updated Construction Schedule. Adjustments in schedule completion dates, either for intermediate activities or for

Contract as a whole, will be considered for compensation only to extent that there is not sufficient float to absorb the revisions accepted.

DISTRIBUTION

Distribute copies of Project Construction Schedule to project site file, Subcontractors, suppliers, and other concerned parties.

Instruct recipients to promptly report, in writing, problems anticipated by projections indicated in Schedules.

RECOVERY SCHEDULE

General: Should updated Project Construction Schedule show Contractor to be fourteen (14) or more calendar days behind schedule at any time during construction, Contractor will prepare Recovery Schedule displayed on CPM schedule, at no additional costs to Owner. Prepare Recovery Schedule to show plan for returning to original schedule as expeditiously as possible.

Schedule Assessment: Five (5) days prior to expiration of Recovery the Owner and Contractor will meet with Construction Manager to assess effectiveness of Recovery Schedule. As a result of this conference, Owner will direct Contractor as follows:

- A. Behind Schedule: If Owner determines Contractor is still behind schedule, Owner will direct Contractor to prepare another Recovery Schedule for subsequent pay period.
- B. On Schedule: If Owner determines Contractor has successfully complied with provisions of Recovery Schedule, Owner will direct Contractor to return to use of Project Construction Schedule.

SUBMITTAL REQUIREMENTS

General: Submit a minimum three (3) sets of submittals for Owner, Owner Representatives, and Contractor Copy. The submittals shall include but not be limited to the following materials:

Asphalt Concrete

Gradation and Type per Plans.

Bedding, Backfill (including permeable backfill), and Aggregate Base

Certificate of Compliance with appropriate gradation specifications;

Sieve Analysis;

Mix Design (Sand/Cement Slurry, Controlled-Density Backfill).

Control and Instrumentation Systems

Manufacturer's resumes

Catalog cuts

Dimensional drawings

Logic diagrams

Ladder diagrams with plain language narrative

Wiring diagrams

Block diagrams

Programming manual

Parts lists including source of supply

Nameplate data

Manufacturer's warranty

Copper Pipe, Tubing, and Fittings

Certificate of Compliance with AWWA C800

Ductile Iron Fittings

Certificate of Compliance with AWWA C110 or C153

Catalog cuts

Details showing dimensions and installation procedures

Ductile Iron Pipe

Certificate of Compliance with AWWA C151

Details showing dimensions and installation procedures

Electrical Equipment including Panels, Switch Gear, Lighting, Low-Voltage Electrical

Certificate of Compliance with Underwriter's Laboratories as appropriate

Certificate of Compliance with NEMA and NEC as appropriate

Catalog cuts

Dimensional drawings and details

Wiring diagrams

Ladder diagrams

Parts list including sources of supply

Short circuit calculations

Bench test results and performance curves

Complete installation and operations manuals

Breaker/fuse coordination diagrams

Breaker/fuse assignment list

Nameplate data

Manufacturer's warranty

Flowmeters, Residential Service (Domestic) Meters

Certificate of Compliance with AWWA C701, C703, and C704

Details showing dimensions and installation procedures

Galvanized Iron Pipe

Certificate of Compliance with AWWA C800

Details showing dimensions and installation procedures

Painting and Coating Systems including Caulking and Sealants

Color chips

Full material specifications including hazardous materials handling requirements

Material Safety Data Sheets

Application instructions

Certificates of Compliance with AWWA and ASTM specifications

Service Tubing and Fittings

Certificate of Compliance with AWWA C800 and C901

Details showing dimensions and installation procedures

Drainage Pipe and Fittings

Certificate of Compliance with ASTM F405, F667, and F810

Details showing dimensions and installation procedures

Polyvinyl Chloride (PVC) Pipe

Certificate of Compliance with AWWA C900, AWWA C905, AWWA C800, ASTM D1785, and ASTM D2241

Details showing dimensions and installation procedures

Precast Concrete Structures: Grates, Drainage inlets, Meter and Valve Boxes, and Vaults

Manufacturer's Resume citing Work of a similar nature within the previous 5-years

Structural calculations

Structural plans and details

Concrete mix designs

Specifications for installation

Manufacturer's warranty

Material specifications

Certificate of Compliance with ASTM Standards as appropriate

Catalog cuts as appropriate.

Pump Suction Barrels

Certificate of Compliance with AWWA C200

Details showing dimensions, welding, and installation procedures as appropriate

Pumping Equipment including Domestic Service Pumps, Chemical Feed Pumps, and Air Compressors

Manufacturer's Resume

Catalog cuts

Certificates of Compliance with AWWA Specifications as appropriate

Pump Curves including pumping rates at specified heads, NPSH Curves, and Efficiency Curves

Complete mechanical drawings

Complete electrical drawings including schematics, wiring, motors, connections, ladder diagrams with plain language narrative, and controls

Complete installation, maintenance, and operations manuals

Parts list including sources of supply

Bench test results

Nameplate data

Manufacturer's warranty

Retaining Wall Systems including but not limited to, Concrete Masonry Units, Structural Steel and Timber, Cast-in-Place Portland Cement Concrete, Pre-Cast Portland Cement Concrete, Crib Type, and Gabion/Mattress Type

Certificates of Compliance with ASTM Standards as appropriate

Dimensional drawings and details

Color chips

Structural calculations and design data

Reinforcing steel diagrams

Erection, bending, and placement drawings

Mix design for mortar and grout

Parts list including sources of supply

Welder certifications

Bench test results

Complete installation, operation, and maintenance manuals

Treatment Works

Manufacturer's Resume

Catalog cuts

Certificates of Compliance with AWWA Specifications as appropriate

Pump Curves including pumping rates at specified heads, NPSH Curves, and Efficiency Curves;

Complete mechanical drawings

Complete electrical drawings including schematics, wiring, motors, connections, ladder diagrams with plain language narrative, and controls

Complete installation, maintenance, and operations manual

Parts list including sources of supply

Bench test results

Nameplate data

Manufacturer's warranty

Valves including Control, Air and Air/Vacuum, Line Valves, Hydrants, Flood Control Valves, Flap Gates, Meters, and Small Valves and Couplings

Certificate of Compliance with AWWA Specifications as appropriate

Catalog cuts

Dimensional drawings and details

Complete mechanical drawings and details

Complete electrical drawings including schematics, wiring, motors, connections, ladder diagrams with plain language narrative, and controls

Water Storage Tanks, Hydro-Pneumatic Tanks, Chemical Storage Tanks, Fuel Tanks

Manufacturer's Resume

Catalog cuts

Certificates of Compliance with AWWA Specifications as appropriate

Complete mechanical drawings as appropriate

Complete installation, maintenance, and operations manuals

Parts list including sources of supply

Nameplate data

Manufacturer's warranty

END OF DOCUMENT

6-E MEASUREMENT AND PAYMENT**UNIT PRICES**

Unit Prices quoted in the Bid Form are for additions of (and deletions of) approved items of work. All Unit Prices quoted shall be for installed, completely furnished, and operable modifications according to the Contract Documents, and shall include profit, overhead, taxes, cost of coordinating the Unit Price work with adjacent work, compensation for risk of loss or damage to the Work regardless of cause, all expenses due to delays in performance, so they are the complete price to the District. The Unit Prices shall not apply to work the Contractor elects to do for its own convenience or to correct errors committed by the Contractor.

All Unit Prices shall remain in effect during construction and will be used to adjust the Contract Sum.

The Contractor shall immediately notify the District's Representative when conditions indicate the probability of the need to make use of any Unit Price work.

The applicability of, measurement methods for, documentation of, and the final adjustment in the Contract Sum for Unit Price work shall be determined by the District's Representative.

After performing Unit Price work as directed by the District's Representative, the Contractor shall take necessary measurements in the presence of the District's Inspector and shall submit calculations of the quantities to the District's Representative for approval. The Contractor shall notify the District's Inspector one (1) day in advance of taking measurements.

APPLICATION FOR PAYMENT

The Contractor shall submit monthly, on the first working day of each month, to the District's Representative, Application for Progress Payments, on forms approved by the District, setting forth an itemized estimate of Work completed in the preceding month for the purpose of the District's making of Progress Payments thereon. Valuation utilized in the Application for Progress Payments shall be based upon the Project Schedule update developed through the Owner's and Contractor's joint review of the cost-loaded schedule described in Section 6-D Submittals. The valuation shall be only for determining the basis of Progress Payments to Contractor and shall not be considered as fixing a basis for adjustments, where additive or deductive to the Contract Price or for determining the extent of Work actually completed.

END OF DOCUMENT

6-F PROJECT MEETINGS**PRECONSTRUCTION CONFERENCE**

Prior to mobilization or the commencement of any work on the Project site, and not later than 14 days after issuance of the Notice to Proceed, a pre-construction conference will be scheduled. The pre-construction conference will be conducted by the Owner's Representative to discuss timing procedures for smooth job progress, items requiring clarification, distribution of documents and correspondence with the Owner and the Owner's Representative, and other procedures which are to be followed during performance of the Work.

Location

On the Project site, as designated by the Owner's Representative.

Attendees

Owner

Owner's Representative

Engineer and the Engineers Consultants;

Contractor

Contractor's Project Manager

Contractor's Superintendent

Subcontractors, as appropriate

Others, as appropriate

Agenda

The agenda will include:

- A. Distribution of a list of major subcontractors and suppliers and the Project Construction Schedule.
- B. Critical work sequencing.
- C. Major equipment deliveries and priorities.
- D. Project coordination.
- E. Designation of responsible personnel.
- F. Procedures and processing of field decisions; submittals; modifications (Change Orders and Field Orders); proposal requests, cost proposals, supplemental information, requests for information (RFI) and applications for payment.
- G. Adequacy of distribution of Contract Documents.
- H. Procedures for maintaining Record Documents.
- I. Use of premises for office, work, and storage areas and the owner's representative's requirements.

- J. Construction facilities, controls, and aids; temporary utilities; tree protection procedures; erosion control; owner's operations and maintenance department concerns; housekeeping procedures; insurance requirements; wage and hour compliance; conducting work in operating facility and noise control.
- K. Other subjects as appropriate.

END OF DOCUMENT

6-G PROGRESS MEETING

During the course of construction, progress meetings will be held to discuss and resolve field problems.

OWNER'S REPRESENTATIVE RESPONSIBILITIES

The Owner's Representative shall schedule and administer weekly progress meetings and specially called meetings throughout progress of the Work:

Prepare agenda for meetings.

Make physical arrangements for meetings.

Preside at meetings.

Record minutes, including significant proceedings and decisions. Items not concluded will be retained on the agenda and in the minutes until conclusion is recorded in subsequent minutes. Format of the minutes shall be as mutually agreed upon by the Contractor and the Owner's Representative.

Reproduce and distribute copies of minutes within four (4) working days after each meeting to participants in meeting and to parties affected by decisions made at meeting.

Attendees taking exception to items contained in the minutes shall state their objections, in writing, within one (1) working day prior to the next scheduled meeting.

Representatives of Contractor, subcontractors and suppliers attending meeting shall be qualified and authorized to act on behalf of entity each represents.

The weekly time and day of job meetings shall be mutually agreed upon by all parties concerned and once determined the job meeting shall be held every week on the same day and at the same time.

The Location will be designated by the Owner's Representative.

Attendees

Owner

Owner's Representative

Engineer and the Engineers Consultants

Inspector

Contractor

Contractor's Project Manager

Contractor's Superintendent
Subcontractors, as appropriate
Others, as appropriate

BILLING MEETING

The Contractor shall conduct the billing meeting each month prior to submittal of the Application for Payment. During this meeting, the percentage of project completion will be discussed.

The Location will be designated by the Owner's Representative

Attendees

Owner
Owner's Representative
Engineer and the Engineers Consultants
Inspector
Contractor
Contractor's Project Manager

END OF DOCUMENT

6-H TESTING AND INSPECTION**DEFINITIONS**

The term "Owner's Testing Laboratory" means one or more testing laboratories retained and paid for by the Owner for the purpose of reviewing material and product reports and performing other services as determined by the Owner concurrent with and/or separate from tests specified to be performed by the Contractor. The Owner will select one or more independent Testing Laboratories to conduct tests. Selection of the material to be tested will be by the Laboratory or the Owner's Inspector and not by the Contractor.

The term "Contractor's Testing Laboratory" means a testing laboratory retained and paid for by Contractor to perform the testing services required by the Contract Documents. Contractor's Testing Laboratory shall be an organization other than the Owner's Testing Laboratory and shall be acceptable to the Owner's Representative. It may be a certified commercial testing organization, the certified testing laboratory of a trade association, the certified laboratory of a supplier or manufacturer, or the certified laboratory of another organization. Contractor's Testing Laboratory shall have performed testing of the type specified for at least five (5) years.

The term "The Owner's Inspector" or "Inspector of Record" means an inspector retained and paid for by the Owner for the purpose of observing the progress of the Work and ensuring compliance with the Contract Documents and applicable codes and regulations.

GENERAL

Except as otherwise specified, Contractor shall perform all observations, sampling and tests specified and as may be required to ensure and demonstrate proper installation and operation of materials and equipment in this Contract. This shall include, but not necessarily be limited to, observations of structural excavations; testing of the compaction of the bottoms of excavations and backfill including related sampling; observing substrate preparation and coating application and related testing; and observing, sampling and testing of concrete, masonry, reinforcing steel and other construction materials.

Tests, inspections, and acceptances of portions of the Work required by the Contract Documents or by Applicable Code Requirements shall be made at the appropriate times. Except as otherwise provided, Contractor shall make arrangements for such tests, inspections, and acceptances with Contractor's Testing Laboratory. Contractor shall give the Owner's Representative timely notice of when and where tests and inspections are to be made.

If such procedures for testing, inspection, or acceptance reveal failure of the portions of the Work to comply with requirements established by the Contract Documents, Contractor shall

bear all costs made necessary by such failure including those of repeated procedures and compensation for the Owner's Representative's, the Owner's Representative's Consultants', and the Owner's Inspector's services and expenses.

If the Owner's Representative or the Owner's Inspector is to observe tests, inspections, or make acceptances required by the Contract Documents, the Owner's Representative or the Owner's Inspector will do so promptly and, where practicable, at the normal place of testing.

Tests or inspections conducted pursuant to the Contract Documents shall be made promptly to avoid unreasonable delay in the Work.

The Work will be available for inspection at any and all times for the Owner, the Owner's Representative or the Owner's Inspector. Contractor will be expected to consult and cooperate with the Owner's Representative or the Owner's Inspector in regard to all requirements as set forth in the Contract Documents.

TESTING AND INSPECTION

Project Inspectors

The Owner will employ one or more qualified inspectors, acceptable to the Owner's Representative, who will be employed at Project site to observe progress of Work and to report to the Owner's Representative any nonconformance with the Contract Documents.

Geotechnical Engineer

The Contractor shall retain and pay the expenses of a professional Geotechnical Engineer licensed in the State of California to perform inspection, sampling, testing, and observation functions. The Contractor's Geotechnical Engineer shall be an entity other than the Owner's Geotechnical Engineer and shall be acceptable to the Owner's Representative.

At the Owner's prerogative, the Owner will retain and pay the expenses of a Geotechnical Engineer to perform inspection, testing, and observation functions in addition to those specified to be performed by the Contractor. Owner's Geotechnical Engineer shall communicate only with the Owner and the Owner's Representative. The Owner's Representative shall then give notice to Contractor, with a copy to the Owner, of any action required of Contractor. Owner's Geotechnical Engineer shall not advise on or issue directions relative to any aspect of construction means, methods, techniques, sequences, or procedures.

Persons performing testing and inspections shall not be authorized to:

- A. Release, revoke, alter or enlarge requirements of the Contract Documents.
- B. Stop Work except as may be required to perform testing or inspection operations.

Contractor's Responsibilities

Maintain quality control over suppliers, manufacturers, products, services, site conditions and workmanship, to produce work of specified quality. Testing and inspection shall not relieve Contractor of his responsibility for quality of materials in place.

Be responsible for scheduling all testing and inspections specified.

- A. Schedule work that is to be tested or inspected so that tests can be performed within a reasonable time period.
- B. Notify and obtain concurrence of Project Inspector prior to scheduling testing or inspection by Testing Laboratory or Geotechnical Engineer.
- C. Notify the Owner's Representative in writing at least forty-eight (48) hours in advance of operations on site requiring testing or inspection.
- D. Notify the Owner's Representative and the Owner's Inspector in writing a minimum of three (3) working days in advance of off-site operations requiring testing or inspection, in order that testing at the source can be arranged without delaying Work.
- E. Material shipped by the Contractor from the source of supply before having satisfactorily passed such testing and inspection, or before the receipt of notice from the Owner's Inspector that such testing and inspection will not be required, shall not be incorporated into the work.
- F. Notify the Owner's Representative in writing at least four (4) working days prior to commencement or resumption of operations requiring observation or testing by the Owner's Geotechnical Engineer as determined necessary by the Owner.
- G. When a specified test or inspection is not performed due to Contractor's failure to schedule services, the Owner's Representative will establish remedial work and Contractor shall bear cost of remedy.
- H. Additional tests and inspections not specified but requested by the Owner or Architect/Engineer, will be paid for by the Owner, unless results of such tests and inspections are found not in compliance with the Contract Documents, in which case the Owner will pay all costs for initial testing as well as re-testing and re-inspection, and deduct the costs from the Contract sum.

Reimburse the Owner for the following by deduction from Contract Sum:

- A. Costs of testing required because of changes in materials or proportions required by the Contractor.

- B. Where results of inspections or tests prove unsatisfactory or not in compliance with Contract Documents, costs for further inspection and retesting.
- C. Costs attributable to the Contractor's methods of operation, when these methods result in excessive test and inspection costs to the Owner, and if after warning, costs remain excessive.
- D. Premium time fees for testing performed after regular working hours or on Saturday, Sunday, or on legal holidays; except when testing is required for the Owner's requested overtime work.
- E. Tests arising from errors and omissions by the Contractor.
- F. Retests of materials that fail; tests required by the lack of required identifications of materials (mill tests, manufacturer's certifications, etc.); and re-inspections.
- G. Services required to expedite the Contractor's operations.
- H. Testing and inspection fees for travel and per diem expenses, when shops or plants of fabrication are located more than a 50-mile radius from the Project site.

The Contractor shall pay all costs associated with specified inspection, sampling and testing not specifically indicated to be paid by Owner without adjustment of the Contract Price or the Contract Time.

Repair or replace damage to work made necessary by sampling, testing and retesting.

Secure and deliver to the Owner's Testing Laboratory, Geotechnical Engineer, and Project Inspector adequate quantities of representative samples of materials proposed for use as specified and/or requested.

Submit to the Owner the preliminary design mixes proposed to be used for concrete and other materials which require review by the Owner.

Submit copies of product test reports as specified.

Furnish incidental labor and facilities:

- A. To provide the Owner's Testing Laboratory, Geotechnical Engineer, and Project Inspector access to the Work to be sampled and/or tested.
- B. To obtain and handle samples at the Project site or at the source of the product to be tested.
- C. To facilitate inspections and tests.

D. For storage and curing of test samples.

Provide notice to the Owner's Representative sufficiently in advance of sampling, testing, and inspection operations to allow for the Owner's Testing Laboratory, Geotechnical Engineer and Project Inspector assignment of personnel and scheduling of tests.

When tests or inspections are not performed after such notice due to the Contractor's operations or inaction, Contractor shall reimburse the Owner for the Owner's Testing Laboratory, Geotechnical Engineer and Project Inspector personnel and travel expenses incurred.

Several Sections of the Specifications require sampling and testing.

Maintain and keep available at the Project Site, California Code of Regulations, Part I and Part II, Title 24.

TESTING SERVICES

The Contractor's Testing Laboratory shall make as many field observations and tests as are required to determine the acceptability of the Work.

The Owner may retain Testing Laboratories to observe structure excavations; to test compaction of backfill; to observe substrate preparation and coating application and to conduct related testing; and to observe, sample and test concrete, masonry, steel, reinforcing and other construction materials and methods installed and used at the site of construction as the Owner's Representative may deem necessary. These observations, sampling and tests shall be supplemental to, and not take the place of, the specified observations, sampling and tests. Contractor shall provide safe access to the Work as required for the Owner's Testing Laboratories to perform sampling and tests.

Testing, sampling and inspection services shall be in accordance with the requirements of the California Building Code (CBC), and as specified. Testing and inspection services shall be used to verify that Work meets the requirements of the Contract documents.

In general, tests and inspections for structural materials shall include all items enumerated on the Structural drawings as listed for this Project and as prepared and listed by the Architect/Engineer.

Notice to the Owner's Representative: In instances where the Owner's Representative requires testing and where the Specifications require work to be specially tested or approved, it shall be tested only in the presence of the Owner's Representative after timely notice of its readiness

for inspection and testing, and the Work after testing shall be covered up only upon the consent thereto of the Owner's Representative.

Except where the costs of tests are specified to be paid by Owner, the results of any tests made by Owner's Testing Laboratory are for the information of the Owner. Regardless of any test results, Contractor is solely responsible for the quality of work and materials and for compliance with the requirements of the Drawings and Specifications.

Registered Civil Engineer currently licensed in the State of California shall sign test reports.

ADDITIONAL TESTING AND INSPECTION

If initial tests or inspections reveal that any portion of the Work does not comply with Contract Documents, or if the Owner's Representative determines that any portion of the Work requires additional testing or inspection, additional tests and inspections shall be made as directed.

- A. If such additional tests or inspections establish that such portion of the Work complies with the Contract Documents without remedial action by the Contractor, all costs of such additional tests or inspections shall be paid by the Owner.
- B. If such additional tests or inspections establish that such portion of the Work fails to comply with the Contract Documents, all costs of such additional tests and inspections, and all other costs resulting from such failure, including compensation for the Owner's Representative and the Owner's consultants shall be deducted from the Contract Sum.

TEST REPORTS

Certification and Copies

The Contractor's Testing Laboratory shall furnish certified reports summarizing results of inspection, indicating observations and results of tests and indicating compliance or non-compliance with the Contract Documents, and other equipment as to adequacy and compliance, and results of tests and inspections. The Contractor's Testing Laboratory will make copies and distribute test and inspection reports as follows:

Owner.	1 copy
Owner's Engineer/Architect.	2 copies
The Owner's Inspector.	1 copy
Contractor.	1 copy
Construction Manager.	2 copies

Test reports shall include all tests made, regardless of whether such tests indicate that the material is satisfactory or unsatisfactory. Samples taken but not tested shall also be reported. The reports shall show that the material or materials were sampled and tested in accordance with the requirements of CBC and with the Contract Documents. The reports shall also state definitely whether or not the material or materials tested comply with the requirements.

Form: Reports shall clearly distinguish type of test, material tested, whether original (first) test or retest, and related information.

SAMPLES AND MATERIALS

Contractor shall furnish samples and materials for testing and job site facilities for sample storage free of charge.

AVAILABILITY OF SAMPLES

Contractor shall make materials required for testing available to Laboratory and assist in acquiring these materials as directed by the Owner's Inspector. The samples shall be taken under the immediate direction and supervision of the Testing Laboratory or Inspector.

If Work that is required to be tested or inspected is covered up without prior notice or approval, such Work will be uncovered by the Contractor at the discretion of the Owner's Representative or Architect/Engineer at no additional cost to the Owner.

Unless otherwise specified, Contractor shall notify Testing Laboratory a minimum of 10 working days in advance of all required tests, and a minimum of 2 working days in advance of all required inspections. Extra laboratory expenses resulting from a failure to notify the Laboratory incurred by the Owner will be paid by the Owner and back-charged to the Contractor.

Contractor shall give sufficient advance notice to Testing Laboratory in the event of cancellation or time extension of a scheduled test or inspection. Charges due to insufficient advance notice of cancellations or time extension incurred by the Owner will be paid for by the Owner and back-charged to the Contractor.

REMOVAL OF MATERIALS

Unless otherwise directed, materials not conforming to the requirements of Contract Documents shall be promptly removed from the Project site.

INSPECTION BY THE DISTRICT

The Owner's Inspector shall at all times have access for the purpose of inspection to all parts of the Work and to the shops wherein the Work is in preparation, and the Contractor shall at all times maintain proper facilities and provide safe access for such inspection.

The Owner's Inspector shall have the right to reject materials and workmanship that are defective, or to require their correction. Rejected workmanship shall be satisfactorily corrected and rejected materials shall be removed from the premises without cost to the Owner. If the Contractor does not correct such rejected Work within a reasonable time, fixed by written notice, the Owner may correct such rejected Work and charge the expense to the Contractor.

Should it be considered necessary or advisable by the Owner at any time before final acceptance of the entire Work to make an examination of Work already completed by removing or tearing out completed Work, the Contractor shall on request promptly furnish necessary facilities, labor and materials. If such Work is found to be defective in any respect because of the fault of the Contractor or Installer, he shall defray all expenses of such examinations and of satisfactory reconstruction. If, however, such Work is found to meet the requirements of the Contract, the additional cost of labor and material necessarily involved in the examination and replacement shall be allowed the Contractor.

An Inspector employed by the Owner will be assigned to the Work.

The Work of construction in all stages of progress shall be subject to the personal continuous observation of the Inspector. He/She shall have free access to any or all parts of the Work at any time. The Contractor shall furnish the Inspector reasonable facilities for obtaining such information as may be necessary to keep the Inspector fully informed respecting the progress and manner of the Work and the character of the materials. Inspection of the Work shall not relieve the Contractor from any obligation to fulfill this Contract.

UNDESIRABLE CONDITIONS / NONCONFORMANCE

Substandard Test Results: When test or inspection by the Owner's Testing Laboratory reveals undesirable conditions, nonconformance or failure to meet requirements, the Owner's Testing Laboratory will notify the Owner's Representative. The Owner's Representative will notify Contractor that the Work does not meet requirements and is rejected.

Immediately upon Contractor's Testing Laboratory determination of a test failure, the Laboratory shall telephone the results of the test to the Owner's Representative and the Architect/Engineer. On the same day, the Laboratory shall send written test results via facsimile to those names on the distribution list above.

Correction: Work done or materials delivered that fail to comply with requirements of Specifications or Drawings shall be rejected and shall immediately be made satisfactory at no additional expense to the Owner.

MATERIALS AND WORK QUALITY

All work under all Sections shall be performed in strict accordance with the highest standards of practice related to the trades involved and shall be complete and properly coordinated with all work adjacent or related to it.

All materials must be of the specified quality and equal to approved samples, if samples have been submitted. All work shall be done and completed in a thoroughly high-quality manner, notwithstanding any omission from these Specifications, or the Drawings, and it shall be the duty of Contractor to call the Owner's Representative's attention to apparent errors or omissions and request written instructions before proceeding with the Work. The Owner's Representative may, by appropriate instructions, correct errors and supply omissions; such instructions shall be as binding upon Contractor as though contained in the original Specifications or Drawings.

All defective work or materials shall be promptly removed from the premises by Contractor, whether in place or not, and shall be replaced or renewed in such manner as the Owner's Representative may direct. All materials and work quality of whatever description shall be subjected to the inspection of, and rejection by the Owner's Representative if not in conformance with the Specifications. The decision of the Owner's Representative is final and conclusive upon the parties.

Any defective material or work quality, or any unsatisfactory or imperfect work which may be discovered before the final acceptance of the Work or within the initial (and any extended) warranty period, shall be corrected immediately as required by the Owner, without extra charge, notwithstanding that it may have been overlooked in previous inspections and estimates. Failure to inspect work shall not relieve Contractor from any obligation to perform sound and reliable work as herein described.

APPROVAL

Approval of the Work in part or as a whole by the Owner's Representative shall not relieve Contractor of the responsibility for such compliance with the requirements of the Contract Documents. Such approvals may be withdrawn at any time that subsequent examination reveals that apparently satisfactory Work is, in fact, either defective or otherwise fails to

comply. Such work from which approval has been withdrawn shall be replaced or re-executed in accordance with the Contract, at no expense to the Owner.

SPECIFIC TESTING REQUIREMENTS

Required tests and inspections as detailed in applicable specification sections include but are not limited to:

EARTHWORK

The Contractor's Geotechnical Engineer will provide continuous inspection of earthwork, field test fill and earth backfill as placed and compacted, inspect excavations and sub-grade before reinforcing steel, concrete or imported or native fill is placed, and provide periodic inspection of open excavations, embankment, and other cuts or vertical surfaces of earth. The Contractor's Geotechnical Engineer will submit a report documenting his observations and findings and providing his opinion if the constructed work is in accordance with the Contract Documents.

Contractor shall remove unsatisfactory material, re-compact, adjust moisture, place new material, or in the case of excavations, provide proper protective measures, perform other operations necessary, as approved by the Owner's Representative whose decisions will be considered final.

Soils Test and Inspection Procedure

Allow sufficient time for testing, and evaluation of results before material is needed. The Owner's Representative shall be sole and final judge of suitability of all materials.

Laboratory compaction tests to be used will be in accordance with ASTM D 1557.

Field density tests will be made in accordance with ASTM D 6938.

Number of tests will be determined by Geotechnical Engineer as approved by the Owner's Representative. Materials in question may not be used pending test results.

Excavation and embankment inspection procedure. Geotechnical Engineer will visually or otherwise examine such areas for bearing values, cleanliness and suitability.

Refer to the Division 2 specifications for additional requirements.

Earth Work Test Reports

In order to avoid misinterpretations by the reviewing agencies, any retest results shall be reported on the same sheet, immediately following the previous failure test to which it is related. Retests shall be clearly noted as such.

CONCRETE

Refer to the Division 3 specification section.

REINFORCING STEEL

Refer to the Division 3 specification sections.

COATINGS

Refer to the Division 9 specification sections.

END OF DOCUMENT

6-I CONTRACT CLOSE-OUT**CLOSE-OUT PROCEDURES**Close-out Submittals

Prior to final payment and before the Owner's Representative issues a final Certificate for Payment, following shall be submitted as directed:

- A. When called for in the Specifications, maintenance materials (extra stock) will be delivered to the Owner at its designated storage location materials, etc., for use in maintenance work.
- B. Provide list of materials and quantities delivered to the Owner indicating date and acceptance by the Owner.
- C. Evidence of compliance with requirements of governing authorities.
- D. Record of all inspections and tests.
- E. Project Record Documents.
- F. Operating and Maintenance Data, Instructions to the Owner's Personnel in suitable transfer cases.
- G. Evidence of Payment and Release of Liens.
- H. Guarantees, Bonds, Service and Maintenance contracts as per Contract.

Final Adjustment of Accounts

The Contractor will prepare a final Certificate for Payment, reflecting approved adjustments to the Contract Sum not previously made by modifications. Submit the final request for payment to the Owner.

The final request shall reflect all adjustments to the Contract Sum as follows:

The original Contract Sum, including accepted alternates.

Additions and deductions resulting from:

- A. Previous modifications (Change Orders).
- B. Unit prices.
- C. Deductions for uncorrected Work.
- D. Deduction for re-inspection payments.
- E. Retainage.

F. Other adjustments.

Total Contract Sum, as adjusted.

Previous payments.

Sum remaining due.

Prerequisites to Final Payment

The Contractor shall satisfactorily fulfill all the following requirements of the Contract before making request for final payment.

Work shall be complete and the Contractor shall receive the Owner's Representative's acceptance of all phases of the Project.

Deliver to the Owner's Representatives and receive the Owner's Representative's written acceptance of the following:

- A. Written Guarantees.
- B. As-built Drawings (original with redlines and AutoCAD Corrections).
- C. Record of all inspections and tests.
- D. File of all operations and maintenance manuals.

Deliver to the Owner a copy of the Final Verified Report filed or to be filed by the Contractor with DSA.

Deliver to the Owner's Representative and receive the Owner's Representative's acceptance of the Owner's Inspection Card(s) with all applicable items thereon signed as having been duly inspected and satisfactorily completed.

PROJECT RECORD DOCUMENTS

Record Drawings (As-Built Drawings)

The Contractor shall be solely responsible for the maintenance and completion of As-Built Drawings, and the following procedure shall be strictly adhered to:

The Contractor shall have complete hardcopy sets of the Project Drawings, Shop Drawings and Specifications which shall be used to document as-built conditions.

As the Work progresses, a complete and accurate notation of all deviations from the Drawings and Specifications, including but not limited to, work by Change Order, clarifications made via

Letters of Instruction, Architect's Supplemental Information, and Requests for Information (RFI's), shall be recorded thereon by the Contractor. Such indications shall be neatly made and kept current. Where exact locations are critical, such as in the case of buried piping or conduit, said locations - both horizontal and vertical - shall be dimensioned.

Maintain at the Project site for the Owner, one record copy of favorably reviewed shop drawings, product data, and samples, field test reports, inspection records, manufacturer's certificates, construction schedule. Store record documents and samples in Field Office apart from documents used for construction. Provide files, racks, and secure storage for Record Documents and samples.

The Contractor shall not request that inspection be made of any Work that has been installed in locations contrary to the Drawings until the Contractor properly notes such deviations on the As-Built Drawings.

The importance of keeping the Record Drawings accurately, neatly and current cannot be overstressed. The Owner's Representative may, if the Owner's Representative deems it necessary, withhold approval of periodic requests for payment if in the Owner's Representative's judgment, the provisions of this Section are not strictly adhered to. All such requests for payment will be approved immediately, assuming all other requirements of the Contract Documents are satisfied, upon the satisfactory current completion of the Record Drawings.

At the completion of the Project, and before the final request for payment is made and the Owner's Representative's approval obtained, the Record Drawings shall be completed by the Contractor.

Approval by the Owner's Representative of the Contractor's final request for payment shall be contingent upon the satisfactory completion and delivery to the Owner of the Record Drawings.

All as-built indications shall be made to the project CAD file.

Maintain Record Documents in a clean, dry, and legible condition. Do not use Record Documents for construction purposes. Keep Record Documents and samples available for inspection by the Construction Manager, Architect/Engineer, and Owner's Inspector.

Upon completion of the Project, the Contractor shall deliver this record of all construction changes to the Construction Manager, for transmittal to the Architect/Engineer, along with a letter which declares that other than the noted changes, "The Project was constructed in conformance with the Contract Documents."

OPERATING AND MAINTENANCE DATA

Contractor shall assemble and furnish three (3) complete sets of all data, except that which is noted to be mounted in frames, in three-ring loose-leaf binders, complete with index, indexed dividers and permanently attached exterior labels on the cover and back of the binder. Bound publications need not be assembled in binders.

Manufacturers' Manuals

Complete installation, operation, maintenance and service manuals and printed instructions and parts lists for all materials and equipment, where such printed matter is regularly available from the manufacturer. This includes, but is not limited to, such service manuals as may be sold by the manufacturer covering the operation and maintenance of the manufacturer's items, and complete replacement parts list sufficiently detailed for parts replacement ordering to the manufacturer.

Equipment Nameplate Data

A typewritten list of all mechanical and electrical equipment showing all equipment nameplate data exactly. Identify equipment by means of names, symbols, and numbers used in the Contract Documents.

System Operating Instructions

Type written instructions covering operation of the entire system as installed (not duplicating manufacturers' instructions for operating individual components). Include schematic flow and control diagrams as appropriate and show or list system valves, control-elements, and equipment components using identification symbols and show proper settings for valves, controls and switches.

System Maintenance Instructions

Type written instructions covering routine maintenance of the system. List each item of equipment requiring inspection, lubrication or service and briefly describe such maintenance, including types of lubricants and frequency of service. It is not intended that these instructions duplicate manufacturers' detailed instructions. Give name, address and phone number of nearest firm authorized or qualified to service equipment or provide parts.

Wall Mounted Data

Frame one set of typewritten system instructions and diagrams as required under Paragraphs 3) and 4) above, covered with glass and mount in locations as directed by the Owner's Representative.

INSTRUCTION OF THE DISTRICT'S PERSONNEL BY CONTRACTOR

After Work under this Contract is completed, tested and prior to acceptance by the Owner and not less than five (5) days after submittal of the Operation and Maintenance Data required in the paragraph above, operate all systems during which time a qualified factory trained representative familiar with the items installed shall instruct and supervise the Owner's personnel in the operation and maintenance of the equipment and systems.

Any instructions from manufacturers' representatives required under other Sections of the Specifications shall be conducted during this period. This instruction period shall be conducted after completion of all piping and equipment labeling periods through the Owner's Representative.

Contractor shall make all arrangements and notices for operation and instruction periods through the Owner's Representative.

This one (1) day instruction period is in addition and subsequent to any period of operation, testing and adjustment called for elsewhere in the Specifications.

SUBSTANTIAL COMPLETION

When the Contractor considers that the Work or portion of the Work is substantially complete, the Contractor shall notify the Owner Representative in writing. Upon receipt of the notification, the Owner Representative, the Owner, the Design Consultant and/or their authorized representatives will make inspection, to determine if the Work and administrative requirements are sufficiently complete in accordance with the Contract Documents so the Owner can occupy or utilize the Work for its intended use. If items are found which prevent such use or occupancy, the Owner Representative shall notify the Contractor in writing of such items by issuing a Corrective Work Item List.

Upon the completion of such corrective work, the Contractor shall so notify the Owner Representative in writing. The Owner Representative, the Owner and/or the Design Consultant shall inspect the Work to determine its acceptability for Substantial Completion and for determination of other items which do not meet the terms of the Contract. Upon verification that the Work is substantially complete the Owner Representative shall prepare a Certificate of Substantial Completion and the Punch List. The Certificate shall establish the date of Substantial Completion and the responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance, commencement of warranties required by the Contract Documents, and shall fix the time, not to exceed sixty (60) days and in compliance with provisions of the Agreement regarding Completion of Work, within which the Contractor

shall finish all items on the Punch List or remaining work or administrative requirements accompanying the Certificate. When the preceding provisions have been approved by both the Owner and the Contractor, they shall sign the Certificate to acknowledge their written acceptance of the responsibilities assigned to them in such Certificate. By such acknowledgment, the Owner has the right to retain, in accordance with applicable law, withheld monies due the Contractor to pay the Owner's actual costs including, but not limited to, charges for engineering, inspection, and administration incurred due to the failure to complete the Punch List within the time period provided in the Certificate of Substantial Completion, which costs the Owner may deduct from amounts due or that may become due the Contractor under the Contract.

FINAL CLEANING

The Contractor shall provide final cleaning of the Work. The Contractor shall employ experienced workers or professional cleaners for final cleaning. The Contractor shall clean each surface or unit of Work to the condition expected from a normal, commercial building cleaning and maintenance program.

The Contractor shall comply with the manufacturer's instructions for cleaning operations.

The Contractor shall complete the following cleaning operations before requesting the final inspection.

Remove labels which are not required as permanent labels.

Clean transparent materials, including mirrors and glass in doors and windows, to a polished condition. Remove putty and other substances that are noticeable as vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials.

Clean exposed exterior and interim hard-surfaced finishes to a dust-free condition, free of dust, stains, films and similar noticeable distracting substances. Restore reflective surfaces to their original reflective condition. Leave concrete floors broom clean. Vacuum carpeted surfaces.

Wipe surfaces of mechanical and electrical equipment clean. Remove excess lubrication and other substances. Clean plumbing fixtures to a sanitary condition. Clean light fixtures and lamps.

Clean the Project site, including landscape development areas, of rubbish, litter and other foreign substances. Sweep paved areas to a broom clean condition; remove stains, spills and other foreign deposits. Rake grounds that are neither paved nor planted, to a smooth even-textured surface.

Clean plumbing fixtures to a sanitary condition, vacuum and wipe inside of all electrical panels and cabinet work, clean light fixtures and lamps, clean permanent filters and replace disposable filters of units operated during construction; in addition, clean ducts, blowers and coils when units have been operated without filters during construction.

Clean roofs, gutters, downspouts and drainage systems.

On all building projects and wherever else applicable, besides final site cleanup, the following special cleaning shall be performed at the completion of the Work:

- A. Putty stains and paint shall be removed from glass; the glass shall be washed inside and outside. Care shall be exercised so as not to scratch glass.
- B. Marks, stains, fingerprints, and other soil and dirt shall be removed from painted, decorated, or stained work.
- C. Waxed woodwork shall be cleaned and polished.
- D. Hardware shall be cleaned and polished of all traces; this shall include removal of stains, dust, dirt, paints, and blemishes.
- E. Spots, soil, paint, plaster, and concrete shall be removed from tile; tile work shall be washed afterwards.
- F. Fixtures, equipment, and visible piping and ducts shall be cleaned, and stains, paint, dirt, and dust shall be removed.
- G. Temporary floor protections shall be removed; floors shall be cleaned, waxed, and buffed.
- H. Dust, cobwebs, and traces of insects and dirt shall be removed.
- I. Marred surfaces shall be repaired, patched, and touched up to specified finish to match adjacent surfaces.
- J. All interior spaces including inside cabinets shall be vacuum cleaned.
- K. Air handling filters and light bulbs shall be replaced if units were operated during construction. Ducts, blowers, and coils shall be cleaned if air-handling units were operated without filters during construction.
- L. All other cleaning applicable to the work performed on the Project in order to convey to the Owner a sanitary, orderly, and aesthetically acceptable facility.

FINAL INSPECTION AND PAYMENT

Upon completion of the Work, including all items on the Punch List, and upon completion of final cleaning, the Contractor shall so notify the Owner Representative in writing. Upon receipt of the notification, the Owner Representative, the Owner and/or their authorized representatives will make the final inspection, to determine the actual status of the Work in accordance with the terms of the Contract. If materials, equipment, workmanship or administrative requirements are found which do not meet the terms of the Contract, the Owner Representative shall prepare a Final Inspection List of such items and submit it to the Contractor. Following completion of the work to correct all items in the Final Inspection List, the Contractor shall notify the Owner Representative. The Owner Representative shall, in turn, notify the Owner that the Work has been completed in accordance with the Contract. Final determination of the acceptability of the Work shall be made by the Owner. After completion of the work, but prior to its acceptance by the Owner, the last partial payment will be made to the Contractor.

After receipt of the last partial payment, but prior to acceptance of the Work by the Owner, the Contractor shall send a letter to the Owner Representative. The letter, pursuant to California Public Contract Code Section 7100, shall state that acceptance of the final payment described below shall operate as and shall be, a release to the Owner, the Owner Representative, the Design Consultant, and their duly authorized agents, from all claim of and/or liability to the Contractor arising by virtue of the Contract related to undisputed contract amounts. Disputed Contract claims in stated amounts previously filed as provided in, Resolution of Disputes may be specifically excluded by the Contractor from the operation of the release.

Following receipt of all required submittals and the Owner Representative's written statement that construction is complete and recommendation that the Owner accepts the project, the Owner will take formal action on acceptance.

Within ten (10) days of the acceptance by the Owner of the completed work embraced in the Contract Documents, the Owner will cause to be recorded in the office of the County Recorder a Notice of Completion.

Within sixty (60) days after recording the Notice of Completion of the Work involved in the Contract, the Owner will pay the Contractor in lawful money such sums of money as may be due the Contractor and are undisputed including all sums retained but excluding such sums as have previously been paid the Contractor. This payment will constitute the final payment to the Contractor under this Contract. Upon receipt of such payment, the Contractor shall send

Owner an "unconditional waiver and release upon final payment" properly executed in accordance with California Civil Code Section 8136.

The Owner will pay the Contractor in lawful money such sums of money as may be due the Contractor including all sums retained but excluding such sums as have previously been paid the Contractor and as may be needed to cover outstanding stop notices. This payment will constitute the final payment to the Contractor under this Contract.

In the event of a dispute between the Owner and the Contractor, the Owner may in accordance with Public Contract Code Section 7107 withhold from the final payment an amount of 150 percent of the disputed amount.

REMOVAL OF TEMPORARY FACILITIES

At the completion of the Work, the Contractor shall remove from the premises all tools, appliances, materials, debris, scaffolding, temporary structures, temporary construction for which the Contractor has been responsible.

At the completion of the Work, the Contractor shall remove or cap all temporary utility lines as directed by the Owner's Representative.

At the completion of the Work, the Contractor shall remove all erosion control fencing, straw waddles, inlet protection and wood stakes associated with erosion control if protection measures are deemed no longer necessary by the Owner.

END OF DOCUMENT

6-J DISPUTE RESOLUTION PROCEDURES

It is the intent of this Contract that disputes regarding the Contract be resolved promptly and fairly between the Owner Representative and Contractor. However, it is recognized that some disputes will require detailed investigation and review by one or both parties before a determination and resolution can be reached. For the protection of the rights of both the Contractor and Owner the following provisions apply to the resolution of disputes.

Contractor shall provide verbal or written notice of disputed or potentially disputed work to the Owner Representative's attention prior to the commencement of and sufficiently in advance of performing the disputed work to allow the Owner Representative initial review of the disputed work. If there is disagreement subsequent to the initial review, the Contractor shall formally request a Contract Interpretation by the Owner Representative. If the Contractor disagrees with the Owner Representative's decision, the Contractor shall notify the Owner Representative, in writing, of its intention to make a claim. Written notice of claims shall be clearly titled "Notice of Potential Claim". Such Notice of Potential Claim shall state the circumstances and the reasons for the claim and the amount of the claim within ten (10) days after the date that the claim arises.

In proceeding with a disputed portion of the Work, the Contractor shall keep accurate records of all costs, including a summary of the hours and classification of equipment and labor utilized on the disputed work, as well as a summary of any materials or any specialized services which are used. Such information shall be submitted to the Owner Representative on a daily basis, receipt of which shall not be construed as an authorization for or acceptance of the disputed work.

The Contractor shall submit to the Owner Representative its costs incurred for the claimed matter within five (5) days after request for said information is requested by the Owner Representative. Claims shall be made in itemized detail and should the Owner Representative be dissatisfied with the format or detail of presentation, upon request for more or different information, the Contractor will promptly comply, to the satisfaction of the Owner Representative. If the additional costs are in any respect not knowable with certainty, they shall be estimated as best can be done. The Owner Representative shall have the right as provided to review the Contractor's records pertaining to a submitted claim. In case the claim is found to be just, it shall be allowed and paid for through a Change Order.

From time to time the Contractor may request or the Owner Representative may call a special meeting to discuss outstanding claims should it deem this a means of possible help in the resolution of the claim. The Contractor shall cooperate and attend prepared to discuss its

claims, making available the personnel, subcontractors and suppliers necessary for resolution, and all documents which may reasonably be requested by the Owner Representative.

Public Contract Code Section 9204

The contractor is hereby informed that the Public Contract Code Sections 9204 provides:

The Legislature finds and declares that it is in the best interests of the state and its citizens to ensure that all construction business performed on a public works project in the state that is complete and not in dispute is paid in full and in a timely manner.

Notwithstanding any other law, including, but not limited to, Article 7.1 (commencing with Section 10240) of Chapter 1 of Part 2, Chapter 10 (commencing with Section 19100) of Part 2, and Article 1.5 (commencing with Section 20104) of Chapter 1 of Part 3, this section shall apply to any claim by a contractor in connection with a public works project.

For purposes of this section: "Claim" means a separate demand by a contractor sent by registered mail or certified mail with return receipt requested, for one or more of the following:

A time extension, including, without limitation, for relief from damages or penalties for delay assessed by a public entity under a contract for a public works project.

Payment by the public entity of money or damages arising from work done by, or on behalf of, the contractor pursuant to the contract for a public works project and payment for which is not otherwise expressly provided or to which the claimant is not otherwise entitled.

Payment of an amount that is disputed by the public entity.

"Contractor" means any type of contractor within the meaning of Chapter 9 (commencing with Section 7000) of Division 3 of the Business and Professions Code who has entered into a direct contract with a public entity for a public works project.

"Public entity" means, without limitation, except as provided in subparagraph (B), a state agency, department, office, division, bureau, board, or commission, the California State University, the University of California, a city, including a charter city, county, including a charter county, city and county, including a charter city and county, district, special district, public authority, political subdivision, public corporation, or nonprofit transit corporation wholly owned by a public agency and formed to carry out the purposes of the public agency.

"Public works project" means the erection, construction, alteration, repair, or improvement of any public structure, building, road, or other public improvement of any kind.

“Subcontractor” means any type of contractor within the meaning of Chapter 9 (commencing with Section 7000) of Division 3 of the Business and Professions Code who either is in direct contract with a contractor or is a lower tier subcontractor.

Upon receipt of a claim pursuant to this section, the public entity to which the claim applies shall conduct a reasonable review of the claim and, within a period not to exceed 45 days, shall provide the claimant a written statement identifying what portion of the claim is disputed and what portion is undisputed. Upon receipt of a claim, a public entity and a contractor may, by mutual agreement, extend the time period provided in this subdivision.

The claimant shall furnish reasonable documentation to support the claim.

If the public entity needs approval from its governing body to provide the claimant a written statement identifying the disputed portion and the undisputed portion of the claim, and the governing body does not meet within the 45 days or within the mutually agreed to extension of time following receipt of a claim sent by registered mail or certified mail, return receipt requested, the public entity shall have up to three days following the next duly publicly noticed meeting of the governing body after the 45-day period, or extension, expires to provide the claimant a written statement identifying the disputed portion and the undisputed portion.

Any payment due on an undisputed portion of the claim shall be processed and made within 60 days after the public entity issues its written statement. If the public entity fails to issue a written statement, paragraph (3) shall apply.

If the claimant disputes the public entity’s written response, or if the public entity fails to respond to a claim issued pursuant to this section within the time prescribed, the claimant may demand in writing an informal conference to meet and confer for settlement of the issues in dispute. Upon receipt of a demand in writing sent by registered mail or certified mail, return receipt requested, the public entity shall schedule a meet and confer conference within 30 days for settlement of the dispute.

Within 10 business days following the conclusion of the meet and confer conference, if the claim or any portion of the claim remains in dispute, the public entity shall provide the claimant a written statement identifying the portion of the claim that remains in dispute and the portion that is undisputed. Any payment due on an undisputed portion of the claim shall be processed and made within 60 days after the public entity issues its written statement. Any disputed portion of the claim, as identified by the contractor in writing, shall be submitted to nonbinding mediation, with the public entity and the claimant sharing the associated costs equally. The public entity and claimant shall mutually agree to a mediator within 10 business days after the disputed portion of the claim has been identified in writing. If the parties cannot agree upon a

mediator, each party shall select a mediator and those mediators shall select a qualified neutral third party to mediate with regard to the disputed portion of the claim. Each party shall bear the fees and costs charged by its respective mediator in connection with the selection of the neutral mediator. If mediation is unsuccessful, the parts of the claim remaining in dispute shall be subject to applicable procedures outside this section.

For purposes of this section, mediation includes any nonbinding process, including, but not limited to, neutral evaluation or a dispute review board, in which an independent third party or board assists the parties in dispute resolution through negotiation or by issuance of an evaluation. Any mediation utilized shall conform to the timeframes in this section.

Unless otherwise agreed to by the public entity and the contractor in writing, the mediation conducted pursuant to this section shall excuse any further obligation under Section 20104.4 to mediate after litigation has been commenced.

This section does not preclude a public entity from requiring arbitration of disputes under private arbitration or the Public Works Contract Arbitration Program, if mediation under this section does not resolve the parties' dispute.

Failure by the public entity to respond to a claim from a contractor within the time periods described in this subdivision or to otherwise meet the time requirements of this section shall result in the claim being deemed rejected in its entirety. A claim that is denied by reason of the public entity's failure to have responded to a claim, or its failure to otherwise meet the time requirements of this section, shall not constitute an adverse finding with regard to the merits of the claim or the responsibility or qualifications of the claimant.

Amounts not paid in a timely manner as required by this section shall bear interest at 7 percent per annum.

If a subcontractor or a lower tier subcontractor lacks legal standing to assert a claim against a public entity because privity of contract does not exist, the contractor may present to the public entity a claim on behalf of a subcontractor or lower tier subcontractor. A subcontractor may request in writing, either on his or her own behalf or on behalf of a lower tier subcontractor, that the contractor present a claim for work which was performed by the subcontractor or by a lower tier subcontractor on behalf of the subcontractor. The subcontractor requesting that the claim be presented to the public entity shall furnish reasonable documentation to support the claim. Within 45 days of receipt of this written request, the contractor shall notify the subcontractor in writing as to whether the contractor presented the claim to the public entity and, if the original contractor did not present the claim, provide the subcontractor with a statement of the reasons for not having done so.

The text of this section or a summary of it shall be set forth in the plans or specifications for any public works project that may give rise to a claim under this section.

A waiver of the rights granted by this section is void and contrary to public policy, provided, however, that (1) upon receipt of a claim, the parties may mutually agree to waive, in writing, mediation and proceed directly to the commencement of a civil action or binding arbitration, as applicable; and (2) a public entity may prescribe reasonable change order, claim, and dispute resolution procedures and requirements in addition to the provisions of this section, so long as the contractual provisions do not conflict with or otherwise impair the timeframes and procedures set forth in this section.

This section applies to contracts entered into on or after January 1, 2017.

Nothing in this section shall impose liability upon a public entity that makes loans or grants available through a competitive application process, for the failure of an awardee to meet its contractual obligations.

This section shall remain in effect only until January 1, 2020, and as of that date is repealed, unless a later enacted statute, that is enacted before January 1, 2020, deletes or extends that date.

The Legislature finds and declares that it is of statewide concern to require a charter city, charter county, or charter city and county to follow a prescribed claims resolution process to ensure there are uniform and equitable procurement practices.

If the Commission on State Mandates determines that this act contains costs mandated by the state, reimbursement to local agencies and school districts for those costs shall be made pursuant to Part 7 (commencing with Section 17500) of Division 4 of Title 2 of the Government Code.

END OF DOCUMENT

SECTION 7 PROJECT FORMS

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7-A PROPOSED EQUIVALENT

Proposed Equivalent or Substitute _____

Manufacturer _____

Product (model, pattern, etc.) _____

Reason for proposed equivalent
or substitute _____☐ The specified item is unavailable (certified letter from manufacturer/supplier attached).☐ Significant Time Reduction Estimated Calendar Day Reduction: _____ Days☐ Significant Cost Reduction Estimated Reduction in Contract Sum: \$ _____☐ Significant improvement in quality without a change in Contract sum. Provide comparison
information and supporting data substantiating the request per requirements**EFFECTS OF PROPOSED EQUIVALENT OR SUBSTITUTE:**Does proposed equivalent or substitute affect dimensions indicated on Drawings ☐ Yes ☐ NoDoes proposed equivalent or substitute affect Work of other Sections? ☐ Yes ☐ NoDoes proposed equivalent or substitute require modifications to design, changes
to Drawings, or revisions to specifications to be incorporated into the Project? ☐ Yes ☐ No

Explain any yes answer above _____

Attach list of at least 3 projects where proposed substitution has been used within past 12 months;
include name, address, and telephone number of Owner and Architect.

