

LAS VIRGENES MUNICIPAL WATER DISTRICT
4232 LAS VIRGENES ROAD
CALABASAS, CALIFORNIA 91302-1994
TELEPHONE: (818) 251-2100
LOS ANGELES COUNTY, CALIFORNIA

CONTRACT DOCUMENTS

**CALLEGUAS – LVMWD
INTERCONNECTION PROJECT**

**APPROVED FOR BIDDING
JULY 2020**



**LAS VIRGENES MUNICIPAL WATER DISTRICT
CALLEGUAS-LVMWD INTERCONNECTION PROJECT**

SPECIAL PROVISIONS, PROPOSAL, AND CONTRACT

TABLE OF CONTENTS

PART I – BID INFORMATION, FORMS, PROPOSAL AND GENERAL PROVISIONS

- Notice Inviting Sealed Proposals (Bids)
- Information for Bidders
- Proposal
- Non-collusion Declaration
- Agreement
 - General
 - Wages, Hours, and Working Conditions
 - Insurance, Indemnification and Bonds
 - Performance
 - Miscellaneous
- Workers' Compensation Certificate
- Payment Bond
- Performance Bond
- Supplemental to General Provisions

PART II - TECHNICAL SPECIFICATIONS

- Section 01010 – Summary of Work and Contract Considerations
- Section 01040 – Coordination and Project Requirements
- Section 01070 – Stormwater Pollution Prevention Plan
- Section 01140 – Environmental Protection
- Section 01270 – Measurement and Payment
- Section 01300 – Submittals
- Section 01500 – Construction Facilities and Temporary Controls
- Section 01550 – Traffic Regulation
- Section 01700 – Contract Closeout
- Section 02050 – Demolition
- Section 02302 – Earthwork for Pipelines
- Section 02320 – Horizontal Direction Drilling
- Section 02700 – Paving
- Section 02775 – Concrete Curb, Gutter and Sidewalks
- Section 03310 – Reinforcing Steel, Cast-In-Place Concrete and Concrete Finishes
- Section 09960 – Protective Coating
- Section 11003 – Disinfection
- Section 13118 – Corrosion Monitoring System
- Section 15050 – Piping, Valves and Accessories
- Section 900 – City of Westlake Village Specifications for Additive Bid Schedule D

APPENDIX

Appendix A – City of Westlake Village Encroachment Permits

Appendix B – City of Thousand Oaks Encroachment Permits

Appendix C – CA Proposition 84 Labor Compliance Handout

Appendix D – DWR Sign

Appendix E – Los Angeles County Flood Control Permit

Appendix F – Geotechnical Report

Appendix G – Pothole Report

NOTICE INVITING SEALED PROPOSALS (BIDS)
Calleguas-LVMWD Interconnection Project

NOTICE IS HEREBY GIVEN that the Board of Directors of Las Virgenes Municipal Water District (District) invites and will receive sealed proposals (bids) up to the hour of **3:00PM** on **August 12, 2020**, for furnishing the work described in the contract documents. Bids received after the time stated in the Call for Bids will not be accepted and will be returned, unopened, to the bidder. The time shall be determined by the time on the receptionist telephone console in our Headquarters lobby. Proposals will be publicly opened and read aloud at the office of the District, 4232 Las Virgenes Road, Calabasas, California 91302. Said bids shall conform to and be responsive to the Specifications and Contract Documents for said work as heretofore approved by the District.

Precautions are being taken by the District in response to the novel coronavirus and COVID-19 outbreak in order to protect employees, customers, and our partners. Until further notice, the District is suspending in-person meetings relating to bids (including public bid openings, the hand-delivery of bids by company employees, and in-person pre-bid meetings) to reduce the number of people coming into District facilities.

This policy is effective, Monday, April 6, 2020, and remains in force until further notice. All bids must be sent by mail. Bidders must allow enough time for bids to be delivered to the District by the due date. All submittals will be time stamped as soon as they are received. Bids received after the due date and time may be deemed non-responsive and excluded from consideration. The District is now also allowing proposals to be dropped into a mail box outside the front entrance doors to the main building (4232 Las Virgenes Rd.) This mail box is checked every morning, and will also be checked several times throughout the bid due date. All bids are to be received by the deadline, **3:00pm** on **August 12, 2020**. Bids being sent by mail must allow sufficient time for delivery, to District headquarters, by the deadline. It is also recommended to specify "**Calleguas-LVMWD Interconnection Project**", somewhere on the envelope to ensure prompt timestamping.

Pre-bid meetings and other meetings associated with the bidding process will be held via telephone conference and/or through web enabled video conference. Details for these meetings will be provided on bid announcements specific to each project.

A **mandatory** pre-bid meeting will be conducted at **9:00AM** on **July 22, 2020**. The meeting will be conducted via web-enabled conference. Attendance at the pre-bid conference is a condition precedent to submittal of the bid and the District will not consider a bid from any bidder not represented at the pre-bid conference. Questions regarding the project may be directed to Oliver Slosser, P.E., at (818) 585-7123 or oslosser@lvmwd.com.

Sets of contract documents may be downloaded for free by going to <http://www.LVMWD.com/Ebidboard> and following the links to this project.