1. _____

2. _____

3. _____

When the first specified item is followed by a second maker's name and "or equal," the Contractor may submit Proposed Equivalent items for the Engineer's review. Proposed Equivalent items that are in the Engineer's judgment equal to the first specified item in quality, utility, and appearance, may be Favorably Reviewed subject to the provisions of Section 6A. Where a product description and first maker's name is followed by "or equal" with no second maker's name, it means the specifier knows of no equivalent product and the Contractor may submit Proposed Equivalent products by other makers for review. Where the term "or equal" is omitted, it means that the named item is required to meet the Owner's needs; no products or makers other than those specified will be considered.

This request shall include adequate technical information to fully describe the function and quality of the item. Submittals of Proposed Equivalent items that are not made within 35 days of the

Notice to Proceed will be rejected unless the Engineer has agreed in writing to a later submittal date and the Contractor agrees to comply with all conditions of the Engineer for the late submittal. If the Contractor's second attempt to obtain Favorable Review of a Proposed Equivalent item is unsuccessful, the Contractor shall submit the first specified item.

Inclusion of a second maker's name in a specification indicates the maker is acceptable but does not necessarily indicate the maker offers a standard product equal to the first specified item. Items by the second named maker are subject to the same conditions of review and compatibility as other Proposed Equivalent items. Inclusion of a maker's name and/or model number after a specification description is not a representation that the maker will furnish an item meeting the Contract requirements at bid time or at time of need. It is the Contractor's sole responsibility to furnish items meeting the Contract requirements.

The Engineer's review of Proposed Equivalent items is based solely on information provided by the Contractor and on the Contractor's warranty that the proposed item is equal in quality, utility, function and appearance to the first specified item. Favorable Review of a Proposed Equivalent item has the same meaning and is subject to the same limitations that apply to the Favorable Review of first named items.

Submit with proposal:

1. Description of item being proposed including the Manufacturer's name and model number.
2. Manufacturer's representation that item is equal to or superior to specified item in all respects.
3. Manufacturer's product data.
4. Any differences between the product specified and the Proposed Equivalent, including the warranty.

CERTIFICATION OF EQUIVALENCY, COMPLETENESS AND ACCURACY:

Undersigned certifies that the item proposed is equal to or superior to the specified item, complete and accurate and in complete compliance with the Contract Documents, without deviations from the Contract Documents except the following (describe deviation) which have the advantages and disadvantages identified:

CONTRACTOR'S / BIDDER'S REPRESENTATION:

Undersigned accepts responsibility for coordination of proposed substitution and accepts all additional costs resulting from the incorporation of proposed substitution into the Project.

SUBMITTED BY: _____ DATE: _____

REVIEWED BY _____ DATE: _____

☐ Accepted ☐ Not Accepted ☐ No Action Required ☐ Incomplete ☐ Too Late

COMMENTS

END OF DOCUMENT

7-B PROPOSAL REQUEST

To Contractor: _____ Proposal Request No. _____

Name: _____ Date Issued _____

Address _____

Attention: _____

Project _____

Copy to: _____

The following change is being considered for the Project. Please provide a Cost Proposal for any changes in Contract Sum and/or Contract Time to perform the work described below in accordance with the General Conditions. Cost Proposal shall be submitted on the Owner's form, 7-B PROPOSAL REQUEST of the Contract Documents.

THIS IS NOT A CHANGE ORDER OR A DIRECTION TO PROCEED WITH THE WORK DESCRIBED HEREIN

Description of Work Requested:**Subject:****Contract Reference:**

The Owner request your Cost Proposal in time and money to:

Attachment:

Project Manager: _____ Date: _____

END OF DOCUMENT

7-C SUBMITTAL TRANSMITTAL

Submittal Number: _____

SUBMITTAL

<u>Specification Section</u>	<u>Article/Paragraph</u>	<u>Description:</u>
_____	_____	_____
_____	_____	_____
_____	_____	_____

The following supporting information is attached:

- | | | |
|---------------------------------------------------|---------------------------------------------------------|----------------------------------------------------|
| <input type="checkbox"/> Product Submittal | <input type="checkbox"/> Shop Drawings | <input type="checkbox"/> Schedules (Contract Time) |
| <input type="checkbox"/> Certified Test Results | <input type="checkbox"/> Calculations | <input type="checkbox"/> Color Selection Charts |
| <input type="checkbox"/> Product/Material Samples | <input type="checkbox"/> Manufacturer's Recommendations | |
| <input type="checkbox"/> Other: _____ | | |

Total Number of Copies Submitted

_____ Number of copies to returned to the Contractor.

_____ Original Transparency (Shop Drawings Only).

_____ Opaque Reproductions/Non-Reproducible Submittal.

_____ (District's Project Files, Construction Manager's File, Architect's File, Inspector of Record's File)

_____ Total Number of Copies Submitted.

Specified Item: Yes: ☐ No: ☐ (complete *Request for Substitution Information* below)

As the Contractor for this Project, we have thoroughly checked this submittal and ascertained that this submittal complies in detail with the Contract Documents. Prior to submission, we have reviewed, marked-up as appropriate, and stamped this submittal. The submittal clearly shows that we have clearly reviewed this submittal for conformance with the requirements of the Contract Documents and for coordination with other Sections. We have determined and verified; field measurements, field construction criteria, catalog numbers and similar data, conformance with Contract Documents.

Contractor_____
Date

END OF DOCUMENT

7-D CHANGE ORDER REQUEST*(Reference Contract Administration 6-C Modification Procedures)*

Cost Proposal #: _____

Date Submitted: _____

Project: _____

Scope of Change: _____

Adjustment of Contract Time: *(Include justification based upon the Contract Schedule)* _____Adjustment of the Contract Sum: *Total Additional Cost from Cost Proposal Breakdown* _____**Instructions:**

Complete this form by providing (a) all information required above, (b) the amount and justification based upon the Contract Schedule for any proposed adjustment of Contract Time, (c) the proposed adjustment of Contract Sum, and (d) the attached Cost Proposal Breakdown.

Attach detailed cost breakdowns for all materials, wages and salaries, and Fringe Benefits and Payroll Taxes.

The Contractor Fee shall be computed on the Cost of Extra Work only; and shall constitute full compensation for all costs and expenses related to the subject change and not enumerated in the Cost Proposal Breakdown, including overhead and profit.

The mark-up for all overhead (including home and field office overhead), general conditions costs and profit, shall not exceed the percentage of allowable direct actual costs for performance of the Change as set forth below. Contractor Fee shall be computed as follows:

For the portion of any Change performed by Subcontractors of any tier, the percentage mark-up on allowable actual direct labor and materials costs incurred by Subcontractors of any tier shall be Twelve Percent (12%).

For the portion of any Change performed by a Subcontractor of any tier, the Contractor may add an amount equal to Five Percent (5%) of the allowable actual direct labor and materials costs of Subcontractors performing the Change.

For the portion of any Change performed by the Contractor's own forces, the mark-up on the allowable actual direct labor and materials costs of such portion of a Change shall be Fifteen Percent (15%).

PREPARED BY:

REVIEWED AND RECOMMENDED BY:

(Contractor)_____
(Owner's Representative)

Title: _____

Title: _____

Date: _____

Date: _____

ACTUAL COSTS	(1)	(2)	(3)	(4)
	Contractor	1st Tier Subs	2nd & Lower Tier Subs	Total
1. Straight Time Wages – Labor				
2. Overtime Wages – Labor				
3. Straight. Time Wages/Salaries Supervisory Personnel				
4. Over Time Wages/Salaries – Supervisory Personnel				
5. Fringe Benefits and Payroll Taxes				
6. Materials				
7. Sales Taxes				
8. Rental Charges				
9. Royalties				
10. Permits				
11. Utilities				
Subtotal Cost of Extra Work (sum lines 1-11)				
OVERHEAD, GENERAL CONDITIONS & PROFIT				
Contractor Fee				
Subcontractor Fee (12% of line 12, col. 2 and col. 3.)				
Contractor Fee for Subcontractor and Subcontractor work (5% line 12 col. 3.)				
Total Subcontractor and Subcontractor Work (Sum of lines 12, col.2 and 3)				
Contractor Fee for Subcontractor and Subcontractor Work. (5% of the Total Subcontractor and Sub- Subcontractor Work)				
SUBTOTAL ADDITIONAL COST (Sum of lines 12 and 13a- 13d)				
Insurance				
Bonds				
TOTAL ADDITIONAL COST (Sum of lines 14 - 16)				

END OF DOCUMENT

7-E FIELD ORDER

Scotts Valley Water District

Field Order Number: _____

Project: _____

Date: _____

FIELD ORDER

This form to be used only for emergency instructions to the Contractor where time required for preparation and execution of a formal Change Order would result in delay or stoppage of the work. This Field Order is issued as per the requirements of the Contract Documents. A Change Order will supersede this Field Order. The Change Order will include the scope of the change in the Work and any actual adjustments of the Contract sum and the Contract time.

To the Contractor: _____

Reference: _____

Subject: _____

You are hereby authorized and instructed to effect the following modifications in your Contract for the above project:

Estimated Adjustment to Contract Sum: _____

Estimated Adjustment to Contract Time: _____ calendar days

To be used where agreed cost or credit cannot be immediately determined. The final agreed amount shall not be more than the maximum cost nor less than the minimum credit noted above.

Owner's Representative_____
Date_____
Contractor_____
Date_____
District_____
Date

7-F CHANGE ORDER

Scotts Valley Water District

Change Order No.: _____

Project: _____

Date: _____

To Contractor:

Description of Change: You are hereby authorized to make changes in the Work as described in the following detail sheets and summaries.

Summary of Contract Sum:

Original Contract Sum:	\$ _____
Prior Adjustments:	\$ _____
Contract Sum Prior to this Change:	\$ _____
Adjustments for this Change:	\$ _____
Revised Contract Sum:	\$ _____

Summary of Contract Time:

Original Contract Time:	(Calendar days) Date	_____
Prior Adjustments:	(Calendar days) Date	_____
Contract Time Prior to this Change:	(Calendar days) Date	_____
Adjustments for this Change:	(Calendar days) Date	_____
Revised Contract Time:	(Calendar days) Date	_____

The Contractor waives any claim for further adjustments of the Contract sum and Contract time related to items contained in the Change Order. This Change Order is complete accord and satisfaction for all items included in this Change Order. Also refer to the General Conditions.

The foregoing adjustment of the Contract Price and the Contract Time for the changes noted in this Change Order (the "Changes") represents the full and complete adjustment of the Contract Price and the Contract Time due the Contractor for providing and completing such Changes, including without limitation: (i) all costs (whether direct or indirect) for labor, equipment, materials, tools, supplies and/or services; (ii) all general and administrative overhead costs (including without limitation, home office, field office and Site general conditions costs) and profit; and (iii) all impacts, delays, disruptions, interferences, or hindrances in providing and completing the Changes. The Contractor waives all rights, including without limitation those arising under Civil Code Section 1542, for any other adjustment of the Contract Price or the Contract Time on account of this Change Order or the performance and completion of the Changes.

Accepted by the Contractor,

Contractor

Name	Date
------	------

Reviewed and Recommended for Approval

Name	Date
------	------

Reviewed and Recommended for District
Approval

Name	Date
------	------

Attachments:

Distribution:

7-G ESCROW AGREEMENT FOR SECURITY DEPOSITS IN LIEU OF RETENTION

California Public Contract Code §22300

THIS ESCROW AGREEMENT ("Escrow Agreement") is made and entered into this Day of _____, 20____ by and between Scotts Valley Water District ("Owner") whose address is 2 Civic Center Drive, Scotts Valley, CA 95066 _____ [NAME OF CONTRACTOR] ("Contractor"), whose place of business is located at: _____ [CONTRACTOR'S ADDRESS] _____, and Owner, as escrow agent **OR** _____ [NAME OF BANK] _____, a state or federally chartered bank in the State of California, whose place of business is located at: _____ [BANK ADDRESS] _____ ("Escrow Agent") For the consideration hereinafter set forth, Owner, Contractor and Escrow Agent agree as follows:

1. Pursuant to California Public Contract Code §22300, Contractor has the option to deposit securities with Escrow Agent as a substitute for retention earnings required to be withheld by Owner pursuant to the Contract entered into between Owner and Contractor for _____ [PROJECT NAME] _____ located at: _____ [PROJECT ADDRESS] _____ in the amount of \$ _____ dated _____ [DATE] _____ (the "Contract"). Alternatively, on written request of Contractor, Owner shall make payments of the retention earnings directly to Escrow Agent. When Contractor deposits the securities as a substitute for Contract earnings, Escrow Agent shall notify Owner within ten days of the deposit. The market value of the securities at the time of substitution shall be at Least equal to the cash amount then required to be withheld as retention under terms of Contract between Owner and Contractor. Securities shall be held in name of _____ and shall designate Contractor as the beneficial owner.
2. Owner shall make progress payments to Contractor for those funds which otherwise would be withheld from progress payments pursuant to Contract provisions, provided that Escrow Agent holds securities in form and amount specified in Paragraph 1 of this Document 00 6290.
3. When Owner makes payment(s) of retention earned directly to Escrow Agent, Escrow Agent shall hold said payment(s) for the benefit of Contractor until the time that the escrow created under this Escrow Agreement is terminated. Contractor may direct the investment of the payments into securities. All terms and conditions of this Escrow Agreement and the rights and responsibilities of the parties shall be equally applicable and binding when Owner pays Escrow Agent directly.
4. Contractor shall be responsible for paying all fees for the expenses incurred by Escrow Agent in administering the Escrow Account, and all expenses of Owner. Such expenses and payment terms shall be determined by Owner, Contractor, and Escrow Agent.

5. Interest earned on securities or money market accounts held in escrow and all interest earned on that interest shall be for sole account of Contractor and shall be subject to withdrawal by Contractor at any time and from time to time without notice to Owner.
6. Contractor shall have the right to withdraw all or any part of the principal in the Escrow Account only by written notice to Escrow Agent accompanied by written authorization from Owner to Escrow Agent that Owner consents to withdrawal of amount sought to be withdrawn by Contractor.
7. Owner shall have the right to draw upon the securities in event of default by Contractor. Upon seven Days written notice to Escrow Agent from Owner of the default, Escrow Agent shall immediately convert the securities to cash and shall distribute the cash as instructed by Owner.
8. Upon receipt of written notification from Owner certifying that the Contract is final and complete, and that Contractor has complied with all requirements and procedures applicable to the Contract, Escrow Agent shall release to Contractor all securities and interest on deposit less escrow fees and charges of the Escrow Account. The escrow shall be closed immediately upon disbursement of all moneys and securities on deposit and payments of fees and charges.
9. Escrow Agent shall rely on written notifications from Owner and Contractor pursuant to Paragraphs 5 through 8, inclusive, of this Document 00 6290 and Owner and Contractor shall hold Escrow Agent harmless from Escrow Agent's release and disbursement of securities and interest as set forth.
10. Names of persons who are authorized to give written notice or to receive written notice on behalf of Owner and on behalf of Contractor in connection with the foregoing, and exemplars of their respective signatures are as follows:

ON BEHALF OF OWNER:

Title

Name

Signature

Address

City/State/Zip Code**ON BEHALF OF CONTRACTOR:**

Title

Name

Signature

Address

City/State/Zip Code**ON BEHALF OF ESCROW AGENT:**

Title:

Name:

Signature:

Address:

City/State/Zip Code

IN WITNESS WHEREOF, the parties have executed this Escrow Agreement by their proper officers on the date first set forth above.

OWNER:**CONTRACTOR**

Title

Title

Name

Name

Signature

Signature**ATTEST:**

Signature

Secretary**ESCROW AGENT:**

Title

Print Name

Signature**REVIEWED AS TO FORM:**

Counsel for Owner

Print Name

Date

At the time the Escrow Account is opened, Owner and Contractor shall deliver to Escrow Agent a fully executed counterpart of this Document 00 6290.

END OF DOCUMENT

SECTION 01 11 00

SUMMARY OF WORK AND CONTRACT CONSIDERATIONS

1.01 WORK COVERED BY CONTRACT DOCUMENTS

- A. See Section 2-A DESCRIPTION OF WORK.

1.02 NOT USED

1.03 DOCUMENTING EXISTING

- A. Prior to commencing the Work, tour the site with the Owner and the Engineer. Examine and document photographically and in writing the condition of existing buildings, equipment, improvements, and landscape planting on or adjacent to the site. This record shall serve as a basis for determination of subsequent damage due to the Contractor's operations and shall be signed by all parties making the tour. Record existing conditions on a DVD, memory stick, or portable hard disk drive.

1.04 SHUTDOWN OF EXISTING UTILITIES, SERVICES OR OPERATIONS

- A. Obtain the Owner's approval at least seven (7) days prior to the shutdown of any utility, service or operation of any existing facility. Give required notice and make appropriate arrangements with utility owners and other affected parties prior to shutdown of any utility service.
- B. Schedule utility service or operations shutdowns for periods of minimum use and at the Owner's convenience. Have all required material, equipment and workers on site prior to beginning any work involving a possible shutdown. Perform work as required to reduce shutdown time to the minimum. In some cases, this may require increased numbers of workers and/or premium time night or weekend work.
- C. Maintain a means of adequate stormwater drainage and conveyance ready for implementation at all times. Develop a plan for maintaining stormwater drainage and conveyance and submit to it the District for review.

1.05 NOT USED

1.06 CONTRACTOR'S USE OF SITE AND COORDINATION OF OPERATIONS

- A. The site of the specified improvements is part of an active public transportation center which must remain in operation throughout the duration of construction. The Contractor shall plan and schedule its work to minimize impacting the continued operations and shall, at all times, maintain safe access for the public and operators of the transportation center.
- B. The Contractor shall confine its use of the site to the immediate work area surrounding each phase of the work to the extent that continued use of other

portions of the site for public parking and bus operations will continue unhindered at all times. The Contractor's use of adjacent lands and roads for access to move onto and off of the site and for daily access of workers, material and equipment shall be arranged and scheduled to minimize interference with the continued operations

- C. The maximum number of standard parking stalls that may be removed from service at any one time is 36. Contractor shall maintain six ADA parking stalls on site in a location that provides ADA-compliant access from the parking to the bus plaza at all times in accordance with the Drawings.
- D. If operation of the existing facility is adversely affected by the Contractor's work, the Owner or Transit District may suffer a financial loss and may make a claim against the Contractor to recover its loss.

1.07 REGULATORY REQUIREMENTS

- A. The codes and regulations, together with local amendments when applicable adopted by the State and other governmental authorities having jurisdiction shall establish minimum requirements for this project. This project shall comply with the following:
 - 1. International Building Code (IBC)
 - 2. International Building Code Standards (IBCS)
 - 3. National Electric Code (NEC)
 - 4. California Building Code (CBC)
 - 5. California Mechanical Code (CMC)
 - 6. California Electric Code (CEC)
 - 7. California Code of Regulations
 - a. Title 8, Industrial Relations
- B. The latest edition of the requirements in effect at the date of submission of bids shall apply.
- C. Before starting work, the Contractor shall carefully study and compare the Contract Documents with each other and with existing site conditions and field measurements. The Contractor shall immediately report any discovered deficiencies including code violations to the Owner, in writing. The Contractor is not responsible for finding all deficiencies but will be held responsible for construction required to correct deficiencies or code violations that the Contractor had knowledge of or should reasonably have had knowledge of and did not report to the Owner in writing.
- D. In cases where the Contract Documents are more restrictive than applicable codes, the Contractor shall comply with the Contract Documents.

1.08 REFERENCE STANDARDS

- A. When these specifications state that Work or tests shall conform to specific provisions in a referenced standard, specification, code, recommendation or manual published by an association, organization, society or agency the referenced provisions, as they apply to the Work of the Contractor only shall be considered a part of these specifications as fully as if included in total. When these specifications or applicable codes contain higher or more restrictive requirements than those contained in reference standards these specifications or applicable codes shall govern.
- B. The latest edition of a referenced standard published at the time of submission of bids shall apply unless a specific date for the referenced standard is cited in these specifications.
- C. General provisions in referenced standards, specifications, manuals or codes shall not change the specific duties and responsibilities between any of the parties involved in this work from those described. Provisions in referenced standards with regard to measurement and payment shall not apply to this Work unless specifically cited.

1.09 SPECIFICATION LANGUAGE AND STYLE

- A. Many parts of the Specifications as well as notes on the Drawings are written in the active voice and are addressed to the Contractor.
 - 1. When words or phrases requiring an action or performance of a task are used, it means that the Contractor shall provide the action or perform the task. For example: provide, perform, install, furnish, erect, connect, test, operate, adjust or similar words mean that the Contractor shall perform the action or task referred to.
 - 2. When words or phrases requiring selection, acceptance, approval, review, direction, designation or similar actions are referred to, it means that such actions are the Owner's or the Engineer's prerogative and that the Contractor must obtain such action before proceeding.
- B. Requirements in the Specifications and Drawings apply to all work of a similar type, kind or class even though the word "all" or "typical" may not be stated.

1.10 DEFINITIONS

- A. The following terms, when used in the Contract Documents, shall have the meanings listed:

ACCEPTABLE	"acceptable to or favorably reviewed by the Engineer"
APPROVED	"acceptable to or favorably reviewed by the Engineer"
PERFORM	"perform all operations required to complete the work referred to in accordance with the intent of the Contract Documents"
PROVIDE	"furnish and install the work referred to including proper anchorage, connection to required utilities or other work,

	testing, adjustment and startup ready to put in service and perform the intended function"
REQUIRED	"required by the Contract Documents or required to complete the Work and produce the intended results"
SATISFACTORY	"acceptable to the Engineer"
SHOWN	"as indicated on the Drawings"
SITE	"geographical location of the Project and land within the work area shown on the contract drawings and within which the Work will be installed or built"
SPECIFIED	"as written in the Contract Documents including the Specifications and the Drawings"
SUBMIT	"submit to the Engineer"

1.11 ABBREVIATIONS

- A. The following acronyms or abbreviations are used in these specifications for the organizations listed.

<u>Abbreviation</u>	<u>Stands for</u>
AASHTO	American Association of State Highway and Transportation Officials
AAMA	Architectural Aluminum Manufacturers Association
ABMA	American Boiler Manufacturers Association
ACI	American Concrete Institute
ADC	Air Diffusion Council
AGA	American Gas Association
AGMA	American Gear Manufacturers Association
AI	Asphalt Institute
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
AITC	American Institute of Timber Construction
AMCA	Air Moving and Conditioning Association
ANSI	American National Standard Institute (formerly United States of America Standards Institute)
APA	American Plywood Association
API	American Petroleum Institute
APWA	American Public Works Association
AREA	American Railway Engineering Association
ASCE	American Society of Civil Engineers
ASHRAE	American Society of Heating, Refrigerating and Air Conditioning Engineers
ASME	American Society of Mechanical Engineers
ASTM	ASTM International
AWPA	American Wood-Preservers' Association
AWS	American Welding Society
AWWA	American Water Works Association
CAGI	Compressed Air and Gas Institute
CAL/OSHA	State of California Department of Industrial Relations, Division of Industrial Safety
CAL TRANS	California Department of Transportation

<u>Abbreviation</u>	<u>Stands for</u>
CBC	California Building Code
CBM	Certified Ballast Manufacturers
CBR	California Bearing Ratio
CI	Chlorine Institute
CISPI	Cast Iron Soil Pipe Institute
CMAA	Crane Manufacturers Association of America
CPSC	Consumer Products Safety Commission
CRA	California Redwood Association
CRSI	Concrete Reinforcing Steel Institute
CS	Commercial Standards for the U.S. Department of Commerce
CTI	Cooling Tower Institute
DFPA	Douglas Fir Plywood Association
EIA	Electronic Industries Association
EPA	U.S. Environmental Protection Agency
ETL	Electronic Testing Laboratory
FM	Factory Mutual Insurance Company
FPS	Fluid Power Society
FS	Federal Specifications
GO 95	General Order No. 95, California Public Utilities Commission Rules for Overhead Electric Line Construction
GO 128	General Order No. 128, California Public Utilities Commission Rules for Underground Electrical Construction
HI	Hydraulic Institute
HMI	Hoist Manufacturers Institute
IAPMO	International Association of Plumbing and Mechanical Officials
ICBO	International Conference of Building Officials
IEEE	Institute of Electrical and Electronic Engineers
IES	Illuminating Engineering Society
IGCC	Insulating Glass Certification Council
IPCE	International Power Cable Engineers Association
ISA	Instrument Society of America
NAAMM	National Association of Architectural Metal Manufacturers
NBS	National Bureau of Standards
NCPI	National Clay Pipe Institute
NEC	National Electric Code
NEMA	National Electrical Manufacturers Association
NETA	International Electrical Testing Association
NFPA	National Fire Protection Association
NGVD	National Geodetic Vertical Datum
NSF	National Sanitation Foundation
NWMA	National Woodwork Manufacturers Association
OSHA	Occupational Safety and Health Act
PCA	Portland Cement Association
REA	Rural Electrification Administration
SAMA	Scientific Apparatus Makers Association
SMACNA	Sheet Metal and Air Conditioning Contractors National Association
SSPC	Structural Steel Painting Council
TCA	Tile Council of America

<u>Abbreviation</u>	<u>Stands for</u>
UBC	Uniform Building Code
UFC	Uniform Fire Code
UMC	Uniform Mechanical Code
UPC	Uniform Plumbing Code
USDC	U.S. Department of Commerce
UL	Underwriters Laboratories
WCLIB	West Coast Lumber Inspection Bureau
WIC	Woodwork Institute of California
WQCB	Water Quality Control Board (Regional)
WRCB	Water Resources Control Board

END OF SECTION

SECTION 01 31 00

COORDINATION AND PROJECT REQUIREMENTS

PART 1 - GENERAL

1.01 PROJECT COORDINATION

- A. Coordinate scheduling, submittals and work of various Sections of the Specifications and subcontractors to assure efficient and orderly sequence of interdependent construction.

1.02 MECHANICAL AND ELECTRICAL COORDINATION

- A. The Contractor's superintendent or a specially assigned assistant shall be designated the mechanical/electrical coordinator and shall coordinate the exact location, space priorities and sequence of installation of all mechanical and electrical work with each other and with all other trades.
- B. The location of mechanical and electrical work may be indicated diagrammatically on the Drawings. Actual locations shall follow locations shown on the Drawings as closely as practicable but shall be altered or adjusted in the field by the mechanical/electrical coordinator as required by the following:
 - 1. In finished spaces install mechanical and electrical work concealed within the space available.
 - 2. Organize mechanical and electrical work to make efficient use of space. Combine similar items into groups; make all runs parallel to or at right angles with building lines.
 - 3. Layout and install work to provide adequate space and access for adjustment, servicing, and maintenance and maximize space available for future installation of additional services or replacement of existing services.
 - 4. Coordinate location of fixtures, registers, grills, outlets, switches, panelboards, pullboxes, access doors, and other exposed mechanical and electrical items with functional and visual elements. Verify location of questionable items with Owner's Representative before proceeding.
- C. Review Shop Drawings and Product Data prior to submission for the Engineer's Review to assure that physical characteristics and service requirements are compatible with contract requirements, field conditions, and other items submitted.
- D. Verify that required services such as electrical power characteristics, control wiring, and utility requirements of items and equipment submitted and furnished are compatible with services provided. Notify Engineer of potential problems prior to ordering items or equipment and prior to installing services or completing construction in areas where services would have to be installed.
- E. Schedule installation sequence of various elements of mechanical and electrical work to achieve optimum compliance with requirements under Mechanical and Electrical Coordination in this Section.

1.03 CUTTING, FITTING, AND PATCHING

- A. Provide cutting, fitting, or patching required to complete the Work and to make all of its parts fit together properly. Include cutting, fitting, and patching required to:
 - 1. Fit the several parts together and to integrate with other work.
 - 2. Uncover work to install or correct ill-timed work.
 - 3. Provide openings in elements of work for penetrations of mechanical and electrical work.
 - 4. Remove and replace defective and non-conforming work.
 - 5. Remove samples of installed work for testing.
- B. Request guidance from the Engineer prior to beginning cutting or altering construction, which affects:
 - 1. Structural integrity of any element.
 - 2. Functional performance of any element.
 - 3. Integrity of weather-exposed or moisture-resistant elements.
 - 4. Efficiency, maintenance, or safety of elements.
 - 5. Visual qualities of sight-exposed elements.
 - 6. Work by Owner or separate contractor.
- C. Execute cutting and patching using workers that specialize in and are skilled in installing the type of work being cut or patched.
- D. Perform work in accordance with the Contract Documents or in the absence of specific requirements comply with best trade practice for the work involved.
 - 1. Execute work by methods that will avoid damage to other work.
 - 2. Provide proper support and substrates to receive patching and finishing materials.
 - 3. Cut concrete materials using masonry saw or core drill. Locate all reinforcing steel, conduits and pipes with electronic detecting devices prior to cutting or core drilling existing concrete.
 - 4. Replace or patch work with new materials meeting the requirements of these specifications or if not specified matching materials and finishes of existing or adjacent work.
 - 5. Cut wall, ceiling and floor finishes to fit snugly around pipes, sleeves, ducts, conduit, and other penetrations. Provide fire and/or acoustical caulking as required by code or conditions of use.
 - 6. Maintain integrity of wall, ceiling, or floor construction; completely seal voids against smoke, fire and water.
 - 7. Report any hazardous or unsatisfactory conditions to the Owner's Representative.

1.04 CONNECTIONS TO UNDERGROUND UTILITIES, CONDUITS, OR PROCESS PIPING

- A. Obtain best available current information on location, identification and marking of existing utilities, piping and conduits and other underground facilities before beginning any excavation. In areas where utilities that participate in Underground Service Alert may occur, call 800-642-2444 in Northern California for information at least 48 hours in advance of beginning work.
- B. The location of existing utilities and underground facilities known to the Design Engineer are shown in their approximate location based on information available at the time of preparing the Drawings. The actual location, size type and number of

utilities and underground facilities may differ from that shown and utilities or underground facilities may be present that are not shown.

- C. Use extreme care when excavating or working in areas that may contain existing utilities, piping, conduits or other underground facilities. Use careful potholing, hand digging and probing to determine the exact location of underground installation. Some locations contain multiple pipes or conduits. Prior to performing any subsurface work, investigate, determine and prepare a plan to turn off or disconnect each utility believed to be within 100 feet of the subsurface work in the event of an accidental breach of a utility conduit.
- D. Where connections to existing utilities or other underground facilities is required, or where new piping or conduits may cross or interfere with existing utilities, or underground facilities are parallel and within 3 feet; carefully excavate and uncover existing installations to a point 1 foot below the pipe or conduit to determine the actual elevation and alignment. Call the Owner's Representative's attention to differing existing conditions that may require a clarification or change.
- E. Shutdown of existing utilities, services or operations shall be done in accordance with Section 01 11 00.

1.05 PRECONSTRUCTION MEETINGS

- A. Prior to beginning the Work, the Contractor and its key personnel and Subcontractors including the Contractor's Superintendent, Project Manager, and Field Engineer shall attend a meeting with the Owner and the Engineer to discuss the following:
 - 1. Name, Authority, and Responsibilities of Parties Involved
 - 2. Project Procedures:
 - a. Progress meetings
 - b. Correspondence
 - c. Notification
 - d. Submittal of Product Data, Shop Drawing Samples, and Proposed Equivalents
 - e. Requests for Information
 - f. Response to Requests for Information
 - g. Requests for Quotation
 - h. Work Directive Change
 - i. Change Orders
 - j. Engineer's "Items of Concern List"
 - 3. Temporary Schedule and Contractor's Construction Schedule
 - 4. Temporary Facilities and Control
 - 5. Testing During Construction
 - 6. Contractors Coordination
 - 7. Mechanical/Electrical Coordination
 - 8. Maintenance of Record Drawings
 - 9. Early Beneficial or Partial Occupancy
 - 10. Final Testing, Startup, and Balancing
 - 11. Punch Lists and Project Closeout Procedures
 - 12. Final Deliverables including Record Drawings, Operation and Maintenance Manuals, and Special Guarantees.

1.06 PROGRESS MEETINGS

- A. The Engineer will conduct bi-weekly progress meetings with Contractor and Owner at job site. Attendance required by Contractor's project manager, superintendent and affected Subcontractors and suppliers. The Engineer will prepare, maintain and distribute agenda and dated record of: (1) actions required and taken; and (2) decisions needed and made.
- B. Agenda:
 - 1. Review critical items/action list.
 - 2. Review work progress. Compare actual progress with planned progress shown on Contractors rolling three-week Schedule. Discuss Corrective action required. Compare actual and projected progress with Contractor's Construction Schedule, propose methods to correct deficiencies.
 - 3. Review status of Submittals; review delivery dates and date of need for critical items.
 - 4. Review coordination problems.
 - 5. Schedule needed testing and critical inspections.
 - 6. Review critical requirements for each trade or major piece of equipment prior to beginning work or installation.
 - 7. Discuss Contractor Quality Control.
 - 8. Discuss open items on Engineers "Items of Concern List."
 - 9. Discuss impact of proposed changes on progress Schedule.

1.07 OTHER BUSINESS.PERFORMANCE SPECIFICATIONS AND CONTRACTOR DESIGNED WORK

- A. Work under this Contract may be specified by a combination of descriptive, performance, reference standard and proprietary specifications. In the event of conflict between any of the various specification methods used to specify a single item the order of precedence shall be the order in which the methods are listed in the preceding sentence. The terms used to describe types of Specifications are taken from the Construction Specification Institute (CSI) Handbook of Practice.
- B. Where Specifications are used to define the characteristics of Contractor designed systems, items or components, the Contractor shall be fully responsible to design, engineer, manufacture, and install the systems, items and components to meet the specified functional requirements, performance requirements, quality standards, durability standards and conditions of use as well as all applicable codes, regulations and referenced trade or industry standards. The Contractor shall perform such design by employing engineers licensed in the State in which the Work is being constructed. The Contractor's design submittals shall include calculations and assumptions on which the design is based and shall be stamped and signed by appropriately licensed engineers.
- C. The Owner and the Engineer shall have the right to rely on the expertise and professional competence of the Contractor's design. Favorable review of the Contractor's design submittal shall not relieve the Contractor from full responsibility for the adequacy of the Contractor's design.

1.08 MATERIAL AND EQUIPMENT

- A. General:
 - 1. Verify that products delivered meet requirements of Contract Documents and the requirements for Favorably Reviewed submittals.
- B. Compatibility of Equipment and Material:
 - 1. Similar items, equipment, devices or products furnished under a single specification section shall all be made by the same maker and have interchangeable parts.
 - 2. In addition, but only if so stated in each affected Specification Section, similar items furnished under two or more Specification Sections shall be made by the same maker and have interchangeable parts.
 - 3. All similar materials or products that are interrelated or used together in an assembly shall be compatible with each other.
- C. Transportation and Handling:
 - 1. Transport and handle products in accordance with manufacturer's instructions.
 - 2. Promptly inspect shipments to assure that products comply with requirements, quantities are correct, and products are undamaged.
 - 3. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage.
- D. Storage and Protection:
 - 1. Store and protect products in accordance with manufacturer's instructions. Seals and labels shall be intact and legible.
 - 2. Store moisture sensitive products including finish woodwork, gypsum products, acoustical products, motors, electrical equipment, instruments and controls in weathertight, humidity and temperature controlled enclosures.
 - 3. For exterior storage of fabricated products, place items on sloped supports, aboveground.
 - 4. Cover products subject to deterioration from moisture, dust, or sunlight with opaque watertight but breathable sheet covering. Provide ventilation to avoid condensation.
 - 5. Provide offsite storage and protection including insurance coverage when site does not permit onsite storage or protection.
 - 6. Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.
 - 7. Provide facilities, equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.
 - 8. Arrange storage of products to permit access for inspection. Periodically inspect to assure products are undamaged and are maintained under specified conditions.
- E. Installation Standards and Manufacturers' Recommendations:
 - 1. Install all products and materials in strict compliance with the most restrictive of the following:
 - a. The manufacturer's or provider's written instructions or recommendations. Follow step-by-step installation procedures.
 - b. Recommendations of referenced trade associations or standards.
 - c. These specifications and drawings.

2. Where conflicts exist present alternatives with advantages and disadvantages to Engineer for decision.
- F. If reference standards or manufacturer's instructions contain provisions that would alter or are at variance with relationships between the parties to the Contract set forth in the Contract Documents, the provisions in the Contract Documents shall take precedence.

1.09 BACKING, SUPPORTS AND FASTENERS

- A. Provide backing, supports, bracing, fasteners and other provisions required for the proper support and attachment of all work. Backing, supports, bracing and fasteners shall be sized to resist vertical and horizontal loads including seismic and wind loads required by codes listed under Regulatory Requirements in Section 01 11 00 and in accordance with Seismic Design Requirements in Section 01 87 13. Where finishes in existing facilities must be removed to install backing or where finishes are installed in new construction prior to installing backing the Contractor shall remove finishes, install backing and reinstall finishes.
- B. Low velocity pneumatic type power-driven fasteners may be used only:
1. Where specifically shown, specified or approved.
 2. Where they meet the structural requirements for a particular assembly with a safety factor of at least 400 percent.
 3. Power-driven fasteners may not be used for electrical or mechanical installations or to attach any items loaded in withdrawal or subject to vibration.
 4. Non-load bearing metal stud tracks fastened to concrete. Powder-driven fasteners shall not be used within 3 inches of the edge or corners of concrete surfaces

1.10 (NOT USED)

1.11 SAFETY

- A. In accordance with generally accepted construction practice, applicable law, the Contractor shall be solely and exclusively responsible for:
1. Construction means and methods.
 2. Safety of employees engaged in the work while on and off the site.
 3. Safety of the Owner, the Engineer, the Design Engineer, and others who may visit or be affected by the work.
 4. Safety of the work itself including material and equipment to be incorporated therein.
 5. Safety of other property at the site or adjacent thereto.
 6. Safety programs, equipment and protective devices required to assure the safety of persons and property for whom/which the Contractor is responsible.
 7. Safety of the public associated with continued operations of the facility adjacent to areas of construction of the work.
- B. The duties of the Engineer in conducting review of the Contractor's performance is not intended to include review of the adequacy of the Contractor's work methods, equipment, bracing, scaffolding or safety measures in, on, or near the construction site.

- C. The Contractor is hereby informed that work on this project could be hazardous. The Contractor shall carefully instruct all personnel working in potentially hazardous work areas as to potential dangers and shall provide such necessary safety equipment and instructions as required to prevent injury to personnel and damage to property, and to comply with all applicable laws and regulations including State OSHA, Federal OSHA, and other regulations referenced in these Contract Documents.
- D. The Contractor shall, at all times, maintain the job in a condition that is safe for the Owner, the Engineer and their Consultants to make site visits and to conduct construction reviews. If the Owner or the Engineer cannot allow personnel to visit the job because it is not safe, the Contractor is not providing required safe access to the Work.
- E. The Contractor shall prepare a Safety Plan meeting the requirements of applicable regulations. As a minimum, the Contractors Safety Plan shall set forth definite procedures for informing workers about safety, for instructing workers in safe practices, for assuring that workers are using appropriate safety equipment and safe work practices and for reporting accidents.

1.12 EXCAVATION AND TRENCHING; WORK WITHIN CONFINED SPACES

- A. Submit specific plans to the Owner showing details of provisions for worker protection from caving ground in accordance with Section 6705 of the California State Labor Code. The detailed plans shall show the design of shoring, bracing, sloping banks or other provisions and shall be prepared, signed and stamped by a Civil or Structural Engineer licensed in the State in which the Work is performed and retained by the Contractor. The Owner's acceptance of the detailed plans submitted is only an acknowledgment of the submission and does not constitute review or approval of the designs, design assumptions, criteria, completeness, applicability to areas of intended use, or implementation of the plans, which are solely the responsibility of the Contractor and his Registered Engineer.
- B. Work Within Confined Spaces: Work within confined spaces is subject to applicable laws, regulations and safety orders including applicable California Tunnel Safety Orders.
- C. The foregoing provisions do NOT reduce the requirement for the Contractor to maintain safety in ALL operations performed by the Contractor or its Subcontractors.

1.13 CONTRACTOR'S QUALITY CONTROL

- A. The Contractor shall be fully responsible for inspecting the work of its suppliers and Subcontractors to assure that the work when completed will comply with the standards for materials and workmanship required by the Contract Documents.
- B. Inspections, periodic observations and testing performed by the Owner or the Engineer are for the Owner's benefit and information only and shall not be construed as partial or incremental acceptance of the work and shall not be deemed to establish any duty on the part of the Owner or the Engineer to the Contractor, its subcontractors or suppliers.

- C. The Contractor shall:
 - 1. Monitor quality control over suppliers, manufacturer, products, services, site conditions, and workmanship, to produce work of specified quality.
 - 2. Comply fully with manufacturer's installation instructions, including performing each step in sequence as recommended by the manufacturer.
 - 3. Submit a Request for Information before proceeding with work when manufacturers' instructions or reference standards conflict with Contract Documents.
 - 4. Comply with specified standards as a minimum quality for the work except when more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
 - 5. Perform work by persons specializing in the specific trade and class of work required and qualified to produce workmanship of specified quality.
 - 6. Secure products in place with positive anchorage devices designed and sized to withstand seismic, static and dynamic loading, vibration, and physical distortion or disfigurement.
- D. If reference standards or manufacturers' instructions contain provisions that would alter or are at variance with relationships between the parties to the Contract set forth in the Contract Documents, the provisions in the Contract Documents shall take precedence.
- E. The Contractor shall provide assistance required by the Owner's Representative and Engineer to adequately inspect the Work including ladders, scaffolding, lighting, ventilation and other aids to facilitate access and provide a safe working environment.

1.14 TESTING LABORATORY SERVICES AND CERTIFIED LABORATORY REPORTS

- A. Provide testing service in accordance with Section 6-H TESTING AND INSPECTION and specific requirements contained in each technical specification section. Submit Certified Laboratory Reports required by technical specification sections.

END OF SECTION

SECTION 01 33 00

SUBMITTALS

1.01 SUBMITTAL PROCEDURES

- A. Comply with Section 6-D SUBMITTALS.

1.02 SCHEDULE OF SUBMITTALS

- A. Comply with Section 6-D SUBMITTALS.

1.03 PLAN OF OPERATIONS

- A. Submit three copies.
- B. Before beginning on site work, submit a plan showing Contractor's intended use of the site assigned to it. Show location of enclosing fence, access points and gates. Show location for Contractor's, Subcontractor's, and Engineer's field office and parking. Show location of Contractor's and Subcontractor's work areas and storage areas. Provide evidence that the site complies with zoning and land use regulations.

1.04 CONSTRUCTION SCHEDULE

- A. Comply with Section 6-D SUBMITTALS.

1.05 SHOP DRAWINGS, PRODUCT DATA AND SAMPLES SUBMITTED FOR PRODUCT REVIEW

- A. This paragraph covers submittal of Shop Drawings, Product Data and Samples required for the Engineer's review referred to as Product Review submittals in the Technical Specifications (Division 2 through 17). Submittals required for information only are referred to as Product Information submittals in the Technical Specifications and are covered in paragraph 1.07 of this Section.
- B. Number and type of submittals:
 - 1. Shop Drawings: Submit four clear, sharp high contrast copies or one PDF of which will be marked, stamped and returned to the Contractor. The Contractor shall make and distribute the required number of additional copies to its superintendent, subcontractors and suppliers.
 - 2. Product Data: Submit four clear copies. One copy will be marked, stamped and returned. The Contractor shall make and distribute the required number of additional copies to its superintendent, subcontractors and suppliers. Alternatively, one PDF may be submitted electronically. One marked PDF will be returned.
 - 3. Samples: Submit three labeled samples or three sets of samples of manufacturer's full range of colors and finishes. Comply with requirements in Technical Specification Sections. One sample will be returned to Contractor.

- C. The Contractor shall make all Product Review submittals early enough to allow adequate time for the Engineer's review, for manufacture and for delivery at the construction site without causing delay to the Work. Submittals shall be made early enough to allow for unforeseen delays such as:
1. Failure to obtain Favorable Review because of inadequate or incomplete submittal or because the item submitted does not meet the requirements of the Contract Documents.
 2. Delays in manufacture.
 3. Delays in delivery.
- D. Content of Submittals:
1. Each submittal shall include all of the items and material required for a complete assembly, system or Specification Section.
 2. Submittals shall contain all of the physical, technical and performance data required by the specifications or necessary to demonstrate conclusively that the items comply with the requirements of the Contract Documents.
 3. Include information on characteristics of electrical or utility service required and verification that requirements have been coordinated with services provided by the Work and by other interconnected elements of the Work.
 4. Provide verification that the physical characteristics of items submitted, including size, configuration, clearances, mounting points, utility connection points and service access points, are suitable for the space provided and are compatible with other interrelated items that are existing or have or will be submitted.
 5. Label each Product Data Submittal, Shop Drawing and Sample with the information required in paragraph 1.01A of this Section. Highlight or mark every page of every copy of all Product Data submittals to show the specific items being submitted and all options included or choices offered.
 6. Additional requirements for Product Review submittals are contained in the Technical Specification sections.
 7. Designation of work as "NIC" or "by others," shown on Shop Drawings, shall mean that the work will be the responsibility of the Contractor rather than the subcontractor or supplier who has prepared the Shop Drawings.
- E. Compatibility of Equipment and Material: Verify that items contained in the same or in different submittals meet the requirements in the paragraph titled "Material and Equipment" in Section 01 31 00 especially the subparagraphs titled "Compatibility of Material and Equipment."
- F. Requirements for Contractor Designed Items and for First Specified (Named) Items: Verify that items meet the requirements in the paragraph titled "Performance Specifications and Contractor Designed Items" in Section 01 31 00.
- G. Requirements for the Contractor's review and stamping of submittals prepared by the Contractor or by Subcontractors or suppliers prior to submitting them to the Engineer are covered as follows:
1. Work or items submitted are complete, accurate and meet the requirements of Contract Documents, or else any deviations are identified and described in a separate letter accompanying the submittal form.

2. Work or items submitted have been coordinated with and meet requirements of other submittals, field conditions and the Work as a whole and quantities and dimensions are correct.
 3. Proposed Equivalent items are at least equal in quality, utility and appearance to the first specified item, or else any deviations are identified in a separate letter accompanying the submittal form.
 4. Adjustments to other work required to accommodate Proposed Equivalent items including second named items have been delineated on the submittal and will be made at the Contractor's expense.
 5. The submittal includes all items needed for a particular specification section or assembly for which submittals are required.
- H. Submittals that contain deviations from the requirements of the Contract Documents shall be accompanied by a separate letter explaining the deviations. The Contractor's letter shall:
1. Cite the specific Contract requirement including the Specification Section and paragraph number for which approval of a deviation is sought.
 2. Describe the proposed alternate material, item or construction and explain its advantages and/or disadvantages to the Owner.
 3. State the reduction in Contract Price if any that is offered to the Owner.
- I. Engineer's Review Procedure and Meaning:
1. The Engineer will stamp and mark each Product Review submittal prior to returning it to the Contractor. The stamp will indicate whether or not the review was favorable and what action is required of the Contractor. Review categories "No Exceptions Taken" and "Make Corrections Noted" both indicate Favorable Review.
 2. The Engineer's Favorable Review is contingent on the Contractor's warranties. Favorable Review is also contingent on:
 - a. The compatibility of items included in a submittal with other related or interdependent items included in previous or future submittals.
 - b. Future submittal of items related to or required to be part of this submittal that was not included with this submittal.
 3. Favorable Review of a submittal does not constitute approval or deletion of items required as part of the submittal but not included with the submittal. Favorable Review of items included in the submittal does not constitute deletion of specified features, options or accessories that were not included in the submittal.
 4. The action required by the Contractor for each category of review is as follows:
 - a. **NO EXCEPTIONS TAKEN.** NO RESUBMITTAL REQUIRED.
 - b. **MAKE CORRECTIONS NOTED:**
 - (1) **NO RESUBMITTAL REQUIRED.** The Contractor shall make corrections noted prior to manufacture.
 - (2) **PARTIAL RESUBMITTALS REQUIRED.** The Contractor shall submit related accessory or optional items as noted which are required but were not included with the submittal and/or shall resubmit unsatisfactory portions or attributes of items as noted. The Contractor may proceed to manufacture those portions of the submittal that will be unaffected by required resubmittals.
 - c. **AMEND AND RESUBMIT.** The Contractor shall amend and resubmit the submittal as noted or required to comply with the Contract Documents.

- d. **REJECTED - RESUBMIT**. The item submitted does not comply with the Contract Documents in a major way. Resubmit items that comply with the requirements of the Contract Documents.
- e. **NOT REVIEWED**. This item was not reviewed, only noted that it was submitted per the Contract Documents.
- 5. The letter of transmittal accompanying the returned Product Review submittal may contain numbered notes. Marking a corresponding number on a Shop Drawing or Product Data submittal shall have the same affect as applying the entire note to the submittal.
- J. Re-submittals that contain changes that were not requested by the Engineer on the previous submittal shall be accompanied by a letter explaining the change.
- K. Favorable Review Required Prior to Proceeding: Do not proceed with manufacture, fabrication, delivery or installation of items prior to obtaining the Engineers Favorable Review of Product Review submittals.
- L. Intent and Limitation on Engineer's Review:
 - 1. The Engineer's review of the Contractor's submittals is done solely for the Engineer's and Owner's benefit. The Contractor agrees that the Engineer has no duty to the Contractor or any of its subcontractors or suppliers for the accuracy, completeness or adequacy or the Engineer's review of its submittals.
 - 2. The Engineer's review of submittals is for compliance with the design intent and the requirements of the Contract Documents and is based solely on information provided by the Contractor and on the Contractor's warranty that the work or items submitted meet the requirements of the Contract Documents, and the Work as a whole. If later information reveals that work or items submitted or furnished do not meet the requirements of the Contract Documents or the Work as a whole, the Engineer's Favorable Review shall be void and the items or work shall be considered Defective. The Engineer's Favorable Review shall not include an examination of methods or means of construction or required safety precautions. The Engineer's Favorable Review: (1) shall not include a review of quantities or dimensions; (2) shall not relieve the Contractor from responsibility for errors or omissions in submittals; (3) shall not relieve the Contractor from responsibility for complying with the requirements of the Contract Documents; (4) shall not constitute a Change Order; and (5) shall not constitute final acceptance of a product, item or portion of the Work.
 - 3. The Engineer's Favorable Review of submittals shall not relieve the Contractor from responsibility for deviations from the requirements of the Contract Documents unless the deviations are specifically called to the Engineer's attention in a separate letter accompanying the submittal, and the Engineer favorably reviews the specific deviations in writing.
 - 4. The Engineer's Favorable Review of a resubmittal does not include a review of changes made by the Contractor to a previous submittal that were not requested by the Engineer unless the Contractor specifically calls the Engineer's attention to the non-requested changes, in a separate letter accompanying the resubmittal.
 - 5. Where performance type specifications are used or where pre-engineered or Contractor designed systems, elements, equipment or components are called for, the Owner, the Design Engineer and the Engineer shall have the right to rely on the Contractor's design. Favorable Review of the Contractor's design

submittal shall be limited to acknowledgment that the design was prepared with the intent of meeting the specified performance criteria, but the Engineer's review shall not constitute a review of the design itself, of the designer's calculations, or of the effectiveness of the design in actually satisfying the specified criteria.

6. The Contractor has primary responsibility for submitting and providing work that complies with the requirements of the Contract Documents. That responsibility cannot be delegated in whole or in part to subcontractors or suppliers. Neither the Engineer's Favorable Review nor the Engineer's failure to notice or comment on deficiencies in the Contractor's submittals shall relieve the Contractor from the duty to provide work, which complies with the requirements of the Contract Documents.

1.06 PROPOSED EQUIVALENTS

- A. Conform with Section 6-A PROPOSED EQUIVALENTS.
- B. Content of submittals shall be the same as that required for Shop Drawings, Product Data and Samples submitted for Product Review in another paragraph of this Section. In addition, the Contractor shall provide information on several recent similar installations of the item to verify its suitability. The information shall include the project name and location, the Owner's name, address, telephone number and name of a knowledgeable person to contact for information on performance of the product.

1.07 PRODUCT INFORMATION SUBMITTALS

- A. Submit three copies. No copies will be returned. Alternatively submit one electronic copy as a PDF.
- B. Product Information submittals are required for the Owner's permanent records and will be used for future maintenance, repair, modification or replacement work. Product Information submittals will be examined only to verify that the required submittals have been made; they will NOT be reviewed for compliance with the Contract Documents.
- C. Make Product Information submittals prior to delivering material, products or items for which Product Information submittals are required.
- D. The Contractor has the sole and exclusive responsibility for furnishing products and work that meets the requirements of the Contract Documents.
- E. The Engineer reserves the right to comment on any submittal and to reject any product or work delivered, installed or otherwise at any time that the Engineer become aware that it is defective or does not meet the requirements of the Contract Document.

1.08 OPERATION AND MAINTENANCE MANUALS AND PARTS LISTS

- A. Submit three complete sets – hard copy and bound.

- B. Provide operation and maintenance manuals and parts list for all equipment furnished under this contract. Comply with the detailed requirements in Technical Specification sections. Include instructions for delivery, storage, assembly, installation, lubrication, adjusting, startup, operation and maintenance.
1. For all equipment include:
 - a. Startup instructions
 - b. Normal operation instructions.
 - c. Trouble shooting instructions.
 - d. Lubrication instructions.
 - e. Maintenance and reinstallation instructions.
 - f. Parts identification.
 - g. List of spare parts recommended to have on hand.
 - h. Operator safety instructions.
 2. For all Electrical Equipment, provide the following additional information:
 - a. Equipment ratings.
 - b. Calibration curves and rating tables if appropriate.
 3. For Complex Equipment provide in addition:
 - a. Alternate specified operating modes.
 - b. Emergency shutdown instructions.
 - c. Normal shutdown instructions.
 - d. Long-term shutdown instructions.
 4. Operation and maintenance manuals for systems composed of separate pieces of equipment shall include a system explanation of Items 1, a, b, and c, and 3a through c, as well as the instructions for each separate piece of equipment.
- C. Submit so that favorably reviewed manuals and parts lists are complete and available at least fifteen (15) days prior to facility startup and training specified in Technical Specifications (Division 2 through 17).
- D. Bind each copy in one or more "D" ring, 8-1/2x11, 3-ring binders with clear view spine and cover, Avery E-Z –D View Binder; K&M; or equal. Prepare Titles for the spine and cover and a Table of Contents listing each piece of equipment. Organize the contents by Specification Section and paragraph number under which the equipment was specified. Provide labeled tab separators for each major item or group of smaller similar items. When standard manufacturer's literature is used highlight or mark all copies to shop specific items and options provided.

1.09 MANUFACTURER'S CERTIFICATES

- A. Submit three copies, hard copies only.
- B. When specified in Technical Specification section, submit manufacturers' certificate to Engineer for review. Indicate material or product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate. Certificates may be recent or previous test results on material or Product, but must be acceptable to the Engineer.

END OF SECTION

SECTION 01 50 00

CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS

1.01 TEMPORARY UTILITIES

- A. Sanitary Facilities: Provide and maintain self-contained portable sanitary facilities for the Contractor's, subcontractor's, Engineer's, and Owner's use. Facilities shall comply with applicable regulations and shall be serviced, cleaned and disinfected frequently.
- B. Temporary Water, Power and Telephone Service: Provide all temporary utility service required for the project. Pay all utility service connection and use charges.
- C. Temporary Fire Protection:
 - 1. Provide and maintain fire protection equipment, including extinguishers, fire hoses, and other equipment required by law, insurance carriers, or necessary for proper fire protection during the course of the work.
 - 2. Use fire protection equipment only for fighting fires.
 - 3. Locate fire extinguishers in field offices, storage sheds, tool houses, temporary buildings, and throughout the construction site.

1.02 TEMPORARY CONSTRUCTION

- A. The Contractor is solely and exclusively responsible for the design, construction and maintenance of all temporary construction including forms, falsework, shoring, scaffolding, stairs, ladders and all other similar items.
- B. Construct adequate and safe forms and falsework, to rigidly support partially completed structures. Design and construct temporary forms, falsework, bridges and decking in accordance with applicable regulations and codes.

1.03 BARRICADES, FENCES AND ENCLOSURES

- A. Barricades: Provide temporary guard rails, ladders, stairs, guards, and barricades to protect persons in accordance with applicable regulations.
- B. Fences:
 - 1. Where construction areas are not enclosed by a permanent fence, provide a secure temporary 6-foot-high (minimum) chain-link fence completely around each work area and each equipment/materials/storage areas to exclude unauthorized persons from construction areas.

1.04 PROTECTION OF INSTALLED WORK

- A. Provide temporary and removable protection for installed products. Control activity in immediate work area to minimize damage.
- B. Protect finished work from traffic, dirt, wear, damage, or movement of heavy objects.

- C. Provide heavy planking, metal plating, or temporary asphalt overlayment (laid atop heavy craft paper or sheeting) to protect curbs, gutters, culverts, paving and similar surfaces to remain from damage by equipment or vehicles. If such surfaces are damaged, remove and replace in kind.

1.05 SECURITY

- A. Provide security and facilities to protect the Work, from unauthorized entry, vandalism, or theft.

1.06 ACCESS ROADS AND PARKING AREAS

- A. Access Roads: Construct and maintain temporary access roads to serve the construction area as needed. Protect existing work to remain as specified herein, or remove and replace in kind.
- B. Parking: Park Contractor and worker's vehicles offsite.

1.07 TEMPORARY CONTROLS

- A. Cleaning:
 - 1. During Construction: Maintain the site and all work in a clean orderly fashion free of waste debris and rubbish. Store debris in covered containers. Pick up and remove debris daily if required, but not less frequently than weekly. Burning debris on site is not permitted. Remove debris from permanently closed spaces prior to enclosing them. Clean mud from vehicles before leaving the site.
 - 2. If work under this Contract creates dusty, dirty or unsightly conditions in adjacent areas, the Contractor shall immediately cleanup the affected areas.
 - 3. Final cleanup is specified in Section 6-I CONTRACT CLOSE-OUT.
- B. Dust Control: Employ measures to prevent the creation of dust which may produce damage or nuisance to property or persons. Be responsible for all damage resulting from dust produced by construction operations. Periodically wet down unpaved areas where vehicles are operated.
- C. Erosion and Sediment Control: Employ measures to prevent erosion and trap any sediment created by construction operations before it leaves the site.
- D. Noise Control: Comply with applicable regulations limiting construction noise levels. Use whisper quite air compressors. Use jack hammers with exhaust mufflers. Prevent noise disturbance to the public and adjacent property owners.
- E. Water Control: Maintain excavations free of water.

1.08 PROTECTION OF TREES

- A. Protect all trees on the site from damage. Do not excavate within the canopy footprint (drip line) of trees to remain.
- B. Do not trim any trees without the written authorization of the Owner's Representative.

1.09 PROJECT SIGNS

- A. Provide project signs within thirty (30) days of receipt of Notice to Proceed. Erect where shown on the Drawings. Sign construction, materials, lettering, painting, and installation shall conform in format to the Environmental Protection Agency's "Project Sign Details", and shall comply with the detail shown on the Drawings. Submit sign details for favorable review.

1.10 FIELD OFFICES

- A. Comply with the provisions of Section 3-A.01.

END OF SECTION

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Section 01 57 00

ENVIRONMENTAL PROTECTION

PART 1 - GENERAL

1.01 SCOPE

- A. This project is not covered under the CA Construction General Storm Water Permit (Permit) Order No. 2009-009-DWQ as amended because the project will result in less than one acre of disturbance including contractor staging and soils stockpiles. However, protection of water resources must still be considered in accordance with City of Scotts Valley Ordinance No. 184 and other federal, state and local requirements.
- B. During the progress of the work, keep the work areas occupied by the Contractor in a neat and clean condition and protect the environment both onsite and offsite, throughout and upon completion of the construction project.

1.02 SUBMITTALS

- A. Develop an Environmental Protection Plan and submit in accordance with Section 01 33 00 within thirty (30) days from the date of the Notice to Proceed. The Environmental Protection Plan shall include, but not be limited to, the following items:
 - 1. Copies of required permits.
 - 2. Proposed disposal site(s).
 - 3. Copies of any agreements with public or private landowners regarding equipment, materials storage, borrow sites, fill sites, or disposal sites. Any such agreement made by the Contractor shall be invalid if its execution causes violation of local or regional grading or land use regulations.
 - 4. Documentation of: Construction Best Management Practice (BMP) implementation including site plan showing locations of all temporary erosion and sediment control measures with inspection and maintenance activities described; Spill Prevention Control and Countermeasure implementation; tree protection BMPs and air quality and nuisance odor BMPs.
- B. Distribute the favorably reviewed plan to all employees and to all subcontractors and their employees.

1.03 ENVIRONMENTAL IMPACT MITIGATION MEASURES

- A. Comply with all environmental mitigation measures that are included in the Contract Documents.

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- B. Mitigation and Monitoring Requirements: Review and comply with the environmental impact mitigation and monitoring requirements listed in Table 1. Comply with all federal, state and local regulations pertaining to environmental mitigation. Document as appropriate in the Environmental Protection Plan.

Table 1: Mitigation and Monitoring Requirements

Environmental Factor	Mitigation and Monitoring Requirements
Air Quality	<ul style="list-style-type: none"> Fugitive Dust control BMPs in Environmental Protection Plan Vehicle Emissions Control BMPs in Environmental Protection Plan
Biological Resources	<ul style="list-style-type: none"> Construction Monitoring
Construction Storage Areas	<ul style="list-style-type: none"> Proper storage of materials
Cultural Resources	<ul style="list-style-type: none"> Cultural Resources Management During Construction
Fire Prevention	<ul style="list-style-type: none"> Proper material storage Provide fire extinguisher Control ignition sources
Fish and Wildlife Resources	<ul style="list-style-type: none"> BMPs to minimize fish and wildlife disturbances
Hazard & Hazardous Materials, Hydrology/ Water Quality	<ul style="list-style-type: none"> Address Spill Prevention Control and Countermeasures (SPCC) in Environmental Protection Plan
Land Resources	<ul style="list-style-type: none"> Address Tree protection BMPs in Environmental Protection Plan
Noise Control	<ul style="list-style-type: none"> Follow local noise ordinances
Odor Control	<ul style="list-style-type: none"> Document BMPs to minimize creation of nuisance odors in Environmental Protection Plan
Revegetation of Disturbed Areas	<ul style="list-style-type: none"> Follow tree and shrub planting guidelines
Sanitation	<ul style="list-style-type: none"> Properly dispose of sanitary and construction wastes
Water Resources	<ul style="list-style-type: none"> Follow applicable regulations including City of Scotts Valley Ordinance No. 184 to protect water resources on construction site including but not limited to erosion and sediment control

1.04 MITIGATION AND MONITORING OF ENVIRONMENTAL FACTORS

- A. Requirements: All operations shall comply with all federal, state and local regulations pertaining to water, air, solid waste and noise pollution.
- B. Definitions of Contaminants:
- Sediment: Soil and other debris that have been eroded and transported by runoff water.
 - Solid Waste: Rubbish, debris, garbage and other discarded solid materials resulting from construction activities, including a variety of combustible and non-combustible wastes, such as ashes, waste materials that result from construction or maintenance and repair work, leaves and tree trimmings.
 - Chemical Waste: Includes petroleum products, bituminous materials, salts, acids, alkalies, herbicides, pesticides, disinfectants, organic chemicals and inorganic wastes. Some of the above may be classified as "hazardous."
 - Sanitary Wastes:
 - Sewage: That which is considered as domestic sanitary sewage.

- b. Garbage: Refuse and scraps resulting from preparation, cooking, dispensing and consumption of food.
- 5. Hazardous Materials: As defined by applicable laws and regulations. Undisclosed or unknown hazardous material contamination, if encountered will constitute a changed site condition as specified in Section 5-A GENERAL CONDITIONS, DIFFERING SITE CONDITIONS.
- C. Protection of Natural Resources:
 - 1. General: It is intended that the natural resources within the project boundaries and outside the limits of permanent work performed under this Contract be preserved in their existing condition or be restored to an equivalent or improved condition upon completion of the work. Confine construction activities to areas defined by the public roads, easements, and work area limits shown on the Drawings. Return construction areas to their pre-construction elevations except where surface elevations are otherwise noted to be changed. Maintain natural drainage patterns. Conduct construction activities to avoid ponding stagnant water conducive to mosquito breeding.
 - 2. Air Quality:
 - a. Employ measures to prevent the creation of air pollution.
 - 1) Unpaved areas where vehicles are operated shall be periodically wetted down or given an equivalent form of treatment, to eliminate dust formation.
 - 2) Store all volatile liquids, including fuels or solvents in closed containers.
 - 3) No open burning of debris, lumber or other scrap will be permitted.
 - 4) Properly maintain equipment to reduce gaseous pollutant emissions.
 - 5) Standard Measures as required by the Monterey Bay Unified Air Pollution Control District (MBUAPCD) Air quality guidelines to minimize dust and particulate matter emissions as follows:
 - a) Water all active construction areas at least twice daily. Frequency should be based on the type of operation, soil, and wind exposure.
 - b) Prohibit all grading activities during periods of high wind (over 15 mph).
 - c) Apply chemical soil stabilizers on inactive construction areas (disturbed lands within construction projects that are unused for at least four consecutive days). An alternative measure to reduce dust and soil erosion on inactive construction areas may be used.
 - d) Apply non-toxic binders (e.g., latex acrylic copolymer) to exposed areas after cut and fill operations and hydro seed area. An alternative measure maybe utilized to reduce dust and soil erosion after cut and fill activities are complete.
 - e) Haul trucks shall maintain at least 2'-0" of freeboard.
 - f) Cover all trucks hauling dirt, sand, or loose materials.
 - g) Plant vegetative ground cover in disturbed areas as soon as possible.
 - h) Cover inactive storage piles.
 - i) Check wheels of all exiting trucks for loose dirt and install wheel washers, or other management practices, at the exits of the construction areas.

- j) Pave all roads on construction sites after completion of construction activities.
 - k) Sweep streets if visible soil material is carried out from the construction site.
 - l) Post a publicly visible sign which specifies the telephone number and person to contact regarding dust complaints. This person shall respond to complaints and take corrective action within 48 hours. The phone number of the Monterey Bay Unified Air Pollution Control District shall be visible to ensure compliance with Rule 402 (Nuisance).
 - m) Limit the area under construction at any one time.
 - n) Limit the idling of construction vehicles and equipment to five minutes or less.
- 3. (Not Used)
- 4. Construction Storage Areas:
 - a. Storage of construction equipment and materials shall be limited to the designated Contractor's storage area.
 - b. Store and service equipment at the designated Contractor's storage area. No dumping of surplus concrete or grout on the site will be permitted.
- 5. Cultural Resources: The project does not pass through any known archaeological sites. However, it is conceivable that unrecorded archaeological sites could be discovered during the construction. In the event that artifacts, human remains, or other cultural resources are discovered during excavations at locations of the Work, the Contractor shall protect the discovered items, notify the Owner's Representative, and comply with applicable law including implementing provisions outlined in California Environmental Quality Act guidelines Section 15064.5.
- 6. Fire Prevention: Take steps to prevent fires including, but not limited to the following:
 - a. Provide spark arrestors on all internal combustion engines.
 - b. Store and handle flammable liquids in accordance with the Flammable and Combustible Liquids Code, NFPA 30.
 - c. Provide fire extinguishers at hazardous locations or operations, such as welding.
- 7. Fish and Wildlife Resources: The Contractor shall not be permitted to alter water flows or otherwise disturb native habitat adjacent to the project area which are critical to fish and wildlife except as may be indicated or specified.
- 8. Hazards:
 - a. Oil wastes shall not be allowed to flow onto the ground or into surface waters at construction site or at Contractor staging area. Containers shall be required at the construction site for the disposal of materials such as paint, paint thinner, solvents, motor oil, fuels, resins and other environmentally deleterious substances.
- 9. Land Resources: Do not remove, cut, deface, injure or destroy trees or shrubs outside the work area limits. Do not remove, deface, injure or destroy trees within the work area without permission from the Owner or unless noted on the drawings.
- 10. Temporary Construction: Obliterate all signs of temporary construction facilities such as haul roads, work areas, structures, foundations of temporary structures, stockpiles of excess or waste materials, or any other vestiges of construction as directed by the Owner's Representative. Level all temporary

- roads, parking areas and any other areas that have become compacted or shaped. Any unpaved areas where vehicles are operated shall receive a suitable surface treatment or shall be periodically wetted down to prevent construction operations from producing dust damage and nuisance to persons and property, at no additional cost to the Owner. Keep haul roads clear at all times of any object that creates an unsafe condition. Promptly remove any contaminants or construction material dropped from construction vehicles. Do not drop mud and debris from construction equipment on public streets. Sweep clean turning areas and pavement entrances as necessary.
11. Noise Control: Employ noise control procedures in the event that noise is in excess of that permitted by CAL/OSHA for 8 hours per day worker exposure or exceeds local noise ordinances.
 12. Odor Control: Employ measures to prevent the creation of odors.
 - a. Store all volatile liquids, including fuels or solvents in closed containers.
 - b. No open burning of debris, lumber or other scrap will be permitted.
 - c. Properly maintain equipment to reduce gaseous pollutant emissions.
 13. Revegetation of Disturbed Areas: Tree and Shrubs Replacement: Replace trees and shrubs damaged by the construction or as noted on the Drawings.
 14. Sanitation: During the construction period, provide adequate and conveniently located chemical sanitation facilities, properly screened, for use of construction crews, the Owner's Representative and visitors to the site
 15. Water Resources: Comply with all applicable federal, state and local regulations concerning the discharge (directly or indirectly) of pollutants to the underground and natural waters. As indicated in Section 1.01 A, this project is not covered under the CA Construction General Permit. However, the following minimum erosion and sedimentation Best Management Practices (BMPs) shall be considered and implemented to minimize the potential for impacts to water resources:
 - a. Exercise every reasonable precaution to protect streams, lakes, reservoirs, bays and coastal waters, if located near project site, from pollution with fuels, oils, bitumens, calcium chloride and other harmful materials and conduct and schedule operations so as to avoid or minimize muddying and silting of said streams, lakes, reservoirs, bays and coastal waters.
 - b. Implement the following Erosion and Sediment Transport Controls or others as described in the Construction Site Stormwater Pollution Control BMP Manual (October 2011, Santa Cruz County Planning Department) and the California Stormwater Quality Association:
 - 1) Discharge construction runoff to avoid buildup of large potentially erosive flows.
 - 2) Prevent runoff from flowing over unprotected slopes.
 - 3) Keep disturbed areas to the minimum necessary for construction.
 - 4) Keep runoff away from disturbed areas during construction.
 - 5) Direct flows over vegetated areas prior to discharge into public storm drainage systems.
 - 6) Do not discharge into public drainage systems or natural drainages without the necessary approvals and permits and implement measures such as:
 - a) Burlap bags filled with drain rock shall be installed around storm drains to route sediment and other debris away from the drains.

- 7) Trap sediment before it leaves the site, using BMPs such techniques as straw wattles, check dams, sediment ponds, or siltation fences.
- 8) Remove and dispose of all project construction-generated siltation that occurs in offsite retention ponds, if used.
- 9) Provide erosion and sediment transport control measures and materials on-site and ready for implementation prior to the onset of the first major storm of the season or subsequent storms including measures such as:
 - a) Stabilize disturbed areas as quickly as possible.
 - b) Earthmoving or other dust-producing activities shall be suspended during periods of high winds.
 - c) All exposed or disturbed soil surfaces shall be watered at least twice daily to control dust as necessary.
 - d) Stockpiles of soil or other materials that can be blown by the wind shall be watered or covered.
 - e) All trucks hauling soil, sand, and other loose materials shall be required to cover all trucks or maintain at least two feet of freeboard.
 - f) All paved access roads, parking areas, staging areas, and residential streets adjacent to the construction sites shall be swept daily (with water sweepers).
 - g) Vegetation in disturbed areas shall be replanted as quickly as possible.
 - h) All unpaved entrances to the site shall be filled with rock to knock mud from truck tires prior to entering City streets. A tire wash system may also be employed at the request of the City.
- 10) Temporary erosion and sedimentation BMPs are intended to provide prevention control and abatement of water pollution to streams, waterways and other bodies of water, and shall consist of constructing those facilities that may be shown on the Drawings, specified herein or in the Special Provisions, or directed by the Owner's Representative.
 - a) Coordinate erosion and sedimentation BMPs with all other work.
- c. If the measures being taken by the Contractor are inadequate to control erosion and sedimentation effectively, the Owner's Representative may direct the Contractor to address these measures. Such directions will be in writing and will specify the items of work for which the Contractor's erosion and sedimentation BMPs are inadequate. Address these measures immediately so that the erosion and sedimentation BMPs adequately control erosion and sedimentation.
- d. Nothing in the terms of the Contract nor in the provisions in this Section shall relieve the Contractor of the responsibility for compliance with the California Fish and Game Code, or other applicable statutes relating to prevention or abatement of water pollution.
- e. The Contractor shall also conform to the following provisions:
 - 1) Oily Substances: At all times, special measures shall be taken to prevent oily or other hazardous substances from entering the ground, drainage areas or local bodies of water in such quantities as to affect normal use, aesthetics or produce a measurable impact upon the area. Any soil or water that is contaminated with oily substances due

to the Contractor's operations shall be disposed of in accordance with applicable regulations.

- 2) Portland cement or fresh portland cement concrete shall not be allowed to enter flowing water of streams.
 - 3) When operations are completed, the flow of streams shall be returned as nearly as possible to a meandering thread without creating possible future bank erosion and settling; pond sites shall be graded so they will drain and will blend in with the surrounding terrain.
 - 4) Material derived from roadway work shall not be deposited in a live stream channel where it could be washed away by high stream flows.
- f. Chlorinated Water: Discharge of chlorinated water to the ground or surface waters is not allowed

D. Execution: Training.

1. Provide pre-construction training to ensure staff is aware of project specific environmental impacts
2. Provide weekly training to review staff awareness of environmental factors
3. Ensure photo and ongoing compliance documentation is acquired and properly kept.

1.05 DISPOSAL OPERATIONS

A. Solid Waste Management:

1. Daily remove all debris such as spent air filters, oil cartridges, cans, bottles, combustibles and litter. Take care to prevent trash and papers from blowing onto adjacent property. Encourage personnel to use refuse containers. Convey contents to a sanitary landfill.
2. Washing of concrete containers where wastewater may reach adjacent property or natural water courses shall not be permitted. Provide temporary, lined concrete washout stations. Remove any excess concrete to the sanitary landfill. Remove temporary concrete washout station(s) at completion of the project.

B. Chemical Waste and Hazardous Materials Management: Furnish containers for storage of spent chemicals used during construction operations. Dispose of chemicals and hazardous materials in accordance with applicable regulations.

C. Dispose of vegetation, weeds, rubble, and other materials removed by the clearing, stripping and grubbing operations off site at a suitable disposal site in accordance with applicable regulations.

D. Excavated Materials:

1. Native soil complying with the requirements of Section 31 00 00, Earthwork, may be reused for fill or backfill provided it meets the requirements of that section for applicable uses.
2. Spoil Material:
 - a. Remove all material which is excavated in excess of that required for backfill, and such excavated material which is unsuitable for backfill, from the site and dispose of off site in accordance with applicable regulations.
 - b. Rubbish shall consist of all materials not classified as suitable materials or rubble and shall include shrubbery, trees, timber, trash and garbage.

END OF SECTION

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SECTION 02 40 00

DEMOLITION

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Provide all demolition required to perform the work covered under this contract including without limitation:
 - 1. Remove existing construction shown to be removed.
 - 2. Remove and replace existing construction and/or finishes as required to provide access to perform other work included in this contract.
 - 3. Include removal of mechanical and electrical work that is to be abandoned and is contained in construction to be removed whether or not the mechanical and electrical work is shown. Disconnect and cap off utilities in accordance with applicable codes and safety regulations.
 - 4. Where utilities that are not shown pass through construction that must be removed and those utilities serve other areas notify the Engineer before disrupting service. If rerouting is required to maintain service, the Owner may issue a Change Order to accomplish the required work.
 - 5. Store and protect items intended for reuse.
 - 6. Assume ownership of debris and unwanted materials, remove from the site and dispose of legally.
 - a. Special requirements for waste management during construction operations.
 - 1) Protect the environment, both onsite and offsite, during construction operations.
 - 2) Prevent environmental pollution and damage.
 - 3) Maximize source reduction, reuse, and recycling of solid waste.
 - 7. Include the cost of removing and disposing of hazardous material including without limitation asbestos or asbestos-containing material, lead-containing paint, and PCBs.
 - 8. Comply with all State permit requirements for demolition. The Contractor shall perform a pre-demolition survey to determine whether hazardous material is present. If material is identified as hazardous, retain qualified and State-licensed Contractor to remove and dispose of the materials legally.

1.02 NOISE AND DUST CONTROL

- A. Perform work in accordance with requirements in Division 1. Particular attention is directed without limitation to paragraphs titled: Owner and Contractor's Use of Premises, Cleanup During Construction, Fire Protection During Construction, Maintenance of Exit Routes for Building Users, Temporary Dust Barriers, Noise Control and Care of Existing Facilities.
- B. Provide temporary partitions to control dust and noise and exclude unauthorized persons.
- C. Perform work in a manner to cause least disturbance to building occupants and least damage to work to remain.
- D. Maintain adequate means of safe, clear egress for building occupants.

- E. Employ all available techniques for construction noise abatement. Use remote, well-muffled air compressors and newest noise suppressed pneumatic and electric tools.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION

3.01 REMOVAL OF FLAT WORK

- A. Sawcut lines shown on the drawings for removal of curb and gutter, pavement, sidewalk, etc are approximate. Contractor shall sawcut and remove and replace improvements to the extents necessary for proper completion of the work.
- B. In general, remove to the extent of an existing curb, lip of gutter, construction joint, scored line, etc. Lines shall be straight and either parallel or perpendicular to existing lines. Sawcuts shall form sharp, square corners without overruns. Concrete damaged by sawcut overruns shall be removed and replaced at no additional cost to the Owner.

3.02 REMOVAL OF CONSTRUCTION IN AREAS TO RECEIVE NEW WORK

- A. Remove all unwanted work or improvements (whether shown or not) that is not wanted and is not needed to serve other areas that is in, on, or concealed behind work being removed. Cap off or terminate in accordance with the applicable requirements and as specified.
- B. Protect improvements and utilities that serve other areas. Relocate utilities that are required to preserve service to other areas to remain.
- C. If utilities or other improvements are encountered that were not shown, protect them from damage and report their presence to the Engineer.

3.03 REMOVAL OF LIMITED PORTIONS OF EXISTING CONSTRUCTION TO PERMIT MODIFICATIONS

- A. Provide careful, selective cutting and removal of existing construction as required to permit relocation or modification of partitions, doors, or openings. Cut and remove the least amount of work possible except when a larger area needs to be removed to permit strengthening existing construction or when required to remove finishes to a natural break line such as a corner or change in material.
- B. Protect existing construction to remain with temporary coverings.
- C. Treat existing mechanical, electrical, or structural work as described in other parts of this Section.
- D. When modifications are complete, replace removed work with new construction and finishes to match adjacent existing work. Standards of material and workmanship shall be in accordance with other portions of this Specification or if not covered then in accordance with current practice for this class of work. Salvaged materials may be used for replacement if in good condition.

3.04 REMOVAL OF EXISTING CONSTRUCTION TO PROVIDE ACCESS TO PERFORM WORK

- A. Provide careful selective cutting and removal of existing construction where required to permit installation of new concealed mechanical or electrical work, or installation of equipment, fixtures or devices.
- B. Treat existing mechanical, electrical, or structural work as described in other parts of this Section.
- C. Replace and/or patch removed construction and finishes in accordance with other parts of this Section.

3.05 PROTECTION OF WORK TO REMAIN

- A. Protect all work to remain. Repair damage with materials, workmanship, and finishes matching existing work when new.

3.06 IF HAZARDOUS MATERIALS ARE ENCOUNTERED

- A. If hazardous materials are discovered, comply with paragraph 1.01 of this Section and all applicable laws.

3.07 REMOVAL AND DISPOSAL OF MATERIAL

- A. Store debris in suitable covered containers located where directed by the Engineer and remove from site when full. Burning on the site is not permitted.
- B. Removed material (other than material to be reused) shall become the property of the Contractor who shall remove it from the site and dispose of it in a legal manner.

END OF SECTION

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SECTION 31 00 00

EARTHWORK

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Perform all excavation, trenching, shoring, dewatering, backfilling, compaction, grading, and disposal of excess material necessary or required for the construction of the work as covered by these Specifications and indicated on the Drawings. Include in the excavation, without classification, the removal and disposal of all materials of whatever nature encountered, including water and all other obstructions that would interfere with the proper construction and completion of the required work.
2. For information pertaining to shutdowns, potholing and interferences see Section 01 11 00.

1.02 REFERENCES

- A. American Association of State Highway and Transportation Officials (AASHTO)
- B. ASTM International (ASTM)
- C.

Standards listed below apply when no other more stringent standard is referenced. The order of precedence is as follows:

1. Agency Standards (Scotts Valley Water District Water System Specifications)
 2. Local Standards (City of Scotts Valley)
 3. Regional Standards (Santa Cruz County)
 4. State Standards (Caltrans)
- D. State of California, Department of Transportation, Manual of Test (California Test).
- E. State of California, Department of Transportation, Caltrans Standard Specifications (Caltrans Standard Specifications).

1.03 DEFINITIONS

- A. Site: Property owned by Santa Cruz Metropolitan Transit District, as shown on the Drawings.
- B. Fill: Earth used to fill holes, pits, or depressions necessary to bring the final grade up to the specified elevation or contours.
- C. Pipe Zone: Zone of material that extends from 4 inches below the bottom of pipe to 12 inches above the crown of the pipe.
- D. Pipe Bedding: Zone of material that extends from the bottom of the pipe to 4 inches below the pipe.
- E. Trench Zone: Zone of material that extends from the top of the pipe zone to the bottom of the pavement subgrade in pavement areas or to the top of the trench in earth areas.
- F. Subgrade: Zone of material that is improved to create a stable, suitable platform for subsequent layers.

1. Finished Subgrade: Finished subgrade indicates the top of the subgrade section in a cut scenario.
 2. Fill Subgrade: Fill subgrade indicates the top of the subgrade section in a fill scenario.
- G. Over excavation: Excavation beyond the limits shown on the Drawings.
- H. Relative Compaction: In-place dry density divided by the maximum dry density laboratory compaction expressed as percentage.

1.04 SUBMITTALS

- A. Submit in accordance with Section 01 33 00.
- B. Do not excavate, construct embankments, or fill until all the required submittals have been reviewed and approved.
- C. Product Data:
1. See Section 01 11 00 for potholing requirements.
 2. Gradation report(s) for bedding material and import backfill materials.
 3. Test results on bedding and import material indicating Sand Equivalent, R-value, Durability Index, Liquid Limit, Plastic Limit and Plasticity Index.
 4. Compaction Reports indicating results from QC testing.
 5. Geotextile fabric indicating fabric and installation procedure.
 6. Bottom of Excavation Map: Upon completing excavation to the limits shown on the Drawings, complete and submit a topographic map indicating the bottom of excavation.
 - a. Complete topographic mapping prior to subgrade preparation or placement of subsequent layers. Subgrade preparation or subsequent layers shall not be placed until excavation limits have been favorably reviewed.
 - b. Submit electronic data in ".dwg" format using AutoCAD Civil 3D, 2018 or newer, with the 3D surface provided in an "*.xml" format, displaying 1- and 5-foot contours.
 - 1) Electronic data file units shall be set to US Survey Feet and to the project datums.
 - 2) Include at least two control points and one benchmark within the electronic data file.
 - 3) Topographic mapping shall be completed by a Licensed Surveyor.
 - 4) Provide spot elevations in a 25 ft x 25 ft grid and grade breaks (e.g., top and toe of slope or top and bottom corners of vertical cuts).
- D. Samples and Test Results:
1. Test bedding and import materials proposed for use demonstrating that the materials conform to the requirements specified herein. Perform tests no more than 60 Calendar Days prior to submission. Submit results to the Engineer at least ten (10) days prior to delivery.
 2. Submit certifications for each source of imported/borrow material to be used indicating the location where material will be obtained, including city and state.
 - a. Owner may request a copy of the material delivery ticket at delivery of each load each day.
 3. Furnish without additional cost to the Owner, such quantities of Bedding material and Import materials, listed herein, as may be necessary for testing.

4. Notify the Engineer a minimum of 48 hours before obtaining samples. The Engineer may choose to be present while samples are obtained.

1.05 QUALITY ASSURANCE / QUALITY CONTROL

- A. All material furnished and all work performed is subject to rigid inspection. Do not deliver material to the site until it has been favorably reviewed by the Engineer. Do not use material in the construction work until it has been inspected in the field/source/quarry by the Engineer should the Engineer choose to inspect.
- B. Source Quality Control: Furnish all bedding material from a single source throughout the work unless otherwise approved.
- C. Field Quality Control:
 1. Hire an independent soil testing laboratory approved by the Engineer to perform the following tasks for flatwork, pipeline installation, non-structural fill or items not requiring special inspection as outlined under Special Inspections:
 - a. Perform a Particle-Size Distribution (Gradation) Analysis every 5,000 cubic yards of materials delivered.
 - b. Test Pipe Zone, Pipe Bedding, and Trench Zone material for quality and in-place density requirements specified herein. Contractor shall test every 200 feet of trench.
 - c. Where Special Inspections are not required, test fill materials to verify conformance with material quality every 5,000 cubic yard of materials delivered.
 2. Perform re-work and re-testing for non-compliant Work and demonstrate to the Owner non-compliant work has been addressed. Bare the costs of additional inspection, rework, and re-testing resulting from non-compliance.
 3. Remove material that does not meet the gradation, quality, or compaction requirements and replace it with material that does comply at no additional cost to the Owner.
- D. Field Quality Assurance:
 1. The Engineer will:
 - a. Review materials, not covered under Special Inspections.
 - b. Observe excavation, not covered under Special Inspections, and advise the Contractor should excavation beyond the limits shown in the Drawings be required.
 - c. Review results of the Contractor's independent testing laboratory tests and request additional testing at the Engineer's discretion.
- E. Special Inspections:
 1. The Owner will be responsible for special inspections in accordance with the building code CBC Chapter 17 Section 1705.6 and the Drawings. Special inspection is required for work related to constructing buildings, structures, structural work, and roadways, and includes but is not limited to:
 - a. Verifying materials below foundations are adequate to achieve the design bearing capacity requirements.
 - b. Verifying excavations are to the depth identified in the Contract Documents and the bottom of excavations are suitable materials.
 - c. Perform classification and testing of compacted fill materials.
 - d. Verifying materials meet quality, lift thickness and in-place density requirements specified herein.

- e. Prior to placement of compacted fill, inspect subgrade and verify the site has been prepared properly.
- 2. Testing will be performed at the frequency provided or as otherwise established by the Owner prior to Construction:
 - a. Engineered Fill: Test every 500 square feet for each 2 feet of fill.
 - b. Subgrade: Test every 200 square feet where in-place materials have been disturbed and recompact or as recommended by the Engineer.
 - c. Structural Backfill:
 - a) Test every 200 square feet of building footprint, with no less than two tests per structure.
 - b) Test every 200 cubic yards of material placed within 10 feet around the building.
 - d. Aggregate Base: Test every 500 square feet of each layer
- F. Testing Methods (CA Projects):

1. R-Value:	California Test 301 or ASTM D2844
2. Durability Index:	California Test 229 OR ASTM 3744
3. Aggregate Gradation:	California Test 202 OR ASTM D6913 and D7928
4. Sand Equivalent:	California Test 217 OR ASTM 2419
5. Specific Gravity:	ASTM D854
6. Laboratory Compaction:	ASTM D1557, Method A or C (Modified Proctor) or ASTM D698 (Standard Proctor)
7. In-place Density:	ASTM D1556 or ASTM D6938 ¹
8. Plastic Limit and Plasticity Index:	ASTM D4318
9. Soil Classification:	ASTM D2487

¹If nuclear methods are used for in-place density testing, verify the accuracy with one sand cone test and one maximum laboratory dry density test for every five (5) nuclear tests.
- G. Store earthwork materials in a location confirmed in writing by the Engineer or as indicated on the Drawings.
- H. Stockpile material so that it is not contaminated, does not cause damage, does not become saturated, and is identifiable.
- I. Storage of Excavated Materials:
 - 1. Neatly place excavated materials far enough from the excavation to prevent stability problems. Keep the materials shaped to cause the least possible interference with plant operations and drainage.
 - 2. Dispose of excavated materials unsuitable for backfill immediately.

1.06 SUBSURFACE INVESTIGATIONS

- A. While the records of data obtained, including any geotechnical investigations and/or reports, may be considered by the Contractor to be correct, any conclusions or recommendations made in the reports are for information to the Design Engineer and are not a part of the Contract Documents.

1.07 ADDITIONAL SAFETY RESPONSIBILITIES

- A. Select, install, and maintain shoring, sheeting, bracing, and sloping as necessary to maintain safe excavations. Ensure such measures: (1) comply fully with 29 CFR Part 1926 OSHA Subpart P Excavations and Trenches requirements, (2) provide

necessary support to the sides of excavations, (3) provide safe access to the Engineer's sampling and testing within the excavation, (4) provide safe access for backfill, compaction, and compaction testing, and (5) otherwise maintain excavations in a safe manner that shall not endanger property, life, health, or the project schedule. Perform earthwork in strict accordance with applicable law, including local ordinances, applicable OSHA, Cal OSHA, California Civil Code, and California Department of Industrial Safety, Federal Register, 29 CFR, Part 1926, Subpart P; Occupational Safety and Health Standards-Excavations requirements.

1.08 EXPLOSIVES

- A. Do not use explosives.

PART 2 - PRODUCTS

2.01 MATERIAL DEFINITIONS

- A. Engineered Fill: Engineered Fill may be Imported Soil or Native Soil that has been processed to meet the below requirements.
 - 1. Native Soil: Remove rocks or lumps larger than 3 inches in greatest dimension or more than 15 percent of the material larger than 1½ inches and be free of organics (less than 3 percent organic material by weight), debris, and other deleterious materials. Do not use wet, soft, or frozen material, organic matter, asphalt chunks, or other deleterious substances as backfill. Provide material containing at least 20 percent passing the No. 200 sieve with a low expansion potential as indicated by a Plasticity Index of 15 or less, or Expansion Index of less than 20.
 - 2. Imported Soil: Imported non-expansive soil with liquid limit no greater than 40 percent and a plasticity index no greater than 15 percent, free from clods or rocks larger than 2 inches in greatest dimension. Representative soil samples of proposed import fills shall be accepted by the Engineer prior to delivery.
- B. Pipe Zone Backfill:
 - 1. Sand: Sand gradation with 90 percent passing Sieve No. 4 and less than 5 percent passing Sieve No. 200 with a minimum sand equivalent (SE) of twenty (20).
 - 2. Sand: Caltrans Standard Specification Section 19-3.02F (2).
- C. Trench Zone Backfill:
 - 1. Trench Zone Backfill may be aggregate base, native soil, or imported soil.
- D. Pipe Bedding Material:
 - 1. Sand: Sand gradation with 90 percent passing Sieve No. 4 and less than 5 percent passing a Sieve No. 200 with a minimum sand equivalent of twenty (20).
 - 2. Sand: Caltrans Specifications, Paragraph 19-3.02F (2). (CA Project)
- E. Aggregate Base:
 - 1. Refer to Section 32 12 16 .
 - 2. Provide Class II, ¾ inch maximum, Caltrans Standard Specifications Section 26.

- F. Filter Fabric: Non-woven, non-biodegradable, needle punched geotextile comprised of polypropylene fibers meeting AASHTO M288 Class 3. Install with a minimum 12-inch overlap, unless otherwise shown on the Drawings.
 - 1. Provide: Mirafi® Model 140N; or Equal.
- G. Water: Water quality acceptable to the Engineer and reasonably free of objectionable quantities of silt, oil, organic matter, alkali, salts, and other impurities.
- H. Warning Tape: 3-inch-wide, inert, fade-resistant plastic film resistant to acids, alkalis, and other components likely to be encountered in soil. Warning Tape colors following the uniform color code per American Public Works Association (APWA) and not be placed more than 12 inches above top of pipe.
 - 1. Provide: Terra Tape® Standard; T. Christy Enterprises, Inc. T A.ND.3-COLOR-CODE; or equal.
 - 2. Acceptable Manufacturers: Reef Industries, Inc.; T. Christy Enterprises, Inc.; or equal.

PART 3 - EXECUTION

3.01 GENERAL CONSTRUCTION REQUIREMENTS

- A. Barriers: Place barriers at each end of trench excavations and along excavations as may be necessary to warn pedestrian and vehicular traffic of such excavations.
- B. Access: Maintain access to all fire hydrants, water valves and meters, and private driveways.
- C. Temporary Pavement: Place temporary pavement on trenches in existing streets within 24 hours after the trench has been backfilled. Refer to Section. Maintain temporary pavement until permanent pavement is to be placed.

3.02 CONTROL OF WATER

- A. According to the Geotechnical Report prepared by Pacific Crest Engineering, dated December 29, 2014, groundwater was not encountered at the locations and depths of the boreholes at the time of the borings. However, there is no guarantee that groundwater will not be encountered at all times during construction due to seasonal weather variations or the presence of localized perched groundwater tables or other factors. If groundwater is encountered, the Contractor shall sufficiently manage it as specified
- B. Keep excavations free from water.
 - 1. Furnish, install, maintain, and operate all necessary pumping and other equipment for dewatering excavations.
 - 2. Provide a sufficient number of pumps, including standby pumps, for use in case other pumps become inoperable, as to hold the groundwater level at an elevation of not less than 1 foot below the lowest elevation of the pipe, duct structure, or other material or feature to be placed.
 - 3. Continue dewatering while concrete is setting and achieves full strength, during backfilling and until backfill has been placed to a sufficient height to anchor the work against possible flotation.
 - 4. If the subgrade becomes unsuitable due to failure of dewatering operations, notify and coordinate with the Engineer as soon as failure is identified. The Engineer will recommend remedial measures, if deemed necessary, based

on site conditions, proposed design elements for the area, and observations made in the field at the time.

5. If pumping is required on a 24-hour basis, requiring engine drives, equip engines in a manner to keep noise to a minimum. Refer to Section 01 57 00 for noise control requirements.
 6. Protect the Work against floatation.
- C. Repair Work or existing foundations and structures damaged by dewatering operations. Repair damage and/or settlement at the Contractor's expense and to the Owner's satisfaction.
- D. During rain events, take necessary precautions to protect staff and the Work. Divert stormwater runoff away from the excavation. Direct precipitation within the excavation to a sump and pump it out.
- E. Discharge dewatered water in accordance with Section 01 57 00.
1. Obtain all necessary Storm Water Discharge Permits.

3.03 TRENCH EXCAVATION

- A. Use open cut excavation for pipe and other utilities such as duct banks. Trench width to be as wide as necessary for sheeting and bracing and the proper performance of the work up to the maximum width permitted as shown on the Drawings. Favorable review by the Engineer is required prior to use of alternative methods of construction.
- B. Remove lumped subsoil and rock up to ½ cubic yard, measured by certified weight tickets.
- C. Do not advance open trench more than 400 feet ahead of installed pipe.
- D. Accurately grade the bottom of the trenches to provide uniform bearing and support for each section of the pipe or conduit at every point along its entire length, except for the portions of the pipe sections where it is necessary to excavate for bell holes and for the proper sealing of pipe joints. Dig bell holes and depressions for joints after the trench bottom has been graded. Remove stones to avoid point bearing.
- E. Do not backfill the trench until the Engineer favorably reviews the pipe and bedding installation.
- F. If no elevations are shown on the Drawings, provide 3 feet of minimum cover.
- G. At manholes or building connections where piping or conduits is connecting, backfill and compact around the structure first to a level at least 3 feet from the top of the piping or conduit elevation and then retrenched to pipe grade.
- H. Provide secured ladders for access to the trench and to any structure or pipe for construction and inspection personnel.

3.04 EXCAVATION FOR STRUCTURES

- A. Excavate to the dimensions, dimensions and elevations indicated in the Drawings or specified herein. Include proper working methods, the erection of forms, and the protection of the work in excavation extents.
- B. Preserve existing foundation surfaces shown on the Drawings in an undisturbed condition. If disturbances occur, replace such foundations in a manner approved by the Engineer

- C. Inspection of Excavation: Notify the Engineer when excavation for the structure is complete. Excavation must be inspected and approved by the Engineer prior to installing forms, reinforcing steel, concrete, or precast structures.

3.05 SUPPORT OF EXCAVATIONS

- A. Adequately support excavation for trenches and structures to meet all applicable requirements in the current rules, orders, and regulations. Adequately shore, brace, and sheet excavations so that the earth will not slide or settle and so that all existing structures and all new pipe and structures will be fully protected from damage. Keep vehicles, equipment, and materials far enough from the excavation to prevent instability.
- B. Protect excavations and adjacent improvements from running, caving, boiling, settling, or sliding soil resulting from the high groundwater table and the nature of the soil excavated. See Section 832 of the Civil Code of the State of California relating to lateral sub adjacent supports, and wherever structures or improvements adjacent to the excavation may be damaged by such excavation, the Contractor shall comply with this law.
- C. Maintain support for excavation in place until the pipeline or structure has been completed. Carefully remove shoring, sheeting, and bracing during backfilling of the trench or around structures so no voids are created and no caving, lateral movement, or flowing of the subsoils occurs.

3.06 EXCAVATION BEYOND THE LIMITS INDICATED

- A. Do not to excavate beyond the limits shown in the Drawings or as specified herein.
 - 1. If excavation beyond the limits indicated occurs, backfill with material approved by the Engineer and compact as specified herein.
 - 2. There is no additional payment for such work.

3.07 UNSTABLE OR UNSATISFACTORY SOILS

- A. If the bottom of the excavation is soft or unstable, and in the opinion of the Engineer cannot satisfactorily support the pipe, structure, or other related design elements, the Engineer will determine proper corrective methods. Payment for removal and replacement or other corrective methods shall be made in accordance with the provisions of the General Conditions.

3.08 SUBGRADE PREPARATION

- A. Prepare subgrade to a minimum depth of 6 inches from the bottom of excavation.
- B. Fill Subgrade: Fill Subgrade (prior to placement of any fill material) may be native soil or import material prepared to be non-yielding when proof-rolled by passing over all required areas with a minimum 10-ton roller, front-end loader with loaded bucket, or other heavy rubber-tired vehicle with high tire pressure (e.g., loaded tandem dump truck) in the presence of the Engineer.
- C. If the subgrade is unstable, wet, or soft, coordinate with the Engineer for corrective methods prior to placing subsequent lifts.

3.09 SITE AND TRENCH BACKFILL

- A. Compact backfill materials by vibrating, tamping, or a combination thereof. Compact materials in accordance with Paragraph 3.11 unless otherwise specified or shown on the Drawings.
- B. Site Backfill:
 - 1. Do not place any backfill material until the Engineer has inspected, tested and favorably reviewed the prepared subgrade.
 - 2. Construct fills as shown on the Drawings, true to line, grade, and cross-section.
- C. Trench Backfill:
 - 1. Place trench materials true to the lines, grades, and details indicated on the Drawings.
 - 2. Place trench materials in uniform, level layers, not exceeding 6 inches thick measured before compaction. Maintain a difference in level on either side of a pipe of less than 4 inches.
 - 3. Do not backfill material over the pipe or conduit until the joints have been completed and inspected by the Engineer.
 - 4. Protect the pipe or conduit from damage during the construction period. Repair broken or damaged pipe at no extra cost to the Owner. Once repair is inspected and approved by the Owner, retest the pipeline. Carefully place backfill around and over the pipe and do not allow it to fall directly upon the pipe. Tamping of backfill over the pipe shall be done with tampers, vibratory rollers, and other machines that will not injure or disturb the pipe.
 - 5. Do not allow traffic over the pipe trench until the trench has been backfilled even with the existing adjacent grade.
 - 6. Where a trench is placed in paved areas, prepare and compact the upper 12 inches of the trench zone per subgrade preparation requirements.
- D. Import Backfill: Coordinate the quantity of import backfill material and obtain approval from the Engineer prior to delivery and installation.
- E. Install Geotextile Fabric per the manufacturer's recommendations and as shown on the Drawings.

3.10 BACKFILL UNDER / ADJACENT TO STRUCTURES

- A. Compact materials in accordance with Paragraph 3.12 unless otherwise specified or shown on the Drawings.
- B. Place aggregate base in uniform, level layers, not exceeding 6 inches thick measured before compaction under catch basins, storm drain drop inlets, manhole structures (Coordinate with Section 33 05 61).
- C. Backfill Adjacent to Structures:
 - 1. Do not place backfill against structures until the concrete has been patched and cured.
 - 2. Do not place backfill against structures until at least 28 calendar days after the concrete was placed, or until the concrete has achieved a strength of at least 2,500 psi, whichever is earlier. Concrete strength shall be demonstrated by field cured cylinders tested at the Contractor's cost, prepared and tested in accordance with ASTM C31 and ASTM C39.
 - 3. Do not place backfill against hydraulic structures until the structure has passed the specified leakage tests.

4. Place structural backfill within 2 feet of a structure.
5. Place structural backfill in uniform, level layers, not exceeding 8 inches thick measured before compaction. Bring backfill up uniformly on all sides of the structure, and on both sides of buried walls.

3.11 COMPACTION

- A. Add water to the backfill material or dry the material as necessary to obtain moisture content within 2 percent of optimum. Employ such means as may be necessary to secure a uniform moisture content throughout the material of each layer being compacted.
 1. Use air-drying to reduce moisture content and/or achieve compaction before other methods may be considered. Or, where applicable, demonstrate air-drying is not possible before other methods may be considered.
- B. After the material has been moisture conditioned, compact it with compaction equipment appropriate for the use to achieve specified compaction.
- C. If the backfill material becomes saturated or does not meet requirements specified through negligence, remove the faulty material and replace it in a manner approved by the Engineer/Owner. No additional payment will be made for such work.
- D. Compact materials in accordance with ASTM D1557 (Modified Proctor) unless otherwise specified.
- E. Compaction of embankment and backfill materials by flooding, ponding, or jetting is not permitted.
- F. Material Requirements:

	Material	Minimum Relative Compaction ¹
1.	Engineered Fill: Native Soil Import Soil	95 percent 95 percent
2.	Pipe Zone Backfill	90 percent
3.	Trench Zone Backfill	95 percent in paved areas
4.	Pipe Bedding	90 percent
8.	Aggregate Base	Refer to Section 32 12 16
9.	Structure Backfill	95 percent
15.	Pervious Backfill Material	90 percent

¹ Modified Proctor Test

3.12 SITE GRADING

- A. Tolerances: Grade the site to the elevations shown on the Drawings within the tolerances provided here:
 1. Excavation:
 - a. Plus or minus ½ inch.
 2. Backfill: Where backfilling due to excavation or temporary cut and fill operations, place lifts as specified herein with the following tolerance:
 - a. Plus or minus 1 inch.
 3. Subgrade:
 - a. Plus or minus ½ inch.
 4. Fine grading (finished surface):

- a. Sidewalks: $\frac{1}{4}$ inch when tested with a 10-foot straight edge.
 - b. Asphalt pavement: $\frac{1}{4}$ inch when tested with a 10-foot straight edge.
 - c. Concrete pavement: Refer to Section 03 30 00.
 - d. Landscaped areas: Plus or minus $\frac{1}{2}$ inch.
- B. Ditches and Swales: Cut ditches accurately to the cross sections and grades shown. Trim all roots, stumps, rock, and other foreign matter from the sides and bottom of the ditches.
- C. Gravel Areas: Place gravel material onsite to finished grade elevations as shown on the Drawings, unless otherwise noted.
- D. Landscaped Areas: Use Landscape Fill in the top 2 feet of areas to be landscaped.
- E. Where filter fabric is installed within an earthen or rock-lined drainage swale or channel, overlap filter fabric a minimum 12 inches with upstream fabric placed over downstream fabric. Join seams per manufacturer recommendations.
- F. Uniformly grade and provide drainage away from areas to collection points. Grade surfaces to drain away from structures at a minimum of 2 percent, unless otherwise noted on the Drawings.
- 1. Construct slopes in accordance with the Caltrans Standard Specifications, Sections 19-103C, 19-2.03G, and 19-103C. (CA project using Caltrans)
- G. Except where shown otherwise on the Drawings, restore the finish grade to the original contours and to the original drainage patterns. Grade surfaces to drain away from structures at a minimum of 2 percent, unless otherwise noted on the Drawings.

END OF SECTION

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SECTION 31 10 00

SITE PREPARATION

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Site preparation shall consist of all clearing, grubbing, stripping, (demolition), and related work necessary to prepare the project site for construction operations.
2. No open burning of debris, lumber, or other scrap will be permitted.
3. Trees and vegetation to be left standing shall be protected from damage incident to site preparation and construction operations by the erection of barriers or by such other means as the circumstances require.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

3.01 DEMOLITION

- A. Demolish and remove any fences, posts, poles, or other structures from within the project site, areas to be cut or areas to receive fill, and pipeline alignments.

3.02 CLEARING

- A. Clearing shall consist of the felling, trimming and cutting of trees, and the removal of downed timber, shrubs, grasses, debris and rubble from the project site which will obstruct or otherwise impede construction operations.

3.03 GRUBBING

- A. Grubbing shall consist of the removal and disposal of stumps, roots larger than 3 inches in diameter, and matted roots from the construction area. This material, together with logs and other organic debris, shall be excavated and removed to a depth of not less than 18 inches below the original surface level of the ground in areas indicated as construction areas under this Contract, such as areas for structures, pavement, fills. Depressions made by grubbing shall be filled with structural backfill material and compacted to make the surface conform with the original adjacent surface of the ground, unless further excavation is required. Grub borrow areas to the extent necessary to obtain material free of stumps and roots.

3.04 STRIPPING

- A. Strip the upper 2 to 6 inches of soil containing vegetation and root matter from all areas to receive fill and from all areas to be excavated.

3.05 DISPOSAL

- A. Felled Trees and Downed Timber: Cut up and stockpile where directed by the Engineer.
- B. Strippings: Stockpile stripped material and use it to restore the site.
- C. Dispose of remaining vegetation and debris in accordance with Section 01 57 00.

END OF SECTION

SECTION 31 12 00

EXISTING PLANTS TO REMAIN

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Work Included: Provide protection of all existing plants and planted areas indicated to remain as shown on Drawings.
- B. Related Work:
 - 1. Selective Site Demolition - Section 02 41 19
 - 2. Planting Area Finish Grading - Section 31 22 19
 - 3. Planting - Section 32 93 00
 - 4. Landscape Maintenance - Section 32 93 25

1.02 PROJECT CONDITIONS

- A. Review: Visit and walk the site with the Owner's Representative to clarify scope of work and understand project conditions.
- B. Documentation: Confirm location in field of all plant materials designated on Drawings as "Existing to Remain". Examine existing irrigation system to remain or to connect with, and report all malfunctioning equipment, to be repaired by Owner. Record all discrepancies and all conditions which threaten existing plantings.
- C. Acceptance: Commencing work shall be taken as acceptance by the Contractor of responsibility for the protection of all existing site plantings, with the exception of discrepancies and corrections noted above.

1.03 SUBMITTALS

- A. Shop Drawings: Construction details and proposed layout for protective barriers and barricades.
- B. Temporary Irrigation: Watering schedule and temporary irrigation equipment for all trees and shrubs to remain throughout the duration of construction.

1.04 DEFINITIONS

- A. Protection: Provide all barricades as required to prevent all damage to existing plant materials to remain, including but not limited to protection from mechanical damage, and soil compaction, pollution from all sources, and disruption of environmental support which would result in the loss of vigor of said plantings.
- B. Drip Line: An imaginary line on the ground around a tree representing its outermost branch tips. All of the area within the drip line of existing trees to remain is to be protected from damage as specified herein, unless otherwise noted.

1.05 SCHEDULING

- A. As required, construct protective barriers prior to demolition (and selective clearing). See Sections 02 41 13 – Site Demolition. Construct other barriers as scope of work progresses.

1.06 QUALITY ASSURANCE

- A. Standards of workmanship shall conform to those recommended by:
 - 1. University of California, Division of Agriculture and Natural Resources, "Pruning Landscape Trees," 1981, publication #2574.
 - 2. American National Standards Institute (ANSI), Section A300-1995, 133.1, Revision Draft 3, Trees, Shrubs, and other Woody Plant Maintenance - Standard Practices (Pruning), "Tree Trimming and Removal."
 - 3. International Society of Arboriculture (ISA).
 - 4. National Arborist Association.