In order to be placed on the plan holder's list, contractors shall register for free as a document holder for this project on Ebidboard by going to www.LVMWD.com/Ebidboard and following the links to this project. Addendum notifications will be issued through Ebidboard.com but may also be provided by calling the District's Project Manager. Although

Ebidboard will fax and/or email all notifications to registered plan holders after the District uploads the information, Bidders are responsible for obtaining all addenda and updated contract documents.

Each bid must be on the District bid form and shall be sealed and filed with the secretary of the District at or before the time stated in the Notice.

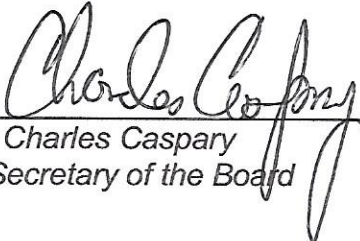
No Contractor or Subcontractor may be listed on a bid proposal for a public works project submitted on or after March 1, 2015 unless registered with the Department of Industrial Relations pursuant to Labor Code section 1725.5. No Contractor or Subcontractor may be awarded a contract for public work on a public works project awarded on or after April 1, 2015 unless registered with the Department of Industrial Relations pursuant to Labor Code section 1725.5. Effective January 1, 2016, no Contractor or Subcontractor may perform on 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 DIR.

All terms and conditions contained in the Specifications and Contract Documents shall become part of the contract. The Board of Directors of Las Virgenes Municipal Water District reserves the right to reject any and all bids and to waive any and all irregularities in any bid. No bidder may withdraw his bid after the said time for bid openings until 60-days thereafter or until the District has made a final award to the successful bidder or has rejected all bids, whichever event first occurs.

The Board of Directors of the District reserves the right to select the schedule(s) under which the bids are to be compared and contract(s) awarded.

**BY ORDER OF THE GOVERNING BODY OF
LAS VIRGENES MUNICIPAL WATER DISTRICT**

July 7, 2020
Dated



Charles Caspary
Secretary of the Board

INFORMATION FOR BIDDERS

1. GENERAL

The work hereunder must be done in strict conformity with the plans and specifications adopted and approved by the District.

2. CONTRACT DOCUMENTS

(a) *The contract documents shall consist of the following:*

- Notice Inviting Sealed Proposals (Bids)*
- Information for Bidders*
- Proposal or Bid Form*
- Non-collusion Declaration*
- Agreement*
- Addenda issued Prior to Bid Opening*
- Certificate(s) of Insurance*
- Workers Compensation Certificate*
- Bonds*
- Special Provisions*
- Plans and Specifications*

(b) *Terms and conditions contained in the contract documents are part of the contract. The governing board of the District may reject bids and to waive informalities in bids. No bidder may withdraw a bid until the District has made a final award to the successful bidder or has rejected all bids.*

3. PROPOSALS

Bids shall be made upon the form of proposal furnished by the District and a part of the contract documents. Bids shall be properly executed and with all items filled in; the signatures of persons signing shall be in longhand. Erasures, interlineations, or other corrections shall be authenticated by affixing in the margin immediately opposite the correction, the initials of a person signing the bid. The unit price and the total amount named by a bidder for an item are not in agreement, the unit price alone shall be considered as representing the bidder's intention, and the totals shall be corrected to conform.

Persons bidding may submit bids on any of the schedules set forth in the bid form.

Bids shall not contain recapitulation of the work to be done. Alternative proposals will not be considered except as called for. No oral, telegraphic or telephonic proposals or modifications will be considered.

Bids shall be accompanied by a bidder bond in a form acceptable to the District or cash in the amount of 10% of the bid price.

Before submitting a bid, bidders shall carefully examine all contract documents, shall visit the site of the work, shall fully inform themselves as to all the existing conditions and limitations, and shall include in the bid a sum to cover the cost of all items included in the contract. No allowance will be made because of lack of such examination or knowledge.

Bids shall be accompanied by proof of Contractor's and Subcontractor's current registration with the Department of Industrial Relations pursuant to Labor Code section 1725.5. Bidders can satisfy this requirement by including their DIR registration number on the enclosed Proposal form where noted.

*Bids shall be sealed in an envelope marked **Calleguas-LVMWD Interconnection Project** addressed to the Secretary of the District, and be delivered thereto on or before the day and hour set for the opening of bids in the notice inviting sealed proposals, and shall bear the name of the bidder. It is the SOLE responsibility of the bidder to see that his bid is delivered and received in proper time. Any bid received after that scheduled closing time for receipt of bids shall be returned to the bidder unopened.*

The District shall have a period of 60 days after the opening of bids within which to accept or reject the bids. If no bid is accepted within the period, or if the successful bidder executes and delivers the necessary contract documents to the District, the District will return to each bidder all checks and bonds received by the District from unsuccessful bidders within 10 days after the execution of the contract and presentation of required certificates and bonds or within 10 days after being requested to do so by the bidder if no bid is accepted within the period.

4. AGREEMENT AND BONDS

The form of contract which the successful bidder, as Contractor, will be required to execute is included in the contract documents, and should be carefully examined by the bidder. The agreement, bonds, and other documents to be executed by the Contractor shall be executed in original triplicates stamped according to law, one of which original triplicate shall be filed with the District, and the others with the District's Attorney and the District's Engineer.

The successful bidder, simultaneously with the execution of the agreement, shall furnish and maintain a payment bond in an amount equal to 100% of the contract price and a faithful performance bond in an amount equal to 100% of the contract price. The bonds shall be secured from a surety company satisfactory to the District and whose name is on file with the County Clerk of