1.07 WARRANTY

- A. General: During the Warranty Period for new plantings, similarity warrant all existing plant materials against decline resulting from damage during construction. See Section 32 93 00 - Planting.
- B. Exclusions: Damage due to vandalism, Acts of Nature, or neglect by Owner.

1.08 REPLACEMENTS

- A. General: Existing planting to remain which exhibits conditions which are determined as unacceptable due to inadequate protection during construction shall be replaced by Contractor at no expense to Owner.
- B. Quality: Closely match replacements to adjacent specimens of the same species and size.
- C. Planting, Maintenance, and Warranty of Replanted Materials: See Section 32 93 00 - Planting.

1.09 FINAL ACCEPTANCE: SEE SECTION 32 93 25 - LANDSCAPE MAINTENANCE.

PART 2 - PRODUCTS

- 2.01 MANUFACTURERS: Fertilizers, herbicides, and pest control - see Section 32 93 00 - Planting and Section 32 93 25 - Landscape Maintenance.
- 2.02 BARRIERS AND BARRICADES: 6-foot high chain link fence or flexible construction fencing, as accepted by Landscape Architect.
- 2.03 SAFETY: Provide all reflective signage and/or flashers as required by all codes and ordinances affecting barricaded plantings to remain.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Provide barriers at the drip line of all trees designated to remain. Grouping of trees may be enclosed by a single protective fence. Similarly protect lawn, groundcover, and shrub areas from construction activities.

3.02 OPERATIONS

- A. Storage: Do not store materials or equipment under the branches of all existing trees nor in shrub or ground cover areas to remain.

- B. Traffic: Do not operate nor park equipment within the drip line of existing trees to remain. Keep foot traffic out of existing ground cover areas. Protect shrub areas from cross traffic.

3.03 EXCAVATING AND GRADING

- A. Cut: Do not permit machine excavation within the drip line of existing trees to remain. All such work shall be hand labor. Do not permit more than two (2) inches of existing soil to be removed within the drip line except as authorized in writing by Landscape Architect.
- B. Fill: Do not permit stockpiling of soil within the drip line of all existing trees nor on existing shrub or groundcover areas. Do not permit more than one (1) inch of fill to be placed within the drip line during grading operations without written acceptance of Landscape Architect.

3.04 MAINTENANCE OF EXISTING PLANTING

- A. General: During the Maintenance Period for new planting, similarly maintain all existing plantings to remain. See Section 32 93 25 - Landscape Maintenance.
- B. Fertilizers: Do not use complete fertilizers on existing plant materials unless soils test indicates specific nutrient deficiencies.
- C. Non-irrigated existing areas: Prior to and throughout construction install and maintain temporary irrigation to all existing plantings to remain including those indicated on the drawings.
- D. Existing Irrigated Areas to Remain: Keep irrigation operable throughout construction.
- E. Mulch: Maintain 6-inch thickness of mulch at trees to remain and 3-inch thickness of mulch at shrubs to remain throughout the duration of construction.

3.05 CLEAN UP

- A. At close of construction in each area, remove all protective barriers at the direction of the Landscape Architect. Transport all barrier materials off site at no additional expense to Owner.
- B. Repair all grades and restore all damaged plant materials.

END OF SECTION

SECTION 31 13 00

SELECTIVE TREE AND SHRUB REMOVAL

PART 1 - GENERAL

1.01 DESCRIPTION

A. Work Included: Perform selective clearing of trees and shrubs and stripping of all weeds within in project area complete as shown, and as specified.

B. Related Work:

1. Existing Plants to Remain - Section 31 12 00
2. Planting Area Finish Grading - Section 31 22 19
3. Soil Preparation - Section 32 91 13

1.02 JOB CONDITIONS

A. For Existing Plant Material to remain, see Existing Plants to Remain - Section 31 12 00.

B. Work Schedule: Proceed and coordinate with the work as the site becomes available, consistent with seasonal limitations for clearing.

1.03 SELECTION AND TAGGING OF TREES AND SHRUBS:

A. Contractor to mark trees and shrubs to be removed and field verify with Landscape Architect prior to removal.

PART 2 - PRODUCTS

2.01 MATERIALS FOR CLEARING AND STRIPPING: CONTRACTOR'S OPTION.

PART 3 - EXECUTION

3.01 TREES AND SHRUBS TO BE CLEARED

A. Clearing: Remove and dispose of trees, snags, stumps, shrubs, brush, limbs, and other vegetative growth. Remove all evidence of their presence from the surface including sticks and branches greater than 1-inch in diameter or thickness. Remove and dispose of trash piles and rubbish. Protect trees, shrubs, and other vegetative growth which are not designated for removal.

B. Grubbing: After clearing, remove and dispose of wood or root matter including stumps, trunks, roots, or root systems greater than 1-inch in diameter or thickness to a depth of 24-inches below the ground surface.

C. General: Clear all trees, shrubs, and weeds in conflict with new planting and as indicated on drawings.

D. Special Conditions: Clear trees at edges of building and all paving areas only at direction of Landscape Architect.

- E. Stump Removal: Grind or remove all tree stumps to a minimum depth of two (2) ft. below proposed finish grade.
- F. Disposal: Dispose of all cleared trees and shrubs off the site unless otherwise directed by Landscape Architect.

3.02 CLEAN-UP

- A. Keep all areas of work clean, neat and orderly at all times.
- B. Clean up and remove all debris from the entire work area prior to Final Acceptance.

END OF SECTION

SECTION 31 22 19

PLANTING AREA FINISH GRADING

PART 1 - GENERAL

1.01 SUMMARY

- A. Work Included: Execute finish grades related to landscaping complete, as shown, and as specified.
- B. Related Work:
 - 1. Irrigation System - Section 32 84 00
 - 2. Soil Preparation - Section 32 91 13
 - 3. Planting – Section 32 93 00

1.02 PROJECT/SITE CONDITIONS

- A. Dust Nuisance: Assume full responsibility for alleviation or prevention of dust as a result of grading work.

1.03 SEQUENCING AND SCHEDULING:

- A. Complete all finish grading prior to installation of sprinkler irrigation systems in each area graded.
- B. Regrade as required to finish grades established by Owner Representative once the sprinkler system is installed.

PART 2 - PRODUCTS

- 2.01 EQUIPMENT: At contractor's option, unless otherwise requested by Owner Representative.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verification of Conditions: Verify that the following items have been completed prior to commencement of finish grading:
 - 1. Installation of stockpiled and imported topsoil and soil preparation including all debris removal.
 - 2. Incorporation of soil amendments.

3.02 INSTALLATION

- A. Finish Grading:
 - 1. Provide all grades for natural runoff of water without low spots or pockets. Accurately set flow line grades at 2 percent minimum gradient unless otherwise noted in Drawings.
 - 2. Finish grades shall be smooth, even, and on a uniform plane with no abrupt changes of surface. Slope uniformly between given spot elevations.

3. Grades not otherwise indicated shall be uniform levels or slopes between points where elevations are given, or between points established by walks, paving, curbs or catch basins.
 4. Tops and toes of all slopes will be rounded to produce a gradual and natural-appearing transition between relatively level areas and slopes.
 5. Fill in areas that were excavated due to material removal, construction activities, or tree removal with imported topsoil to achieve a uniform plane.
- B. Tolerances:
1. All planting areas shall be true to grade within 1 inch when tested with a 10-foot straightedge.
 2. Hold finished grades 1½ inches below top of adjacent pavement, headers, curbs or walls, unless otherwise indicated in Drawings.

END OF SECTION

SECTION 32 12 16

PAVING AND SURFACING

PART 1 - GENERAL

1.01 SUMMARY

- A. Furnish all labor, material, equipment, tools, and services required for removing, placing and compacting asphalt concrete pavement for roadways, parking lots, and walkways to the lines, grades, and dimensions shown on the Drawings and as specified herein.
 - 1. Demolish existing asphalt paving where shown in Drawings.
 - 2. Repair and resurface existing asphalt pavement damaged during construction.
 - 3. Rehabilitation of existing asphalt pavement.
 - 4. Install asphalt pavement.
 - 5. Repair or replace concrete curbs, gutters, and sidewalks damaged by the work in accordance with Section 32 16 00.

1.02 REFERENCES

- A. ASTM International (ASTM):
 - 1. D422 Test Method for Particle-Size Analysis for Soils
 - 2. D1556 Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method
 - 3. D1557 Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (Modified Proctor)
 - 4. D2027 *Specification for Cutback Asphalt (Medium Curing Type)*
 - 5. D2922 Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)
- B. California Department of Transportation (Caltrans):
 - 1. California Test 216 Method of Test for Relative Compaction of Untreated and Treated Soils and Aggregates
 - 2. California Test 231 Method of Test for Relative Compaction of Untreated and Treated Soils and Aggregates by the Area Concept Utilizing Nuclear Gauges
- C. State of California, Department of Transportation, Caltrans Standard Specifications
- D. City of Scotts Valley Standard Specifications
- E. Scotts Valley Water District Standard Specifications

1.03 DEFINITIONS

- A. Base (aggregate base): Layer of material of certain thickness placed under the pavement, constructed on subgrade. It provides a working surface for pavement placement, load distribution, and drainage.
- B. Leveling course: Lift of asphalt concrete used to fill and level irregularities prior to placement of the wearing course.

- C. PG: Performance graded. The PG system defines the asphalt binder based on the conditions in which it may be used.
- D. *Prime Coat: Emulsified asphalt used for water-proofing the base layer prior to placing asphalt concrete.*
- E. Subgrade: See Section 31 00 00.
- F. Tack Coat: Emulsified asphalt used to bond asphalt concrete to existing asphalt concrete, or to bond between asphalt concrete lifts.
- G. Wearing course: Final lift of asphalt concrete.

1.04 SUBMITTALS

- A. Submit in accordance with Section 01 33 00.
- B. Submit the following under the Product Data:
 - 1. Submit a signed verification from each source of supply for each construction material employed on this project indicating that the materials meet the Specification requirements.
 - 2. Mix design for asphalt concrete.
 - 3. Submit manufacturer's certification of the actual volatile organic compound (VOC) content for all pavement paints and bituminous pavement sealers proposed for use on this project. Submit certification of the actual VOC content for all coatings. VOC content shall be measured in grams per liter by weight of coating as applied excluding water and color added to the tint base.
 - 4. Submit verification that bituminous pavement sealers and paint products furnished meet applicable local air resources quality enforcement jurisdiction regulations as to allowable VOC content for the time and place of application and use intended.
- C. Submit the following under Samples and Test Results:
 - 1. Furnish, without additional cost to the Owner, such quantities of construction materials as may be required by the Engineer for test purposes. The Contractor shall cooperate with the Engineer and furnish necessary facilities for sampling and testing of all materials and workmanship. All materials furnished and all work performed shall be subject to rigid inspection, and no materials shall be used in the construction work until it has been inspected by the Engineer.

1.05 QUALITY ASSURANCE

- A. Comply with State of California, Department of Transportation, Caltrans Standard Specifications (Caltrans Standard Specifications).
- B. All pavement stripe painting shall be performed by competent and experienced Equipment operators and painters using proper equipment, tools, stencils, templates, and shields in a workmanlike manner.

1.06 REGULATORY REQUIREMENTS

- A. All work, material, procedures, and practices under this Section shall conform to requirements of the California Air Resources Board (CARB) and local air quality board.

PART 2 - PRODUCTS

2.01 ASPHALT CONCRETE

- A. Asphalt Concrete: 3/4-inch maximum HMA Type A shall conform to the applicable requirements of Section 39 of the Caltrans Standard Specifications. Mineral filler shall consist of portland cement or mechanically reduced rock. Proportioning shall be as set forth in Paragraph "D" below.
- B. Asphalt binder: PG 64-10 conforming to the requirements of Section 92 of the Caltrans Standard Specifications. Bitumen ratio shall be selected by the supplier in accordance with the tests specified in Section 39-3.04 of the Caltrans Standard Specifications.
- C. Mineral filler shall be mechanically reduced rock, conforming to the following gradations when tested in accordance with ASTM D422:

Particle Size	Percentage
Passing No. 200 sieve	75-100
Finer than 0.05 mm	65-100
Finer than 0.02 mm	35-65
Finer than 0.01 mm	26-35
Finer than 0.0005 mm	10-22

- D. Mix Design:

Mix	Type	Grade	Binder Content (%)
Normal	A	3/4" max.	4.5 to 6.5
Patching	A	3/8" max.	5.7 to 7.5
AC Berm	A	No. 4 max	6.0 to 7.5

2.02 TACK COAT

- A. Material for tack coat shall be SS-1 or SS-1h grade emulsified asphalt conforming to Section 94 of the Caltrans Standard Specifications.

2.03 FOG SEAL

- A. Fog seal shall be SS-1 or SS-1h asphaltic emulsion fog seal conforming to the requirements of Sections 94 of the Caltrans Standard Specifications.

2.04 SLURRY SEAL

- A. Slurry seal shall be SS1h asphaltic emulsion conforming to the requirements of Section 37-2 and Section 94 of the Caltrans Standard Specifications. Aggregate shall conform to Type II.

2.05 AGGREGATE BASE

- A. Aggregate base shall conform to the applicable requirements of the Caltrans Standard Specifications Section 26, for Class 2 aggregate base. The aggregate base shall conform to that specified for the 3/4-inch maximum, unless otherwise indicated.

2.06 PARKING STRIPES

- A. Parking stripes paint shall be non-reflective Sherwin Williams Series 338-116(W), 338-117(Y), and 338-333(B), OR Pervo Paint Company No. 4773-A(W), 4473-4A(Y), and 473-5A(B). Paint shall be stored at the project site in the manufacturer's sealed and labeled containers. Labels shall clearly identify the manufacturer, specification number, batch number, intended use, quantity and contract number.

2.07 TEMPORARY PAVEMENT (COLD MIX)

- A. Temporary pavement shall consist of No. 4 sieve maximum aggregate size, graded in accordance with Section 39 of the Caltrans Standard Specifications. The aggregate shall be blended with 5-8% SC-800 liquid asphalt.

2.08 DISTRIBUTING EQUIPMENT

- A. Distributors shall be of the pressure type with insulated tanks and shall be equipped with the following:
 - 1. A tachometer of the auxiliary wheel type, which registers speed in feet per minute.
 - 2. Charts and devices to provide for accurate and rapid determination and control of the amount of asphalt being applied.
 - 3. A hose and nozzle attachment to be used for areas inaccessible to the spray bar.
 - 4. A pressure gauge for determining application pressure.
 - 5. A thermometer for determining temperature of the asphalt.

Distributors and booster tanks shall be so maintained as to prevent dripping of asphalt from any part of the equipment.

Spray bars shall have a minimum length of 9 feet. Spray bars and extensions shall be the full circulating type and shall be adjustable to permit varying height above the surface to be treated.

The nozzles attached to the bar shall be either the conical or flat slotted type. The distance center to center of the nozzles shall not exceed 6 inches. The valves, which control the flow from nozzles, shall be of a positive acting design so as to provide a uniform unbroken spread of asphalt on the surface. Valves shall be operated so that all valves may be simultaneously opened or closed. Each valve shall also be capable of similar independent control.

Spreading equipment shall be so designed and articulated that uniform application of the asphalt, in controlled amounts, may be made ranging from 0.02 to 1.0 gallon per square yard of surface and with a range of pressure from 25 to 75 psi.

- B. A trough shall be located under the sprays, properly arranged to be swung out of the way after the sprays are operating in a uniform manner at the desired pressure or, in lieu thereof, building paper shall be spread over the treated surface for a sufficient length back so that the sprays are operating properly when the uncovered surface is reached. The building paper shall then be removed and disposed of. If the cutoff is not sufficiently positive, the similar use of paper may be required at the end of the area being covered. The distributor shall be operated in such a manner that liquid asphalt will not be splashed on adjacent guardrails or structures. Any asphalt so splashed may be removed at the expense of and by the Contractor.

PART 3 - EXECUTION

3.01 GENERAL

- A. Where trenching or other construction activity has resulted in damage to a localized area of pavement, the damaged pavement shall be cut back 6 inches, removed and replaced.
- B. Where the demolition or damaged area extends over more than 50% of the road width or paved area, as determined by the Engineer, the full pavement width or area shall be removed and replaced.
- C. Structures such as valve boxes, manhole frames and covers, and electrical vaults shall be adjusted to grade as necessary within paved areas.
- D. Existing asphalt pavement islands of 50 square-feet or less and strips 18 inches or less in width shall be removed and replaced.
- E. Adjust existing manholes, meter boxes, cleanouts, etc. to match the new grade.

3.02 PAVEMENT CUTTING

- A. Where trenching or excavation occurs in paved areas, the existing pavement shall be scored and broken ahead of the trenching or excavation operation. The extent of paving removed shall be limited to the minimum necessary for the excavation. All existing asphalt or concrete surfacing shall be saw cut vertically in a straight line and removed from the jobsite prior to starting the trench excavation. This material shall not be used in any fill or backfill.
- B. Pavement shall be cut accurately and on neat lines. The asphalt pavement shall be saw cut to a minimum depth equal to or greater than one-half the thickness of the pavement section. Any pavement damaged outside these lines shall be re-cut and restored at the expense of the Contractor. Should voids develop under existing pavements during construction, Contractor shall remove the affected pavement, repair voids and replacement pavement section at the expense of the Contractor.
- C. Construct joints between successive runs that are vertical and at right angles to the line of the improvement. Exercise care in construction of all joints to ensure that the surface of the pavement is true to grade and cross-section. Lapped joints will not be permitted.

3.03 PLACEMENT OF AGGREGATE BASE

- A. Subgrade Preparation: Refer to Section 31 00 00.
- B. Aggregate Base Tolerance: The aggregate base shall not be placed before the subgrade is approved by the Engineer. The finished aggregate base shall not vary more than 1 inch above or below, the planned grade.
- C. Aggregate Base Placing: The aggregate base material shall be spread on the prepared subgrade by means of approved spreading devices subject to approval by the Engineer; the aggregate base material may be dumped in piles upon the subgrade and spread by bulldozing ahead from the dumped material. Each layer shall not exceed 6 inches. Segregation of large or fine particles of aggregate shall be avoided, and the material as spread shall be free from pockets of large and fine material.
- D. Compaction: The relative compaction of each layer of compacted aggregate base material shall not be less than 95% as determined by California Test 216 OR

ASTM D1556 (Sand Cone) OR California Test 231 OR ASTM D2922 (Nuclear method when approved by the Engineer). Compaction shall be in accordance with Section 26-1.05 of the CATLRANs Standard Specifications. Aggregate base, after compaction, shall be watered as provided in Section 17 of the Caltrans Standard Specifications.

3.04 PRIME COAT APPLICATION

- A. Prime Coat: A prime coat shall be applied to all base course surface areas to be covered with asphalt concrete.
 - 1. Preparation: Immediately before applying the prime coat, the area to be surfaced shall be cleaned of all loose material by means of hand brooms.
 - 2. Application: The application temperature shall be between 125 and 225°F. The Engineer reserves the right to require an adjustment of the temperature of the liquid asphalt at the time of placement. The rate of application shall be between 0.05 and 0.25 gallon per square yard. Prime coat shall not be applied when the atmospheric temperature is below 50°F. The prime coat shall be applied at least 24 hours in advance of paving. Damaged prime coat shall be repaired at least 24 hours in advance of paving.

3.05 TACK COAT APPLICATION

- A. Tack Coat: In advance of spreading bituminous material upon an existing bituminous or portland cement concrete surface, a tack coat shall be applied to all areas to be surfaced and to all vertical surfaces of existing pavement, curb, gutters and construction joints in the surfacing against which additional material is to be placed. Apply tack coat only as far in advance as necessary for that day's installation.
 - 1. When two or more lifts of asphalt concrete are required, a tack coat shall be applied between each lift unless the lifts are placed in the same work shift if:
 - a. No dust, dirt or extraneous material is present
 - b. Surface is at least 140 degrees F
 - 2. Preparation: Immediately before applying a tack coat, the area to be surfaced shall be cleaned of all loose material.
 - 3. Application: The tack coat shall be applied by means of pressure distributors by pressure hand-spray equipment. The rate of application shall be 0.05 gallon per square yard for PG 64-10 or 0.05 to 0.10 gal per square yard for SS-1h emulsified asphalt. Emulsified asphalt shall not be applied when the atmospheric temperature is below 40°F. If emulsified asphalt Type SS-1 is used, it may be diluted with an equal part of water. Cover drain inlets, and manholes during the application of tack coats.

3.06 PLACEMENT OF ASPHALT CONCRETE

- A. Delivery and Spreading: Bituminous mixtures shall be delivered to the roadbed at temperatures specified in the Caltrans Standard Specifications. Spreading of the mixture shall be in accordance with Section 39 of the Caltrans Standard Specifications. All loads shall be covered with tarpaulin or other material during transportation. The top layer of asphalt concrete shall not exceed 2 inches in compacted thickness. The next lower layer shall not exceed 3 inches in compacted thickness, and any lower layers shall not exceed 6 inches in compacted thickness.
- B. Compaction: Initial or breakdown rolling and the final rolling of the uppermost layer of the asphalt concrete shall be compacted in accordance with Section 39 of the

Caltrans Standard Specifications. Compaction by vehicular traffic shall not be permitted. The Engineer reserves the right to require an adjustment of the temperature of the asphalt concrete at the time of placement.

- C. Pavement Thickness: Pavement shall match the existing adjoining pavement in thickness, or as indicated on the Drawings, or as specified, whichever is greater.
- D. Joining Pavement: The joints between old and new pavements or between successive days' work shall be carefully made in such manner as to ensure a continuous bond between old and new sections of the course. Edges of existing pavement shall be exposed and cleaned and edges cut to straight, vertical surfaces. All joints shall be painted with a uniform coat of tack coat before the fresh mixture is applied.
- E. Protection of Pavement: After final rolling, no vehicular traffic of any kind shall be permitted on the pavement until it has cooled and hardened and in no case less than 6 hours.

3.07 REPLACEMENT OF TEMPORARY PAVEMENT

- A. Final pavement restoration shall be made as soon as practicable after backfilling. In that period of time between backfilling and final pavement restoration, the trench shall be maintained level with the adjacent pavement and shall be covered with a 1-inch minimum layer of temporary pavement. Prior to placing the final pavement, the temporary pavement shall be removed, the aggregate base excavated to the lines indicated on the Drawings, and the existing pavement edges saw cut as herein specified. The final asphalt pavement shall not be placed before the aggregate base is approved by the Engineer and a tack coat applied to existing paved surfaces.

3.08 FOG SEAL APPLICATION

- A. A fog seal shall be applied to the surface of installed asphalt concrete. It shall be applied in accordance with the applicable requirements of Section 37-4, of the Caltrans Standard Specifications. Cover drain inlets, and manholes during the application of fog seals.

3.09 SLURRY SEAL APPLICATION

- A. A slurry seal shall be applied to the surface of existing asphalt pavement where shown on the Drawings. The slurry seal shall be applied in accordance with the applicable requirements of Section 37-3 of the Caltrans Standard Specifications. Cover drain inlets, and manholes during the application of slurry seals.

3.10 PAVEMENT AND CURB MARKINGS

- A. Removal of Traffic Striping and curb and pavement markings: Remove existing traffic striping and pavement markings by wet or dry sandblasting, high velocity water jet, grinding or other methods approved by the Engineer. Covering with black paint or emulsified asphalt will not be allowed. Conflicting striping and pavement markings shall be removed prior to placement of temporary or permanent traffic striping, and curb or pavement markings. Asphalt damaged due to removal shall be patched with minor HMA, gradation No. 4 in conformance with Section 39 of the Caltrans Standard Specifications.
- B. Preparation: Immediately before applying the paint, the pavement surface shall be thoroughly cleaned of all dust, dirt, scale, curing compound, oil, grease, or other

objectionable matter as directed by the Engineer. Solvent material that will damage the pavement shall not be used as a cleaning agent.

- C. Tolerances: Marking and striping shall be within 2 inches of the correct alignment. Dimensions of marking and striping shall be within ½ inch.
- D. Mixing: Mechanical mixers shall be used to mix paint. Prior to applying, the paint shall be mixed a sufficient length of time to thoroughly mix the pigment and vehicle together, and shall be kept thoroughly agitated during its application.
- E. Application: Pavement and curb marking shall be applied only on dry surfaces and only during periods of favorable weather. Painting shall not be performed when the atmospheric temperature is below 40°F when using solvent-borne paint or below 50°F when using water borne paint; when freshly painted surfaces may become damaged by rain, fog, or condensation; nor when it can be anticipated that the atmospheric temperature will drop below said 40°F or 50°F temperatures during the drying period.
 - 1. Immediately following the preparation of the pavement, the paint shall be applied. The paint shall be applied at the rate of 100 to 110 square feet per gallon of paint. The stripe painting machine shall have a compressor capacity of at least 105 cubic feet per minute and be capable of operating at an air pressure of 125 psi. The paint shall be mechanically agitated while the machine is in operation. The striping machine shall be equipped with a guide post so designed that the machine will hold exactly to the alignment. The propelling vehicle shall be equipped with a guide post so designed that the machine will hold exactly to the alignment. The propelling vehicle shall be equipped with a speedometer or tachometer, and with a suitable device for determining the quantity of paint in the container. The paint container and spray nozzles on the machine shall be thoroughly cleaned before starting each day's work. The stripe shall be of the required width, with clean, true edges and without sharp breaks.
 - 2. Application of a bituminous seal coat and the permanent pavement marking shall meet local and state requirements. The Contractor shall allow sufficient time before applying permanent pavement marking so that the paint does not bleed, curl or discolor when applied to bituminous surfaces. If bleeding or discoloring occurs, apply an additional coat(s) of paint as needed to provide a clean and neat final product.
 - 3. Remove existing permanent or temporary markings and striping which are to be abandoned or obliterated, by wet sandblasting or other favorably reviewed methods. Dry sandblasting may be used in selected areas only with prior approval of the Engineer and with approval of the air pollution control authority having jurisdiction over the area in which the work will be performed. Obliteration of traffic striping with black paint or light emulsion oil shall be done only with the prior favorable review shall not be used as a removal agent.
- F. Provide all warning devices required to protect the painting operation and the finished work. Repaint, to the applicable specifications, any portion of the stripe damaged by any type of traffic within 24 hours after the stripe has been applied. For striping less than 50 feet in length, favorably reviewed portable painting equipment may be used.

END OF SECTION

SECTION 32 13 43

PORTLAND CEMENT PERVIOUS CONCRETE PAVEMENT

PART 1 - GENERAL

1.01 SCOPE

- A. The Work to be completed under this section includes the furnishing of all labor, materials and equipment necessary for construction of Portland Cement Pervious Concrete Pavement for streets, parking and pedestrian areas in conformance with the plans and specifications.

1.02 DEFINITIONS

- A. These definitions are to assist in interpreting the provisions of this specification.
 - 1. construction joint—a joint constructed from two separate concrete placements where the first has undergone final setting before the next placement.
 - 2. contraction joint—formed, sawed, or tooled groove in a concrete structure to create a weakened plane and control the location of cracking resulting from the expansion and contraction of concrete.
 - 3. early-entry dry-cut saw—a saw designed for cutting joints in concrete that uses diamond-impregnated blades and a skid plate to help prevent spalling.
 - 4. isolation joint—a separation between adjoining parts of a concrete pavement and fixed element, usually a vertical plane, at a designed location such as to not impact the performance of the pavement, but to allow relative movement of the concrete and reduce formation of cracks.
 - 5. exposure condition, moderate—exposure to a climate where the concrete will not be in a saturated condition when exposed to freezing and will not be exposed to deicing agents or other aggressive chemicals.
 - 6. panel—an individual concrete slab bordered by joints or slab edges.
 - 7. Pavement – a layer or finished surface of pervious concrete for areas such as roads, sidewalks, canals, playgrounds, storage areas, and parking lots.
 - 8. exposure condition, severe—exposure to deicing chemicals or other aggressive agents or where the concrete can become saturated by continual contact with moisture or free water before freezing.
 - 9. subbase—a layer in the overall pavement cross section between the subgrade and the concrete pavement.
 - 10. subgrade—the soil prepared and compacted to support the pavement system.
 - 11. unreinforced concrete pavement—concrete pavement that does not contain distributed deformed steel reinforcing bars or welded wire fabric.

1.03 REFERENCED STANDARDS

- A. Standards of ACI and ASTM referred to in this specification are listed with serial designation including year of adoption or revision, and are part of this specification.
 - 1. ACI standards
 - a. 522-1 Specification for Pervious Concrete Pavement
 - 2. ASTM standards

- a. C 29/C 29M-97 (2003) Test Method for Bulk Density (Unit Weight) and Voids in Pervious Concrete.
- b. C 33-03 Specification for Concrete Aggregates
- c. C 94/C 94M-06 Specification for Ready-Mixed Concrete
- d. C 138/C 138M-01a Test Method for Density (Unit Weight), Yield, and Air Content (Gravimetric) of Concrete
- e. C 140-06 Test Method for Sampling and Testing Concrete Masonry Units and Related Units
- f. C 172-04 Practice for Sampling Freshly Mixed Concrete
- g. C 174/C 174M-06 Test Method for Measuring Thickness of Concrete Elements Using Drilled Concrete Cores
- h. C 494/C 494M-05a Specification for Chemical Admixtures for Concrete
- i. C 1077-06 Practice for Laboratories Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Laboratory Evaluation
- j. D 994-98 (2003) Specification for Preformed Expansion Joint Filler for Concrete (Bituminous Type)
- k. D 1751-04 Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types)
- l. D 1752-04a Specification for Preformed Sponge Rubber Cork and Recycled PVC Expansion Joint Fillers for Concrete Paving and Structural Construction
- m. D 3385-03 Test Method for Infiltration Rate of Soils in Field Using Double-Ring Infiltrometer
- n. D 3665-06 Practice for Random Sampling of Construction Materials
- o. E 329-06a Specification for Agencies Engaged in Construction Inspection and/or Testing

1.04 SUBMITTALS

- A. Contractor shall submit drawings and documentation as required in this section to demonstrate conformance with the specification requirements.
- B. Submit the following:
 - 1. Pervious concrete qualifications of Contractor specified herein.
 - 2. Two test panels as specified herein for review in the field; placed, jointed, and cured; each a minimum of 225 square feet and having the required thickness shown on the Drawings.
 - 3. Proposed concrete mixture proportions and unit weight.
 - 4. Data concrete mix design void content, unit weight, and concrete mixture proportions.

1.05 QUALITY CONTROL

- A. Contractor qualifications:
 - 1. The Contractor installing pervious concrete must have successfully installed 100,000 square feet within the Northern California region, for adequate experience with environmental and climatic conditions.
 - 2. The Contractor shall employ no less than four NRMCA certified Pervious Concrete Technicians who must be on site working as members of each placement crew during all concrete placement unless otherwise specified.

B. Test panels:

1. Test panels may be placed at any of the final pervious concrete pavement placement locations. Test density of fresh concrete for the test panels in accordance with ASTM C 138/C 138M following the consolidation procedures described in ASTM C29/C29M, Jigging Procedure. Test thickness in accordance with ASTM C 174/C 174M, and test density in accordance with ASTM C 140-06, Paragraph 9.3.
2. The acceptable fresh density shall be within 10 pounds per cubic foot of the specified density.
3. Tolerance for thickness, and unit weight, reported as the average of three cores of each test panel shall be as follows:
 - a. The average compacted thickness shall not be 1/2 in. less than the specified thickness, with no single core exceeding 1 in. less than the specified thickness; nor the average compacted thickness more than 1-1/2 in. more than the specified thickness.
 - b. The acceptable hardened density shall be within 10 pounds per cubic foot of the specified density.
 - c. When the test panel complies with the above requirements, the panel may be left in-place and included in the completed work

C. Testing Procedures:

1. Agencies that perform testing services on concrete materials shall meet the requirements of ASTM C 1077. Agencies inspecting the work shall meet the requirements of ASTM E 329. Testing agencies performing the testing shall be favorably reviewed by the Engineer before performing any work. Contractor responsible for testing costs.
2. Field tests of concrete shall be performed by an individual certified as an NRMCA Certified Pervious Concrete Technician or equivalent and an ACI Concrete Field Testing Technician—Grade 1 or equivalent.
3. Notify the Engineer at least 48 hours before concrete placement.
4. Conduct a minimum of one unit weight test for each day's placement. Comply with ASTM C 172 and C 138/C 138M following the consolidation procedures described in ASTM C 29/C 29M, Paragraph 11, "Jigging Procedure," to verify unit weight. Determine unit weight in accordance with ASTM C 29/C 29M using a minimum 0.25 cubic foot cylindrical metal measure. Fill and compact the measure in accordance with ASTM C 29/C 29M, Paragraph 11, "Jigging Procedure."
5. The acceptable fresh density shall be within ± 10 pcf of the specified density.
6. Remove three cores from each lot of 5,000 square feet, in accordance with ASTM C 42/C 42M not less than 7 days after placement of the pervious concrete, select three locations in accordance with ASTM D 3665-06. Measure the cores for thickness (ASTM C 42/C 42M), and unit weight (ASTM C 140). After thickness determination, trim and measure the cores for unit weight in the saturated condition as described in Paragraph 9.3.1, "Saturation," of ASTM C 140-06. Immerse the trimmed cores in water for 24 hours, drain for 1 minute, remove surface water with a damp cloth, then weigh immediately.
7. Tolerance for thickness, and unit weight, reported as the average of three cores of each lot shall be as follows:
 - a. The average compacted thickness shall not be less than 1/2" the specified thickness, with no single core being 1" less than the specified thickness.

- b. The acceptable hardened density shall be within ± 10 pounds per cubic foot of the specified density.
- c. When a lot is outside one or more of these limits, the lot shall be rejected, removed, and replaced at no additional cost to the Owner.
- 8. Core holes shall be filled with standard concrete.
- 9. Compressive or Flexural Strength Test shall not be used for Pervious Concrete.

PART 2 - MATERIALS

2.01 SUBBASE

- A. Geotextile Fabric—Mirafi 140N
- B. Pervious Concrete Rock Base—Washed 1" crushed rock (#57 washed aggregate) containing no fines. Rock shall meet the durability requirements of ASTM C 33.

2.02 PERVIOUS CONCRETE

- A. ASTM C 94/C 94M and the following requirements:
 - 1. Maximum aggregate size shall not exceed one inch.

2.03 ISOLATION JOINT MATERIAL

- A. ASTM D 994, D 1751, or D 1752.

2.04 FORMS

- A. Make forms with steel, wood, or other material that is sufficiently rigid to maintain specified tolerances, and capable of supporting concrete and mechanical concrete placing equipment.
- B. Forms shall be clean and free of debris of any kind, rust, and hardened concrete.

PART 3 - EXECUTION

3.01 SUBGRADE PREPARATION

- A. Grade subgrade to the required lines, slopes and depths indicated on the Drawings and as required to achieve surface grades and slopes equal to the existing parking lot.
- B. Construct subgrade to ensure that the required pavement thickness (pervious concrete and sub-base) is obtained in all locations.
- C. After grading, scarify the subgrade to loosen soils compacted by grading activities. Smooth and compact to 90% of maximum proctor density.
- D. Keep all traffic off of the subgrade during construction to the maximum extent practical, to avoid overcompaction.

3.02 SUBBASE

- A. Install geotextile in accordance with manufacturer recommendations.
- B. Roll lengthwise in the direction of sloping grade.
- C. Lap joints 12 inches.

- D. Install Rock Base to the thickness indicated on the Drawings. Compact with three passes of a vibratory plate compactor.

3.03 SETTING FORMWORK

- A. Set, align, and brace forms so that the hardened pavement meets the specified tolerances below.
- B. Apply form release agent to the form face which will be in contact with concrete, immediately before placing concrete.
- C. The vertical face of previously placed concrete may be used as a form. Do not apply form release agent to previously placed concrete.
- D. Placement width shall be as specified in Contract Documents. Concrete placement width (panel width) shall not exceed 20 feet.

3.04 BATCHING, MIXING, AND DELIVERY

- A. Batch and mix in compliance with ASTM C 94/C 94M except that discharge shall be completed within 60 minutes of the introduction of mixture water to the cement. Increase time to 90 minutes when utilizing an extended set control admixture meeting the requirements of ASTM C 494/C 494M, Type B. Water addition, in accordance with ASTM C 94/C 94M, is permitted at the point of discharge. Do not exceed the maximum water to cement ratio specified or submitted.

3.05 PLACING AND FINISHING PAVEMENT

- A. Deposit concrete either directly from the transporting equipment or by conveyor onto the subgrade or subbase, unless otherwise specified.
- B. Do not place concrete on frozen subgrade or subbase.
- C. Deposit concrete between the forms to an approximately uniform height.
- D. Spread the concrete using a come-along, short-handle, square-ended shovel or rake.
- E. Do not allow foot traffic on the fresh concrete.
- F. Strike off concrete between forms using Bunyan Striker.
- G. Do not use steel trowels or power finishing equipment.

3.06 FINAL SURFACE TEXTURE

- A. Compact the fresh concrete with the Bunyan Striker.
- B. Compact the concrete along the slab edges with hand tools.
- C. Pervious Concrete Pavement does not look or behave like typical asphalt or concrete pavements. The finished surface is not tight and uniform, but is open and varied. Minor surface irregularities and moderate amounts of surface raveling are normal.

3.07 TOLERANCES

- A. Construct pavement to comply with the following tolerances:
 - 1. Elevation: plus or minus 3/4-inch
 - 2. Thickness: plus 1.5 inches, minus 1.0 inch.

3.08 CURING

- A. Begin curing within 20 minutes of concrete discharge.
- B. Completely cover the pavement surface with a minimum 6 mil thick polyethylene sheet. Cut sheeting to a minimum of a full placement width.
- C. Cover all exposed edges of pavement with polyethylene sheet.
- D. Secure curing cover material without using dirt.
- E. Cure pavement for a minimum of 7 uninterrupted days.
- F. Do not allow vehicular or foot traffic of any kind during the curing period.

3.09 HOT AND COLD-WEATHER CONSTRUCTION

- A. When hot weather is anticipated, submit detailed procedures for the production, transportation, placement, protection, curing, and temperature monitoring of concrete during hot weather. Temperature of concrete shall be 95 degrees or less.
- B. In cold weather, comply with ACI 306.1-90.

3.10 JOINTING

- A. Construct joints at the locations, depths, and with horizontal dimensions indicated on the Contract Documents.
- B. When jointing requirements are not indicated on the project drawings, submit shop drawings for the proposed jointing approach in accordance with the following requirements. Do not proceed with work until favorably reviewed by the Engineer.
 - 1. Indicate locations of contraction joints, construction joints, and isolation joints. Spacing between contraction joints shall not exceed 15 ft (6 m).
 - 2. The larger horizontal dimension of a slab panel shall not exceed 125% of the smaller dimension.
 - 3. The angle between two intersecting joints shall be between 80 and 100 degrees, as specified in Contract Documents.
 - 4. Joints shall intersect pavement free edges at 90-degree angles and shall extend straight for a minimum of 1-1/2 ft (0.5 m) from the pavement edge where possible.
 - 5. Contraction joint depth shall be 1-1/2" using a roller jointer.
 - 6. Use isolation joints only where pavement abuts fixed objects, such as curb and gutter, buildings, foundations, and manholes.
 - 7. Extend isolation joints through the full depth of the pervious concrete layer. Fill the entire isolation joint with expansion joint material.
- C. Create contraction joints by one of the following methods:
 - 1. Tool contraction joints to the specified depth and width in fresh concrete immediately after the concrete is compacted.
 - 2. Saw-cut concrete after concrete has hardened sufficiently to prevent aggregate from being dislodged and soon enough to control pavement cracking. To minimize drying, ensure that curing materials are removed only as needed to make cuts.
 - 3. Contractor shall provide alternate add for caulking contractor to seal all joints with a semi ridged material. This will help reduce raveling at the joints.

3.11 OPENING TO TRAFFIC

- A. Do not open the pavement to light vehicular traffic until the concrete has cured for at least 14 days to light traffic (passenger vehicles), and 28 days for heavy traffic and construction vehicles.
- B. Obtain favorable review from the Engineer prior to opening to traffic.

END OF SECTION

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SECTION 32 16 00

CONCRETE CURB, GUTTERS, AND SIDEWALKS

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes: Provide concrete curbs, curbs and gutters, gutters, and sidewalks as shown on the Drawings and as specified herein.

1.02 REFERENCES

- A. Americans with Disabilities Act (ADA)
- B. State of California, Department of Transportation, CALTRANS Standard Specifications (CALTRANS Standard Specifications).
- C. City of Scotts Valley Standard Specifications (City Standard Specifications).
- D. Scotts Valley Water District Standard Specifications

1.03 SUBMITTALS

- A. Submit in accordance with Section 01 33 00.
- B. Product Data:
 - 1. Submit certificate of compliance indicating that the concrete complies with the Specifications.

PART 2 - PRODUCTS

2.01 CONCRETE

- A. Comply with the Standards Specifications, Paragraph 73 1.01.
 - 1. Cement: Type II Modified
- B. Concrete shall not contain less than 6 sacks of cement per cubic yard.
- C. Concrete shall have a minimum ultimate compressive strength of 3,000-psi as determined by ASTM C873.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Comply with the Standard Specifications, Section 73, Paragraphs 1.02 through 1.06, inclusive.
- B. Unless shown otherwise on the Drawings, replace existing curbs, curbs and gutters, gutters, and sidewalks in kind.
- C. Adjust structures such as valve boxes, manhole frames and covers, and electrical vaults to grade after the curb and gutter or sidewalk has been constructed for a reasonable distance on all sides of the structure. Complete the concrete work after the structure is adjusted.

- D. Slopes shall not exceed those allowed by the Americans with Disability Act.

END OF SECTION

SECTION 32 84 00

IRRIGATION

PART 1 - GENERAL

1.01 SUMMARY

- A. Section includes but is not limited to:
 - 1. Trenching
 - 2. Stockpiling excavation material
 - 3. Refilling and compaction of trenches
- B. Automatic irrigation system:
 - 1. Sleeving and conduit (as needed)
 - 2. Piping
 - 3. Valves
 - 4. Controller (as specified)
 - 5. Fittings
 - 6. Irrigation heads and dripperline with associated fittings
 - 7. Automatic control system upgrades (as needed)
 - 8. Low voltage control wiring and connections

1.02 REFERENCES

- A. Cited Standards - current edition:
 - 1. ASTM: American Society for Testing Materials:
 - a. A-120 Standard specifications for pipe, steel, black and hot dipped zinc coated (galvanized) welded and seamless, for ordinary uses.
 - b. D-883 Standard definitions of terms relating to plastics.
 - c. D-1600 Standard abbreviations of terms relating to plastics.
 - d. D-1784 Standard specifications for rigid polyvinylchloride (PVC) compounds and chlorinated polyvinyl chloride (CPVC) compounds.
 - e. D-1785 Standard specifications for polyvinylchloride (PVC) plastic pipe, Schedules 40, 80, and 120.
 - f. D-2241 Standard specifications for polyvinylchloride (PVC) plastic pipe (SDR-PR).
 - g. D-2464 Standard specifications for threaded polyvinylchloride (PVC) Schedule 80.
 - h. D-2466 Standard specifications for polyvinylchloride (PVC) plastic pipe fittings, Schedule 40.
 - i. D-2467 Standard specifications for socket-type polyvinyl chloride (PVC) plastic pipe fittings, Schedule 40.
 - j. D-2564 Standard specifications for solvents for polyvinylchloride (PVC) plastic pipe and fittings.
 - k. D-2672 Standard specifications for bell-end polyvinylchloride (PVC) pipe.
 - l. D-2774 Standard recommended practice for underground installation of thermoplastic pressure pipe.
 - m. D-2855 Standard practice for making solvent cemented joints with polyvinylchloride (PVC) pipe and fittings.

- n. D-3036 Standard specifications for socket-type polyvinylchloride (PVC) plastic line couplings.

1.03 RELATED WORK SPECIFIED UNDER OTHER SECTIONS

- A. Division 15: Mechanical.
- B. Division 16: Electrical.
- C. Section 02 01 10 – Existing Plants to Remain.
- D. Section 32 93 00 – Planting.

1.04 REGULATORY REQUIREMENTS

- A. Work and materials is to be in full accordance with the latest rules and regulations of the National Electric Code; the Uniform Plumbing Code as adopted by the International Association of Plumbing and Mechanical Officials, current edition.

1.05 SUPERVISION

- A. Supervise the work constantly through an authorized representative, who is bilingual in English and the language of all coworkers. The same supervisor shall remain on the job from commencement to completion.

1.06 INSTRUCTION

- A. Instruct the District maintenance personnel about the complete operation and maintenance of the irrigation system after the system has been approved by the District representative. Provide a minimum of two (2) hours of instruction.

1.07 SUBMITTALS

- A. Submit the following in accordance with Division 1 Section "Submittals."
 - 1. Materials List.
 - 2. Manufacturer's Specification Data.
 - 3. Manuals.
 - 4. As-Built Drawings.
 - 5. Controller Charts.
 - 6. Extra Tools and Equipment.
- B. Submit to the District Representative, all descriptive data and samples for the work as required by these specifications, and any alternatives, if any. Check and coordinate the submittals with the work of other trades involved and ensure submittal package is complete before submitting to the District Representative.

1.08 CONTROLLER CHARTS

- A. Obtain District Representative's approval of the Record Drawings before charts are prepared.
- B. Provide two charts for satellite controller installed, showing the area covered by the controller installed under this work. The charts are to be as follows:
 - 1. 8-1/2 by 11-inch.
 - 2. Easily readable reduced drawing of the installed system.
 - 3. Blackline print with a light color highlighting marker used to show area of coverage for each station. Use a different color for each station.

4. Hermetically sealed between two pieces of plastic, each piece being a minimum 20 mils. thick.
- C. Complete the chart and obtain approval of chart from District Representative prior to final inspection of the irrigation system.

1.09 OPERATIONAL AND MAINTENANCE MANUALS

- A. Prior to the final inspection of the irrigation system, furnish two (2) individually bound Service Manuals to the District. The manuals shall contain the following:
 1. Index sheet indicating the contractor's name, address, and phone number.
 2. A copy of the completed guarantee-following the form in these specifications.
 3. Certificate of insurance verifying coverage for completed operations.
 4. List of equipment with names, addresses and telephone numbers of all local manufacturers' representatives.
 5. Copies of equipment warranties and certificates.
 6. Complete operating and maintenance instructions of all equipment including exploded drawings and spare parts list.
- B. Provide instruction in operation of system to District personnel.
- C. Hardware Items: Contractor shall provide the following:
 1. Two (2) sets of matching quick coupling valve keys and hose swivels.
 2. Two (2) keys to each controller box.
 3. Two (2) sets of any special tool required for the maintenance of each type of component used in the sprinkler system.

1.10 AS-BUILT DRAWINGS

- A. Maintain in the field one complete set of blackline prints of the contract drawings for the irrigation system. Show all water lines, sleeves, conduit, wire routing, sprinklers, valves, controllers, and stub-outs. If work is not installed as indicated on the record drawings such work shall be corrected at no additional cost to the District.
- B. The District Representative may call for the record drawings at any time. If the record drawings are not current, progress on the job will stop until the record drawings are brought up-to-date.
- C. Locate and dimension all underground stub-outs for future connections and valves. Locate and dimension accurately from two permanent features on all record drawings. Provide dimensions at 100-feet maximum intervals along mainline and wire routing.
- D. Submit the record working prints to the District Representative for approval.
- E. Provide documented actual flow rates at the time of as-built submittals. Actual precipitation, cycle and soak rates are to be provided by the contractor after installation.
- F. Show locations and depths of the following items:
 1. Point of connection.
 2. Routing of existing pressure main line piping (dimension maximum 100-feet along routing).
 3. Rigid lateral line piping.
 4. Shut off valves.
 5. Remote control valves.

6. Quick coupling valves.
 7. Routing of low voltage wire (dimension maximum 100-feet along routing).
 8. Other related equipment as directed by the District Representative.
- G. Complete the following checklist at the end of the Project, using the format shown:
1. Plumbing permits (if none are required, so note).
 2. Material approvals (approved by and date).
 3. Pressure main line pipe tests (by whom and date).
 4. Record Drawings completed (received by and date).
 5. Controller charts completed (received by and date).
 6. Materials furnished (received by and date).
 7. Operation and maintenance manuals furnished (received by and date).
 8. System equipment operation instructions (received by and date; total hours of instruction given).
 9. Manufacturer warranties, if required (received by and date).
 10. Written Guarantee (received by and date).
- H. A signed and dated checklist shall be forwarded to District Representative before final acceptance of the Project.

1.11 EQUIPMENT TO BE FURNISHED

- A. Supply as a part of this contract the following tools:
1. Two (2) sets of special tools required for removing, disassembling and adjusting each type of valve supplied on this project.
 2. Two (2) quick coupler keys and matching hose swivels for each type of quick coupling valve installed.
- B. The above-mentioned equipment shall be turned over to the District Representative at the conclusion of the project. Show written evidence that the District Representative has received material before final inspection is scheduled.

PART 2 - PRODUCTS

2.01 CONTROLLER

- A. Manufacturer: Hunter, model as listed on the Drawings.

2.02 MAIN LINE PIPE

- A. Manufacturer: JM-Eagle Pipe, or equal.
- B. Material: Purple-colored, Polyvinyl Chloride (PVC) plastic in conformance with ASTM D1784 (cell class 12454-B).
- C. Type: Schedule 40 PVC plastic pipe with solvent-cement joints.
- D. Identification marking: Pipe is to be clearly marked at regular intervals indicating the manufacturer's name, nominal pipe size, schedule or class, pressure rating in PSI, and date of extrusion.
- E. Recycled water: In addition to the above identification, the pipe material shall be a purple color and clearly marked to indicate the use of recycled water. The pipe shall have text on opposite sides to read "CAUTION: RECYCLED WATER - DO NOT DRINK" in intervals not to exceed five (5) feet with 3/8-inch high letters.

2.03 LATERAL LINE PIPE

- A. Manufacturer: PW Pipe, JM-Eagle Pipe, or equal.
- B. Material: Purple-colored, Polyvinyl Chloride (PVC) plastic in conformance with ASTM D1784 (cell class 12454-B).
- C. Type: Schedule 40 PVC plastic pipe with solvent cemented joints.
- D. Identification marking: Pipe is to be clearly marked at regular intervals indicating the manufacturer's name, nominal pipe size, schedule or class, pressure rating in PSI, and date of extrusion.
- E. Recycled water: In addition to the above identification, the pipe material shall be a purple color and clearly marked to indicate the use of recycled water. The pipe shall have text on opposite sides to read "CAUTION: RECYCLED WATER - DO NOT DRINK" in intervals not to exceed five (5) feet with 3/8-inch high letters.

2.04 PIPE FITTINGS FOR MAIN LINE PIPE

- A. Metallic threaded Fittings:
 - 1. Manufacturer: Anderson Metals, or equal.
 - 2. Material: Cast bronze or brass.
 - 3. Weight: Standard.
 - 4. Joints: Threaded IPT.
- B. Solvent cemented:
 - 1. Manufacturer: Lasco, Dura, or equal.
 - 2. Material: Purple-colored, Polyvinyl Chloride (PVC) plastic in conformance with ASTM D-1784 (cell classification 12454-B).
 - 3. Schedule: 40 or 80, refer to the Drawings for application.
- C. Joints: Injection molded IPT threaded or socket for solvent cemented joints in conformance with ASTM D-2464, D-2466, and D-2467.

2.05 PIPE FITTINGS FOR LATERAL LINE PIPE

- A. Manufacturer: Lasco, Dura, or equal.
- B. Material: Purple-colored, Polyvinyl Chloride (PVC) plastic in conformance with ASTM D-1784 (cell classification 12454-B).
- C. Schedule: 40 or 80, refer to the Drawings for application.
- D. Joints: As indicated on the drawings; Injection molded IPT threaded or socket for solvent-cement joints in conformance with ASTM D-2464, D-2466, and D-2467.

2.06 SLEEVING

- A. Manufacturer: PW Pipe, JM-Eagle Pipe, or equal.
- B. Material: Polyvinylchloride (PVC) plastic in conformance with ASTM D1784 (cell class 12454-B).
- C. Schedule or Class: Class 200 PVC plastic pipe (or) Schedule 40 PVC plastic pipe (whichever has the greatest wall thickness) with solvent cemented joints.

- D. Identification marking: Pipe is to be clearly marked at regular intervals indicating the manufacturer's name, nominal pipe size, schedule or class, pressure rating in PSI, and date of extrusion.

2.07 BALL VALVE

- A. Manufacturer: Apollo 78-130 series, or equal.
- B. Components:
 - 1. Full port bronze body ball valve.
 - 2. Stainless steel ball.
 - 3. Square handle.
 - 4. TFE seals with stainless steel trim.
 - 5. Female I.P.S. threaded connections.

2.08 REMOTE CONTROL VALVE

- A. Manufacturer: Netafim as indicated on the Drawings, or equal.
- B. Components:
 - 1. Plastic body and cover.
 - 2. Manual on-off bleed screw.
 - 3. Manual flow stem to adjust the speed of closure.
 - 4. Solenoid: 24 VAC 50/60 HZ.
 - 5. Valve shall provide manual operation.
 - 6. Components shall be serviceable from the top without removing the main valve body.

2.09 QUICK COUPLING VALVE AND KEY

- A. Manufacturer: Rain Bird 33DNP or equal.
- B. Components:
 - 1. Bronze construction with female I.P.T. threaded connections.
 - 2. Valve body: Two-piece construction
 - 3. Cover: Bronze with thermoplastic purple cover.
 - 4. Quick coupling valve key to be of the same manufacturer as the QCV.

2.10 BOXES FOR CONTROL VALVES, QCV, AND BALL VALVE

- A. Emitter dripline control valve: Carson Model 1324, 15-3/4-inch x 25-1/4-inch x 12-inch-deep (top dimensions) valve box with bolt-down plastic lid or approved equal. Lid shall be marked: "Irrigation".
- B. Remote control valves, ball valves, and pull boxes: Carson Model 1419, 12-inch x 17-inch x 12 inch-deep (top dimensions) valve box with bolt-down plastic lid or approved equal. Lid shall be marked: "Irrigation".
- C. Quick coupling valve: Carson Model 910, 12-inch deep round plastic valve box with plastic lid. Lid shall be marked: "Irrigation".
- D. Use plastic box extensions made by the same manufacturer and of equal size to the valve box as required to allow access to the valve.
- E. The valve box and lid shall be a purple color, as manufactured by the vendor.

2.11 SUB-SURFACE EMITTER TUBING

A. Manufacturer: Netafim

B. Description:

1. Continuous self-cleaning, recycled content, pressure compensating dripline with built-in check valve, purple stripe, identifying contents as recycled water.
2. Low volume dripline has integral and evenly spaced pressure compensating check valve emitters welded to the inside of the tubing that contains recycled content.
3. Emitters discharge rate 0.9 gallons per hour (GPH) evenly spaced at 12-inch or 18-inch, on center.

C. Construction:

1. Nominally sized to 17mm (5/8-inch) low-density linear polyethylene tubing with recycled content qualifying for maximum LEED credits.
2. Constructed with pressure compensation, continuously self-cleaning, integral emitters with an internal check valve at 12-inch or 18-inch spacing.
3. The exterior of the tubing shall be brown in color with a purple stripe and conform to an outside diameter (O.D.) of 0.66 inches and an inside diameter (I.D.) of 0.56 inches.
4. Individual pressure compensating emitters shall be welded to the inside wall of the tubing as an integral part of the manufacturing process.
5. Emitters shall be constructed of a two (2) piece plastic emitter housing containing a continuously self-flushing molded silicone diaphragm.
6. Emitter shall have a built-in check valve that will hold back a 4.6-foot column of water.
7. Emitter shall be installed into the tubing so that the inlet to the emitter is toward the center of the tubing cross section.
8. Emitter shall have a built-in physical root barrier whereby the water shall exit the emitter from one location and shall exit the tubing from a second location. This physical barrier shall create an air gap inside the exit bath of the emitter.

D. Operation:

1. Each emitter shall have the ability to independently regulate discharge rates, with an inlet pressure range of 14.5 - 58 pounds per square inch (psi), at a constant flow and with a manufacturer's coefficient of variability (Cv) of 0.03 or less. Recommended operating pressure shall be between 14.5 - 50 psi.
2. Emitter discharge rate shall be 0.9 gallons per hour (GPH) utilizing a combination of turbulent flow and reduced pressure compensation by molded silicone diaphragm.
3. Emitters shall be capable of continuously cleaning themselves while in operation.
4. Dripline shall have an 18-inch or 12-inch spacing between emitters unless otherwise specified.
5. For subsurface installation, pipe depth shall be 2 to 3-inches. Maximum system pressure shall be 50 psi for maximum fitting integrity. Filtration shall be 120 mesh or finer. Bending radius shall not be smaller than 7-inch or tubing kinking may result.
6. For on-surface or under mulch installations, 6-inch metal wire staples (TLS6) shall be installed 3 – 5 foot on center, (depending on soil type) and two staples shall be installed over every change-of-direction fitting.

- E. Techline® CV shall be Netafim Model Number TLRW9 – 12 or 18. Techline® CV Blank Tubing shall be Netafim Model Number TLRW010.

2.12 LOW VOLTAGE WIRE FOR SOLENOID CONTROLLED VALVES

- A. Manufacturer: Paige Electric, Regency, or equal.
- B. Attributes:
 - 1. Soft-annealed, uncoated copper.
 - 2. Single conductor, with PVC insulating jacket, 600 volt rated UL listed Type UF for direct burial in soil.
- C. Wire color:
 - 1. Common ground wire: white insulating jacket.
 - 2. Control wire: red insulating jacket.
 - 3. Spare wire to have an insulating jacket color other than white or the color of the satellite control wires.
- D. Wire size:
 - 1. Control wires and spare wires: #14-1 AWG.
 - 2. Common wires: #12-1 AWG.

2.13 WIRE SPLICE ASSEMBLY

- A. Manufacturer: 3M Co. 3M-DBY splice kit, Paige Electric DBM-L, or equal.
- B. Attributes:
 - 1. Direct bury splice kit with a Y electrical spring connector.
 - 2. Voltage rating: 30 volts maximum.

2.14 VALVE IDENTIFICATION TAGS

- A. Manufacturer: T. Christy Enterprises, or equal (no known equal.)
- B. Material: Metal tag with member imprint.
- C. Attributes:
 - 1. 2.25-inch by 2.75-inch hot stamped with 1-1/8-inch black letters on a yellow background.
 - 2. Indicates satellite controller letter or number and valve station number.

2.15 RECYCLED WATER MARKING (VALVES)

- A. Manufacturer: T. Christy Enterprises part no. 3150 (no known equal).
- B. Material: Polyurethane behrdesopan.
- C. 3 inch by 4 inch in size and hot stamped with 1-1/8 inch black letters on a purple background, which states in English and Spanish:

"WARNING - RECYCLED/RECLAIMED WATER - DO NOT DRINK"
"AVISO - AGUA IMPURA NO TOMAR"

- D. Manufacturer provided punched hole.

2.16 RECYCLED WATER MARKING (CONTROLLER)

- A. Manufacturer: T. Christy Enterprises part no. 4100 (no known equal).

- B. Material: Decal manufactured from a 3.5 mil flexible vinyl base.
- C. Attributes:
 - 1. 4-3/8 inch by 3-1/2 inch in size and have a permanent acrylic adhesive backing, on a #90 stay-flat liner.
 - 2. Purple (PMS 522C) background, printed with a UV cured vinyl ink.
 - 3. Legend printing: Black with a UV cured vinyl ink.
 - 4. Decal is clear flood over-printed for superior weathering and UV protection.
 - 5. Decal release paper shall be slit for ease of application.
 - 6. Decal states in English and Spanish:

"ATTENTION - CONTROLLER UNIT FOR RECLAIMED WATER"
"ATENCIÓN – UNIDAD CONTROLADORA DEL AGUA RECUPERADA"

2.17 MISCELLANEOUS INSTALLATION MATERIALS

- A. Solvent cement cleaner and primer: IPS Weld-On, Oatey, or equal.
- B. Pipe joint compound: Rectorseal "T Plus 2" or "Tack-n-Seal" or equal. A non-hardening, non-toxic material designed specifically for use on metallic and plastic (PVC) threaded connections in water carrying pipe.

2.18 MAINTENANCE

- A. Extra materials: Provide the following:
 - 1. One remote control valve of each size and type.
- B. Two quick coupler keys and hose swivels.

PART 3 - INSTALLATION

3.01 FIELD QUALITY CONTROL

- A. Progress observations: In addition to the observations specified below, the District Representative will make periodic progress observations.
- B. Notify the District Representative in advance of the following observation meetings:
 - 1. Field layout: 7-day notice.
 - 2. Existing pressure supply line testing: 48-hour notice.
 - 3. Coverage test: 48-hour notice.
 - 4. Maintenance period observations: 7-day notice.
 - 5. Final observation: 7-day notice.
- C. The District Representative will not allow review if a site visit is scheduled without specified Record Drawings, without completing previously noted corrections, or without preparing the system for review.

3.02 COORDINATION

- A. Inspect, become familiar with, and protect existing utilities. Contact USA for an inspection.
- B. Coordinate placement of items to be embedded into concrete work.

- C. Verify static pressure at point of connection before starting construction and notify the District Representative if it is less than or greater than the static PSI stated on the Drawings.

3.03 HANDLING AND STORAGE

- A. Protect work and materials from damage during construction and storage.
- B. Handle plastic pipe carefully; especially protect it from prolonged exposure to sunlight.

3.04 LAYOUT

- A. Before installation, stake layout of pressure main line pipes and valves for approval by the District Representative. Coordinate with existing layout of utilities, monuments, and trees. Adjust as directed by the District Representative.
- B. Drawings are diagrammatic. Provide necessary fittings and offsets to adapt to existing conditions and prevent conflicts with other work and existing improvements. Keep 90-degree elbow fittings to a minimum in pressure main line pipe - use 45-degree fittings to keep water flow in a minimum turbulence condition.
- C. Minimum pipe clearance:
 - 1. Irrigation system pipes: 3-inches.
 - 2. Irrigation pipes to other utilities: Per District Representative.
 - 3. Electrical wires or conduit: 4-feet minimum horizontal clearance, 6-inch minimum vertical clearance.
 - 4. Sanitary sewers: 10-feet minimum horizontal clearance, 6-inch minimum vertical clearance.
 - 5. Storm drains, telephone conduits, and other utilities: 4-feet minimum horizontal clearance, 6-inch minimum vertical clearance.
 - 6. Pipes crossing at angles between 45 and 90 degrees: 2-inch vertical clearance.
- D. Do not install pipe parallel to and directly over another irrigation or utility line without approved separation.
- E. Install pipes and low voltage wiring in common trenches wherever practical.

3.05 EXCAVATION AND TRENCHING

- A. Excavate trenches with ample space to permit the pipes to be laid at the elevations intended and to permit ample space for joining.
- B. Dig trenches straight and support pipe continuously on bottom of trench. Keep trenches 18 inches away from paving. Lay pipe to even grade.
- C. Provide minimum cover from finish grade as follows:
 - 1. 18-inch minimum cover over main line pipe.
 - 2. 18-inch minimum cover over low voltage wires.
 - 3. 12-inch minimum cover over lateral line pipe to pop-up shrub spray heads.
 - 4. 24-inch minimum cover over all sleeves, conduit, pipe, and wire under vehicular pavement.
- D. PVC pipe is flexible and can be curved longitudinally without affecting performance. Therefore, lateral line pipe trenches may be curved to meet the following allowable longitudinal minimum pipe bending radius for 20 foot pipe lengths.

- E. Allowable minimum pipe bending radius:

<u>Pipe Diameter</u>	<u>Bend Radius</u>
3/4 inch	15 feet - 0 inches
1 inch	19 feet - 0 inches
1-1/4 inch	32 feet - 0 inches
1-1/2 inch	32 feet - 0 inches

- F. Restore surfaces and existing underground utilities, damaged or cut as a result of excavations, to original conditions. Obtain approval from the District Representative.
- G. Where other utilities interfere with irrigation trenching and pipe Work, adjust the trench depth as instructed by the District Representative.

3.06 SLEEVES (PVC PIPES)

- A. Install minimum 24 inches below bottom of vehicular pavement base, and under pedestrian pavement at least as deep as required depth of pipe.
- B. Backfill and compact as specified in Section - Backfilling.
- C. Sleeve internal diameter is to be minimum twice the outside diameter for all pipes contained within sleeve and extend minimum 24 inches beyond edge of pavement. In-line fittings are not permitted in sleeves less than 20 feet long. Provide wooden caps at ends of sleeves until pipe is installed.
- D. Install an extra 2-inch sleeve parallel to each sleeve and cap each end. Show locations on Record Drawings.
- E. Install sleeves level and in straight line.
- F. Backfill with 4 inches of clean sand around circumference of sleeve, and compact by tamping.

3.07 PIPE ASSEMBLY

- A. Install piping under existing concrete by jacking or boring. Where cutting or breaking of existing paved asphalt surface is necessary, remove the pavement, install the sleeve, pipe, or conduit, backfill and compact to original specifications. Restore paving as approved by the District Representative.
- B. Install pipe in a dry trench and provide for expansion and contraction as described by the manufacturer of the pipe.
- C. Cut plastic pipe with a pipe cutter or hack saw with the assistance of a squared-in sawing vice, or in a manner to ensure a square cut. Remove burrs at cut ends prior to installation to obtain a smooth unobstructed flow.
- D. Use PVC pipe cleaner and primer on solvent weld PVC pipe before PVC solvent cement is applied.
- E. Install piping in trench with manufacturer's markings (manufacturer, pipe size, Schedule or Class, pressure rating, etc.) facing up and readable to District Representative during installation.
- F. Paint below grade brass or galvanized iron pipe and fittings with two coats of a corrosion preventative coating which is a composition of a coal tar base pitch, fast evaporating solvents and selected fillers.
- G. PVC pipe with solvent weld joints:

1. Instruct each pipe installer in the proper assembly of solvent joints from a representative of the pipe, cement or fitting manufacturer before starting a job, unless the installer has been previously instructed in the recommended solvent cement procedures.
 2. Prepare joint by first making sure the pipe end is square, then deburring the pipe end and cleaning pipe and fitting of dirt, dust and moisture with PVC pipe cleaner.
 3. Dry-insert pipe into fitting to check for proper sizing. Pipe should enter fitting 1/3 to 2/3 depth of socket.
 4. Coat the inside socket surface of the fitting and the external surface of the male end of the pipe with primer. Apply cement liberally to the male end of the pipe and apply cement lightly to the inside of the socket. Apply a second coat of cement to the pipe end.
 5. Insert pipe immediately into fitting and turn 1/4 turn to distribute cement and remove air bubbles. The pipe must seat to the bottom of the socket and fitting. Check alignment of the fitting. Align pipe and fitting properly without strain to either.
 6. Hold joint still for approximately thirty (30) seconds and wipe the excess cement from the pipe and fitting.
 7. Cure joint a minimum of thirty (30) minutes before handling and at least six (6) hours before allowing water in the pipe.
- H. Threaded Joints:
1. Field threading of plastic pipe or fittings is not permitted. Factory-made threads are the permitted method.
 2. Use factory-made metallic nipples whenever possible. Field-cut threads in metallic pipe will be permitted where absolutely necessary. Cut threads accurately on axis with sharp dies.
 3. Install threaded joints with pipe joint compound. Apply compound to male threads and first two female threads.
 4. Where assembling metallic pipe to metallic fitting or valve, expose no more than three (3) full threads when joint is finished.
 5. Where assembling threaded plastic fittings, take up joint no more than one full turn beyond hand tight.
 6. Where assembling soft metal (brass or copper) or plastic pipe, use strap type friction wrench; do not use metal-jawed wrench.
 7. Wherever there is a threaded connection between PVC and metallic fittings, it must consist of male PVC threads into female metallic threads only. A male metallic threaded fitting into a female PVC threaded fitting is not acceptable.
- I. Cap open pipe ends as pipe is assembled to prevent entrance of dirt or obstruction. Remove caps only when necessary to continue assembly.
- J. Where pipes or control wires pass through sleeves, provide removable non-decaying plug material at ends of sleeve to prevent entrance of soil.
- K. Provide clearance of recycled water constant pressure pipes to all other pipes according to the SV Water District and the State Board of Health guidelines.

3.08 REMOTE CONTROL VALVE

- A. Provide excavation and backfill, furnishing, installing and testing of risers, fittings, and valve, and other Work in accordance with the Drawings and Specifications.

- B. Install where shown on Drawings, group together where practical and in landscape areas.
- C. Thoroughly flush main line pipe before installing valves.
- D. Do not use pipe joint compound on valve inlet threads.
- E. Label each valve with an identification tag, indicating identification number of valve (controller and station number). Permanently attach label to solenoid control wire.
- F. Label each valve with a recycled water identification tag, indicating the use of recycled water. Permanently attach label to solenoid control wire.
- G. Provide each remote control valve with its own threaded riser and connection to main line pipe. Do not manifold valves to a single riser from main line.

3.09 LOW VOLTAGE WIRING

- A. Install wiring alongside main line piping unless it is impossible.
- B. Tie wires in bundles with pipe wrapping tape at 10-foot intervals and allow slack for contraction between tape.
- C. Loop a minimum of 3-feet of extra wire in a 1-inch diameter coil at each splice.
- D. Make connections to wiring by twisting bare wires, securing with wire connectors and sealing with weatherproof wire splice assembly as shown on Drawings.
- E. Splicing of valve control wire other than at valve or controller is permitted only on runs exceeding 2500-feet. For this condition, locate splices within a separate 10-inch diameter valve box.
- F. Where low voltage wires pass under vehicular or pedestrian paving, install wire through Schedule 40 electrical conduit.
- G. Install wire at a depth of 18-inches minimum.
- H. Install the wire in a logical manner, avoiding existing shrubs, trees, light posts, monuments, and signs.

3.10 BALL VALVE

- H. Provide excavation and backfill, the furnishing and installing of fittings and valve, and other work in accordance with the Drawings and Specifications.
- I. Set the valve box flush with finish grade unless otherwise designated on the Drawings.
- J. Thoroughly flush pipe before installing valve.
- K. Locate and install as shown on the Drawings and details.
- L. Unless otherwise noted on the Drawings, place the valve in the open position when system is finished.
- M. Label each valve with a recycled water identification tag, indicating the use of recycled water. Permanently attach label to valve.

3.11 QUICK COUPLING VALVE

- A. Provide excavation and backfill, the furnishing, installing, testing of risers, fittings, and valve, and other work in accordance with the Drawings and Specifications.
- B. Set the valve perpendicular to the finish grade unless otherwise designated on the Drawings.
- C. Thoroughly flush lines before installing valve.
- D. Locate and install as shown on the Drawings and details.

3.12 EMITTER DRIPLINE SYSTEM

- A. Provide excavation and backfill, furnishing, installing and testing of risers, fittings, emitter heads, and other Work in accordance with the Drawings and Specifications.
- B. Set dripline tubing 2 – 3 inches below grade unless otherwise designated on the Drawings. Stake tubing to soil as the Drawings indicate.
- C. Thoroughly flush system piping.
- D. Locate and install heads as shown on the Drawings and details.

3.13 BACKFILLING

- A. Do not allow the Work to be covered or enclosed until it has been inspected, tested and approved in writing by the District Representative. Work that is enclosed or covered before inspection and test may be required to be uncovered at no additional expense to the District.
- B. Backfill material: Earth excavated from the trenches, free from rock pieces exceeding 3-inches in the largest dimension, concrete chunks, and other foreign or coarse materials. Select backfill that is to be placed next to plastic pipe to avoid any sharp objects which may damage the pipe.
- C. Backfill PVC plastic pipe under asphalt paving with 6-inches of clean sand on all sides of pipe unless it is contained within a sleeve.
- D. Place backfill in the trench in lifts not exceeding eight inches in loose thickness and compacted with a mechanical tamper. Compact soils to 88% to 92% relative compaction. The moisture content should be at least three percent above optimum at the time of compaction. Compact non-clay to a minimum of 90%, with the moisture content at or above the optimum level. This density is recommended for all subgrades supporting structures, with the upper twelve inches compacted to at least 95% in areas supporting asphalt concrete pavement subject to vehicle loadings. Jetting of backfills is not permitted.
- E. If any areas of soft subgrade are exposed in the bottom of the trench excavation, place a geotextile fabric such as Mirafi 500 X, Supac 4NP, or an approved equivalent, in the bottom of the excavation prior to placing pipe bedding material.
- F. Utility trench side slopes in clay soils will remain near vertical to a depth of five feet or so. Trenches in sandy soils, especially in loose zones, should expect to have sloughing and sidewall stability problems. Sidewall slope flattening will probably be required. Trench wall instability should also be anticipated during time of high groundwater levels when soils are saturated or nearly saturated, and also due to moisture loss and equipment vibration.

- G. Safety of trench excavation is the responsibility of the contractor. Excavation construction practices conform to requirements presented by OSHA 29 CFR Part 1926 (Occupation Safety and Health Standards – Excavations; Final Rule).
- H. Grade areas to finish grade and remove excess soil, rocks or debris remaining after backfill is completed.
- I. If settlement occurs along trenches, and adjustment of pipes, valves and sprinkler heads, soil, or paving is necessary to bring these items to the proper level or the permanent grade, provide adjustments at no additional expense to the District.

3.14 FLUSHING

- A. Prior to leakage testing, thoroughly flush piping with water to remove debris introduced into the piping during the construction operations. Open valve outlets, and continue flushing operations until clear water flows.

3.15 TESTS

- A. General. Test pipelines for leakage in accordance with the requirements specified for each type of pipe. Provide materials and labor required for the leakage test including pumps, gauges, temporary plugs, and thrust blocks. Following completion of the leakage test, dispose of the water in conformance with state and local regulations. Use laboratory calibrated test gauges recalibrated by a certified laboratory at the Contractor's expense prior to the leakage test if requested by the District. Block off valves and appurtenances which might be damaged by the test pressure and provide suitable thrust restraints. If the test of any section of pipe results in leakage greater than the specified allowable amount, repair the defective work and retest that section until the leakage is within the allowable amount. Water for testing will be furnished from available sources at the site. Pay for the cost of water and perform testing at no additional expense to the District.
- B. Notify the District Representative at least three (3) days in advance of testing.
- C. Center load piping with small amount off backfill to prevent arching or slipping under pressure. Do not cover fittings.
- D. Leakage testing of main line pipe.
- E. Use hydraulic pump with water. Do not use an air compressor.
- F. Exhaust air from main line piping, using quick coupling valves.
- G. Fill main line slowly with water to avoid water hammer damage.
- H. PVC pipe (solvent weld joints) - Apply the following tests after solvent weld plastic pipe joints have cured at least 24 hours:
 - 1. Main line pipe: Conduct the leakage test at a test pressure of 125 PSI for a minimum period of 6 hours. Visually inspect for leaks while system is holding constant. Pressure should not drop more than 5 PSI during test. Correct leakage point and retest if pressure does not hold.
 - 2. Lateral line pipe: Test piping downstream of remote control valve with water at line pressure and visually inspect for leaks. Retest after correcting defects.
- I. Remake any faulty joints with new materials. Use of cement or caulking to seal leaks is absolutely prohibited.

3.16 REMOVAL OF EXISTING IRRIGATION EQUIPMENT

- A. Where instructed, disconnect, remove and return existing irrigation. Return equipment to the District Representative. Do not cause damage to existing equipment during the removal process.

3.17 PROTECTION OF PROPERTY

- A. Field verify the sizes, location, and proper operation of existing equipment to remain operational within and beyond the Contract Area. This includes, but is not limited to the following:
 - 1. Coverage at interface areas between the Contract Area and adjacent irrigation areas which are to remain operational.
 - 2. Utilities servicing buildings within and beyond the Contract Area.
 - 3. Potable (domestic) water services to buildings within and beyond the Contract Area.
- B. Notify the District Representative prior to field verification of existing utilities and irrigation. Report, in writing to the District Representative for review and possible revision, any deviation of existing services and irrigation equipment as shown on the Drawings.
- C. Contact Underground Service Alert (U.S.A.) at 811 for location and marking of existing utilities prior to construction.

3.18 GUARANTEE

- A. Fill and repair depressions due to the settlement of irrigation trenches for one year following completion and acceptance of the job.
- B. Guarantee materials, equipment and workmanship furnished to be free of defects and agree to replace at no additional expense to the District, upon demand within one year after installation is accepted, defective components or installations that may be found.

3.19 CLEAN-UP

- A. When Work of this section has been completed and at such other times as may be directed by the District Representative, remove all trash, debris, surplus materials and equipment from site.

END OF SECTION

SECTION 32 91 13

SOIL PREPARATION

PART 1 - GENERAL

1.01 SUMMARY

- A. Work Included: Provide all soil and soil amendments products, including all amendments for existing soil to be amended in-place, amendments for imported soil, soil sampling and testing prior to planting, and all imported topsoil as required to make up deficiencies in quantity of soil available on site. Execute all labor to achieve soil preparation, complete, as shown and as specified.
- B. Related Work:
 - 1. Existing Plants to Remain - Section 31 12 00
 - 2. Planting Area Finish Grading - Section 31 22 19
 - 3. Irrigation System - Section 32 84 00
 - 4. Planting - Section 32 93 00
 - 5. Landscape Maintenance - Section 32 93 25

1.02 DEFINITIONS

- A. Existing Soil: Area of undisturbed native soil where no rough grading is to be done. No topsoil is to be placed. Only surface cultivation and soil amending are included in this Section. See Drawings.
- B. Subgrade: Soil level resulting from the rough grading work under another Section. Cultivation of all subgrade areas prior to amending is included in this section.
- C. Topsoil: Soil stockpiled for spreading over prepared subgrade.
 - 1. Stockpiled Native Topsoil: Topsoil stripped from the site prior to rough grading work under another Section, to be spread and amended as work under this Section.
 - 2. In-Place Native Topsoil: Existing topsoil to be amended in place.
 - 3. Imported Topsoil: Off-site topsoil imported and stockpiled under this Section, to be spread and amended also as work under this Section.
- D. Backfill Mix: Native or imported topsoil, amended per Soils Report direction.

1.03 SUBMITTALS

- A. Product Data: Manufacturer's current catalog cuts and specifications of the following:
 - 1. Fertilizer
 - 2. Amendments, as recommended in soils test results.
 - 3. Compost.
 - 4. Filter Fabric
- B. Quality Control Submittals:
 - 1. Testing Agency: Waypoint Analytical California, Inc. 4741 East Hunter Avenue, Suite A, Anaheim, CA 92807, (408) 727-0330; or Root Zones Associates, P.O. Box 18911, San Jose, CA 95118, (408) 264-7024; or Perry Laboratory, 424 Airport Blvd., Watsonville, CA 95076, (831) 722-7606; or approved equal.

C. Test Reports:

1. On-Site Planting Soil: Laboratory soil test reports indicating specified characteristics of soil, with test date no more than 2 weeks old. The soil analysis shall at a minimum include:
 - a. soil texture;
 - b. infiltration rate determined by laboratory test or soil texture infiltration rate table;
 - c. pH;
 - d. total soluble salts;
 - e. sodium;
 - f. percent organic matter; and
 - g. recommendations.
2. Re-Graded Site Areas: Laboratory soil test reports indicating specified characteristics of surface soils, with test date no more than 2 weeks old. The soil analysis shall at a minimum include:
 - a. soil texture;
 - b. infiltration rate determined by laboratory test or soil texture infiltration rate table;
 - c. pH;
 - d. total soluble salts;
 - e. sodium;
 - f. percent organic matter; and
 - g. recommendations.
3. Import Topsoil: Laboratory soil test reports indicating specified characteristics of surface soils, with test date no more than 2 weeks old. The soil analysis shall at a minimum include:
 - a. soil texture;
 - b. infiltration rate determined by laboratory test or soil texture infiltration rate table;
 - c. pH;
 - d. total soluble salts;
 - e. sodium;
 - f. percent organic matter; and
 - g. recommendations.
4. Stock-piled and In-Place Native Topsoil: Test for physical and chemical composition, horticultural suitability, phytophthora ramorum (Sudden Oak Death), herbicide contamination, soil texture, infiltration rate, pH, total soluble salts, sodium, and percent organic matter.
5. Compost: Before delivery of the soil, the supplier shall submit a copy of lab analysis performed within the last three months by a laboratory that is enrolled in the US Composting Council's Compost Analysis Proficiency (CAP) program and using approved Test Methods for the Evaluation of Composting and Compost (TMECC). The lab report shall verify:
 - a. Feedstock Materials shall be specified and include one or more of the following: landscape/yard trimmings, grass clippings, food scraps, and agricultural crop residues.
 - b. Organic Matter Content: 35% - 75% by dry weight.
 - c. Carbon and Nitrogen Ratio: C:N < 25:1 and C:N > 15:1.
 - d. Maturity/Stability: Shall have a dark brown color and a soil-like odor. Compost exhibiting a sour or putrid smell, containing recognizable grass or leaves, or is hot (120°F) upon delivery or rewetting is not acceptable. In addition, any one of the following is required to indicate stability:

- 1) Oxygen Test < 1.3 O₂ / unit TS / hr.
 - 2) Specific Oxygen Test < 1.5 O₂ / unit BVS
 - 3) Respiration Test < 8°C / unit VS / day
 - 4) Dewar Test < 20°C Temp. rise
 - 5) Solvita® > 5 Index value.
 - e. Toxicity: Any one of the following measures is sufficient to indicate non-toxicity:
 - 1) NH₄- : NO₃-N < 3
 - 2) Ammonium < 500 ppm, dry basis
 - 3) Seed Germination > 80% of control
 - 4) Plant Trials > 80% of control
 - 5) Solvita® > 5 Index value
 - f. Nutrient Content: Provide analysis detailing nutrient content include N-P-K, Ca, Na, Mg, S, and B.
 - 1) Total Nitrogen content 0.9% or above preferred.
 - 2) Boron: Total shall be <80ppm; soluble shall be <2.5 ppm.
 - g. Salinity: Must be reported; < 6.0 mmhos/cm.
 - h. pH shall be between 6.5 and 8; may vary with plant species.
 6. Certificates: Certify strict compliance with accepted soil mixes and amendments, including rate of application.
 7. Laboratory test report of organic amendment indicating specified characteristics of organic amendment, with test date no more than 2 weeks old.
- D. Purchase Documentation:
1. Organic Amendment purchase and delivery notices.
 2. Fertilizer purchase and delivery invoices.
 3. Chemical amendment purchase and delivery invoices.

1.04 PROJECT/SITE CONDITIONS

- A. Existing Conditions: For protection of existing plants to remain, see Section 32 13 00 - Existing Plants to Remain.

1.05 SEQUENCING AND SCHEDULING: Do not install on-structure drainage materials and soil mix prior to acceptance of waterproofing in another section.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Stockpiled Native Topsoil:
1. Quantity: The approximate quantity of stockpiled native top-soil will not be known until demolition and rough grading have been completed under Civil work.
 2. Stockpiling: Stripped topsoil shall have been stockpiled on the site.
 3. Composition: Fertile, friable, well-drained soil, of uniform quality, free of stones over ½-inch diameter, sticks, oils, chemicals, plaster, drain rock, base rock, concrete, paint, and other deleterious materials.
 4. Samples: Landscape Architect reserves the right to take samples of the amended topsoil for conformance to the Specifications.
- B. Imported Topsoil:
1. Quantity: Import topsoil as soon as an insufficient quantity of native soil is verified. Quantity of topsoil to complete the work shall be calculated by the Contractor.

2. Stockpiling: Stockpile on site as directed by Owner.
 3. Composition: Fertile, friable, well-drained soil, of uniform quality, free of stones over ½-inch diameter, sticks, oils, chemicals, plaster, drain rock, base rock, concrete, paint, and other deleterious materials.
 4. Samples: Landscape Architect reserves the right to take samples of the imported topsoil delivered to the site for conformance to the Specifications.
 5. Rejected Topsoil: Immediately remove rejected topsoil off the site at Contractor's expense.
- C. Compost: Compost shall be a well-decomposed, stable, weed-free organic matter course derived from waste materials including yard debris, wood wastes, or other organic materials not including manure or biosolids meeting the standards developed by the US Composting Council (USCC). The product shall be certified through the USCC Seal of Testing Assurance (STA) Program (a compost testing and information disclosure program).
- D. Backfill: Native or imported topsoil, amended per Soils Report direction.

2.02 SOIL MIXES

- A. Backfill Mix for Plant Pits: Per soils analysis report recommendations.
- B. Preliminary Planting Area Soil Mix to Establish Bid (actual quantities contingent on amendment program determined by the Owner's Representative based on soil test report) as follows:
1. Content:
 - a. 8 cubic feet of organic amendment per cubic yard of dry soil.
 - b. 2 pounds Iron Sulfate per cubic yard of dry soil.
 - c. 1-pound granular Micromax per cubic yard of dry soil.
 - d. 1/2-pound Triple Superphosphate 0-45-0 per cubic yard of dry soil.
 - e. 1-pound of Nitroform 38-0-0 per cubic yard dry soil.
 - f. 1-pound of Potassium Sulfate 0-0-50 per cubic yard dry soil.
- C. Amendment Mix for Existing Planting Soil to be Amended in Place (actual quantities contingent on amendment program determined by the Owner's Representative based on soil test report) as follows:
1. Content:
 - a. 6 cubic yards of organic amendment per 1,000 square feet (minimum).
 - b. 10 pounds of granular Micromax per 1,000 square feet.
 - c. 9 pounds of Nitroform 38-0-0 per thousand square feet.
 - d. 2.5 pounds of Triple Superphosphate 0-45-0 per thousand square feet.
 - e. 200 pounds of gypsum per 1,000 square feet.
- D. Mixing:
1. Blend amendment materials uniformly with dry existing soil from stock pile and plant pits or dry imported Planting Soil in bulk by turning over materials with an end loader.
 2. Blend materials in a clean area which will not contaminate mix.
 3. Do not mix in planting areas.
- E. Final Planting Soil Mix for Installation: Planting soil mixes determined by the Owner's Representative upon review of the soil test report.
- F. Stormwater Treatment Soils: See Civil Documents.

2.03 SOURCE QUALITY CONTROL

- A. Organic Amendment: Employ independent soil testing laboratory to test organic amendment for specified properties and submit test results.
 - 1. Sphagnum peat moss is not acceptable.
- B. Imported Soils and Amendments:
 - 1. If imported soils are required, source soils shall have a comparable origin to on-site locations.
 - 2. Imported soils shall not be sourced from Natural Resource web soil survey as prime farmland, unique farmland or farmland of statewide or local importance; or from greenfield sites.

2.04 ACCESSORIES

- A. Fine Sand:
 - 1. Physical Properties (by dry weight basis):

Percent Passing	Sieve Size
100	4.76 mm(#4, 4 mesh)
95-100	1.00 mm (#18, 16 mesh)
65-100	500 micron (#35, 32 mesh)
0- 50	250 micron (#60, 60 mesh)
0- 20	105 micron (#140, 150 mesh)
0- 5	53 micron (#270, 270 mesh)
 - 2. Chemical Properties: (by Saturation Extract Method):
 - a. Soluble Salts/Salinity: Maximum conductivity of 3.0 millimhos/cm at 25 degrees C.
 - b. Boron: Maximum concentration of 1.0 ppm.
 - c. Sodium Absorption Ratio (SAR): Maximum 6.0.
- B. Water: Clean, fresh and potable, as available from Owner. Transport as required.
- C. Drain Rock:
 - 1. Description: Hard, durable, clean, screened, uniformly-sized broken stone or crushed gravel free of injurious materials or soil and all deleterious chemicals.
 - 2. Size: One (1) inch-diameter, gap-graded.

2.05 ORGANIC COMPONENTS:

- A. Coconut Coir:
 - 1. Type: Finely-shredded, light brown in color, suitable for horticultural purposes.
- B. Nitrogen-Treated Sawdust:
 - 1. Type: Derived from redwood, fir or cedar wood sawdust.
 - 2. Physical Properties:

Percent Passing	Sieve Size
95-100	6.35 mm. (1/4 inch)
80-100	2.38 mm. (#8, 8 mesh)
0- 30	500 micron (#35, 32 mesh)
 - 3. Chemical Properties:
 - Nitrogen content (dry weight basis):

Wood of Redwood	0.4 - 0.6%
Wood of Fir/Cedar	0.56 - 0.84%
 - Iron content (dry weight basis): 0.08% iron as metallic, minimum.
 - Salinity/Soluble salts: Maximum 3.5 millimhos/cm 25 degrees C. as determined by saturation extract method.

Ash (dry weight basis): 0 - 6.0 percent maximum.

4. Treating Nitrogen Process: Thoroughly bulk-blend any of the following available sawdust types with the amendment specified:

	Urea Formaldehyde
Sawdust	Per Cubic Yard
Hardwood	4 pounds
Redwood	2 pounds
Fir or Cedar	4-1/2 pounds

C. Treated Fir/Pine Bark:

1. Physical Properties (dry weight basis):

Percent Passing	Sieve Size
95-100	6.35 mm (1/4 inch)
80-100	2.38 mm (#8, 8 mesh)
0- 30	500 micron (#35, 32 mesh)

2. Organic Content (dry weight basis): 94 percent minimum as determined by ash analysis.

3. Chemical Properties:

- a. Nitrogen Content (dry weight basis): 0.8 percent minimum.
- b. Soluble Salts/Salinity: Maximum Saturation Extract Conductivity 3.0 millimhos/cm at 25 degrees C, by method.
- c. Iron (dry weight basis): 0.08 percent minimum.
- d. pH: 6.5 - 7.5

4. Wettability:

- a. When applied to a cup or small beaker of water @ 70 degrees F. in the amount of 1 teaspoon, the air-dry product shall become completely wet in a period not exceeding 2 minutes.
- b. All wetting agents to be non-phytotoxic at rate used.

D. Manure:

1. Type: Well-rotted cow, horse or sheep manure, free from sawdust, shavings or refuse.
2. Straw Content: Maximum 25% straw by volume.

2.06 COMMERCIAL FERTILIZERS

A. Pre-Plant Fertilizer:

1. Type: Mixed by a commercial fertilizer supplier and consisting of the following percent by weight: 18-6-12 or 15-9-12.
2. Manufacturer: Osmocote.

2.07 CHEMICAL COMPONENTS: The following additives may or may not be used depending on the outcome of the soils report.

- A. Ground Limestone: Agricultural limestone containing not less than 85% of total carbonates, ground to such fineness that 50% will pass #100 sieve and 90% will pass #20 sieve.
- B. Dolomite Lime: Agricultural grade mineral soil conditioner containing 35% minimum magnesium carbonate and 49% minimum calcium carbonate, 100% passing #65 sieve. "Kaiser Dolomite 65 AG" by Kaiser, Inc. Mineral Products Department, or accepted equal.
- C. Gypsum: Agricultural grade product containing 80% minimum calcium sulfate.

- D. Iron Sulfate (Ferric or Ferrous): Supplied by a commercial fertilizer supplier, containing 20% to 30% iron and 35% to 40% sulfur.
- E. Sulfate of Potash: Agricultural grade containing 50% to 53% of water-soluble potash.
- F. Single Superphosphate: Commercial product containing 20% to 25% available phosphoric acid.
- G. Ammonium Sulfate: Commercial product containing approximately 21% ammonia.
- H. Ammonium Nitrate: Commercial product containing approximately 34% ammonia.
- I. Calcium Nitrate: Agricultural grade containing 15-1/2% nitrogen.
- J. Urea Formaldehyde: Granular commercial product containing 38% nitrogen.
- K. I.B.D.U. (Iso Butyldiene Diurea): Commercial product containing 31% nitrogen.
- L. Soil Sulfur: Agricultural grade sulfur containing a minimum of 96% sulfur.
- M. Iron Sequestrene: Sequestrene 330 Fe, iron chelate.

2.08 SOURCE QUALITY CONTROL

- A. Organic Amendment: Employ independent soil testing laboratory to test organic amendment for specified properties and submit test results.
 - 1. Sphagnum peat moss is not acceptable.
- B. Imported Soils and Amendments:
 - 1. If imported soils are required, source soils shall have a comparable origin to on-site locations.
 - 2. Imported soils shall not be sourced from Natural Resource web soil survey as prime farmland, unique farmland or farmland of statewide or local importance; or from greenfield sites.

PART 3 - EXECUTION

3.01 SOIL MOISTURE CONTENT

- A. General: Do not work soil when moisture content is so great that excessive compaction will occur, nor when it is so dry that dust will form in air or that clods will not break readily. Apply water, if necessary, to bring soil to an optimum moisture content for tilling and planting.
- B. Range: Maintain within 2 percent above or below optimum moisture content at all times during the work.

3.02 CLEARING AND CULTIVATION

- A. Clearing: Clear all planting areas of stones 1/2-inch diameter and larger, weeds, debris and other extraneous materials prior to soil preparation work.
- B. Cultivation of Existing Soil:
 - 1. Cultivation: Where topsoil will not be applied, rip or cultivate existing soil to receive planting to the following depths immediately prior to applying soil amendments:
 - a. Less Than 2:1 Slopes: Twelve (12) inches.
 - b. 2:1 Slopes and Greater: Six (6) inches.

2. Trees to Remain: Hand cultivate within the dripline of existing trees to remain. Depth of cultivation shall not exceed 2 inches. Cultivate immediately prior to amending existing soil.
- C. Cultivation of Subgrade:
1. Verification:
 - a. Verify that subgrades for installation of topsoil have been established under rough grading. Do not spread topsoil prior to acceptance of subgrade work.
 - b. Depth: Verify that subgrades are 12 inches minimum below finished grades, +1 inch. Report all variations.
 2. Cultivation: Rip or cultivate subgrade in planting areas to a depth of 12 inches immediately prior to spreading topsoil.

3.03 SPREADING OF TOPSOIL

- A. General: Spread stockpiled topsoil over accepted subgrade prior to incorporating amendments.
- B. Restrictions: Do not commence spreading of topsoil prior to acceptance of soil cultivation above. Do not place topsoil under muddy conditions.
- C. Topsoil Depth: Minimum depth of 12 inches after natural settlement and light rolling conforming to finished grades shown on Drawings.

3.04 SOIL AMENDMENT

- A. Amending of Existing Soil:
1. Preparation: Do not commence amending of existing soil prior to acceptance of soil cultivation above. Do not work soils under muddy conditions.
 2. Soil Amendments per 1,000 Square Feet: Incorporate thoroughly with top six (6) inches of all existing planting areas, components as identified in soils report for existing site soil. Compost shall be incorporated at a minimum of six (6) cubic yards per 1,000 square feet, unless soils report recommendations differ.
- B. Amending of Spread Topsoil:
1. Soil Amendments per 1,000 square feet: Incorporate thoroughly with top six (6) inches, components as identified in soils report for existing site soil. Compost shall be incorporated at a minimum of six (6) cubic yards per 1,000 square feet, unless soils report recommendations differ.

3.05 BLENDING OF SOIL MIXES: Thoroughly bulk-blend materials uniformly in stockpiles, not individual plant pits.

3.06 FIELD QUALITY CONTROL

- A. Tests: Right is reserved to take samples of soil mixes and prepared soil for testing for conformity to specifications.
- B. Rejected Materials: Remove off site at Contractor's cost. Pay cost of testing of materials, not meeting specifications.

END OF SECTION

SECTION 32 93 00

PLANTING

PART 1 - GENERAL

1.01 SUMMARY

- A. Work Included: Provide planting complete, as shown and as specified.
- B. Products Installed But Not Furnished Under This Section:
 - 1. Notification: Notify Owner at least two (2) weeks in advance of date when plants will be picked up and transported to the place of installation.
 - 2. Review: Review plants prior to acceptance and notify Landscape Architect of all unacceptable plants. Pick up of plants shall constitute acceptance for the purpose of warranties.
- C. Related Work:
 - 1. Existing Plants to Remain - Section 31 12 00
 - 2. Planting Area Finish Grading - Section 31 22 19
 - 3. Irrigation System - Section 32 84 00
 - 4. Soil Preparation - Section 32 91 13
 - 5. Landscape Maintenance - Section 32 93 25

1.02 REFERENCES

- A. "An Annotated Checklist of Woody Ornamental Plants of California, Oregon and Washington, (Number 4091)", McClintock and Leiser, Division of Agricultural Sciences, University of California, 1979.
- B. "American Standard for Nursery Stock", 2014 Edition, ANSI Z60.1-2014, AmericanHort.
- C. "Hortus III", 1976 Edition, Bailey Hortorium, Cornell University.
- D. "A California Flora and Supplement", 1973 Edition, Philip A. Munz, University of California Press.
- E. "Guideline Specifications for Nursery Tree Quality, Revision 2009", Brian Kempf, Urban Tree Foundation, <http://www.urbantree.org/pdf/NurseryTreeSpecs1.pdf>.
- F. Scotts Valley Integrated Pest Management Plan.

1.03 SUBMITTALS

- A. Product Data: Manufacturer's current catalog cuts and specifications of the following:
 - 1. Mulch and fertilizer tablets.
 - 2. Anti-desiccant.
 - 3. Tree stakes and ties.
 - 4. Erosion control mat.
 - 5. Gopher baskets.
 - 6. Deer protection measures.

- B. Shop Drawings: Locations of fences and/or barriers at drip lines of existing trees/plants to remain; rodent protection; deer protection barriers.
- C. Samples:
 - 1. Mulch: Two (2) pints.
 - 2. Erosion control mat (12"x12").
- D. Certificates of Inspection: As required by law for transportation of each shipment of plants along with invoice.
- E. Photos: Plant Material.
- F. Results from plant pit drainage tests.
- G. Soils analysis results.
- H. Certificate of Completion. Contractor to provide items required by the Department of Water Resources, Title 23, Chapter 2.7. Model Water Efficient Landscape Ordinance. Items to be included, but not limited to:
 - 1. Irrigation audit report prepared by 3rd party.
 - 2. Controller parameter/settings.
 - 3. Soil sampling analysis results and documentation of installation.

1.04 CLOSEOUT SUBMITTALS

- A. Warranty as specified.
- B. Irrigation Audit.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Delivery: Do not deliver disease-infected plant materials to the site.
- B. Labeling: Furnish standard products in manufacturer's standard containers bearing original labels legibly showing quantity, analysis, genus/species and name of manufacturer/grower.
- C. Storage: Protect metal containers from sun during summer months with temperatures above 80 degrees F. Keep plants that cannot be planted immediately upon delivery in the shade, well protected and well watered.
- D. Handling: Do not lift or handle plants by tops, stems or trunks at any time. Do not bind or handle plants with wire or rope at any time (except wrapped rootball of field dug material).
- E. Anti-Desiccant: At Contractor's option, immediately before transporting, spray deciduous plant materials in full leaf or evergreens with anti-desiccant. Apply an adequate film over trunks, branches, twigs and foliage.

1.06 SEQUENCING AND SCHEDULING

- A. Acceptance: Do not install plant materials prior to acceptance of finish grades and main line trenching/installation of irrigation system.
- B. Coordination: Coordinate with work of other sections to insure the following sequence of events:

1. General: Sprinkler system to be installed and operable prior to installation of plant materials. Schedule hand watering of all plant materials installed prior to sprinkler irrigation system.
2. Headers: Install prior to installation of adjacent sprinkler irrigation system.
3. Vines: Do not attach anchors or ties to wall or other structures prior to acceptance of such work under another Section.
4. Trees in Paving: As necessary, install prior to installation of paving under another Section. See Drawings.
5. Pruning: Do not prune plant materials prior to installation and acceptance. Request review by Landscape Architect prior to pruning.

1.07 WARRANTY

- A. Warrant that all trees, shrubs, and groundcover planted under this Contract will be healthy and in flourishing condition of active growth one (1) year from date of Final Acceptance.
- B. Correct Species: Warrant that all plant materials are true to species and variety.
- C. Delays: Delays caused by the Contractor in completing planting operations which extend the planting into more than one planting season shall extend the Warranty Period correspondingly.
- D. Condition of Plants: Plants shall be free of dead or dying branches and branch tips, with foliage of normal density, size and color.
- E. Replacements: As soon as weather conditions permit, replace, without cost to Owner all dead plants and all plants not in a vigorous, thriving condition, as determined by Landscape Architect during and at the end of Warranty Period.
- F. Exclusions: Contractor shall not be held responsible for failures due to neglect by Owner, vandalism, and acts of Nature, during Warranty Period. Report such conditions.

1.07 CERTIFICATE OF COMPLETION

- A. Contractor to provide items required by the Department of Water Resources, Title 23, Chapter 2.7. Model Water Efficient Landscape Ordinance.
- B. Items to be included, but not limited to:
 1. Irrigation audit report.
 2. Controller parameter/settings.
 3. Soil sampling analysis results and documentation of installation.

1.08 MAINTENANCE PERIOD AND FINAL ACCEPTANCE

- A. See Section 32 93 25 - Landscape Maintenance.

1.09 REPLACEMENTS

- A. Failed Materials:
 1. Repair and/or replace at no cost to the Owner all plant materials exhibiting conditions which are determined as unacceptable due to workmanship by the Contractor.
 2. Closely match replacements to adjacent specimens of the same species. Apply requirements of this Specification to replacements.

3. Contractor shall be held responsible for a maximum of two (2) replacements for each failed tree, shrub and vine, and same area of groundcover planting after final acceptance during warranty period.
- B. Incorrect Materials:
1. During Warranty Period, replace at no cost to Owner plants revealed as being untrue to name and species.
 2. Provide replacements of a size and quality to match the planted materials at the time the mistake is discovered.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Plant Materials: Verify that all container stock has been grown in the containers in which delivered for at least one growing season, but not over two (2) years.
1. Growing Conditions: Plants shall be nursery-grown in accordance with good horticultural practices under climatic conditions similar to those of the project for at least two years unless otherwise specifically authorized.
 2. Appearance: Trees shall be exceptionally heavy, symmetrical, tightly knit, and so trained or favored in development and appearance as to be superior in form for their species, with regard to number of branches, compactness and symmetry.
 3. Vigor: Plants shall be sound, healthy and vigorous, well branched and densely foliated when in leaf. They shall be free of disease, insect pests, eggs, or larvae. They shall have healthy, well-developed root systems that comply with requirements below. Plants shall be free from physical damage or adverse conditions which would prevent thriving growth.
- B. Condition of Root System:
1. Plant roots shall be normal to the plant type specified. Root observations shall take place without impacting tree health. Root quality at or below the soil line shall comply with the following:
 - a. The roots shall be reasonably free of scrapes, broken or split wood. Reasonable and reasonably -- when used in this specification relative to plant quality -- are intended to mean that the conditions cited will not affect the establishment or long-term stability, health, or growth of the plant. This specification recognizes that it is not possible to produce plants free of all defects and that some decisions cannot be totally based on measured findings, so professional judgment is required. In cases of different opinion, Landscape Architect will determine when conditions within the plant are judged as reasonable
 - b. The root system shall be reasonably free of injury from biotic (e.g., insects and pathogens) and abiotic (e.g., herbicide toxicity and salt injury) agents. Wounds resulting from root pruning used to produce a high quality root system are not considered injuries.
 - c. The tree shall be well rooted in the soil media (substrate). Root distribution shall be uniform throughout the container media. Structure and growth shall be appropriate for the species/cultivar. When the container is removed, the root ball shall remain intact. When the trunk is lifted, both the trunk and root system shall move as one.
 - d. A minimum of three structural roots reasonably distributed around the trunk (not clustered on one side) shall be found in each plant. Root distribution

shall be uniform throughout the root ball, and growth shall be appropriate for the species.

- 1) Plants with structural roots on only one side of the trunk (J roots) shall be rejected.
 - e. The root collar shall be within the upper two inches of the substrate/soil. Two structural roots shall reach the side of the root ball near the top surface of the root ball. The grower may request a modification to this requirement for species with roots that rapidly descend, provided that the grower removes all stem girdling roots above the structural roots across the top of the root ball.
 - f. The root system shall be reasonably free of stem girdling roots over the root collar or kinked roots from nursery production practices. Soil removal near the root collar may be necessary to inspect root defects.
 - 1) Plant Grower Certification: The final plant grower shall be responsible to have determined that the plants have been root pruned at each step in the plant production process to remove stem girdling roots and kinked roots, or that the previous production system used practices that produce a root system throughout the root ball that meets these specifications. Regardless of the work of previous growers, the plant's root system shall be modified at the final production stage, if needed, to produce the required plant root quality. The final grower shall certify in writing that all plants are reasonably free of stem girdling and kinked roots as defined in this specification, and that the tree has been grown and harvested to produce a plant that meets these specifications.
 - g. At time of observations and delivery, the root ball shall be moist throughout. The crown shall show no signs of moisture stress as indicated by wilted, shriveled, or dead leaves or branch dieback. Roots shall not show signs of excess soil moisture conditions as indicated by stunted, discolored, distorted, or dead roots.
- C. Measurements:
1. General: Take caliper measurement at a point on the trunk 6 inches above natural ground line for trees up to 4 inches in caliper (and at a point 12 inches above the natural ground line for trees over 4 inches in caliper.)
 - a. Measure foliage across mean foliage dimension when branches are in their normal upright position. Foliage origin along main trunk shall be measured from soil line.
 - b. Height and spread dimensions specified refer to main body of plant and not branch tip to tip. Properly trimmed plants shall measure the same in any direction. If a plant is unevenly grown, it shall be classified in the size category of the smallest dimension.
 2. Size Range: If a range of size is given, do not use plant materials less than the minimum size. The measurements specified are the minimum size acceptable and are the measurements after pruning, where pruning is required. Plants that meet the measurements specified, but do not possess a normal balance between height and spread shall be rejected.
 3. Substitutions: Substituted plants shall be true to species and variety and shall conform to measurements specified except that plants larger than specified may be used if accepted. Use of such plants shall not increase Contract price. If larger plants are accepted, increase the ball of earth in proportion to the size of the plant. Plants overgrown for their container size will be rejected.
- D. Unacceptable Trees: Trees which have damaged or crooked leaders will be rejected. Trees having a main leader shall not have been headed back. Trees with

abrasions of the bark, sunscalds, disfiguring knots, or fresh cuts of limbs over 3/4 inch which have not completely callused, will be rejected. Trees whose root systems do not conform to 2.01-B above will be rejected.

- E. Pruning: Do not prune plants before delivery. Consult Landscape Architect for pruning after installation.

2.02 MIXES

- A. Backfill Mix for Plant Pits: See Section 32 91 13 - Soil Preparation.
- B. Commercial Fertilizers:
 - 1. Top-dress Fertilizer: Complete fertilizer, 50 percent of the nitrogen to be derived from natural organic sources or urea-form. Available phosphoric acid shall be from superphosphate, bone or tankage. Potash shall be derived from muriate of potash containing 60 percent potash:
 - 16% Nitrogen
 - 6% Phosphoric Acid
 - 8% Potash
 - 2. Slow-release Fertilizer Tablet: "Agriform" 21 gram tablets with 20-10-5 (N-P-K) by Sierra Chemical Co., (408) 263-8080.
- C. Anti-Desiccant/transpirant (used for retarding excessive loss of plant moisture and inhibiting wilt):
 - 1. Type: Sprayable, water-soluble pine oil complex which will produce a moisture-retarding barrier not removable by rain.
 - 2. Product: "Wilt-Pruf" by Wilt-Pruf Products, Inc., Greenwich, CT.

2.03 ACCESSORIES

- A. Tree Staking:
 - 1. Type: Round tree stakes, fir, 2-inch diameter x 10-foot length, with a tapered driving point and chamfered top, untreated, or approved equal.
 - 2. Source: D-Stake Mill, 1726 Southwest Highway 18, McMinnville, OR 97128, (800) 528-5525.
 - 3. Ties: Wonder Tree Ties, by Wonder Tree Tie, Inc. (714) 666-3121, or approved equal.
- C. Wood Chip Mulch, 3-inch-thick layer:
 - 1. Source: Central Home Supply
 - 2. Name: Golden Nuggets, or approved equal
 - 3. Type: Redwood chips, free of seed, sticks, dirt, dust and other debris, as accepted by Landscape Architect.
 - 4. Size: 1-inch to 2-inch diameter
- D. Erosion Control Blanket:
 - 1. Coir Erosion Control Mat
 - 2. Type: SC150BN (BIONET) Erosion Blanket
 - 3. Source: Granite Rock or Favorably Reviewed Equivalent
 - 4. Contact: www.graniterock.com
 - 5. Phone: 831-471-3400
- E. Gopher Baskets: As detailed in drawings.

F. Deer Protection: As detailed in drawings.

E. Water:

1. Clean, fresh and potable, furnished and paid for by Owner.
2. Transport as required.

2.04 SOURCE QUALITY CONTROL

- A. Review: Submit a written request for review of plant materials and quantity at place of growth at least sixty (60) calendar days prior to shipment to site. Right is reserved to refuse review at this time if, in Landscape Architect's judgment, a sufficient quantity of plants is not available. All plant material that does not conform to requirements will be rejected.
- B. Transportation: Contractor shall accompany Landscape Architect to all review(s) of plant materials at the nursery. Landscape Architect will review and tag plants at place of growth and upon delivery for conformity to specifications.
- C. Distant Material: Submit photographs with a person adjacent to each plant type for preliminary review. Such review shall not impair the right of review and rejection during progress of the work.
- D. Unavailable Material: If proof is submitted that a specified plant is not obtainable, a proposal will be considered for use of the nearest equivalent size or variety with corresponding adjustment of Contract price. Substantiate such proof in writing no later than 30 days after award of contract.
- E. Special Conditions: The above provisions shall not relieve Contractor of the responsibility of obtaining specified materials in advance if special growing conditions or other arrangements must be made in order to supply specified materials.
- F. Plant Material Review and Tagging:
1. At the Owner's Representative's discretion, trees may or may not be reviewed, photographed, and tagged by the Owner's Representative at the nursery or other place of growth.
 2. At the Owner's Representative's discretion, shrubs may or may not be reviewed, photographed, and tagged by the Owner's Representative at the nursery or other place of growth.
 3. Tagging of plant material at the nursery or place of growth does not affect the right of the Owner's Representative to reject plant material at the site, if damage or unacceptable conditions are found that were not detected at the nursery, place of growth, or in the submitted photographs.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verification of Conditions:
1. Finish Grades: Finish grades for planting areas shall have been established in another Section. Verify that all grades are within 1 inch plus or minus of required finish grade.
 2. Soil Preparation: Do not commence planting work prior to completion and acceptance of soil preparation.
 3. Irrigation: Verify that irrigation system has been installed and accepted.

3.02 PREPARATION

- A. Layout and Staking: Lay out plants at locations shown on Drawings. Use 3-foot lath, color-coded for each species of plant material. Stake each tree, not specifically located by dimension or alignment. Outline shrub and groundcover beds with lime.
- B. Review: Locations of plants will be checked in the field and will be adjusted to exact position before planting begins. Right is reserved to refuse review at this time if, in the Landscape Architect's opinion, an insufficient quantity of plants is available.
- C. Digging Plant Pits: Dig tree pits and scarify all sides of the tree pit after excavation - see below. Do not use an auger or tree spade.
- D. Containerized Plant Pits: Excavate square plant pits per Details.

3.03 DRAINAGE TEST OF PLANT PITS/OBSTRUCTIONS

- A. Testing: Immediately after completion of excavation, test drainage of plant pits by filling with water twice in succession. Give written notification of conditions permitting the retention of water in plant pits for more than twenty-four (24) hours.
- B. Correction: Submit for acceptance a written proposal and cost estimate for the correction of poor drainage conditions before proceeding with planting.
- C. Obstructions: If rock, underground construction work, tree roots or other obstructions are encountered in the excavation of plant pits, acceptable alternate locations may be used at direction of Landscape Architect.
- D. Percolation Test Pit:
 - 1. Location: At all tree planting locations and reviewed with Owner's Representative.
 - 2. Restrictions: Do not perform test on a rainy day. Repeat from beginning all tests interrupted by rain or cold.
 - 3. Procedure:
 - a. Dig test pit of a size specified for the tree pits, a minimum of 4 feet deep. Legibly calibrate a stake at 1-inch intervals and drive it firmly into the undisturbed soil at the bottom of the pit.
 - b. Fill test pit with water to within 1 foot of the finish grade. Immediately record water level on the stake.
 - c. After 3 hours, record water level again. Repeat recording of water level once each hour for the succeeding five hours.
 - 4. Documentation: Submit written documentation of all test pit results, dated and signed by the tester.

3.04 TREE, SHRUB AND VINE PLANTING

- A. Handling and De-potting of Plant Materials:
 - 1. Damage: Avoid damage to containers and rootballs. If rootball is cracked or broken during handling and de-potting, plant will be rejected. Do not remove plant from container prior to completion of plant pit preparation.
 - 2. Canned Trees and Shrubs: Metal Containers: Cut can on two sides with accepted cutting tool. Do not use spade. Plastic Containers: Tip container to horizontal orientation and shake carefully to remove shrub. Support rootball during installation to prevent cracking or shedding of soil.
 - 3. Boxed Trees: Lift from bottom with forklift or from sides with 2-inch x 4-inch rails nailed to each side of box. Do not remove box prior to settling tree in plant pit.

Remove sides of box after acceptance by Landscape Architect and prior to backfilling. Bottom of box may be left in place.

B. Installation:

1. Scarification:

- a. Plant Rootball: After removing plant from container, scarify the sides of the rootball to a depth of 1 inch at four to six equally-spaced locations around the perimeter of the ball or at 12-inch intervals on sides of boxed materials. Cut and remove circling roots over 3/8-inch diameter.
- b. Plant Pit: Scarify sides of plant pit, thoroughly breaking up surfaces and eliminating "glazed" areas.

2. Positioning: Backfill plant pit to allow setting crown of tree 2 inches above new finish grade and crown of shrub 1 inch above finish grade. Thoroughly foot tamp all backfill. Position plant in planting pit, maintaining plumb condition. Maintain throughout all planting operations.

3. Backfilling:

- a. Use backfill mix to backfill plant pits as shown on Drawings. Brace each plant plumb and rigidly in position until planting soil has been tamped solidly around the ball and roots.
- b. When plant pits have been backfilled approximately 2/3 full, water thoroughly and saturate rootball, before installing remainder of the backfill mix to top of pit, eliminating all air pockets.

4. Staking: When required, stake or as specified below.

5. Slow-release Fertilizer Tablets: Place evenly distributed in plant pits when backfilled 2/3 according to the following schedule or per Manufacturer's latest specifications.

1 gallon can - 2 tablets	24 in. box - 8 tablets
5 gallon can - 4 tablets	36 in. box - 10 tablets
15 gallon can - 6 tablets	48 in. box - 12 tablets

D. Watering Basin: Form saucer with 3-inch high berm centered around tree and shrub pits 12 inches wider than ball diameter. Do not form saucer around trees in lawn areas.

E. Watering: Immediately water all plants after completion of planting operations.

3.05 STAKING

A. Remove nursery-supplied stake and install 'Wonder Tree Tie' per manufacturer's recommendations. Find proper height for point of tree tie and attach as follows:

1. Hold trunk in one hand, pull top to one side and release. Height at which trunk will snap back to upright position while hand-held is Base Height. Attach tree ties to trunk 6 inches above Base Height.
2. If trunk is too "whippy" to support tree plumb, use auxiliary stake as follows:
 - a. Attach auxiliary stake as required to support trunk. Extend stake 30 inches below finish grade up to a point no closer than 24 inches from top of leader.
 - b. Round and wrap the ends of the stake with friction tape. Attach stake to trunk with 1-inch wide vinyl or polyethylene tape at 10-inch to 15-inch intervals.

B. Staking: Stake all trees under 3¼-inch caliper in accordance with the following table:

Tree		
Caliper @ 12 inches	#	Stake
Above-Grade	Stakes	Size _____
To 1-3/4 inch	2	2-inch Diam. x 8-foot min.
2 inches to 3 inches	2	3½-inch Diam. x 10-foot min.

1. Locate stakes as detailed in the Drawings, perpendicular to prevailing wind and as close to the main trunk as is practical, avoiding root injury. Drive stakes at least 36 inches into firm ground.
2. Nail 1-inch x 4-inch spreader board to stakes at detailed height making sure minimum trunk clearance is maintained.
3. Remove nursery-supplied stake and tie to new stakes using two tree ties. Find proper height for point of tree ties and attach as follows:
 - a. Hold trunk in one hand, pull top to one side and release. Height at which trunk will snap back to upright position while hand-held is Base Height. Attach tree ties to trunk 6 inches above Base Height.
 - b. Nail rubber ties to stakes using two (2) galvanized roofing nails at each end of tie. After total securement, cut off stakes to an even height determined by the Landscape Architect.
 - c. If trunk is too "whippy" to support tree plumb, use auxiliary stake as follows:
 - 1) Attach auxiliary stake as required to support trunk. Extend stake 30 inches below finish grade up to a point no closer than 24 inches from top of leader.
 - 2) Round and wrap the ends of the stake with friction tape. Attach stake to trunk with 1-inch-wide vinyl or polyethylene tape at 10-inch to 15-inch intervals.

3.06 PRUNING: See Section 32 93 25 - Landscape Maintenance.

3.07 MULCHING

- A. Install a 3-inch-deep layer of mulch over all shrub areas including tree and shrub watering basins, and bare ground within project boundaries.

3.08 GROUNDCOVER PLANTING

- A. Top-dress Fertilizer: Apply at the rate of 5 pounds per 1,000 square feet immediately after completion of planting.
- B. Watering: Immediately water groundcover areas after fertilizer application to wash fertilizers from leaves of plants.

END OF SECTION

SECTION 32 93 25

LANDSCAPE MAINTENANCE

PART 1 - GENERAL

1.01 SUMMARY

- A. Work Included: Provide continuous Landscape Maintenance, complete as specified during progress of the work, after installation, and for a period of 90 days after Preliminary Acceptance.
- B. Related Work:
 - 1. Planting Area Finish Grading - Section 31 22 19
 - 2. Existing Plants to Remain - Section 31 12 00
 - 3. Irrigation System - Section 32 84 00
 - 4. Soil Preparation - Section 32 91 13
 - 5. Planting - Section 32 93 00

1.02 REFERENCES

- A. University of California Cooperative Extension Publications:
 - 1. "Fertilizing Woody Plants", Leaflet #2958, Sept. 1979, or latest edition.
 - 2. "Pruning Landscape Trees", Leaflet #2574, Jan. 1979, or latest edition.
 - 3. "Staking Landscape Trees", Publication #AXT-311.
- B. "Arboriculture: Care of Trees, Shrubs and Vines in the Landscape" by Richard W. Harris, Prentice-Hall, Inc. 1983.

1.03 SUBMITTALS

- A. Quality Control Submittals:
 - 1. Schedule of maintenance operations and monthly status report including list of equipment, materials proposed for the job (and watering schedule).
 - 2. Licenses, permits and insurances required by Santa Cruz County, the State or Federal government pertaining to maintenance work.
 - 3. Monthly record of Integrated Pest Management (IPM) techniques applies.
 - 4. Documentation of existing planting and irrigation system.
 - 5. Written application recommendation by a licensed IPM for this work.
- B. Project Close-out Submittal: Include in a single, 3-ring binder a landscape maintenance manual containing an indexed collection of all schedules, records and permits listed above, as well as a documentation of accepted condition of planting and irrigation at Final Acceptance.

1.04 QUALITY ASSURANCE

- A. Qualifications:
 - 1. Experience: The landscape contractor or maintenance subcontractor shall have a full-time employee assigned to the job as foreman for the duration of the contract. He/she shall have a minimum of four (4) years experience in landscape maintenance supervision, with experience or training in (turf management), entomology, pest control, soils, fertilizers and plant identification.

2. Labor Force: The landscape maintenance labor force shall be thoroughly familiar with, and trained in, the work to be accomplished and shall perform the task in a competent, efficient manner acceptable to the Owner.
- B. Requirements:
1. Supervision: The foreman shall directly supervise the work force at all times. Notify Owner of all changes in supervision.
 2. Identification: Provide proper identification at all times for landscape maintenance firm's vehicles and labor force. Be uniformly dressed in a manner satisfactory to the Owner.

1.05 PROJECT/SITE CONDITIONS

- A. Site Visit: At beginning of maintenance period, visit and walk the site with the Owner's representative to clarify scope of work and understand existing project/site conditions.
- B. Documentation of Conditions: Document general condition of existing trees, shrubs, vines, groundcovers and lawn recording all plant materials which are healthy, thriving, damaged, dead or dying.
- C. Irrigation System: Document general condition of existing irrigation system, making sure that faulty electrical controllers, broken or inoperable sprinkler heads (or emitters) are reported.

1.06 SEQUENCING AND SCHEDULING

- A. Perform all maintenance during hours mutually agreed upon between Owner and Contractor.
- B. Work force shall be present at the project site at least once a week and as often as necessary to perform specified maintenance in accordance with the approved maintenance schedule.

1.07 WARRANTY

- A. Specific Requirements: Refer to the following sections:
1. Irrigation System - Section 32 91 13.
 2. Planting - Section 32 93 00.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. General: All materials and equipment, shall be provided by the Contractor, except as specified below.
- B. Water: Clean, potable and fresh, as available from Owner
- C. Fertilizers:
1. Tightly-compressed, slow-release and long-lasting complete fertilizer tablets bearing manufacturer's label of guaranteed analysis of chemicals present.
 2. Balanced, once-a-season application, controlled-release fertilizers with a blend of coated prills which supply controlled-release nitrogen, phosphorus and potassium, and uncoated, rapidly soluble prills containing nitrogen and phosphorus.

- D. Do not use herbicides, insecticides, or fungicides on this project. Project to comply with City of Scotts Valley Integrated Pest Management (IPM) policy. Submit proposed methods to Owner Representative prior to implementation.
- E. Replacement Tree Stakes, Ties and Wires: Match originally accepted existing materials on the site.

2.02 EQUIPMENT

- A General: Use only the proper tool for each job. Maintain all tools in sharp, properly-functioning condition. Clean and sterilize pruning tools prior to usage.
- B Insect/Disease Prevention: Take all acceptable measures to prevent introduction of insect or disease-laden materials onto the site. Planting - Section 32 93 00.

PART 3 - EXECUTION

3.01 ESTABLISHING THE MAINTENANCE PERIOD

- A. Preliminary Review: As soon as planting is substantially completed per documents, hold a preliminary review to determine the condition of the work.
- B. Date of Review: Notify Landscape Architect at least five (5) working days prior to anticipated date of review.
- C. Beginning of the Maintenance Period: The date on which the Landscape Architect issues a letter of Preliminary Acceptance to the Contractor.

3.02 PREPARATION

- A. Protection:
 - 1. Protect all new planting areas from damage of all kinds from beginning of work until sufficiently established or until Final Acceptance.
 - 2. Provide temporary protection fences, barriers and signs as required for protection.
- B. Replacements:
 - 1. Immediately treat or replace all plants which become damaged or injured as a result of Contractor's operations or negligence, as directed by Landscape Architect, at no cost to Owner.
 - 2. Replacement plants shall match size, condition, and variety of plants replaced.

3.03 PLANTING

- A. Watering Basins:
 - 1. Maintain all watering basins around plants so that enough water can be applied to establish moisture through major root zones.
 - 2. For supplemental hand watering of watering basins, use a water wand to break the water force. Do not permit use of "jet" type watering equipment. Do not permit crown roots to become exposed to air through dislodging of soil and mulch.
 - 3. Maintain originally called for depth of mulch to reduce evaporation and frequency of watering.
 - 4. In rainy season, open basins to allow surface drainage away from the root crown where excess water may accumulate. Restore watering basins at end of rainy season.

- B. Resetting: Reset plants to proper grades and upright position.
- C. Weed Control:
 - 1. All areas between plants, including watering basins, shall be weed free at all times.
 - 2. Use only IPM techniques to control weed growth.
- D. Pruning:
 - 1. Prune trees to select and develop permanent scaffold branches that are smaller in diameter than the trunk or branch to which they are attached, and which have vertical spacing of 18 inches to 48 inches and radial orientation so as not to overlay one another.
 - 2. Prune trees to eliminate diseased or damaged growth, and narrow V-shaped branch forks that lack strength. Reduce toppling and wind damage by thinning out crowns.
 - 3. Prune trees to maintain growth within space limitations, maintaining a natural appearance and balancing crown with roots.
 - 4. No stripping of lower branches ("raising up") of young trees will be permitted.
 - 5. Retain lower branches in a "tipped back" or pinched condition to promote caliper trunk growth (tapered trunk). Do not cut back to fewer than six buds or leaves on such branches. Only cut lower branches flush with the trunk after the tree is able to stand erect without staking or other support.
 - 6. Thin out and shape evergreen trees when necessary to prevent wind and storm damage. Do primary pruning of deciduous trees during the dormant season. Do not permit any pruning of trees prone to excessive "bleeding" during growth season.
 - 7. Prune damaged trees or those that constitute health or safety hazards at any time of year as required.
 - 8. Make all cuts clean and close to the trunk, without cutting into the branch collar. "Stubbing" will not be permitted. Cut smaller branches flush with trunk or lateral branch. Make larger cuts (1 inch in diameter or larger) parallel to shoulder rings, with the top edge of the cut at the trunk or lateral branch.
 - 9. Branches too heavy to handle shall be precut in three stages to prevent splitting or peeling of bark. Make the first two cuts 18 -inches or more from the trunk to remove the branch. Make the third cut at the trunk to remove the resulting stub.
 - 10. Do not prune or clip shrubs into balled or boxed forms unless specifically called for by design.
 - 11. Clip shrubs to be hedged when branches project 2 inches beyond limit of clipped hedge shown on the Drawings.
 - 12. Take extreme care to avoid transmitting disease from one infected plant to another. Properly sterilize pruning tools before going from one infected plant to all other plants.
- E. Staking and Guying of Trees:
 - 1. Inspect stakes and guys at least once a month to check for rubbing that causes bark wounds.
 - 2. Conform to the recommended procedures of staking and guying as outlined in the University of California Publication AXT-311, "Staking Landscape Trees."
- F. Maintenance of Existing Plantings to Remain:
 - 1. General: Conform to all applicable paragraphs regarding pruning, watering, spraying and fertilizing of new plant materials as specified in this section.

2. Symptoms: Be alert to symptoms of construction damage to existing plantings as evidenced by wilting, unseasonal or early flowering or loss of leaves, and insect or disease infestation due to declining vigor.
3. Notification: Submit in writing of evidences of declining vigor immediately upon discerning the problem. Take appropriate interim measures to mitigate the severity of the problem as specified in this section.
4. Proposal: Submit written proposal and cost estimate for the correction of all conditions before proceeding with permanent correction work.

3.04 GROUNDCOVERS

- A. Watering:
 1. Check for moisture penetration throughout the root zone at least twice a month.
 2. Water as frequently as necessary to maintain healthy growth of groundcovers.
- B. Weed Control:
 1. Do not use herbicides, insecticides, or fungicides on this project. Project to comply with Scotts Valley IPM policy. Submit proposed methods to Owner Representative prior to implementation.
- C. Fertilization:
 1. Recently installed plant materials: Verify with Owner actual completion date of planting installation and rate of prior application of fertilizers.
 2. New plant materials: Place one (1) 5-gram tablets (20-10-5; N-P-K) beside the root ball about an inch from root tips.
 3. Established Plant Materials: Do not use complete fertilizers unless soil test shows specific nutrient deficiencies.
- D. Mowing and Edging:
 1. Edge groundcovers to keep in bounds. Trim top growth as necessary to achieve an overall even appearance.
 2. Groundcovers which lend themselves to mowing shall be mowed to specified height above finished grade in order to renew growth, improve density and attractiveness.
- E. Replace dead and missing plants after obtaining Owner's agreement to pay for replacement. Damages due to Contractor's negligence shall be paid for without charge to Owner.

3.05 ANNUALS AND PERENNIALS

- A. Watering:
 1. Hand-water all pre-cast pots and planters without an automatic irrigation system.
 2. Species, sizes of plants, container sizes and orientation shall dictate frequency of watering. Submit to Owner a watering schedule for different seasonal requirements.
- B. Weed Control: All planters with annuals and perennials shall be weed-free at all times.
- C. Pruning:
 1. Limit pruning to removal of damaged or dead twigs and foliage.
 2. Remove spent flowers on a weekly basis.
- D. Replacements of Annuals:
 1. Replace annuals when materials exhibit a "spent" condition.

2. Thoroughly cultivate soil after removal of "spent" or "dead" plants prior to planting new materials.
- E. Fertilization: Incorporate slow release fertilizers per manufacturer's current specifications, and rake smooth.

3.06 INSECTS, PESTS, AND DISEASE CONTROL

- A. Inspection: Inspect all plant materials for signs of stress, damage and potential trouble from the following:
1. Presence of insects, moles, gophers, ground squirrels, snails and slugs in planting areas.
 2. Discolored or blotching leaves or needles.
 3. Unusually light green or yellowish green color inconsistent with normal green color of leaves.
- B. Use only IPM techniques to address problems.

3.07 IRRIGATION SYSTEM

- A. General:
1. Repair without additional charge to Owner all damages to system caused by Contractor's operations. Perform all repairs within one (1) watering period.
 2. Report promptly to Owner all accidental damage not resulting from Contractor's negligence or operations.
 3. Do not run the irrigation system during rainy season. Set and program automatic controllers for seasonal water requirements.
 4. Twice a month, use a probe or other acceptable tool to check the rootball moisture of representative plants as well as the surrounding soil.
- B. Cleaning and Monitoring the System:
1. Continually monitor the irrigation systems to verify that they are functioning properly as designed. Make program adjustments required by changing field conditions.
 2. Clean pump filter and strainer at least once a year and as often as necessary to keep the irrigation systems free of sand and other debris.
 3. Prevent spraying on windows, building walls, and walkways by balancing the throttle control on the remote control valves and the adjustment screws on the sprinkler heads. Do not allow water to atomize and drift.
- C. Winterization: The irrigation system is designed to be completely drained to protect pipe from bursting prior to freezing temperatures. To adequately drain the system, the following procedure must be followed:
1. Air blow-out:
 - a. Set automatic control stations to 2-1/2 minutes timing.
 - b. Attach hose from portable air compressor to 1-inch air inlet installed on main line at backflow preventer.
 - c. Operate compressor at 100 cubic feet per second at 60-80 PSI.
 2. Manual drain valves: Open manual drain valves located at low points on the main line to drain main completely after air blow-out has been completed.
 3. Backflow Preventer: Rotate backflow unit at unions and open pet cocks and drain. Reverse operation and tighten unions to resume irrigation.

3.08 TERMINATION OF THE MAINTENANCE PERIOD

- A. Final Acceptance Procedure:

1. Work will be accepted by the Landscape Architect upon satisfactory completion of all work, including maintenance period, but exclusive of replacement of materials under the Warranty Period.
 2. Submit a written request to Landscape Architect for review for Final Acceptance at least five (5) working days prior to anticipated Final Review date, which is at the end of the Maintenance Period.
- B. Corrective Work:
1. Work requiring corrective action or replacement shall be performed within ten (10) calendar days after the Final Review.
 2. Perform corrective work and materials replacement in accordance with the Drawings and Specifications, and shall be made by the Contractor at no cost to the Owner.
 3. After corrective work is completed, the Contractor shall again request a Final Review for Final Acceptance as outlined above.
 4. Continue maintenance of all landscaped areas until such time as all corrective measures have been completed and accepted.
- C. Conditions for Acceptance of Work at End of Maintenance Period:
1. Each plant shall be alive and thriving, showing signs of growth and no signs of stress, disease, or any other weaknesses.
 2. Replace all plants not meeting these conditions. An additional Warranty Period equal in length to the original shall be commenced for all such plants and planted areas.
- D. Final Acceptance Date: The date on which the Landscape Architect issues a Letter of Final Acceptance. Upon Final Acceptance, the Owner will assume responsibility for maintenance of the work.

3.09 CLEANING

- A. Dispose of all pruned materials, vacuum all lawn clippings and leaves, sweep all walkways and rake smooth all mulched areas.
- B. Remove from the site all containers and evidence of maintenance activities.

3.10 CLOSE OUT

- A. Landscape Maintenance Record: Submit binder to Owner with all documentation and records required and utilized during the maintenance period.
- B. Keys and Identification: Return all keys and identification materials supplied by Owner for the purpose of site access.

END OF SECTION

SECTION 33 05 61

PRECAST CONCRETE SECTIONAL MANHOLES

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Precast reinforced concrete cylindrical sectional manholes, complete with openings, inserts, ladder rungs (where specifically called for), hardware, drains, covers, and frames.
 - 2. Precast reinforced concrete manhole bases and tops.

1.02 REFERENCES

- A. ASTM International (ASTM), Standard Specifications:
 - 1. A36 Structural Steel
 - 2. A48 Gray Iron Castings
 - 3. A615 Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement
 - 4. A1064 Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete
 - 5. C150 Portland Cement
 - 6. C478 Precast Reinforced Concrete Manhole Sections
 - 7. C1821 Installation of Underground Circular Precast Concrete Manhole Structures
 - 8. C990 Joints for Concrete Pipe, Manholes, and Precast Box Sections Using Preformed Flexible Joint Sealants
- B. American Association of State Highway and Transportation Officials (AASHTO), Standard Specifications for Highway Bridges:
 - 1. M198 Standard Specification for Joints for Concrete Pipe, Manholes, and Precast Box Sections Using Preformed Flexible Joint Sealants
 - 2. M199 Standard Specification for Precast Reinforced Concrete Manhole Sections
- C. American Iron and Steel Institute (AISI).

1.03 SUBMITTALS

- A. Submit in accordance with Section 01 33 00.
- B. Product Data:
 - 1. Descriptive details of the manufacturer's proposed standard products, including:
 - a. Precast manhole sections.
 - b. Precast roof slab or cone section.
 - c. Precast base slab.
 - d. Steps, ladder rungs, ladders, and other hardware.
 - e. Minimum concrete 28-day compressive strength.
 - f. Cement certification.
 - g. Manhole cover and frame.

2. Shop drawings, including:
 - a. Design criteria
 - b. Layout:
 - 1) Plan:
 - a) Orientation of concentric manhole with laterals shown
 - b) Indicate location of latter rungs
 - c) Inserts, attachments, and openings
 - 2) Section:
 - a) Finished grade of manhole lid/cover/grate
 - b) Elevations of bottom of manhole and pipe invert(s)
 - c) Inserts, attachments, and openings
 - d) Joint types and number of risers.
 - c. Reinforcing steel location and concrete cover.

1.04 QUALITY ASSURANCE

- A. Provide products of a manufacturer who has been regularly engaged in the design and manufacture of the product.

PART 2 - PRODUCTS

2.01 DESIGN CRITERIA

- A. General: ASTM C478, and AASHTO M199 and also:
 1. Structure live load: AASHTO Loading Class HS 20-44.
 2. Backfill material: Structural backfill.
 3. Base material: Aggregate base.
 4. Buoyancy: Design manhole for groundwater up to two feet below grade, showing resistance to buoyancy with factor of safety of at least 1.2.

2.02 PRECAST SECTIONS

- A. General:
 1. Manhole cone section: Concentric. Provide eccentric when rotation of the cone to orient the frame and cover out of conflict with curb and gutter or other obstruction at the surface is necessary.
 2. Cement: ASTM C150, Type II, low alkali.
 3. Roof slab opening: Size to support the manhole cover frame.
 4. Lifting eyes: Provide for each section.
- B. Manufacturer: Hanson Concrete Products, Inc., Milpitas, CA; Santa Rosa Cast Products Company, Santa Rosa, CA; or equal.

2.03 JOINTS AND SEALANT

- A. Tongue and Groove Joint General: Joint shall conform to ASTM C990.
 1. Sealant: Preformed, continuous rope gasket, protected by removable two-piece wrapper constructed from bitumen or butyl resins, blended with hydrocarbons and plasticizing compounds, and reinforced with inert mineral filler. Provide recommendation to Engineer of cross-sectional dimensions that will produce an ASTM C990 compliant joint. Suggested products include RAM-NEK by Henry Co.; KENT Seal by Hamilton-Kent; or equal. No solvents, irritating fumes, or obnoxious odors.

- B. Single Off-Set Joint General: Joint shall conform to ASTM C443.
 - 1. Rubber gasket: Gasket shall be made of rubber compounds, create a watertight joint up to 13 psi and conform to ASTM C443.
- C. External Sealing Bands: Where watertight joints are specified apply external sealant bands conforming to ASTM C877.
- D. Manufacturer: Henry® Co., El Segundo, CA; Hamilton-Kent LLC, Winchester, TN; or equal.

2.04 FRAMES AND COVERS

- A. Material: Cast iron; ASTM A48, Class 30B.
- B. Marking: In raised letters, as specified, on manhole cover. Markings shall comply with City of Scotts Valley standards for storm drain manholes.
- C. Coating: Bituminous paint, black.
- D. Size: 24-inch-diameter cover.
- E. Pick Hole: In accordance with Scotts Valley standards..
- F. Vent Holes: In accordance with Scotts Valley standards.
- G. Connection: Bolt down cover into frame with four 1/2-inch-diameter stainless steel bolts, coarse thread, flush with top. Seal with 1/8-inch-thick, 1/2-inch-wide continuous circular neoprene gasket.
- H. Seal: Provide continuous 1/4-inch-diameter neoprene “o” ring between frame and cover.
- I. Manufacturer: South Bay Foundry, Hayward, CA.; Alhambra Foundry Company Ltd., Alhambra, CA; Olympic Foundry, Seattle, WA; or equal.

2.05 SOURCE QUALITY CONTROL

- A. Precast Sections:
 - 1. Verify concrete compressive strength test results are satisfactory for the sections supplied.
 - 2. State the curing method. Identify the start and end dates for the sections supplied.
- B. Frames and Covers:
 - 1. Verify cast test bar tensile strengths are satisfactory.

PART 3 - EXECUTION

3.01 OPENINGS AND EMBEDMENTS

- A. The contractor and precaster shall be responsible for the integration of embedded items in the quantity, materials, elevations, and locations required.
- B. Embedded pipes, conduits, sleeves, and other items intended to pass through walls and slabs shall be installed perpendicular to the surface unless noted otherwise.
- C. Embedded plates, grates, hatches, angle frames, and other items intended to provide a working surface shall be installed flush to the surface unless noted otherwise.

- D. Aluminum items embedded in concrete shall be treated with an asphaltic coating.
- E. Openings in the structure shall be placed integrally at the time of casting. Unreinforced knockouts may be provided for post installed opening if approved by the Engineer. Openings shall not be placed by coring or cutting through reinforced concrete after the item has been cast.

3.02 INSTALLATION

- A. General: ASTM C1821 and also:
 - 1. Compact subgrade to a 6-inch minimum depth in accordance with Section 31 00 00.
 - 2. Provide a 6-inch crushed rock aggregate base layer under the base slab and compact in accordance with Section 32 12 16 prior to placement.
 - 3. Apply primer compatible with gasket to joint surfaces in accordance with manufacturer's instructions. Make all joints watertight with sealant gaskets.
 - 4. Backfill around manholes with Engineered Backfill material. Compact the backfill material to 95% relative density from the pipe bedding and slab up to final finish grade, over an area defined as being within a distance of 4 feet from the exterior walls.
 - 5. Accurately locate and place the manhole or hatch frames to within 1/8 inch vertical elevation in paved areas and to 1/2 inch in other areas. Coordinate the activities of all trades so that this tolerance is achieved.
 - 6. Install the manhole cover in the frame. Machine the cover, if necessary, to obtain a solid fit, without rattling under load.
 - 7. Accurately locate conduits, pipes, spools and knock-outs for mechanical and connections through the manhole.

3.03 FIELD QUALITY CONTROL

- A. Verify all precast sections are continuously sealed with gaskets.
 - 1. Contractor shall receive favorable review of initial section and seals from the Engineer prior to placing subsequent sections.
- B. Verify all manhole covers fit quietly in the frames.

3.04 TEST FOR MANHOLES

- A. Furnish and dispose of water used for testing in accordance with Section 01 57 00.
- B. Hydraulically test all manholes installed with the presence of the Engineer.
- C. After all pipe has been laid, backfilling completed, and pipes pass requirements, plug the end of pipe stubs in each manhole with flexible-joint caps, or acceptable alternate, fastened securely.
- D. Fill the manhole with water and measure leakage over a period of not less than 1 hour.
- E. Allowable Leakage: Less than one (1) gallon per hour per 10-foot depth of manhole.
- F. When leakage from the vault exceeds the above amount, determine the source or sources of the leakage, and repair or replace defective materials and workmanship. A second test shall not start until after the repaired/replaced defective materials have set. If the manhole does not pass the second test, Contractor shall remove and install new materials at no cost to the Owner.

- G. The completed pipe and vault installation shall pass this test before the project can be accepted.

END OF SECTION

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SECTION 33 14 00

GENERAL BURIED PIPING REQUIREMENTS

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes: Furnish and install all buried piping, including fittings, valves, and accessories as shown on the Drawings, described in the Specifications, and as required to completely interconnect all piping for a complete and operable systems.

1.02 REFERENCES

- A. American Association of State Highway and Transportation Officials (AASHTO)
- B. American National Standards Institute (ANSI)
- C. American Society of Mechanical Engineers (ASME)
- D. ASTM International (ASTM)
- E. American Water Works Association (AWWA)
- F. Manufacturers Standardization Society of the Valve and Fittings Industry (MSS)
- G. NSF/ANSI Standard 61 Drinking Water System Components (NSF 61)
- H. UNI-BELL PVC Pipe Association
- I. U.S. Department of Transportation (DOT)

1.03 SUBMITTALS

- A. Refer to respective piping specifications.
- B. Product Data
 - 1. Submit gaskets with pipe material requirements.
 - 2. Submit bolt and tie rods with pipe material requirements.
 - 3. Polyethylene encasement.

1.04 DELIVERY, HANDLING AND STORAGE

- A. Pipe shall not be bent, dented, or otherwise damaged during transport, delivery or unloading.
- B. All materials delivered to the job site shall be new, free from defects, and marked to identify the material, class, and other appropriate data such as thickness for piping.
- C. Prevent damage to the pipe material, lining and coatings.
- D. Store pipe so that it's off the ground, adequately supported on suitable supports such as wooden sleepers, rubber tires or sandbags and securely blocked. Avoid compression damage or deformation to the ends.
- E. Cover pipe from direct sunlight and protect from heat sources, such as heaters, boilers, steam lines and engine exhaust, to protect pipe and coatings.
- F. Where possible, store pipe in unit packages provided by the Pipe Manufacturer.

- G. Stack pipe in accordance with the Pipe Manufacturer's recommendations.
- H. Do not roll, drag, or drop pipe.
- I. Store gaskets in a cool, dark place, out of direct sunlight, preferably in original cartons.
- J. Damaged pipe, lining and/or coatings shall be repaired or replaced at the expense of the Contractor to the Owner's satisfaction.

1.05 QUALITY ASSURANCE / QUALITY CONTROL

- A. Materials and equipment under this Section shall be furnished by manufacturers regularly engaged in the design and manufacture of the materials and equipment for a period of at least 5 years.
- B. Pipe installed under this contract may be inspected for compliance by the Engineer, Owner and/or an independent testing laboratory selected by the Owner.
 - 1. Pipe rejected by the Engineer or Owner shall be immediately removed from the job site.
- C. Acceptance of materials shall be subject to strength and quality testing in addition to inspection of the completed product. Acceptance of installed piping systems shall be based on inspection and leakage tests as specified hereinafter.
- D. Factory Quality Control: The Contractor shall test all products as required herein and by the reference specifications.
- E. Field Quality Control:
 - 1. The Owner will:
 - a. Inspect pipe fabrication and witness any test
 - 2. The Contractor shall:
 - a. Perform leakage tests
 - b. Be responsible for the costs of additional inspection and retesting by the Owner resulting from noncompliance.

1.06 SHUTDOWN OF EXISTING UTILITIES, SERVICES OR OPERATIONS

- A. Refer to Section 01 11 00 and the General Conditions.

1.07 POTHOLING

- A. Do not prepare shop drawings, order, or design any piping until potholing has been completed and a potholing report has been favorably reviewed in accordance with Section 01 11 00 and the General Conditions.

PART 2 - PRODUCTS

2.01 GENERAL

- A. Pipe and valve sizes are nominal inside diameter unless otherwise noted.
- B. *Gaskets:*
 - 1. *Stormwater systems shall be SBR.*
- C. Bolts and Tie Rods: Unless specified otherwise herein, flange bolts and nuts, coupling bolts and nuts, tie rods, and other hardware shall be as follows:
 - 1. Buried: Carbon and Alloy Steel Nuts per ASTM A193, Grade B7 or equal.

2. Concrete encased: Steel.
 3. Exposed: Hot dip galvanized steel.
 4. Apply an anti-galling compound to the threads of stainless steel bolts.
- D. Flexible Sealant: Flexible sealant for pipe joints, where shown on the Drawings, shall be a two-component polysulfide, non-sag; Sikaflex 2C, Dualthane, or equal.
- E. All materials in contact with potable water shall comply with the Safe Drinking Water Act and NSF requirements for use in water systems.
- F. Isolated flanges: Provide insulating flanges for connections between dissimilar metallic pipe materials.

2.02 PIPING MATERIALS

- A. Refer to respective pipe material specifications.

2.03 PIPE COUPLINGS AND FLEXIBLE PIECES

- A. General: For typical pipe joints refer to pipe material specifications. Other joint devices shall be furnished where called for as specified below.
- B. Flexible Couplings and Flange Coupling Adaptors:
1. Sleeve: Cast-iron or fabricated steel.
 2. Followers: Cast-iron, ductile-iron, or steel.
 3. Sleeve bolts: Type 304 stainless steel.
 4. Coating: Fusion epoxy line and coat sleeve and followers.
 5. Pressure rating: The test pressure of the applicable service.
 6. Performance: Longitudinal movement and angular deflection capabilities shall meet AWWA C-219.
 7. Flanged Coupling Adaptor Flanges: Match mating flanges. If required by connecting valve or other device, provide flanges with inside diameter equal to nominal pipe diameter.
 8. Buried flexible coupling sleeve: Long barrel; Smith-Blair 442, Dresser Style 40, or equal.
 9. Manufacturers:
 - a. Flexible couplings:
 - 1) Connecting pipe with identical outside diameters: Smith-Blair 411 or 431, Dresser Style 38 or 138 or equal.
 - 2) Connecting pipe with slightly different outside diameters: Smith-Blair 413 or R 441, Dresser Style 62, or equal.
 - b. Flange coupling adaptors:
 - 1) Connecting new pipe or new pipe to existing non-ferrous pipe: Smith-Blair 912 or 913, Dresser Style 128-W, or equal.
 - 2) Connecting new pipe to existing ferrous pipe: Insulating flange coupling adaptor with insulating boot: Smith-Blair 932 or 933, or equal.

2.04 VALVES

- A. General Requirements for Valves:
1. Refer to 32 84 00 for irrigation system valves and accessories

2.05 ACCESSORIES

- A. Furnish and install all necessary guides, inserts, anchors and assembly bolts; washers and nuts, hangers, supports, gaskets, and flanges; all other appurtenant

items shown on the Drawings, specified or required for the proper installation and operation of the piping; devices included in or on the piping equipment; and piping accessories.

PART 3 - EXECUTION

3.01 PIPING INSTALLATION

- A. Trenching, bedding, and backfill: Refer to Section 31 00 00.
- B. Dewatering: Refer to Section 01 57 00.
- C. Handling and Placing:
 - 1. Inspect each pipe, fitting, and accessory prior to installation confirming no defects or obstructions exist.
 - 2. Only use nylon ropes, slings, or other lifting devices that will not damage the surface of the pipe.
 - 3. Prevent damage to the pipe, lining and coating during handling and placement.
 - 4. Carefully inspect the interior and exterior of each pipe, fitting, valve, and accessory before installation. Repair all damaged areas in the field or replace damaged components to the Owner's satisfaction.
 - 5. Place piping to accurate line and grades. Backfill, support, or brace against movement as specified or shown on the Drawings, or as required for proper installation.
 - 6. Remove all dirt and foreign matter from the pipe interior prior to installation and thoroughly clean all joints before joining.
 - 7. Only use nylon ropes, slings, or other lifting devices that will not damage the surface of the pipe.
 - 8. Field cutting: Cut pipe ends square, bevel and de-burr. Repair lining and coating in conformance with applicable reference standards specified herein.
 - 9. Connections between ferrous and non-ferrous piping and accessories shall be made using a dielectric coupling, union, or insulated flanged joint.
 - 10. Handle glass and ceramic epoxy lined pipe only from the outside of the pipe.
- D. General Buried Piping Installation:
 - 1. Preparation: Thoroughly clean pipe. Remove scale and dirt on inside and outside before assembly.
 - 2. Follow manufacturer instructions for installation.
 - 3. At the end of each day's work, open ends of pipe shall be closed temporarily with wood blocks or bulkheads.
 - 4. Minimum cover: Where no grade elevations are shown on the Drawings, buried piping shall have at least 3 feet of cover.
 - 5. Pipe elevations: Where pipe grade elevations are shown on the Drawings, install the pipe with straight grades between the indicated elevations.
 - 6. Thrust: Protect buried piping against thrust by use of restrained pipe joints or thrust blocks.
 - a. Install restrained pipe per Manufacturer recommendations and per the "Length of Restraint" detail on the Drawings.
 - 7. Perform pipe connections to appurtenances, existing piping, facilities, and to the work of other Contractors.
 - 8. Future connections: Cap or plug pipe ends that are for future connections as shown on the Drawings and in a manner favorably reviewed by the Engineer.

- E. Buried Bell and Spigot Installation Specifics (e.g., polyvinyl chloride, ductile iron, cast iron):
1. Bell and spigot pipe shall be laid with the bell end pointing in the direction of laying.
 2. Blocking or wedging between bells and spigots will not be permitted.
 3. Keep the pipe clean and free of debris, dirt, animals, and trash during and after laying operations.
 4. At the close of each operating day, seal the open end of the pipe using a gasketed night cap.
 5. Install pipe to allow for expansion and contraction without stressing pipe or joints. Maximum deflection of joints shall not exceed 50% of the AWWA C600 requirements.
 6. Angular changes in pipe alignment shall be achieved by either fittings, joint deflection, or longitudinal bending of the pipe.
 7. Joint deflection shall not exceed the Pipe Manufacturer's recommendation.

3.02 PIPE COUPLING AND FLEXIBLE PIECES INSTALLATION

- A. Flexible Couplings and Flange Coupling Adaptors: Prior to installation, thoroughly clean oil, scale, rust, and dirt from the pipe to provide a clean seat for the gasket. Care shall be taken that the gaskets are wiped clean before they are installed. If necessary, flexible couplings and flanged coupling adapter gaskets may be lubricated with soapy water or manufacturer's standard lubricant before installation on the pipe ends. Install in accordance with the manufacturer's recommendations. Bolts shall be tightened progressively, drawing up bolt on opposite sides a little at a time until all bolts have a uniform tightness. Workers tightening bolts shall be equipped with torque-limiting wrenches or other favorably reviewed type. Anchor studs on restrained flanged coupling adapters shall be installed so as to lock into holes drilled through pipe wall in accordance with manufacturer's recommendation.

3.03 INSTALLATION OF VALVES

- A. Refer to Section 32 84 00 for landscape irrigation valves and accessories.
- B. Use reducing fittings where any change in pipe size occurs between valves or accessories and the attached pipeline. Bushings shall not be used, unless specifically noted on the Drawings. Use eccentric reducing fittings wherever necessary to provide free drainage of lines.

3.04 INSTALLATION OF ACCESSORIES

- A. Install accessories such that all parts are easily accessible for maintenance and operation.
- B. Where pipeline accessories require full-face connecting flanges, provide intermediate flanges if the connecting flange is not adequate.
- C. All insulated piping passing through walls or slabs shall be sleeved and insulation shall run continuously through the sleeves and shall allow for 1/8-inch annular clearance between outside of insulation and sleeve wall.
- D. Install link-type seals in cast-in-place metal sleeves or in smooth core drilled holes. Grout both sides flush with non-shrink grout unless otherwise shown on the Drawings.

3.05 ABANDONING EXISTING BURIED UTILITIES

A. Permanent plugs:

1. Where existing piping shall be taken permanently out of service and abandoned in place, cut either end of the pipe or portion of piping to be abandoned and clean interior contact surfaces.
 - a. For pipes 18 inches or less in diameter: Construct a plug with concrete that is 8 inches to one pipe diameter long.
 - b. For pipe 21 inches or larger in diameter: Construct a plug with common brick or concrete block. The exposed face and voids between bricks or blocks shall be plastered and filled with mortar. All plugs shall be watertight and capable of withstanding internal and external pressures without leakage.
2. Where plugs are installed on pressure piping, install a blowoff just upstream from the plug.

END OF SECTION

SECTION 33 42 33

CATCH BASINS

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes: Furnish and install catch basin structures, fittings, and accessories, and perform all earthwork and grading as shown on the Drawings, described in the specifications, and as required to construct a complete and operable storm water runoff drainage system.
- B. Related Sections:
 - 1. Section 31 00 00: Earthwork
 - 2. Section 33 14 00: General Buried Piping Requirements

1.02 REFERENCES

- A. American Association of State Highway and Transportation Officials (AASHTO)
- B. State of California, Department of Transportation, Standard Specifications (Standard Specifications) 2010 or latest edition

1.03 SUBMITTALS

- A. Submit in accordance with Section 01 33 00.
- B. Submit the following:
 - 1. Shop Drawings: Submit detailed drawings and specifications on all precast catch basins and accessories, including gratings, covers and frames. Show locations and sizes of penetrations, elevations, and proposed field-installed appurtenances such as grout fill.

1.04 QUALITY ASSURANCE

- A. All products and materials furnished under this Section shall be of a manufacturer who has been regularly engaged in the design and manufacture of said products and materials for a period of at least 3 years. If the product of an alternate supplier is proposed, it shall be demonstrated to the satisfaction of the Engineer to be of a quality and serviceability equal to the product made by the manufacturer specifically named herein.

PART 2 - PRODUCTS

2.01 PRECAST CATCH BASINS AND COVERS

- A. Catch Basins: Precast concrete structures conforming to the dimensions and details shown on the Drawings and designed to withstand an AASHTO H-20 loading. Provide interlocking joints where depth requires more than one unit. Minor

variations from the drawings may be accepted to permit the use of manufacturer's standard methods of fabrication.

B. Covers: Covers shall be supplied by the manufacturer of the catch basin and be matched to the catch basin.

2. Grates and Frames: Fabricated steel grating and frames, hot dip galvanized after fabrication, and designed for AASHTO H-20 loading. Firmly embed frames in the concrete at the factory. Gratings shall fit neatly in the frames and bear firmly without rocking. Grating shall be bicycle proof. Provide two locking bolts and clips for each grate.

C. Manufacturers: Oldcastle; Christy; or equal.

PART 3 - EXECUTION

3.01 INSTALLATION OF PRECAST CATCH BASINS

A. Install in accordance with manufacturer instructions and recommendations.

B. Install catch basins, level and set to grade, on a 6-inch aggregate base leveling course, compacted to 95% relative density. Scarify subgrade in accordance with Section 31 00 00 Earthwork. Grout joints between sections smooth with mortar.

C. Connect pipes to the structures through the openings provided. Grout firmly in place to form a tight seal. Provide cut-off rings or gaskets for plastic piping systems in accordance with pipe manufacturer recommendations. Place pipe ends flush or cut off flush with the inside face of the structure.

END OF SECTION

SECTION 33 44 43

Hydrodynamic Separator

PART 1 - GENERAL

1.01 SUMMARY

- A. Furnishing all labor, material, equipment, tools, and services required for the installation of a storm water treatment devices and appurtenances specified herein and in the Drawings.
- B. Related Sections:
 - 1. Section 31 00 00: Earthwork

1.02 REFERENCE SPECIFICATIONS

- A. American Society for Testing and Materials (ASTM), Standard Specifications

1.03 SUBMITTALS

- A. Submit in accordance with Section 01 33 00.
- B. Product Data: Sufficient information, data sheets, and brochures demonstrating the submitted item meets the specification requirements.
- C. Manufacturer's installation instructions and recommendations.
- D. Shop drawings, including:
 - 1. Design criteria.
 - 2. Internal equipment and components.
 - 3. Horizontal and vertical dimensioning, elevations, locations and sizes of penetrations, pipe connections, reinforcement, and joint type and locations.
- E. Warranty
- F. Manufacturer's Performance Certificate

1.04 QUALITY ASSURANCE

- A. Provide products of a manufacturer who has been regularly engaged in the design and manufacture of the product for a period of at least 3 years.
- B. Demonstrate to the satisfaction of the Engineer that the quality is equal to the product made by those manufacturers specifically named herein, if an alternate product manufacturer is proposed.

PART 2 - PRODUCTS

2.01 HYDRODYNAMIC SEPARATOR

- A. Precast concrete components shall conform to applicable sections of ASTM C478, ASTM C 857 and ASTM C 858 and the following:

1. Concrete shall achieve a minimum 28-day compressive strength of 4,000 pounds per square-inch (psi);
 2. Design to withstand lateral earth and AASHTO H-20 traffic loads;
 3. Cement shall be Type III Portland Cement conforming to ASTM C 150;
 4. Aggregates shall conform to ASTM C 33;
 5. Reinforcing steel shall be deformed billet-steel bars, welded steel wire or deformed welded steel wire conforming to ASTM A 615, A 185, or A 497.
 6. Joints shall be sealed with preformed joint sealing compound conforming to ASTM C 990.
 7. Shipping of components shall not be initiated until a minimum compressive strength of 4,000 psi is attained or five (5) calendar days after fabrication has expired, whichever occurs first.
- B. Internal Components and appurtenances shall conform to the following:
1. Screen and support structure shall be manufactured of Type 316 and 316L stainless steel conforming to ASTM F 1267-01;
 2. Hardware shall be manufactured of Type 316 stainless steel conforming to ASTM A 320;
 3. Fiberglass components shall conform to the National Bureau of Standards PS-15 and coated with an isophalic polyester gelcoat;
 4. Access system(s) conform to the following:
 - a. Manhole castings shall be designed to withstand AASHTO H-20 loadings and manufactured of cast-iron conforming to ASTM A 48 Class 30.
- C. Manufacturer: Contech - model CDS2015-5-C; or equivalent.

2.02 PERFORMANCE

A. REMOVAL EFFICIENCIES

1. The hydrodynamic separator shall be capable of achieving an 80 percent average annual reduction for a particle distribution having a mean particle size (d50) of 125 microns
2. The hydrodynamic separator shall be capable of capturing and retaining 100 percent of pollutants greater than or equal to 3/16 of an inch regardless of the pollutant's specific gravity (i.e.: floatable and neutrally buoyant materials) for flows up to the device's rated-treatment capacity. The hydrodynamic separator shall be designed to retain all previously captured pollutants addressed by this subsection under all flow conditions.
3. The hydrodynamic separator shall be capable of capturing and retaining total petroleum hydrocarbons. The hydrodynamic separator shall be capable of achieving a removal efficiency of 92 and 78 percent when the device is operating at 25 and 50 percent of its rated-treatment capacity. These removal efficiencies shall be based on independent third-party research for influent oil concentrations representative of storm water runoff (20 ± 5 mg/L). The hydrodynamic separator shall be greater than 99 percent effective in controlling dry-weather accidental oil spills.
 - a. The hydrodynamic separator shall be designed to retain hydrocarbons with a downstream water surface elevation up to and equal to 6 inches greater than the MH-4 weir crest elevation identified on the Drawings.

B. HYDRAULIC CAPACITY

1. The hydrodynamic separator shall provide a rated-treatment capacity of 0.544 cubic feet per second (cfs).
 - a. At this rated-treatment capacity, the device shall be capable of achieving 80 percent removal efficiency for a particle distribution having a mean particle size (d50) of 125 microns. This removal efficiency shall be supported by independent third-party research.
2. The hydrodynamic separator shall maintain the peak conveyance capacity of the drainage network as follows:
 - a. 10-year storm peak discharge rate: 5.67 cfs
 - b. 100-year storm peak discharge rate: 10.63 cfs.

C. STORAGE CAPACITY

1. The hydrodynamic separator shall be designed with a sump chamber for the storage of captured sediments and other negatively buoyant pollutants in between maintenance cycles.
2. The minimum storage capacity provided by the sump chamber shall be 1.5 cubic yards. The boundaries of the sump chamber shall be limited to that which does not degrade the hydrodynamic separator's treatment efficiency as captured pollutants accumulate.
3. The sump chamber shall be separate from the treatment processing portion(s) of the hydrodynamic separator to minimize the probability of fine particle resuspension. In order to not restrict the Owner's ability to maintain the hydrodynamic separator, the minimum dimension providing access from the ground surface to the sump chamber shall be 20 inches in diameter.

PART 3 - EXECUTION

3.01 HANDLING AND STORAGE

- A. The Contractor shall exercise care in the storage and handling of the hydrodynamic separator components prior to and during installation. Repair or replacement costs for damaged caused by construction activities shall be borne by the Contractor.

3.02 INSTALLATION

- A. The hydrodynamic separator shall be installed in accordance with the manufacturer's recommendations, Drawings, and related sections of the Contract Documents.
- B. Scarify and compact subgrade to 95% relative density for 6-inch minimum depth.
- C. Provide a 6-inch layer of aggregate base under the base slab and compact to 95% relative density prior to placement.
- D. The Manufacturer shall provide the services of a qualified field representative to assist the Contractor with achieving proper installation. Contractor shall provide a minimum of 72 hours notice to the Manufacturer for field services.
- E. The Contractor shall fill all voids associated with lifting provisions provided by the Manufacturer. These voids shall be filled with non-shrink grout providing a finished surface consistent with adjacent surfaces. The contractor shall trim all protruding

lifting provisions flush with the adjacent concrete surface in a manner, which leaves no sharp points or edges.

- F. Backfill around the structure with Engineered Fill. Compact the backfill material to 95% of relative density within a distance of 4 feet from the exterior walls of the structure.
- G. Accurately locate and place the manhole frames to within 1/8-inch of finished grade in paved areas. Coordinate the activities of all trades so that this tolerance is achieved.
- H. The Contractor shall removal all loose material and pooling water from the hydrodynamic separator prior to the transfer of operational responsibility to the Owner.

3.03 TESTING

- A. Hydraulically test for leaks. Furnish and dispose of water used for testing.
- B. Fill the unit with water to the level of the inlet and outlet pipe inverts, and measure leakage over a period of not less than one hour.
- C. Allowable Leakage: less than one (1) gallon per hour per 10-foot depth.
- D. When leakage exceeds the above amount, determine the source or sources of the leakage, and repair or replace defective materials and workmanship.
- E. The completed installation shall pass this leakage test before the project can be accepted.

END OF SECTION

SECTION 33 46 23

Modular Biofiltration Unit (MBU)

PART 1 - GENERAL

1.01 SUMMARY

- A. Furnishing all labor, material, equipment, tools, and services required for the installation of a precast reinforced concrete box structure biofiltration unit and appurtenances specified herein and in the Drawings.
- B. Related Sections:
 - 1. Section 31 00 00: Earthwork
 - 2. Section 33 14 00: General Buried Piping Requirements
 - 3. Section 32 16 00: Concrete Curb, Gutters, and Sidewalks
 - 4. Landscape and Irrigation Specification Sections

1.02 REFERENCE SPECIFICATIONS

- A. American Society for Testing and Materials (ASTM), Standard Specifications
 - 1. A36 Structural Steel
 - 2. C150 Portland Cement
 - 3. C890 Minimum Structural Design Loading for Monolithic or Sectional Precast Concrete Water and Wastewater Structures
 - 4. C913 Precast Concrete Water and Wastewater Structures

1.03 SUBMITTALS

- A. Submit in accordance with Section 01 33 00.
- B. Product Data:
 - 1. Descriptive details of the manufacturer's proposed standard products and accessories sufficient to demonstrate conformance with the specified requirements, including:
 - a. Precast sections.
 - b. Minimum concrete 28-day compressive strength.
 - c. Cement certification.
 - d. Joint sealants.
 - e. Included piping and pipe connectors.
 - f. Gravel, biofiltration mix, and mulch filtration media, and source of supply.
 - g. Overflow catch basin device and capacity.
- C. Manufacturer's Information:
 - 1. Installation instructions.
 - 2. Operation and Maintenance information.
- D. Shop drawings, including:
 - 1. Design criteria.
 - 2. Reinforcing steel location and concrete cover.

3. Layout of all inserts, attachments, openings, and overflow device.
 4. Horizontal and vertical dimensioning, elevations, locations and size of penetrations and pipe connections.
 5. Location and type of joints.
- E. Manufacturer's standard warranty.
- F. Manufacturer's Performance Criteria
- G. Submit proposed plan for temporary re-routing of stormwater runoff during construction of the MBUs, for information. No runoff shall be allowed to enter the MBUs until completed, including landscaping.

1.04 QUALITY ASSURANCE

- A. Provide products of a manufacturer who has been regularly engaged in the design and manufacture of the product for at least 3 years.
- B. Demonstrate to the satisfaction of the Engineer that the quality is equal to the product made by those manufacturers specifically named herein, if an alternate product manufacturer is proposed.

PART 2 - PRODUCTS

2.01 PRECAST UNITS

- A. Precast concrete components shall conform to applicable sections of ASTM C478, ASTM C 857 and ASTM C 858 and the following:
1. Concrete shall achieve a minimum 28-day compressive strength of 4,000 pounds per square-inch (psi);
 2. Cement shall be Type III Portland Cement conforming to ASTM C 150;
 3. Aggregates shall conform to ASTM C 33;
 4. Reinforcing steel shall be deformed billet-steel bars, welded steel wire or deformed welded steel wire conforming to ASTM A 615, A 185, or A 497.
 5. Joints shall be sealed with preformed joint sealing compound conforming to ASTM C 990.
 6. Shipping of components shall not be initiated until a minimum compressive strength of 4,000 psi is attained or five (5) calendar days after fabrication has expired, whichever occurs first.
 7. Closed bottom.
- B. Oldcastle/Kristar Bio-Mod; or equivalent.

2.02 FILTER MEDIA

- A. Bioretention Soil Blend:
1. Supplied by the MBU manufacturer in accordance with their standard, consisting of a mix of sand and compost.
 2. Provide a minimum organic content of 15%.
 3. Long term infiltration capacity of 5 inches per hour.
- B. Drain Rock:
1. Supplied by the MBU manufacturer in accordance with their standard.
 2. Well graded, washed, no-fines content 1" gravel, or similar.
- C. Geotextile:

1. When recommended by the MBU manufacturer provide a single layer of geotextile separating the bioretention soil from the drain rock, to prevent the migration of fines into the gravel. Geotextile shall comply with the MBU manufacturer's standard, or as specified in Section 31 00 00.
- D. Mulch:
 1. Supplied by the MBU manufacturer in accordance with their standard.
 2. Mulch shall be a type that does not float when subject to ponding water; non-wood chip content.
- E. Alternative source of supply:
 1. At the Contractor's option, the Contractor may furnish the Bioretention Soil Blend, Drain Rock, and Mulch in lieu of the MBU manufacturer.
 - a. Drain Rock shall be consistent with Drainage Gravel specified in Section 31 00 00, and
 - b. Mulch shall be a non-floating type. Submit for favorable review.

2.03 UNDERDRAIN PIPE

- A. Supplied by the MBU manufacturer or Contractor, at the Contractor's option.
- B. Pipe: Perforated schedule 40 polyvinyl chloride (PVC), white, normal impact, Type 12454 B, ASTM D1784 and ASTM D1785.
- C. Joints: Solvent weld.
- D. Fittings: Solvent weld, socket type, of same material as the pipe, Schedule 40, ASTM D2467.
- E. Cement: Solvent weld, ASTM D2564, as recommended by the pipe manufacturer for the schedule and size to be joined.
- F. Pipe Cleaner: As recommended by the pipe manufacturer for the schedule and size to be joined.

2.04 OUTLET PIPE AND CONNECTORS

- A. Provide pipe and connectors consistent with and compatible with PVC or HDPE gravity drain pipe specified in Section 33 14 00.

2.05 OVERFLOW DEVICE

- A. Supplied by the MBU manufacturer.
- B. Precast concrete conforming to paragraph "Precast Units" herein, and designed specifically for use with the supplied MBU. Provide 6 inch wall thickness, and inside dimensions noted on the Drawings.
- C. Provide pipe and connectors consistent with and compatible with PVC or HDPE gravity drain pipe specified in Section 33 14 00.
- D. Provide adjustable overflow filter.
 1. Retains gross pollutants, such as trash, debris, and coarse sediment.
 2. Steel fabrication, powder coated in accordance with the manufacturer's standard.
 3. Provide 300 pounds per square foot load rating.
 4. Kristar SwaleGard; or equivalent.

2.06 LANDSCAPING

- A. Plant selection and irrigation components per Landscape Drawings and specifications, except that other backfill and planting soil materials shall be omitted except for those specified herein.

PART 3 - EXECUTION

3.01 HANDLING AND STORAGE

- A. The contractor shall exercise care in the storage and handling of the MBU components prior to and during installation. Any repair or replacement costs associated with events occurring after delivery is accepted and unloading has commenced shall be borne by the contractor.

3.02 INSTALLATION

- A. Runoff shall not be allowed to enter the MBUs until completed and favorably reviewed by the Engineer. Prior to starting work, provide temporary re-routing of runoff directly to the existing storm drain system, prior to its demolition, or as otherwise submitted and favorably reviewed.
- B. The MBU and associated accessories shall be installed in accordance with the manufacturer's recommendations and related sections of the Contract Documents. The manufacturer shall provide the contractor installation instructions and offer onsite guidance during the important stages of the installation as identified by the manufacturer, with associated cost included in the bid price. A minimum of 72 hours notice shall be provided to the manufacturer prior to their performance of the services included under this subsection.
- C. Install precast box, overflow device box, and pipe outlet to the elevations and locations shown on the Drawings. Subgrade preparation shall be in conformance with Section 31 00 00.
- D. Dowel, form, and install curb above the walls of the precast box section to the elevations shown on the Drawings or as otherwise favorably reviewed. At no location shall the top of curb elevation be lower than the elevations shown on the drawings relative to the overflow device rim elevation and parking lot inlet elevation, to prevent overtopping during heavy rainfall events. Provide curb cut for water inflow as shown. Curbs and installation shall comply with Section 32 16 00.
- E. Adjust the overflow filter device rim to the elevation specified on the Drawings.
- F. Remove all debris from the inside of the box prior to placing media. The Contractor shall use methods to place all media loosely, without compaction. Media shall not be placed while wet, or during wet weather. Due to anticipated post-installation consolidation, install an additional 2 inches of biofiltration soil mix higher than the top elevation specified on the Drawings.
- G. Install landscape plantings and irrigation systems as shown on the Landscape Drawings and as specified. Comply with plant spacing requirements as detailed. Utilize precast ports for irrigation piping, from the uphill side where buried with the most cover. Valve boxes to be located outside of and adjacent to the MBU.

END OF SECTION

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Appendix A
Stormwater Infiltration Study
for
Scotts Valley Transit Center LID Retrofits Project
prepared by
Pacific Crest Engineering Inc. Consulting
Geotechnical Engineers
December 2014

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STORMWATER INFILTRATION STUDY
FOR
SCOTTS VALLEY TRANSIT CENTER
LID RETROFITS PROJECT
KINGS VILLAGE ROAD AND BLUE BONNET ROAD
SCOTTS VALLEY WATER DISTRICT
SCOTTS VALLEY, CALIFORNIA

FOR
KENNEDY/JENKS CONSULTANTS
SAN FRANCISCO, CALIFORNIA

BY
PACIFIC CREST ENGINEERING INC.
CONSULTING GEOTECHNICAL ENGINEERS
14104-SZ41-I513
DECEMBER 2014
www.4pacific-crest.com

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444 Airport Blvd, Suite 106
Watsonville, CA 95076
Phone: 831-722-9446
Fax: 831-722-9158

December 29, 2014

Project No. 14104-SZ41-1513

Mr. Donald L. Ervin
Kennedy/Jenks Consultants
303 Second Street, Suite 300 South
San Francisco, CA 94107

Subject: **Stormwater Infiltration Study**
Scotts Valley Transit Center LID Retrofits Project
Kings Village Road and Blue Bonnet Road
Scotts Valley Water District, Scotts Valley, California

Dear Mr. Ervin,

In accordance with your authorization, we have performed an infiltration study for the design of the storm water management facilities associated with the subject project. The project site is located at 246 Kings Village Drive in Scotts Valley, California.

The accompanying report presents our findings as well as the results of infiltration testing. Should you have any questions concerning the data and findings presented in this report, please contact our office. We can be reached at (831) 722-9446.

Very truly yours,

PACIFIC CREST ENGINEERING INC.



Shannon Chome, PE
Senior Engineer
RCE 68398
Expires 9/30/15



Elizabeth M. Mitchell, GE
President/Principal Geotechnical Engineer
GE 2718
Expires 12/31/14

Copies: 2 to Client

STORMWATER INFILTRATION STUDY

Purpose and Scope

As requested, our firm has performed an infiltration study at the subject site in order to determine infiltration rates of the native and fill soils in selected areas where stormwater disposal facilities are proposed. The study utilized a combination of drilled borings and falling head percolation tests to document the general subsurface conditions at each test location. This information was then used to develop infiltration rates and identify subsurface layers that might inhibit or promote infiltration of stormwater runoff.

A total of five percolation tests were performed at depths ranging from 7 to 16 feet below the ground surface. The percolation tests were performed in five locations which were selected prior to drilling by the design team.

Site and Project Description

The project site is located on the southeast corner of the intersection of Kings Village Road and Blue Bonnet Road in Scotts Valley, California. The property is occupied by the Scotts Valley Transit Center and consists predominantly of parking with a small accessory structure adjacent to Kings Village Road along the western edge. Please refer to the Regional Site Map, Figure 1, in Appendix A for the general vicinity of the project site.

The site is generally gently sloping towards Kings Village Road to the west and has been modified by grading in order to accommodate four relatively flat parking areas. The grading operations have resulted in 4 distinct tiers or benches separated by small slopes.

It is our understanding the proposed development will consist of Low Impact Development (LID) efforts aimed at improving the water quality of rivers and lakes and enhance groundwater recharge in the vicinity. Shallow based storm water control measures (SCMs) for this project may include infiltration basins, pervious pavement, vegetated swales and bioretention. Small retaining walls may also be required between the tiered parking levels as proposed grades may change.

Field Investigation

Nine 6-inch diameter test borings were drilled at the site on October 14, 2014. The drilling method used was hydraulically operated continuous flight augers. An engineer from Pacific Crest Engineering Inc. was present during the drilling operations to log the soil encountered and to choose soil sampling type and locations.

Two borings were drilled approximately 2 feet apart in four of the five designated areas of interest for SCMs and one boring was drilled in the fifth area. In the four areas with two adjacent borings; one boring was drilled while continuously sampling to observe the soil profile and identify the target soil stratum for percolation testing, while the second adjacent boring was "straight drilled" to the percolation test depth. In the fifth area, the target soil stratum had been consistently identified and a single boring was straight drilled to the percolation depth.

Relatively undisturbed soil samples were obtained at various depths by driving a split spoon sampler 18 inches into the ground. This was achieved by dropping a 140 pound down hole safety hammer through a vertical height of 30 inches. The number of blows needed to drive the sampler for each 6 inch portion is recorded and the total number of blows needed to drive the last 12 inches is reported as the Standard Penetration Test (SPT) value. The outside diameter of the samplers used in this investigation was either 3 inches, 2 ½ inches, or 2 inches, and is noted respectively as “L”, “M”, or “T” on the boring logs.

All standard penetration test data has been normalized to a 2 inch O.D. sampler so as to reflect a SPT "N" value. The normalization method used was derived from the second edition of the Foundation Engineering Handbook (H.Y. Fang, 1991). The method utilizes a Sampler Hammer Ratio which is noted as either R_s for non-cohesive soils, or R_c for cohesive soils. This ratio is dependent on the weight of the hammer, height of hammer drop, outside diameter of sampler, and inside diameter of sample. Using the Sampler Hammer Ratio, the correlation can be made from the samplers used in the field to the standard SPT “N” Value.

The soils encountered in the borings were continuously logged in the field and visually described in accordance with the Unified Soil Classification System (ASTM D2488-Modified). The soil classification was verified and or modified upon completion of laboratory testing in accordance with ASTM D2487.

Appendix A contains the Site Map Showing Test Borings and the Log of Test Borings presenting the soil profile explored in each boring, the sample locations, and the SPT "N" values for each sample. Stratification lines on the boring logs are approximate as the actual transition between soil types may be gradual.

Laboratory Investigation

The laboratory testing program was developed to help in evaluating the engineering properties of the materials encountered on the site. Laboratory tests performed include:

- a. Moisture Density relationships in accordance with ASTM test D2937.
- b. Gradation tests in accordance with ASTM test D1140.
- c. Hydraulic Conductivity in accordance with ASTM test D5084

The results of the laboratory tests are presented on the boring logs opposite the sample tested in Appendix A.

General Soil Conditions

The soils observed across the project site were relatively consistent and consisted generally of artificial fill overlying the Santa Margarita sandstone formation. The artificial fill was observed from the surface to between 4 and 8½ feet below existing grade. The fill consists mainly of silty and clayey sand. This material is medium dense and non-plastic to low plasticity.

The Santa Margarita Sandstone formation was encountered in all our test borings underlying the artificial fill. The sandstone formation consisted generally of silty fine to medium grained sandstone with varying amounts of fines. The material was generally loose to medium dense in the upper 10 feet and dense at depth.

Groundwater was not encountered in the test borings to a maximum explored depth of 31 feet.

Please refer to the Geologic Characterization report prepared by Zinn Geology in Appendix B for further discussion of the soils encountered and the geologic setting at the subject site

Test Procedure and Results

The testing was performed based on the Central Coast Regional Water Quality Control Board's (RWQCB) guidance on percolation testing for "shallow infiltration-based storm water control measures." This testing method utilizes a 30-minute period in which a constant head is maintained at the proposed elevation of the base of the SCM's. The volume of water that entered the test boring during the 30-minute period is noted on the percolation data sheets. Immediately following the 30-minute period of constant head, a falling head percolation test commenced. Depending on the rate of fall, measurements were recorded at intervals ranging from 10 minutes to 30 minutes, over periods ranging from 2 hours to 4 hours.

We performed five percolations tests across the site. The four upper sites (1B, 3B, 4B and 5A) were relatively shallow and were performed within the upper 10 feet but sufficient to extend below the artificial fill. The lower test site (2A) was performed at a depth of 16 feet. It is our understanding that a deeper retention/detention system may be proposed in this area. All test elevations were selected by observing the various soils strata and targeting what appeared to be the most permeable layer within a reasonable depth envelope.

The percolation rates in the four upper test sites (1B, 3B, 4B and 5A) were relatively slow. The rates ranged from 0.02 to 0.04 inches per hour. The slow percolation rates are related to many variables including the amount of fine grained soils present, relative void ratios of the soils tested and initial moisture content of the soils.

The percolation rate at the lower site (2A) was much faster with a measured infiltration rate of 6 inches per hour.

The Porchet Method (Inverse Borehole Method) was used to determine the infiltration rate for each test location. This method provides a calculation to determine the tested infiltration rate (I_t) in units of inches/hour. The infiltration rate is then divided by a factor of safety of 2.0 in order to determine the measured infiltration rate (KM). The I_t and KM for each percolation test hole is presented below:

1B							10/15/2014
Bore Hole Radius		3	inches				
Bore Hole Depth		120	inches				

Reading	Time (min)	Δt (min)	Depth (in)	H _o (in)	ΔH (inches)	H _{avg} (in)	I _t (in/hour)
0	0		72.00	48.00			
1	30.0	30.0	72.84	47.16	0.84	47.58	0.05
2	60.0	30.0	73.68	46.32	0.84	46.74	0.05
3	90.0	30.0	74.40	45.6	0.72	45.96	0.05
4	120.0	30.0	75.12	44.88	0.72	45.24	0.05
5	150.0	30.0	75.84	44.16	0.72	44.52	0.05
6	180.0	30.0	76.56	43.44	0.72	43.80	0.05
7	210.0	30.0	77.28	42.72	0.72	43.08	0.05
8	240.0	30.0	77.88	42.12	0.60	42.42	0.04

					Average	0.05	inches/hour
			Infiltration Rate		I_t	0.04	inches/hour
			Measured Infiltration Rate		KM	0.02	inches/hour

*0.3 gallons were used to maintain a Constant Head for 30 minutes prior to testing.

2A							10/16/2014
Bore Hole Radius		3	inches				
Bore Hole Depth		192	inches				

Reading	Time (min)	Δt (min)	Depth (in)	H _o (in)	ΔH (inches)	H _{avg} (inches)	I _t (inches/hour)
0	0		132.00	60.00			
1	4.00	4.00	150.00	42.00	18.00	51.00	7.71
2	8.00	4.00	160.80	31.20	10.80	36.60	6.38
3	12.00	4.00	166.80	25.20	6.00	28.20	4.55
4	16.00	4.00	171.60	20.40	4.80	22.80	4.44
5	20.00	4.00	176.40	15.60	4.80	18.00	5.54
6	24.00	4.00	181.20	10.80	4.80	13.20	7.35
7	28.00	4.00	184.80	7.20	3.60	9.00	7.71
8	32.00	4.00	188.40	3.60	3.60	5.40	11.74
9	36.00	4.00	189.60	2.40	1.20	3.00	6.00

					Average	6.82	inches/hour
			Infiltration Rate		I_t	6.00	inches/hour
			Measured Infiltration Rate		KM	3.00	inches/hour

*A flow rate of 0.4 gpm (12 gal.) was required to maintain a Constant Head for 30 minutes prior to testing.

***0.3 gallons were used to maintain a Constant Head for 30 minutes prior to testing.**

5A							10/16/2014
Bore Hole Radius			3 inches				
Bore Hole Depth			84 inches				
Reading	Time (min)	Δt (min)	Depth (in)	H _o (in)	ΔH (inches)	H _{avg} (inches)	I _t (inches/hour)
0	0		54.00	66.00			
1	30.0	30.0	54.48	65.52	0.48	65.76	0.02
2	60.0	30.0	54.96	65.04	0.48	65.28	0.02
3	90.0	30.0	55.44	64.56	0.48	64.80	0.02
4	120.0	30.0	55.80	64.20	0.36	64.38	0.02
5	150.0	30.0	56.16	63.84	0.36	64.02	0.02
6	180.0	30.0	56.52	63.48	0.36	63.66	0.02
7	210.0	30.0	56.88	63.12	0.36	63.30	0.02
8	240.0	30.0	57.24	62.76	0.36	62.94	0.02
					Average	0.02	inches/hour
			Infiltration Rate		I _t	0.02	inches/hour
			Measured Infiltration Rate		KM	0.01	inches/hour
*0.3 gallons were used to maintain a Constant Head for 30 minutes prior to testing.							

The percolation testing was conducted in accordance with the Central Coast RWQCB's guidelines for percolation testing for shallow based SCM's to the best of our ability. The guidelines indicate that testing should be conducted at the approximate elevation of the top of the SCM. However, the elevation of the proposed SCM's were unknown at the time of testing. The selected test depths were based on conditions encountered during our field investigation in order to aid in selecting the design depth of the proposed infiltration facilities. We have attempted to establish testing depths that adequately address below grade infiltration rates for a variety of proposed top of SCM elevations.

CONCLUSIONS AND RECOMMENDATIONS

GENERAL

1. The purpose of this study was to identify soils stratum within each designated test area that may promote infiltration of stormwater, and perform percolation testing in each of these areas. In the four upper test areas (1B, 3B, 4B and 5A) where relatively shallow SCM's are proposed, our testing indicates the percolation rates are relatively slow ranging from 0.02 to 0.04 inches per hour. At the lower test site (2A) where a potentially deeper retention/detention system is proposed along the northwest corner of the property, a significantly faster percolation rate of 6.0 inches/hour was attained. It is our opinion that the northwest corner of the property should be targeted for stormwater disposal. The infiltration facilities should be designed to extend into the underlying sandy material which is located at a depth of 10½ feet below existing grade.
2. Stormwater disposal facilities may also be proposed in the upper parking areas, however it must be anticipated that the infiltration rates will be significantly slower than the lower site.
3. The hydraulic conductivity laboratory testing results were not generally consistent with the on-site percolation testing. The clayey soils at the site should be considered to have a very slow infiltration rate.
4. Project plans should be reviewed by Pacific Crest Engineering Inc. during their preparation and prior to contract bidding.
5. It must be understood that geologic and geotechnical conditions can vary from those encountered at the times and locations where available data was obtained by us and the limitation on available data results in some level of uncertainty with respect to the interpretation of these conditions, despite the use of due professional care. Field observations must be provided during construction by a representative of Pacific Crest Engineering Inc. to enable them to form an opinion regarding whether changed conditions are encountered and whether the assumptions regarding geologic and geotechnical conditions remain valid.
6. Maintenance of the drainage facilities will be critical in order to maintain the design percolation rates.

SITE RETAINING WALLS

7. It is our understanding site retaining walls may be proposed between the tiered parking areas. These walls are anticipated to be between 3 and 4 feet in height.
8. Site retaining walls may be founded on reinforced concrete spread footings. Retaining wall footings shall have a minimum embedment depth of 18 inches below lowest adjacent grade and be designed for an allowable bearing capacity of 1500 psf. The bearing value may be increased by 1/3 for short term loads imposed by wind or seismic shaking.

9. All footings should be excavated into firm native soil or artificial fill. Any soft conditions exposed in the field during construction by the Geotechnical Engineer may require deepened footings.
10. Footing excavations must be observed by a representative of Pacific Crest Engineering Inc. before placement of formwork, steel and concrete to ensure bedding into proper material.
11. The footings should contain steel reinforcement as determined by the Project Civil or Structural Engineer in accordance with applicable CBC or ACI Standards.
12. Retaining walls with full drainage should be designed using the following criteria:
 - a. The following lateral earth pressure values should be used for design:

TABLE No. 1, Active and At-Rest Earth Pressure Values

Backfill Slope (H:V)	Active Earth Pressure (psf/ft of depth)	At-rest Earth Pressure (psf/ft of depth)
Level	40	50
2:1	55	65

Active earth pressure values may be used when walls are free to yield an amount sufficient to develop the active earth pressure condition (about ½% of height). The effect of wall rotation should be considered for areas behind the planned retaining wall (pavements, foundations, slabs, etc.). **When walls are restrained at the top (such as basement walls) or to design for minimal wall rotation, at-rest earth pressure values should be used.**

- b. For resisting passive earth pressure use 300 psf/ft of depth.
- c. A “coefficient of friction” between base of foundation and soil of 0.35.
- d. Any live or dead loads which will transmit a force to the wall, refer to Figure No. 14.

Please note: Should the slope behind the retaining walls be other than shown in Table No. 1, supplemental design criteria will be provided for the active earth or at rest pressures for the particular slope angle.

13. The above criteria are based on **fully drained conditions**. Therefore, we recommend that permeable material meeting the State of California Standard Specification Section 68-1.025, Class 1, Type A, be placed behind the wall, with a minimum width of 12 inches and extending for the full height of the wall to within 1 foot of the ground surface. The permeable material should be covered with Mirafi 140N filter fabric or equivalent and then compacted native soil placed to the ground surface. A 4-inch diameter perforated rigid plastic drain pipe should be installed within 3 inches of the bottom of the permeable material and be discharged to a suitable, approved location such as the project storm drain system. The perforations should be

located and oriented on the lower half of the pipe. Neither the pipe nor the permeable material should be wrapped in filter fabric. Please refer to Figure No. 15, Typical Retaining Wall Drain Detail.

14. The area behind the wall and beyond the permeable material should be compacted with approved material to a minimum relative dry density of 90%.

TEMPORARY SHORING

15. There is a possibility that temporary construction shoring may become necessary on this project. The design, construction and installation of the shoring system is the sole responsibility of the Contractor.

16. Stormwater retention/detention system or trench excavations should have temporary sidewall slopes in accordance with CAL-OSHA guidelines or be mechanically shored. Excavation safety and shoring is the sole responsibility of the contractor. Excavation design and shoring systems should be submitted to the geotechnical engineer and the structural designer a minimum of 3 weeks prior to construction for a review to determine the conformance of the design with standard engineering practices and specific site conditions.

17. The “top” of any temporary cut slope should be set-back at least ten feet (measured horizontally) from any nearby structure or property line. Any excavation planned which cannot meet these side slope gradients will need to have a shoring system designed to support steeper sidewall gradients.

18. It should be understood that on-site safety is the sole responsibility of the Contractor, and that the Contractor shall designate a competent person (as defined by CAL-OSHA) to monitor the slope excavation prior to the start of each work day, and throughout the work day as conditions change. The competent person designated by the Contractor shall determine if flatter slope gradients are more appropriate, or if shoring should be installed to protect workers in the vicinity of the slope excavation. Refer to Title 8, California Code of Regulations, Sections 1539-1543.

19. The temporary shoring may consist of either a soldier pier wall with wood lagging or a soil nail wall with a shotcrete facing. Irrespective of the type of shoring, the chosen wall should be fully drained and should not obstruct nor significantly change the normal flow of moisture or groundwater through the project soils. Wall drainage should discharge to an approved location.

20. If a soil nail wall with shotcrete facing is utilized, it should include weep holes through the facing on a minimum 5 foot grid. Drainage geotextile such as Miradrain is neither sufficient nor appropriate drainage for walls on this project and should not be used.

21. If a soil nail wall with shotcrete facing is utilized, the designers should note that the soil nails will be in clay and this clay may tend to creep when loaded in tension.

22. If a soldier pier wall with wood lagging is utilized, the wood lagging, and any gravel backfill (or other drainage material) behind the wall, must be completely removed as the excavation is backfilled, and prior to the completion of the project. Soldier piles should be cut off a minimum of 5 feet below finished grade.

23. All shoring backfill to be placed in maximum 8 inch lifts, at a water content which is 1 to 3 percent above the laboratory optimum value. The material should be compacted to at least 90 percent relative compaction. If a clean gravel backfill is utilized as shoring backfill, it should be compacted in maximum 1 to 2 foot lifts using a vibra-plate or similar equipment. **It is recommended that all voids behind the shoring system be completely filled with soil or gravel backfill while the shoring work is in progress.**

24. The temporary shoring wall system chosen by the designer should be designed using the geotechnical design criteria presented in the "Site Retaining Walls" section of this report.

UTILITY TRENCHES

25. Utility trenches that are parallel to the sides of structures should be placed so that they do not extend below a line sloping down and away at a 2:1 (horizontal to vertical) slope from the bottom outside edge of all footings.

26. Utility pipes should be designed and constructed so that the top of pipe is a minimum of 24 inches below the finish subgrade elevation of any road or pavement areas. Any pipes within the top 24 inches of finish subgrade should be concrete encased, per design by the Project Civil Engineer.

27. For the purpose of this section of the report, backfill is defined as material placed in a trench starting one foot above the pipe, and bedding is all material placed in a trench below the backfill.

28. Unless concrete bedding is required around utility pipes, free-draining clean sand should be used as bedding. Sand bedding should be compacted to at least 95 percent relative compaction.

29. Approved imported clean sand or native soil should be used as utility trench backfill. Backfill in trenches located under and adjacent to structural fill, foundations, concrete slabs and pavements should be placed in horizontal layers no more than 8 inches thick. This includes areas such as sidewalks, patios, and other hardscape areas. Each layer of trench backfill should be water conditioned and compacted to at least 95 percent relative compaction. Clean sand is defined as 100 percent passing the #4 sieve, and less than 5 percent passing the #200 sieve.

30. A representative from our firm should be present to observe the bottom of all trench excavations, prior to placement of utility pipes and conduits. In addition, we should observe the condition of the trench prior to placement of sand bedding, and to observe compaction of the sand bedding, in addition to any backfill planned above the bedding zone.

31. Jetting of the trench backfill is not recommended as it may result in an unsatisfactory degree of compaction.

32. Trenches must be shored as required by the local agency and the State of California Division of Industrial Safety construction safety orders.

LIMITATIONS AND UNIFORMITY OF CONDITIONS

1. This Geotechnical Investigation was prepared specifically for Mitch and Shelly Paup and for the specific project and location described in the body of this report. This report and the recommendations included herein should be utilized for this specific project and location exclusively. This Geotechnical Investigation should not be applied to nor utilized on any other project or project site. Please refer to the ASFE "Important Information about Your Geotechnical Engineering Report" attached with this report.
2. The recommendations of this report are based upon the assumption that the soil conditions do not deviate from those disclosed in the borings. If any variations or undesirable conditions are encountered during construction, or if the proposed construction will differ from that planned at the time, our firm should be notified so that supplemental recommendations can be provided.
3. This report is issued with the understanding that it is the responsibility of the owner, or his representative, to ensure that the information and recommendations contained herein are called to the attention of the Architects and Engineers for the project and incorporated into the plans, and that the necessary steps are taken to ensure that the Contractors and Subcontractors carry out such recommendations in the field.
4. The findings of this report are valid as of the present date. However, changes in the conditions of a property can occur with the passage of time, whether they are due to natural process or the works of man, on this or adjacent properties. In addition, changes in applicable or appropriate standards occur, whether they result from legislation or the broadening of knowledge. Accordingly, the findings of this report may be invalidated, wholly or partially, by changes outside of our control. This report should therefore be reviewed in light of future planned construction and then current applicable codes. This report should not be considered valid after a period of two (2) years without our review.
5. This report was prepared upon your request for our services in accordance with currently accepted standards of professional geotechnical engineering practice. No warranty as to the contents of this report is intended, and none shall be inferred from the statements or opinions expressed.
6. The scope of our services mutually agreed upon for this project did not include any environmental assessment or study for the presence of hazardous or toxic materials in the soil, surface water, groundwater, or air, on or below or around this site.

APPENDIX A

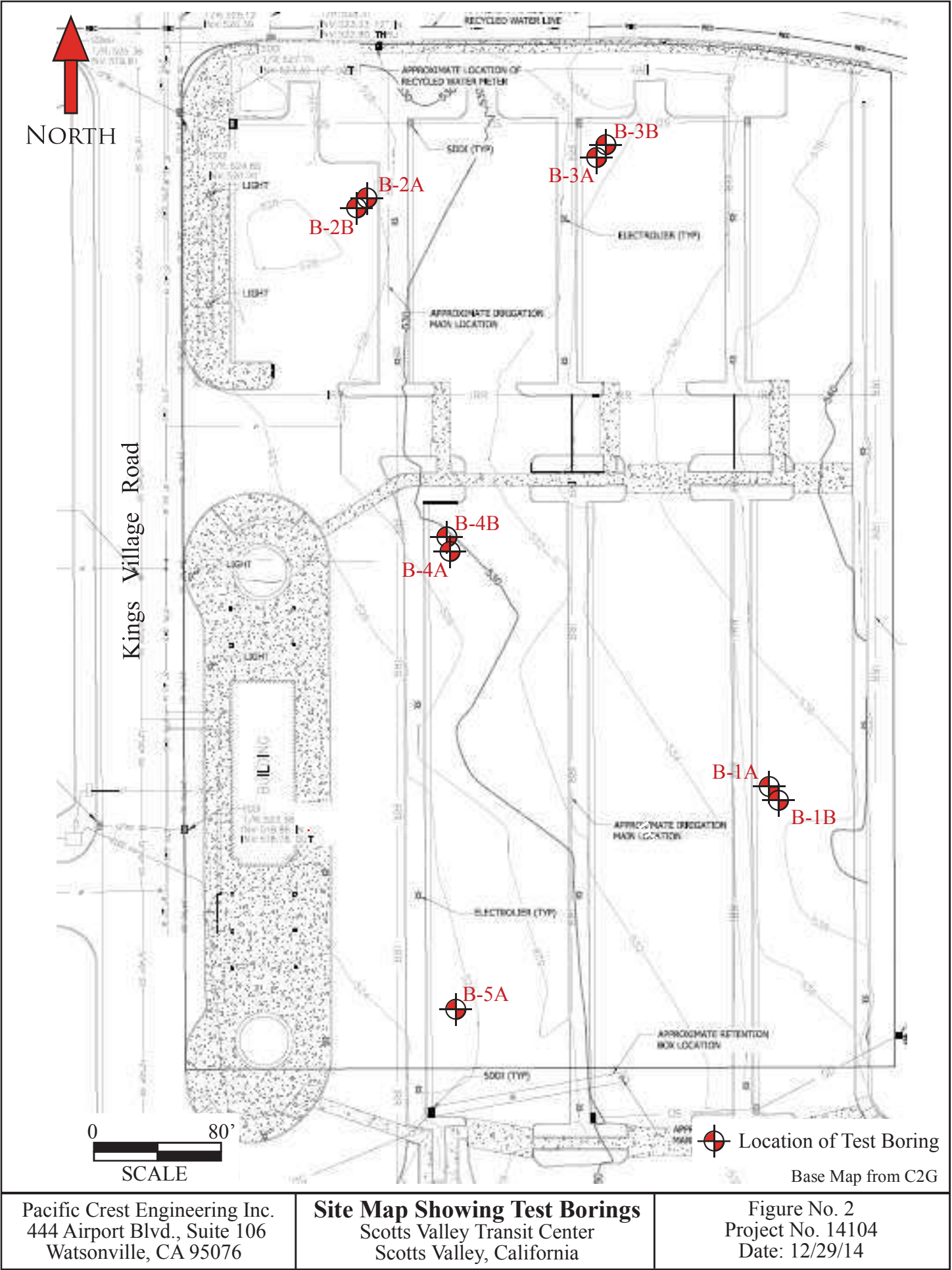
Regional Site Map
Site Map Showing Test Borings
Boring Log Explanation
Log of Test Borings
Surcharge Pressure Diagram
Retaining Wall Drain Detail
Hydraulic Conductivity Test Results



0 500'
Approximate Scale

Base Map from Google Earth


<p>Pacific Crest Engineering Inc. 444 Airport Blvd., Suite 106 Watsonville, CA 95076</p>	<p>Regional Site Map Scotts Valley Transit Center Scotts Valley, California</p>	<p>Figure No. 1 Project No. 14104 Date: 12/29/14</p>
--------------------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------	--------------------------------------------------------------



UNIFIED SOIL CLASSIFICATION SYSTEM - ASTM D2488 (Modified)

PRIMARY DIVISIONS			GROUP SYMBOL	SECONDARY DIVISIONS
COARSE GRAINED SOILS MORE THAN HALF OF MATERIAL IS LARGER THAN #200 SIEVE SIZE	GRAVELS MORE THAN HALF OF COARSE FRACTION IS LARGER THAN #4 SIEVE	CLEAN GRAVELS (LESS THAN 5% FINES)	GW	Well graded gravels, gravel-sand mixtures, little or no fines
		GRAVELS (MORE THAN 12% FINES)	GP	Poorly graded gravels or gravels-sand mixtures, little or no fines
			GM	Silty gravels, gravel-sand-silt mixtures, non-plastic fines
			GC	Clayey gravels, gravel-sand-clay mixtures, plastic fines
	SANDS MORE THAN HALF OF COARSE FRACTION IS SMALLER THAN #4 SIEVE		CLEAN SANDS (LESS THAN 5% FINES)	SW
		SANDS (MORE THAN 12% FINES)	SP	Poorly graded sands or gravelly sands, little or no fines
			SM	Silty sands, sand-silt mixtures, non-plastic fines
			SC	Clayey sands, sand-clay mixtures, plastic fines
FINE GRAINED SOILS MORE THAN HALF OF MATERIAL IS SMALLER THAN #200 SIEVE SIZE	SILTS AND CLAYS LIQUID LIMIT IS LESS THAN 35%		ML	Inorganic silts and very fine clayey sand silty sands, with slight plasticity
			CL	Inorganic clays of low to medium plasticity, gravelly, sand, silty or lean clays
			OL	Organic silts and organic silty clays of low plasticity
	SILTS AND CLAYS LIQUID LIMIT IS BETWEEN 35% AND 50%		MI	Inorganic silts, clayey silts and silty fine sands of intermediate plasticity
			CI	Inorganic clays, gravelly/sandy clays and silty clays of intermediate plasticity
			OI	Organic clays and silty clays of intermediate plasticity
	SILTS AND CLAYS LIQUID LIMIT IS GREATER THAN 50%		MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts
			CH	Organic clays of high plasticity, fat clays
			OH	Organic clays of medium to high plasticity, organic silts
	HIGHLY ORGANIC SOILS			PT

BORING LOG EXPLANATION

Depth, ft.	Sample No. and Type	Symbol	SOIL DESCRIPTION	Unified Soil Classification	SPT "N" Value	Plasticity Index	Dry Density, p.c.f.	Moisture % of Dry Wt.	MISC. LAB RESULTS
1			 ← Ground water elevation		NOTE: All blows/foot are normalized to 2" outside diameter sampler size				
2	1-1		← Soil Sample Number						
3	L		← Soil Sampler Size/Type						
4			L = 3" Outside Diameter						
5			M = 2.5" Outside Diameter						
			T = 2" Outside Diameter						
			ST = Shelby Tube						
			BAG = Bag Sample						

RELATIVE DENSITY

SANDS AND GRAVELS	BLOWS/FOOT
VERY LOOSE	0-4
LOOSE	4-10
MEDIUM DENSE	10-30
DENSE	30-50
VERY DENSE	OVER 50

CONSISTENCY

SILTS AND CLAYS	BLOWS/FOOT
VERY SOFT	0-2
SOFT	2-4
FIRM	4-8
STIFF	8-16
VERY STIFF	16-32
HARD	OVER 32

Pacific Crest Engineering Inc.
444 Airport Blvd., Suite 106
Watsonville, CA 95076


Boring Log Explanation
Scotts Valley Transit Center
Scotts Valley, California


Figure No. 3
Project No. 14104
Date: 12/29/14


LOGGED BY <u>SSC</u> DATE DRILLED <u>10-14-14</u> BORING DIAMETER <u>6" SS</u> BORING NO. <u>1A</u>									
Depth (feet)	Sample No. and Type	Symbol	Soil Description	Unified Soil Classification	SPT "N" Value	Plasticity Index	Dry Density (pcf)	Moisture % of Dry Wt.	Misc. Lab Results
			3" AC/5" Baserock						
1	1A-1 L		FILL: Gray/reddish brown mixed Silty SAND, moist, medium dense, non-plastic, trace gravels	SM	23			8.9	31% passing #200 sieve
2									
3	1A-2 M		Dark gray/gray mixed Silty SAND, moist, medium dense, non-plastic, trace gravels		23			9.2	
4	1A-3 T			SC					
5			Dark gray/gray mixed Clayey SAND, moist, medium dense, slight plasticity, trace gravels		23			8.3	
6	1A-4 L								
7			Dark gray/blue gray mixed Clayey SAND, moist, medium dense, slight plasticity		18			9.6	26% passing #200 sieve
8	1A-5 M		NATIVE: Light brown Silty SAND, moist, medium dense, non-plastic, some iron oxide staining	SM	27			11.9	
9	1A-6 T								
10			Light brown SAND with Silt, moist-wet, medium dense, non-plastic		28			11.3	
11	1A-7 T								
12			Light brown SAND with Silt, moist-wet, medium dense, non-plastic, some iron oxide staining		24			10.7	15% passing #200 sieve
13			Boring terminated at 11½ feet. No groundwater encountered.						
14									
15									
16									
17									
18									
19									
20									
21									
22									
23									
24									
Pacific Crest Engineering Inc. 444 Airport Blvd., Suite 106 Watsonville, CA 95076				Log of Test Borings Scotts Valley Transit Center Scotts Valley, California			Figure No. 4 Project No. 14104 Date: 12/29/14		


LOGGED BY <u>SSC</u> DATE DRILLED <u>10-14-14</u> BORING DIAMETER <u>6" SS</u> BORING NO. <u>1B</u>									
Depth (feet)	Sample No. and Type	Symbol	Soil Description	Unified Soil Classification	SPT "N" Value	Plasticity Index	Dry Density (pcf)	Moisture % of Dry Wt.	Misc. Lab Results
	1B-1 L		3" AC/5" Baserock		36		113.2	14.2	22% passing #200 sieve
1		FILL: Gray brown Silty SAND, moist, non-plastic	SM						
2									
3									
4		Gray Clayey SAND, moist, slight plasticity	SC						
5									
6									
7		NATIVE: Light brown SAND with Silt, moist-wet, dense, non-plastic	SM						
8									
9									
10	Boring terminated at 10 feet. No groundwater encountered.								
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									
21									
22									
23									
24									
Pacific Crest Engineering Inc. 444 Airport Blvd., Suite 106 Watsonville, CA 95076			Log of Test Borings Scotts Valley Transit Center Scotts Valley, California			Figure No. 5 Project No. 14104 Date: 12/29/14			

LOGGED BY <u>SSC</u> DATE DRILLED <u>10-14-14</u> BORING DIAMETER <u>6" SS</u> BORING NO. <u>2A</u>									
Depth (feet)	Sample No. and Type	Symbol	Soil Description	Unified Soil Classification	SPT "N" Value	Plasticity Index	Dry Density (pcf)	Moisture % of Dry Wt.	Misc. Lab Results
1	2A-1 L		3" AC/5" Baserock						
2	2A-2 M		FILL: Dark gray/blue gray mixed Silty SAND, moist, medium dense, non-plastic, trace gravels	SM	14			15.5	31% passing #200 sieve
3	2A-3 T		Brown Silty SAND, moist, medium dense, non-plastic, trace gravels		17			11.3	
4	2A-4 L		Brown Silty SAND, moist, loose, non-plastic, trace gravels		9			9.1	
5	2A-5 M		NATIVE: Gray Sandy CLAY, moist, stiff, plastic	CL	11			20.7	32% passing #200 sieve
6	2A-6 T		Gray SAND with Silt, moist-wet, medium dense, non-plastic, some iron oxide staining	SM/SP	14			19.2	8% passing #200 sieve
7	2A-7 L		Brown Sandy CLAY, moist-wet, soft, plastic	CL	2			27.5	
8	2A-8 M		Gray light brown mottled SAND with Silt, moist, medium dense, non-plastic, iron oxide staining	SM/SP	19			13.8	
9	2A-9 T		Light gray SAND with Silt, moist, loose, non-plastic		15			23.3	10% passing #200 sieve
10	2A-10 L		Light gray Gravelly SAND with Silt, wet, loose, non-plastic		9			15.1	
11			Boring terminated at 16 feet. No groundwater encountered.		5			14.0	10% passing #200 sieve
12									
13									
14									
15									
16									
17									
18									
19									
20									
21									
22									
23									
24									
Pacific Crest Engineering Inc. 444 Airport Blvd., Suite 106 Watsonville, CA 95076				Log of Test Borings Scotts Valley Transit Center Scotts Valley, California			Figure No. 6 Project No. 14104 Date: 12/29/14		





LOGGED BY <u>SSC</u> DATE DRILLED <u>10-14-14</u> BORING DIAMETER <u>6" SS</u> BORING NO. <u>2B</u>												
Depth (feet)	Sample No. and Type	Symbol	Soil Description	Unified Soil Classification	SPT "N" Value	Plasticity Index	Dry Density (pcf)	Moisture % of Dry Wt.	Misc. Lab Results			
	2B-1 T		3" AC/5" Baserock		86							
1			FILL: Gray Silty SAND, moist, non-plastic	SM								
2												
3												
4												
5												
6												
7			NATIVE: <u>Gray Sandy CLAY, moist, plastic</u>	CL								
8			Gray SAND with Silt, moist-wet, non-plastic	SM/ SP								
9			Brown Sandy CLAY, moist-wet, plastic	CL								
10												
11												
12			Light brown SAND with Silt, moist, non-plastic	SM/ SP								
13												
14												
15												
16												
17												
18												
19			Increase in drilling resistance Santa Margarita Formation?	SM/ SP								
20												
21			Light brown SAND with Silt and some gravels, moist-wet, dense, non-plastic, iron oxide staining								8.7	10% passing #200 sieve
22												
23												
24												
Pacific Crest Engineering Inc. 444 Airport Blvd., Suite 106 Watsonville, CA 95076			Log of Test Borings Scotts Valley Transit Center Scotts Valley, California			Figure No. 7 Project No. 14104 Date: 12/29/14						

LOGGED BY <u>SSC</u> DATE DRILLED <u>10-14-14</u> BORING DIAMETER <u>6" SS</u> BORING NO. <u>2B</u>									
Depth (feet)	Sample No. and Type	Symbol	Soil Description	Unified Soil Classification	SPT "N" Value	Plasticity Index	Dry Density (pcf)	Moisture % of Dry Wt.	Misc. Lab Results
25	2B-2 T		Light brown SAND with Silt and some gravels, moist-wet, dense, non-plastic, iron oxide staining	SM/SP					
26									
27									
28									
29									
30			Light gray SAND with Silt and some gravels, moist-wet, dense, non-plastic		50/3"			8.3	
31									
32			Boring terminated at 31 feet. No groundwater encountered.						
33									
34									
35									
36									
37									
38									
39									
40									
41									
42									
43									
44									
45									
46									
47									
48									
Pacific Crest Engineering Inc. 444 Airport Blvd., Suite 106 Watsonville, CA 95076			Log of Test Borings Scotts Valley Transit Center Scotts Valley, California			Figure No. 8 Project No. 14104 Date: 12/29/14			

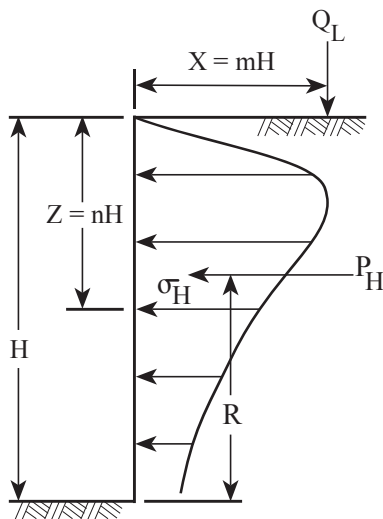
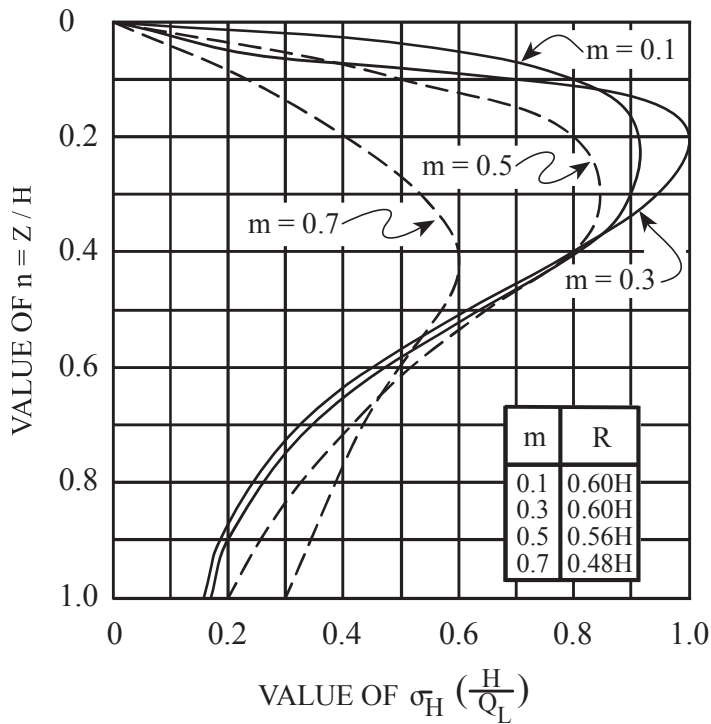
LOGGED BY <u>SSC</u> DATE DRILLED <u>10-14-14</u> BORING DIAMETER <u>6" SS</u> BORING NO. <u>3A</u>									
Depth (feet)	Sample No. and Type	Symbol	Soil Description	Unified Soil Classification	SPT "N" Value	Plasticity Index	Dry Density (pcf)	Moisture % of Dry Wt.	Misc. Lab Results
			3" AC/5" Baserock						
1	3A-1 L		FILL: Brown Silty SAND, moist, medium dense, non-plastic	SM	29			9.9	28% passing #200 sieve
2									
3	3A-2 M		Brown/light gray mixed Silty SAND, moist, medium dense, non-plastic, trace gravels						
4	3A-3 T		Light brown/brown mixed Silty SAND, moist, medium dense, non-plastic, trace gravels	SM/ SC	16			10.1	
5									
6	3A-4 L		NATIVE: Gray Silty SAND, moist, medium dense, non-plastic						
7	3A-5 M		Light brown Silty-Clayey SAND with some gravels, moist, medium dense, slight plasticity, some iron oxide staining		20			13.9	
8									
9	3A-6 T		Light brown Silty-Clayey SAND with some gravels, moist, medium dense, slight plasticity, some iron oxide staining		28			13.2	
10					18			17.8	
11			Boring terminated at 10 feet. No groundwater encountered.						
12									
13									
14									
15									
16									
17									
18									
19									
20									
21									
22									
23									
24									
Pacific Crest Engineering Inc. 444 Airport Blvd., Suite 106 Watsonville, CA 95076				Log of Test Borings Scotts Valley Transit Center Scotts Valley, California			Figure No. 9 Project No. 14104 Date: 12/29/14		

LOGGED BY <u>SSC</u> DATE DRILLED <u>10-14-14</u> BORING DIAMETER <u>6" SS</u> BORING NO. <u>3B</u>									
Depth (feet)	Sample No. and Type	Symbol	Soil Description	Unified Soil Classification	SPT "N" Value	Plasticity Index	Dry Density (pcf)	Moisture % of Dry Wt.	Misc. Lab Results
	3B-1 L		3" AC/5" Baserock		39			15.7	
1			FILL: Light brown Silty SAND, moist, non-plastic	SM					
2									
3									
4									
5									
6			NATIVE: Light brown Silty-Clayey SAND with some gravels, moist, dense, slight plasticity	SM/ SC					
7									
8									
9									
10			Boring terminated at 10 feet. No groundwater encountered.						
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									
21									
22									
23									
24									
Pacific Crest Engineering Inc. 444 Airport Blvd., Suite 106 Watsonville, CA 95076			Log of Test Borings Scotts Valley Transit Center Scotts Valley, California			Figure No. 10 Project No. 14104 Date: 12/29/14			

LOGGED BY <u>SSC</u> DATE DRILLED <u>10-14-14</u> BORING DIAMETER <u>6" SS</u> BORING NO. <u>4A</u>									
Depth (feet)	Sample No. and Type	Symbol	Soil Description	Unified Soil Classification	SPT "N" Value	Plasticity Index	Dry Density (pcf)	Moisture % of Dry Wt.	Misc. Lab Results
1	4A-1 L		3" AC/5" Baserock	SM	15			8.1	27% passing #200 sieve
2			FILL: Gray/brown mixed Silty SAND, moist, medium dense, non-plastic, some gravels						
3	4A-2 M		Brown/blue gray mixed Silty SAND, moist, medium dense, non-plastic, some gravels						
4	4A-3 T		Light brown/blue gray mixed Silty SAND, moist, medium dense, non-plastic, some gravels		16			10.0	
5					23			8.5	
6	4A-4 L		Brown/light gray mixed Silty SAND, moist, medium dense, non-plastic		16			10.0	
7	4A-5 M		Dark gray/brown mixed Silty SAND, moist, medium dense, non-plastic	SM	14			10.1	28% passing #200 sieve
8					15			23.0	
9	4A-6 T		NATIVE: Dark gray Silty SAND, moist-wet, medium dense, non-plastic, trace gravels						
10			Boring terminated at 10 feet. No groundwater encountered.						
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									
21									
22									
23									
24									
Pacific Crest Engineering Inc. 444 Airport Blvd., Suite 106 Watsonville, CA 95076				Log of Test Borings Scotts Valley Transit Center Scotts Valley, California			Figure No. 11 Project No. 14104 Date: 12/29/14		

LOGGED BY <u>SSC</u> DATE DRILLED <u>10-14-14</u> BORING DIAMETER <u>6" SS</u> BORING NO. <u>4B</u>									
Depth (feet)	Sample No. and Type	Symbol	Soil Description	Unified Soil Classification	SPT "N" Value	Plasticity Index	Dry Density (pcf)	Moisture % of Dry Wt.	Misc. Lab Results
	4B-1 L		3" AC/5" Baserock		19		106.4	10.6	24% passing #200 sieve
1			FILL: Gray brown Silty SAND, moist, non-plastic	SM					
2									
3									
4									
5									
6			Light brown Silty SAND, moist, medium dense, non-plastic, some iron oxide staining, some gravels						
7									
8									
9			NATIVE: Dark gray Silty SAND, moist-wet, non-plastic	SM					
10									
11			Boring terminated at 10 feet. No groundwater encountered.						
12									
13									
14									
15									
16									
17									
18									
19									
20									
21									
22									
23									
24									
Pacific Crest Engineering Inc. 444 Airport Blvd., Suite 106 Watsonville, CA 95076			Log of Test Borings Scotts Valley Transit Center Scotts Valley, California			Figure No. 12 Project No. 14104 Date: 12/29/14			

LOGGED BY <u>SSC</u> DATE DRILLED <u>10-14-14</u> BORING DIAMETER <u>6" SS</u> BORING NO. <u>5A</u>									
Depth (feet)	Sample No. and Type	Symbol	Soil Description	Unified Soil Classification	SPT "N" Value	Plasticity Index	Dry Density (pcf)	Moisture % of Dry Wt.	Misc. Lab Results
			3" AC/5" Baserock						
1	5A-1 L		FILL: Gray/brown mixed Silty SAND, moist, medium dense, non-plastic, trace gravels	SM	26		123.7	9.7	26% passing #200 sieve
2	5A-2 M				18			11.7	
3	5A-3 T		NATIVE: Gray/light brown mottled Silty-Clayey SAND, moist-wet, medium dense, slight plasticity	SM/SC	15			12.1	
4	5A-4 L		Light brown SAND with Silt, moist-wet, medium dense, non-plastic, some iron oxide staining, trace gravels		23		106.4	13.5	12% passing #200 sieve
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									
21									
22									
23									
24									
Pacific Crest Engineering Inc. 444 Airport Blvd., Suite 106 Watsonville, CA 95076			Log of Test Borings Scotts Valley Transit Center Scotts Valley, California			Figure No. 13 Project No. 14104 Date: 12/29/14			

LINE LOADFOR $m \leq 0.4$:

$$\sigma_H \left(\frac{H}{Q_L} \right) = \frac{0.20 n}{(0.16 + n^2)^2}$$

$$P_H = 0.55 Q_L$$

FOR $m > 0.4$:

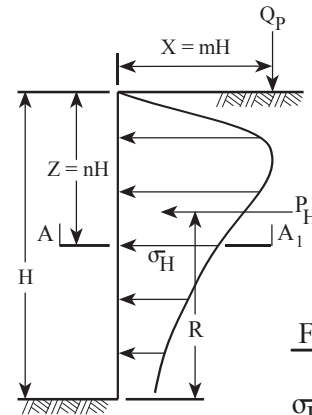
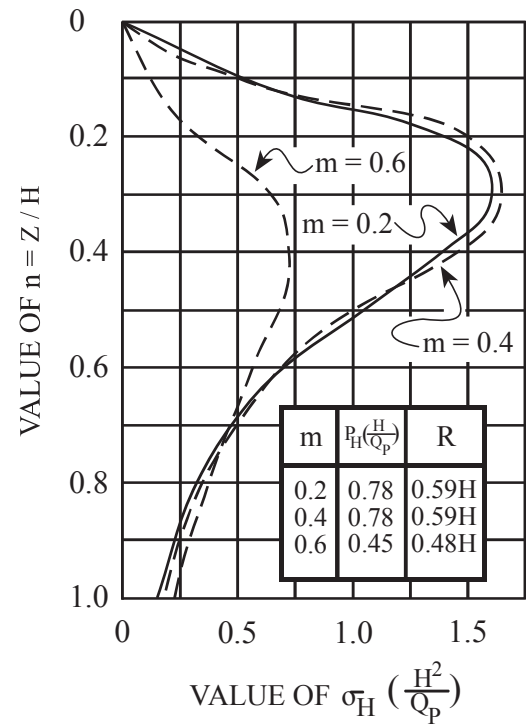
$$\sigma_H \left(\frac{H}{Q_L} \right) = \frac{1.28 m^2 n}{(m^2 + n^2)^2}$$

$$\text{RESULTANT } P_H = \frac{0.64 Q_L}{(m^2 + 1)}$$

PRESSURES FROM LINE LOAD Q_L

(BOISSINESQ EQUATION MODIFIED BY EXPERIMENT)

REFERENCE: Design Manual
NAVFAC DM-7.02
Figure 11
Page 7.2-74

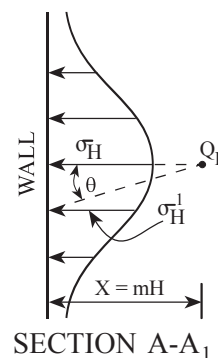
POINT LOADFOR $m \leq 0.4$:

$$\sigma_H \left(\frac{H^2}{Q_P} \right) = \frac{0.28 n^2}{(0.16 + n^2)^3}$$

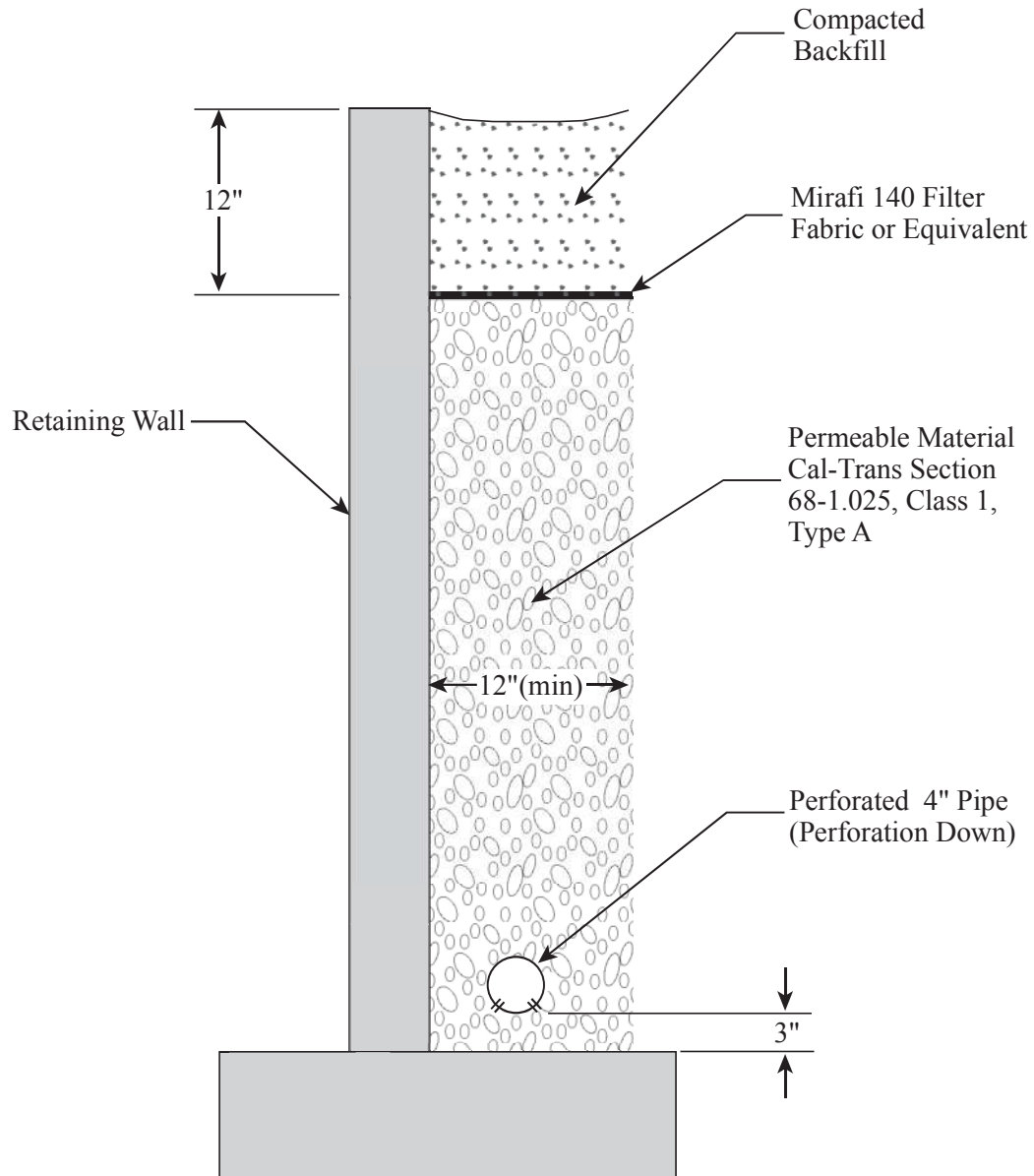
FOR $m > 0.4$:

$$\sigma_H \left(\frac{H^2}{Q_P} \right) = \frac{1.77 m^2 n^2}{(m^2 + n^2)^3}$$

$$\sigma_H^1 = \sigma_H \cos^2 (1.1 \theta)$$

SECTION A-A₁**PRESSURES FROM POINT LOAD Q_P**

(BOISSINESQ EQUATION MODIFIED BY EXPERIMENT)



NOT TO SCALE



Hydraulic Conductivity

ASTM D 5084

Method C: Falling Head Rising Tailwater

Job No: 416-529 Boring: Date: 10/31/14
 Client: Pacific Crest Engineering Sample: 14-104-2A-10-1 By: MD/PJ
 Project: SV Transit Center - 14104 Depth, ft.: Remolded:
 Visual Classification: Gray Clayey GRAVEL w/ Sand/ Clayey SAND w/ Gravel

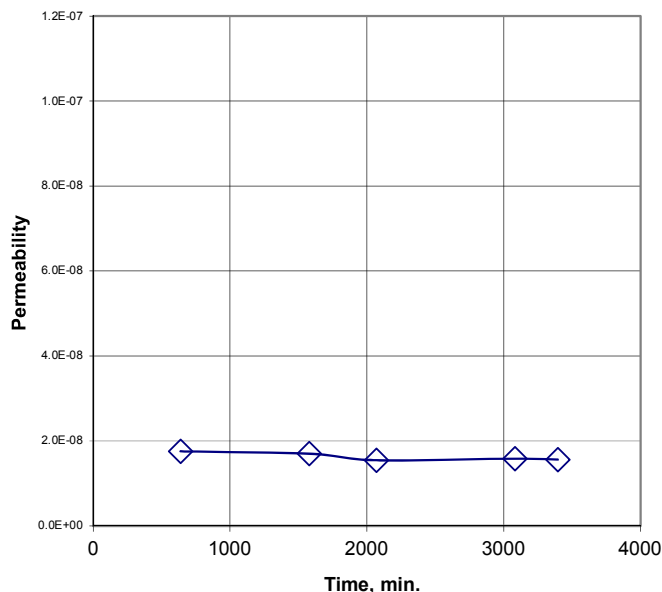
Max Sample Pressures, psi:

B: = >0.95 ("B" is an indication of saturation)

Cell:	Bottom	Top	Avg. Sigma3
53.5	49.5	47.5	5

Max Hydraulic Gradient: = 33

Date	Minutes	Head, (in)	K,cm/sec
10/28/2014	0.00	79.38	Start of Test
10/28/2014	638.00	78.63	1.8E-08
10/29/2014	1580.00	77.63	1.7E-08
10/29/2014	2071.00	77.23	1.5E-08
10/30/2014	3082.00	76.18	1.6E-08
10/30/2014	3395.00	75.88	1.6E-08



Average Hydraulic Conductivity: 2.E-08 cm/sec

Sample Data:	Initial (As-Received)	Final (At-Test)
Height, in	2.51	2.38
Diameter, in	2.40	2.40
Area, in ²	4.52	4.52
Volume in ³	11.33	10.77
Total Volume, cc	185.7	176.4
Volume Solids, cc	76.9	76.9
Volume Voids, cc	108.8	99.6
Void Ratio	1.4	1.3
Total Porosity, %	58.6	56.4
Air-Filled Porosity (θ _a), %	0.6	2.2
Water-Filled Porosity (θ _w), %	58.0	54.3
Saturation, %	98.9	96.2
Specific Gravity	2.70 Assumed	2.70
Wet Weight, gm	315.2	303.3
Dry Weight, gm	207.5	207.5
Tare, gm	0.00	0.00
Moisture, %	51.9	46.1
Wet Bulk Density, pcf	105.9	107.3
Dry Bulk Density, pcf	69.7	73.4
Wet Bulk Dens.pb, (g/cm ³)	1.70	1.72
Dry Bulk Dens.pb, (g/cm ³)	1.12	1.18

Remarks:



Hydraulic Conductivity

ASTM D 5084

Method C: Falling Head Rising Tailwater

Job No: 416-529 Boring: Date: 10/31/14
 Client: Pacific Crest Engineering Sample: 1404-3B-1-1 By: MD/PJ
 Project: SV Transit Center - 14104 Depth, ft.: Remolded:
 Visual Classification: Light Olive Brown Clayey SAND w/ Gravel (Sandstone)

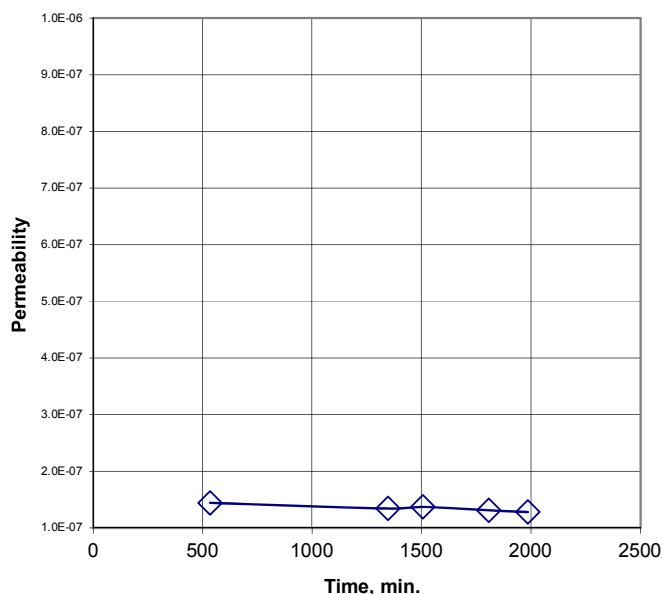
Max Sample Pressures, psi:

B: = >0.95 ("B" is an indication of saturation)

Cell:	Bottom	Top	Avg. Sigma3
53.5	49	48	5

Max Hydraulic Gradient: = 21

Date	Minutes	Head, (in)	K,cm/sec
10/27/2014	0.00	51.69	Start of Test
10/27/2014	534.00	48.64	1.4E-07
10/28/2014	1347.00	44.84	1.3E-07
10/28/2014	1505.00	44.14	1.4E-07
10/28/2014	1807.00	42.94	1.3E-07
10/28/2014	1985.00	42.29	1.3E-07



Average Hydraulic Conductivity: 1.E-07 cm/sec

Sample Data:	Initial (As-Received)	Final (At-Test)
Height, in	2.52	2.51
Diameter, in	2.39	2.38
Area, in ²	4.48	4.45
Volume in ³	11.28	11.17
Total Volume, cc	184.9	183.0
Volume Solids, cc	116.4	116.4
Volume Voids, cc	68.5	66.6
Void Ratio	0.6	0.6
Total Porosity, %	37.1	36.4
Air-Filled Porosity (θ _a), %	6.1	1.4
Water-Filled Porosity (θ _w), %	31.0	35.0
Saturation, %	83.5	96.1
Specific Gravity	2.70 Assumed	2.70
Wet Weight, gm	371.4	378.2
Dry Weight, gm	314.2	314.2
Tare, gm	0.00	0.00
Moisture, %	18.2	20.4
Wet Bulk Density, pcf	125.3	129.0
Dry Bulk Density, pcf	106.0	107.1
Wet Bulk Dens.pb, (g/cm ³)	2.01	2.07
Dry Bulk Dens.pb, (g/cm ³)	1.70	1.72

Remarks:

APPENDIX B

Geologic Characterization Report by Zinn Geology



GEOLOGIC CHARACTERIZATION

Proposed Stormwater Management/Infiltration
Santa Cruz Municipal Transit District Parking Lot
Kings Village Drive
Scotts Valley, California

Job #2014015-G-SC
21 December 2014



21 December 2014

Job #2014015-G-SC

Pacific Crest Engineering
Attention: Elizabeth Mitchell
444 Airport Boulevard, Suite 106
Watsonville, California 95076

Re: Geologic characterization
Proposed Stormwater Management/Infiltration
Santa Cruz Municipal Transit District Parking Lot
Kings Village Drive
Scotts Valley, California

Dear Mrs. Mitchell:

Our geologic characterization for the Scotts Valley Santa Cruz Municipal Transit District parking lot is attached. This report documents geologic conditions on the property germane to the proposed stormwater management and infiltration.

If you have any questions or comments regarding this characterization, please contact us at your earliest convenience.

Sincerely,
ZINN GEOLOGY

Erik N. Zinn
Principal Geologist
P.G. #6854, C.E.G. #2139



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SITE GEOLOGIC SETTING.....	5
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Drainage.....	6
Earth Materials.....	6
FINDINGS AND RECOMMENDATIONS.....	7
INVESTIGATION LIMITATIONS.....	8
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Figure 2 - Regional Geologic Map.....	12
Figure 3 - Local Geologic Map.....	13

PLATE 1 (Geologic Site Map), PLATE 2 (40-Scale Map Showing Borings) and PLATE 3
(Geologic Cross Sections) - In pocket at back of report

NOTE: Plates must accompany text of report in order for report to be considered complete.

INTRODUCTION

This report presents the results of our geologic characterization for a proposed stormwater management and infiltration system on an existing Santa Cruz Municipal Transit District parking lot, located on Kings Village Drive, in the City of Scotts Valley in the County of Santa Cruz (Figure 1).

The property is currently developed as a parking lot, with several small appurtenant structures located along the western margin of the property. The proposed development related to this project will consist of some form of stormwater structures on the parking lot that will gather surface water and infiltrate some of it into the soil or bedrock that underlies the site.

The purpose of this investigation was to evaluate the geological conditions relevant to the proposed infiltration scheme. The primary focus at the outset of the project was to provide the team with the geological conditions at the site and help them understand the layers of soil or bedrock that would provide the best infiltration.

SCOPE OF INVESTIGATION

Work performed during this study included:

1. Telephone conversations and email correspondence with the Project Geotechnical Engineer Of Record, Elizabeth Mitchell of Pacific Crest Engineering [PCE], as well as team members with Kennedy/Jenks Consultants.
2. A review of published and unpublished maps and reports germane to the project that were provided to us.
3. Performance of regional reconnaissance level mapping consisting of observing natural and artificial exposures in the vicinity of the property.
4. Location of the small-diameter borings advanced by PCE and observation of the advancement of select borings on a site map prepared by our firm using GIS products made available to the public by the County of Santa Cruz. A current site-specific topographic map reflecting existing conditions was never provided to our firm.
5. Preparation of a geologic site map and geologic cross section for the project.
6. Analysis and interpretation of the geologic data and preparation of this report.

REGIONAL GEOLOGIC SETTING

The subject property is located within the central Santa Cruz Mountains. The Santa Cruz Mountains are formed by a series of rugged, linear ridges and valleys following the pronounced northwest to southeast structural grain of central California geology. Underlying most of the Santa Cruz Mountains is a large, elongate prism of granitic and metamorphic basement rocks, known collectively as the Salinian Block. These rocks are separated from contrasting basement rock types to the northeast and southwest by the San Andreas and San Gregorio-Sur Nacimiento strike-slip fault systems, respectively. Overlying the granitic basement rocks is a sequence of dominantly marine sedimentary rocks of Paleocene to Pliocene age and non-marine sediments of Pliocene to Pleistocene age (Figure 2).

Throughout the Cenozoic Era, this portion of California has been dominated by tectonic forces associated with lateral or "transform" motion between the North American and Pacific lithospheric plates, producing long, northwest-trending faults such as the San Andreas and San Gregorio, with horizontal displacements measured in tens to hundreds of miles. Accompanying the northwest direction of the horizontal (strike-slip) movement of the plates have been episodes of compressive stress, reflected by repeated episodes of uplift, deformation, erosion and subsequent redeposition of sedimentary rocks. Near the crest of the Santa Cruz Mountains, this tectonic deformation is most evident in the sedimentary rocks older than the middle Miocene, and consists of steeply dipping folds, overturned bedding, faulting, jointing, and fracturing. Along the coast, the ongoing tectonic activity is most evident in the formation of a series of uplifted marine terraces. The Loma Prieta earthquake of 1989 and its continuing aftershocks are the most recent reminders of the geologic unrest in the region.

SITE GEOLOGIC SETTING

The Geologic Site Map (Plate 1), Plate Showing Boring Locations At 40-Scale (Plate 2) and Geologic Cross Section (Plate 3) depict relevant site-specific topographic and geologic information for the project. See also the Local Geologic Map (Figure 4) for information of a more general nature.

Topography

The site is situated on a gently sloping area that sits in a transitional topographic area (Plates 1 and 2; Figures 1 and 4) at an approximate elevation of 540 feet above mean sea level. The gently sloping area of the site is situated in a terrain alcove, below hills rising steeply to the north and east of the site. The site is also situated above a very gently sloping alluvial surface that defines a large portion of the Scotts Valley region and lies to the south and west of the site (Plates 1 and 2; Figures 1 and 4).

The topography of the site has been heavily modified by past grading for the parking lot and possibly even for prior historical grading operations, resulting in four distinct benches separated by distinct topographic steps between each bench. This observation is not precisely reflected on the topographic maps used for this project, since they were derived from readily-available GIS data provided to the public by the County of Santa Cruz. A site-specific topographic map that reflects the aforementioned observation was never made available to us for this project, but presumably will be constructed at some point in the project.

Drainage

Surface drainage across the area currently occurs primarily by overland sheet flow downslope to the west and toward the sundry storm drainage structures present on and off the site. Ultimately all the water for the site eventually enters Carbonera Creek, located south of the site (Figure 1).

Very little of the rainfall on the property probably currently infiltrates the ground and enters the groundwater regime, due to the fact that the site, as well surrounding areas, is mostly paved over. No groundwater was encountered by PCE in their shallow small-diameter borings, which is not surprising, considering that the region has suffered from nearly three years of drought, as well as the fact that water table in the direct underlying bedrock (Santa Margarita Sandstone) has been drawn down to about 190 feet below the ground surface of the site (Figure 3-3 from Kennedy/Jenks Consultants, 2011). Considering our long standing drought conditions in this region, and the geometry and distribution of the earth materials on this site, it is likely that the regional groundwater will continue to stay well below the ground surface for the foreseeable future.

Earth Materials

Regional researchers (Clark, 1981; Brabb, 1997) have depicted the site as being underlain by a blanket of alluvium, thought to conceal the Santa Margarita Sandstone bedrock at depth (see Figure 4). We did not find this to be the case at all.

The site appears to be blanketed by artificial fill that is between 4' and 8.5' thick on the site. The Santa Margarita Sandstone bedrock formation appears to underlie the blanket of fill. At some point, prior to the placement of the thick fill blanket on the site, the original ground surface may have been underlain by a colluvial layer or a pedogenic soil overprinting the sandstone bedrock. This is based upon our observation of the presence of pedogenic soil development within the Santa Margarita Sandstone with missing soil horizons from the sequence. Regardless, at this point the thick blanket of fill is in sharp contact with the underlying sandstone bedrock, indicating the site has been extensively modified by past grading activities.

The Santa Margarita Sandstone encountered on site is generally a fine to medium grained, well sorted (poorly graded) arkosic sandstone, containing varying amounts of interstitial clay. Other

beds within the formation were also encountered, such as silt beds, and cobble- and pebble-bearing beds. One bed of particular interest, a 1" thick bed of fine sand case hardened by iron oxide (a spodic horizon) was encountered approximately 10 feet below the ground surface at the lowest point on the site within boring B-2A. That bed was of particular interest because it appeared to be an aquitard that perches water, based upon the moisture content of the earth materials above (wet) and below (dry) the bed. It is unclear to us as to whether any of the thin beds, including the iron oxide fine sand bed, are laterally continuous across the site as well as off of the site. In our opinion, it is reasonable to assume that those beds are laterally continuous for the design of the infiltration, because to do otherwise could result in a poorly performing system, as well as cause high groundwater conditions to occur during the rainy season at adjacent lower sites. This conservative assumption is reflected on the Geologic Cross Section (Plate 3). Additionally, it is important to note that even if the beds are not significantly laterally continuous, the high energy depositional environment implied by the encountered earth materials in the sandstone typically has overlapping, interbedded and intercalated layers, which could create a similar conservative outcome for infiltration.

FINDINGS AND RECOMMENDATIONS

The objective of the project is to infiltrate stormwater to lessen current regional impacts of flooding and erosion brought upon by the existing array of storm drainage systems. Given that, in our opinion the area at the lowest point on the property should be targeted for infiltration, in the vicinity of boring B-2A. This is based upon our observation of the borings, our analysis of the geological data and a review of the infiltration results by PCE. The following points are the most germane and salient to the design in our opinion:

1. The infiltration systems should not be terminated in either the artificial fill, or the Santa Margarita Sandstone bedrock directly under the fill if avoidable. This opinion is based upon our observation of clay content and its distribution within both units. Furthermore, the infiltration results within the Santa Margarita Sandstone on the upper portions of the site, at depths between 7 and 10 feet below the ground surface, were well under 1/10" per hour, which supports our opinion.
2. In our opinion, the most effective and safest infiltration system would be one located in the northwestern corner of the site, at the lowest point, with the bottom of the system penetrating the case hardened iron oxide fine sand horizon located approximately 10.5 below the ground surface. Our opinion is based upon our observation during drilling and sampling at this location, which seemed to indicate that the thin bed of sand at that depth has historically perched water above it. Additionally, a review of the infiltration results by PCE indicates that the earth materials in this area have an infiltration rate ranging from 4 ½ " to 11 ¾" inches per hour. If the storm water is directed to this location and infiltrated deeper than 10.5' below the ground surface, it will fall below the aforementioned aquitard and lessen the likelihood that the water will perch atop the

aquitard and migrate down gradient toward the topographically lower developed sites to the west and south.

INVESTIGATION LIMITATIONS

1. The conclusions and recommendations noted in this report are based on probability and in no way imply the site will not possibly be subjected to groundwater or drainage issues in the future. The report does suggest that pursuing the recommended measures at the site, in compliance with the recommendations noted in this report, will lower the likelihood that the site will be subjected to groundwater or drainage issues in the future.
2. This report is issued with the understanding that it is the duty and responsibility of the owner or his representative or agent to ensure that the recommendations contained in this report are brought to the attention of the engineers for the project, incorporated into the plans and specifications, and that the necessary steps are taken to see that the contractor and subcontractors carry out such recommendations in the field.
3. If any unexpected variations in soil and geological conditions or if any undesirable conditions are encountered during construction or if the proposed construction will differ from that planned at the present time, Zinn Geology should be notified so that supplemental recommendations can be given.

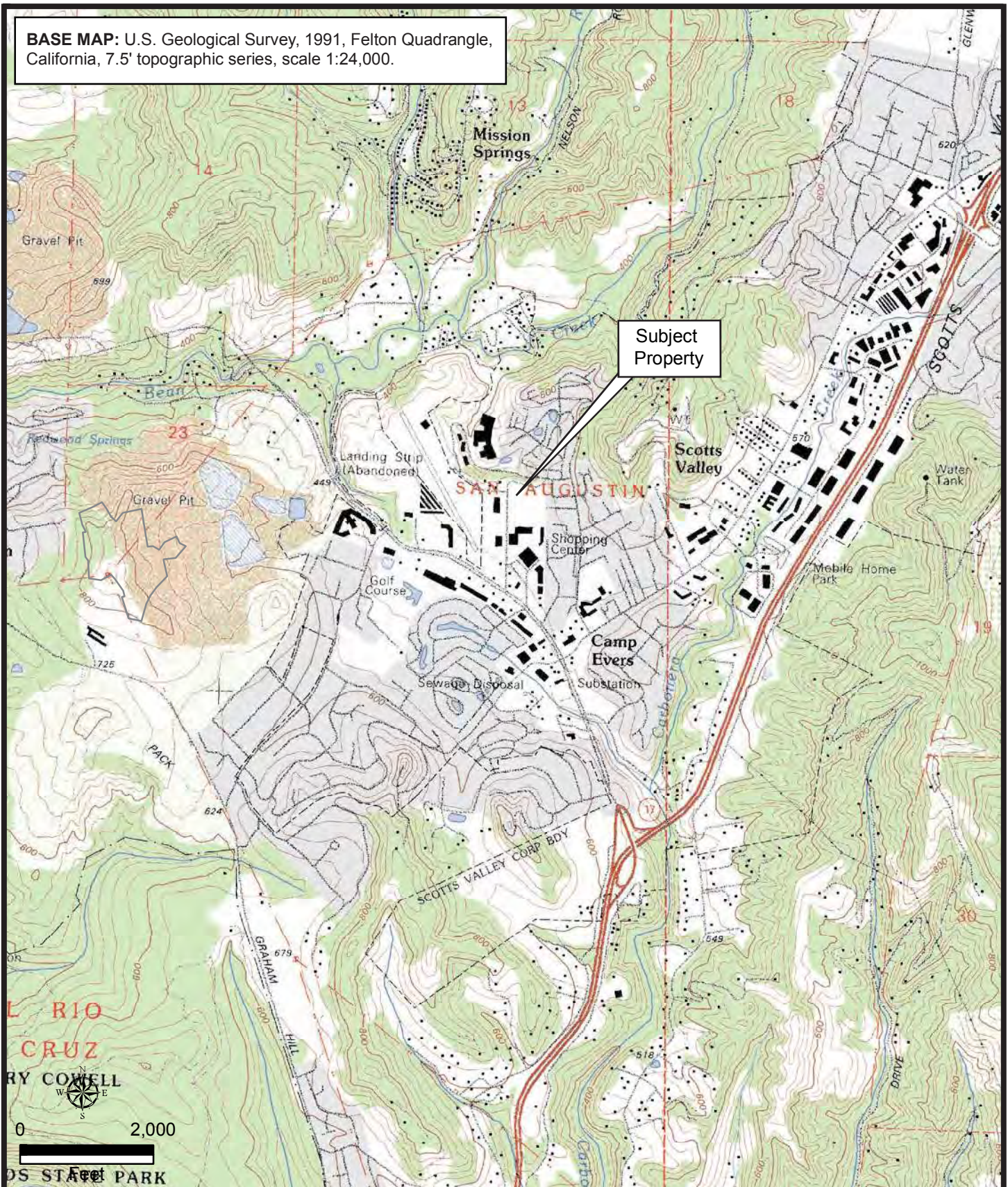
REFERENCES

- Brabb, E.E., Graham, S., Wentworth, C., Knifong, D., Graymer, R., and Blissenbach, J., 1997, Geologic map of Santa Cruz County, California: a digital database, U.S. Geological Survey Open File Report 97-489, scale 1:62,500.
- Clark, J.C., 1981, Stratigraphy, paleontology, and geology of the central Santa Cruz Mountains, California Coast Ranges, U. S. Geological Survey Professional Paper 1168, 51 p., 2 plates.
- Kennedy/Jenks Consultants, 2013, Annual Report 2012 Water Year - Scotts Valley Water District - Groundwater Management Program, unpublished consultant report. Internet address for document is: http://www.svwd.org/uploads/2012_SVWD_GWAnnual.pdf

APPENDIX A

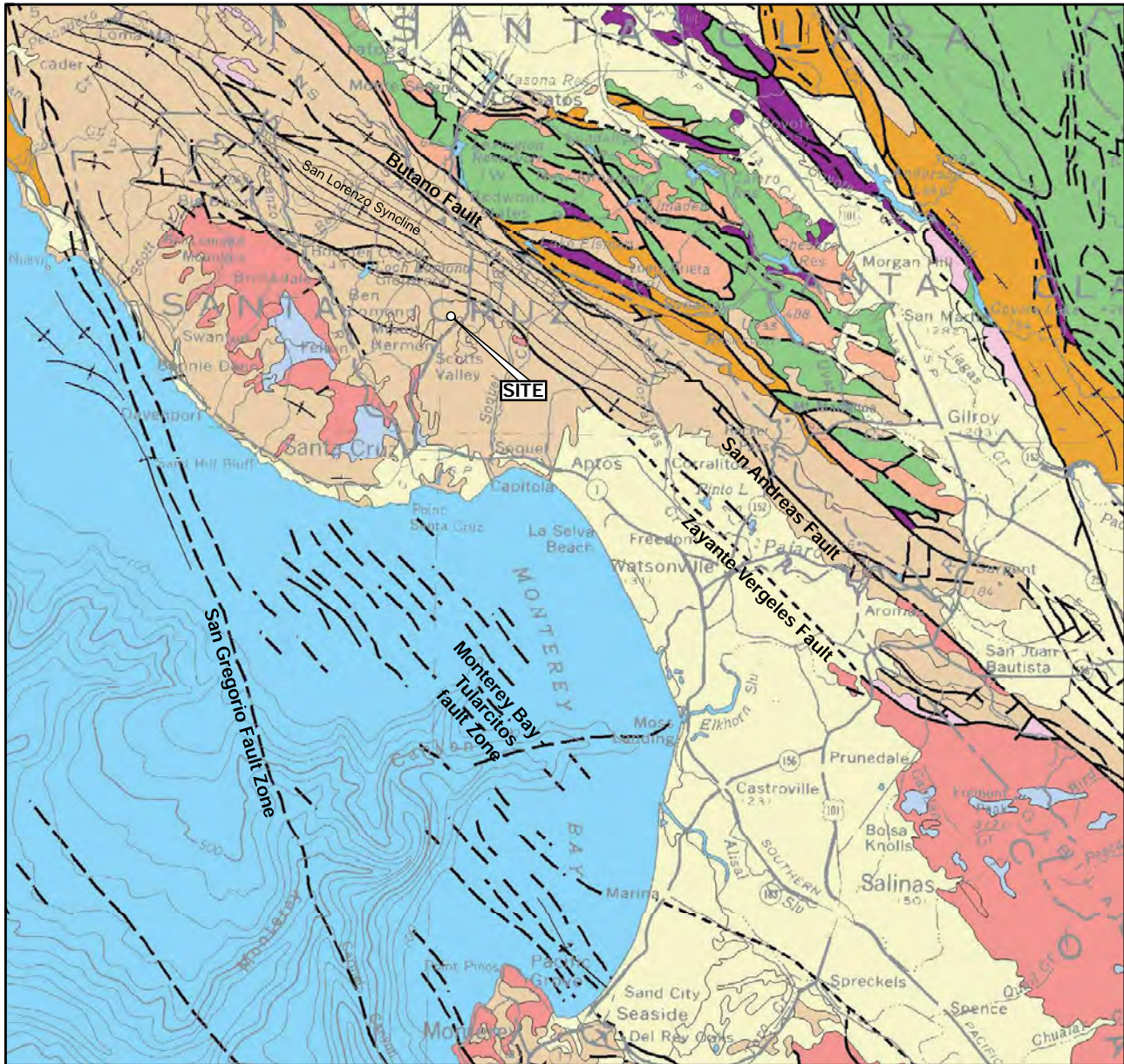
FIGURES

BASE MAP: U.S. Geological Survey, 1991, Felton Quadrangle, California, 7.5' topographic series, scale 1:24,000.



Topographic Index Map
Stormwater Management Project
Santa Cruz Municipal Transit District
Scotts Valley, California

FIGURE #
1
JOB #
2014015-G-SC



Reference: Jennings, C.W., 1977, Geologic Map of California: California Department of Conservation, Division of Mines and Geology, scale 1:750,000.

Digital Data: Saucedo, G.J., Bedford, D.R., Raines, G.L., Miller, R.J., and Wentworth, C.M., 2000, GIS Data for the Geologic Map of California: California Department of Conservation, Division of Mines and Geology, CD-ROM 2000-007, ver. 2.0.

EXPLANATION

Geologic Units

Quaternary Deposits	Pre-Tertiary Volcanic Rocks
Quaternary Volcanics	Granitic Intrusive Rocks
Tertiary Sedimentary Rocks	Franciscan Complex
Tertiary Volcanic Rocks	Ultramafic Rocks
Pre-Tertiary Sedimentary Rocks	Pre-Tertiary Metamorphic Rock
	Pre-Cambrian Metamorphic and Igneous Rocks

Symbols

contact	anticline
fault, certain	monocline
fault, approx. located	syncline
fault, concealed or inferred	



SCALE 1:500,000



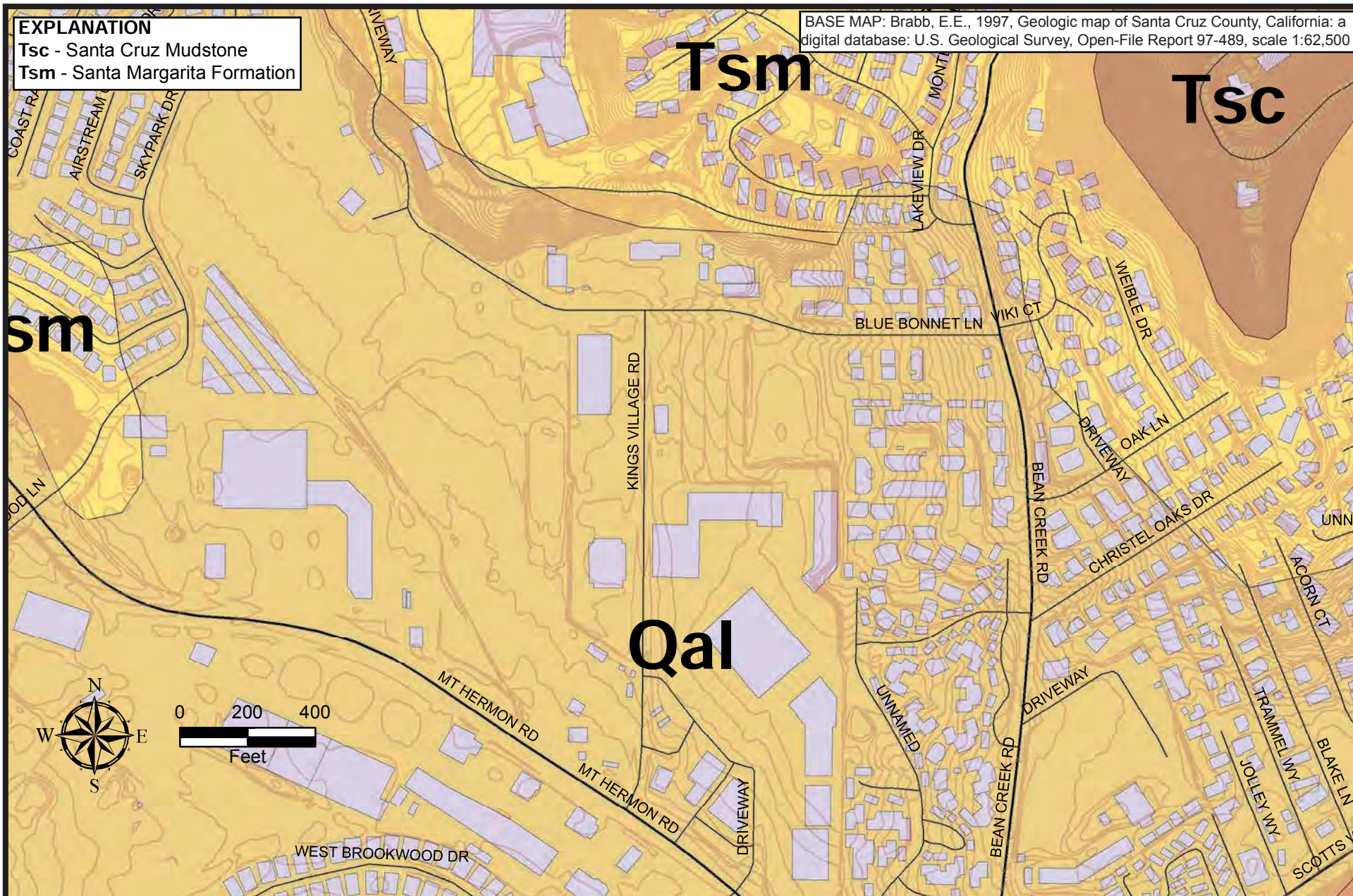
Regional Geologic Map
Stormwater Management Project
 Santa Cruz Municipal Transit District
 Scotts Valley, California

FIGURE #
2
 JOB #
 2014015-G-SC

EXPLANATION

Tsc - Santa Cruz Mudstone
Tsm - Santa Margarita Formation

BASE MAP: Brabb, E.E., 1997, Geologic map of Santa Cruz County, California: a digital database: U.S. Geological Survey, Open-File Report 97-489, scale 1:62,500



Local Geologic Map
Stormwater Management Project
Santa Cruz Municipal Transit District
Scotts Valley, California

FIGURE #
3
JOB #
2014015-G-SC



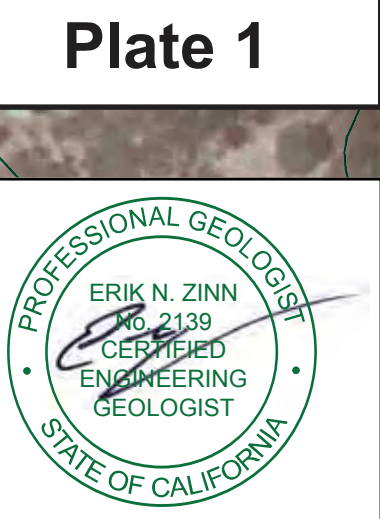
Geological Site Map
Storm Water Management Project
Santa Cruz Municipal Transit District Parking Lot
Scotts Valley, California

Date: 18 December 2014 Revised:

Job #2014015-G-SC

Scale: 1"=20'

Drawn by: ENZ/enz



Tsm

Tsm

Af

Af

A

A'

BLUE BONNET LN

KINGS VILLAGE RD

Af

Af

Af

Tsm

EXPLANATION

Af

Tsm

Artificial fill
Santa Margarita Sandstone

PCE #5a



4' Af
Tsm - Very Fine Clayey Sand

Small-diameter borings advanced
by Pacific Crest Engineering for
this project - annotations next to
borings indicate thickness of artificial
fill encountered in the boring



0 100 200
Feet

PCE #2a
PCE #2b
6.5' Af
Tsm - Sand, Gravel, Silt and Clay
FeOx case hardened horizon (spodic horizon)
at 10.5'

PCE #3a
PCE #3b
5.5' Af
Tsm - Fine to Very Fine Grained Sand

540

See Plate 3 to view Geologic
Cross Section A-A'

550

PCE #4a
PCE #4b
8.5' Af
Tsm - Very Fine Grained Sand With Clay

PCE #1b
PCE #1a
7.5' Af
Tsm - med. gr. sand

PCE #5a
4' Af
Tsm - Very Fine Clayey Sand

530

4' Af

Tsm - Very Fine Clayey Sand

PCE #5a

Small-diameter borings advanced by Pacific Crest Engineering for this project - annotations next to borings indicate thickness of artificial fill encountered in the boring

ZINN GEOLOGY

2005 Carder Lane, Suite B
Tel. 931.476.9443 Fax 931.476.1491
enzinn@crutso.com

40-Scale Map Showing Borings

Storm Water Management Project

Santa Cruz Municipal Transit District Parking Lot

Scotts Valley, California

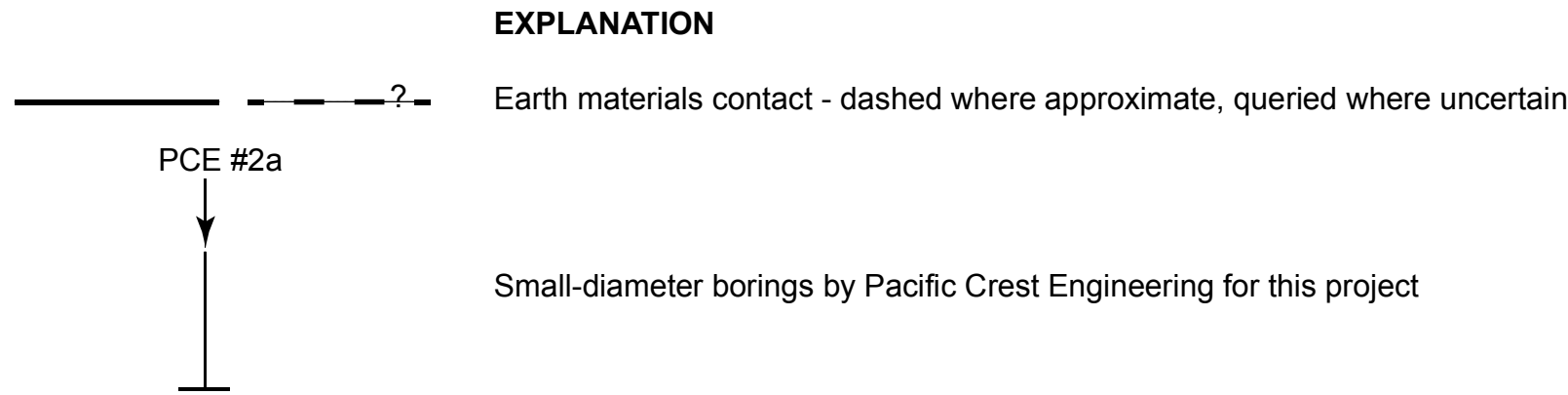
Date: 18 December 2014 Revised:

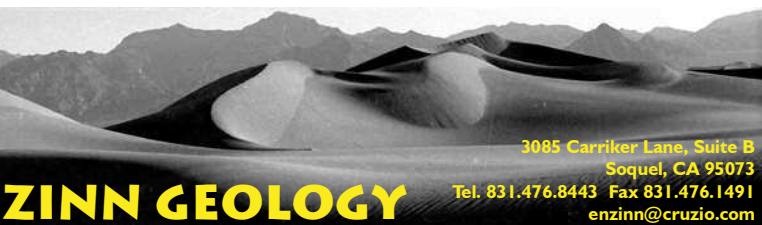
Job #2014015-G-SC

Scale: 1"=40'

Drawn by: ENZ/enz

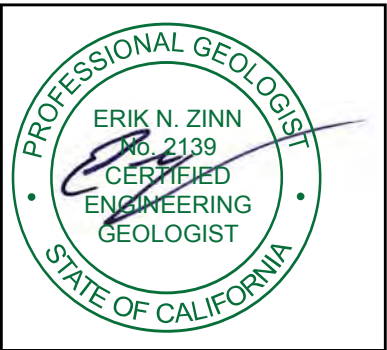
Plate 2





Geological Cross Section A-A'
Storm Water Management Project
Santa Cruz Municipal Transit District Parking Lot
Scotts Valley, California

Date: 18 December 2014	Revised:
Job #2014015-G-SC	
Scale: 1"=20', h=v	Plate 3
Drawn by: ENZ/enz	



NOTE: Dip of 1" thick iron oxide cased hardened sand bed is apparent. No bedding was observed in natural or unnatural exposures near the site. The nearest regional bedding information for the Santa Margarita Sandstone is depicted by Clark (1981) as striking roughly parallel to the section and dipping to the north at approximately six degrees.

Appendix B

Summary of Terms and Conditions Applicable to Consultants, Contractors & Subcontractors

of the

Urban Community Drought Grant

Implementation Grant Agreement Number 4600015021

California Department of Water Resources

**Urban Community Drought Grant
Implementation Grant Agreement Number 4600015021
Summary of Grant Terms and Conditions Applicable to
Consultants, Contractors & Subcontractors**

Funding for this project is supported in part by a grant award from the California Department of Water Resources (DWR) to the Scotts Valley Water District (SVWD). The SVWD (Grantee) received and entered into an agreement with the State of California (Agreement #4600015021) funded by the Budget Act of 2021, as amended (Stats. 2022, ch. 44, § 25). The Grantee will receive grant funding for services to be performed by the Consultant and its consultants, contractors or subcontractors (collectively, "Consultant"). The Grant Agreement identifies all terms and conditions applicable to the Consultant. For reference, a summary of terms and conditions applicable to the consultant are provided below. To comply with the conditions of the Agreement, the Consultant agrees to the following:

INELIGIBLE PROJECT COST. Costs that are not eligible for reimbursement by grant funds include, but are not limited to the following items:

- A. Purchase of equipment not an integral part of a project.
- B. Travel and per diem costs.
- C. Meals, food items, or refreshments.
- D. Generic overhead or markup (e.g., 10% mark-up on sub-contractor labor, materials, supplies).

This prohibition applies to the Consultant and any subcontract or sub-agreement for work on the Project that will be reimbursed pursuant to this Agreement. This is consistent with Grant Agreement Item 7.

ACCOUNTING: The Consultant shall maintain books, records, and other documents pertinent to their work in accordance with generally accepted accounting principles and practices. Records are subject to inspection by the State at any and all reasonable times. This is consistent with Grant Agreement Standard Condition D1.

AUDITS: Pursuant to Government Code §8546.7, the Consultant shall be subject to the examination and audit by the State for a period of three (3) years after final payment under this Funding Agreement with respect to all matters connected with this Funding Agreement, including but not limited to, the cost of administering this Funding Agreement. All records of the Consultant and its contractor or subcontractors shall be preserved for this purpose for at least three (3) years after receipt of the final disbursement under this Agreement. This is consistent with Grant Agreement Standard Condition D.5.

CONFLICT OF INTEREST: The Consultant is subject to State and Federal conflict of interest laws. Failure to comply with these laws, including business and financial disclosure provisions, will result in the application being rejected and any subsequent contract being declared void. Other legal action may also be taken. Applicable statutes include, but are not limited to, Government Code section 1090 and Public Contract Code sections 10410 and 10411, for State conflict of interest requirements. This is consistent with Grant Agreement Standard Condition D.12.

DRUG-FREE WORKPLACE CERTIFICATION: The Consultant hereby certifies, under penalty of perjury under the laws of State of California, compliance with the requirements of the Drug-Free Workplace Act of 1990 (Gov. Code, § 8350 et seq.) and have or will provide a drug-free workplace. This is consistent with Grant Agreement Standard Condition D.15.

ADDITIONAL INSURED: The Consultant and its Contractors and subcontractors shall name the State, its officers, agents, and employees as additional insured on their liability insurance for activities undertaken pursuant to this Agreement. This is consistent with Grant Agreement Standard Condition D.22.

INSPECTION OF PROJECT BY STATE: State shall have the right to inspect the work being performed at any and all reasonable times during the term of the Funding Agreement. This right shall extend to any subcontracts, and Grantee shall include provisions ensuring such access in all its contracts or subcontracts entered into pursuant to its Funding Agreement with State. This is consistent with Grant Agreement Standard Condition D.23.

LABOR CODE COMPLIANCE: The Consultant and its contractors or subcontractors agree to be bound by all the provisions of the Labor Code regarding prevailing wages and shall monitor all contracts subject to reimbursement from this Agreement to assure that the prevailing wage provisions of the Labor Code are being met. Current Department of Industrial Relations (DIR) requirements may be found at: <http://www.dir.ca.gov/lcp.asp>. For more information, please refer to DIR's *Public Works Manual* at: <http://www.dir.ca.gov/dlse/PWManualCombined.pdf>. The Grantee affirms that it is aware of the provisions of section 3700 of the Labor Code, which requires every employer to be insured against liability for workers' compensation or to undertake self insurance, and the Grantee affirms that it will comply with such provisions before commencing the performance of the work under this Agreement and will make its contractors and subcontractors aware of this provision. This is consistent with Grant Agreement Standard Condition D.24.

NONDISCRIMINATION: During the performance of this Funding Agreement, the Consultant and its contractors or subcontractors shall not unlawfully discriminate, harass, or allow harassment against any employee or applicant for employment because of sex (gender), sexual orientation, race, color, ancestry, religion, creed, national origin (including language use restriction), pregnancy, physical disability (including HIV and AIDS), mental disability, medical condition (cancer/genetic characteristics), age (over 40), marital/domestic partner status, gender identity, and denial of medial and family care leave or pregnancy disability leave. The Consultant and its contractors or subcontractors shall ensure that the evaluation and treatment of their employees and applicants for employment are free from such discrimination and harassment. The Consultant and its contractors or subcontractors shall comply with the provisions of the California Fair Employment and Housing Act (Gov. Code, § 12990.) and the applicable regulations promulgated there under (Cal. Code Regs., tit. 2, § 11000 et seq.). The applicable regulations of the Fair Employment and Housing Commission are incorporated into this Agreement by reference. The Consultant and its contractors or subcontractors shall give written notice of their obligations under this clause to labor organizations with which they have a collective bargaining or other agreement. The Consultant shall include the nondiscrimination and compliance provisions of this clause in all subcontracts to perform work under the Funding Agreement. This is consistent with Grant Agreement Standard Condition D.26.

PERFORMANCE BOND: Construction shall not be authorized to begin until each contractor has furnished a performance bond in favor of the Grantee in the following amounts: faithful performance (100%) of contract value, and labor and materials (100%) of contract value. This requirement shall not apply to any contract for less than \$25,000.00. Any bond issued pursuant to this paragraph must be issued by a California-admitted surety. (Civ. Code, § 9550, et seq.; Pub. Contract Code, § 7103; Code Civ. Proc., § 995.311.) This is consistent with Grant Agreement Standard Condition D.28.

SUSPENSION OF PAYMENTS: This Funding Agreement may be subject to suspension of payments or termination, or both if the State determines that:

- A. The Consultant, its contractors, or subcontractors have made a false certification, or
- B. The Consultant, its contractors, or subcontractors violates the certification by failing to carry out the requirements noted in this Funding Agreement.

This is consistent with Grant Agreement Standard Condition D.37.

Appendix C

Contractor and Grantee Compliance with Economic Sanctions Imposed in Response to Russia's Actions in Ukraine

DEPARTMENT OF WATER RESOURCES

715 P STREET, 7th FLOOR P.O. BOX 942836
SACRAMENTO, CA 94236-0001

**APR 19 2022**

April 18, 2022

RE: Contractor and Grantee Compliance with Economic Sanctions Imposed in Response to Russia's Actions in Ukraine

Dear Contractor or Grantee:

On March 4, 2022, Governor Gavin Newsom issued Executive Order N-6-22 (EO) regarding sanctions in response to Russian aggression in Ukraine. The EO is located at <https://www.gov.ca.gov/wp-content/uploads/2022/03/3.4.22-Russia-Ukraine-Executive-Order.pdf>.

The EO directs all agencies and departments that are subject to the Governor's authority to take certain immediate steps, including notifying all contractors and grantees of their obligations to comply with existing economic sanctions imposed by the U.S. government in response to Russia's actions in Ukraine, as well as any sanctions imposed under state law.

This correspondence serves as a notice under the EO that as a contractor or grantee, compliance with the economic sanctions imposed in response to Russia's actions in Ukraine is required, including with respect to, but not limited to, the federal executive orders identified in the EO and the sanctions identified on the U.S. Department of the Treasury website (<https://home.treasury.gov/policy-issues/financial-sanctions/sanctions-programs-and-country-information/ukraine-russia-related-sanctions>). Failure to comply may result in the termination of contracts or grants, as applicable.

Please note that for any agreements or grants valued at \$5 million or more, a separate notification will be sent outlining additional requirements specified under the EO.

Sincerely,

Rhonda Pascual

Rhonda Pascual
Manager, Division of Business Services
Department of Water Resources

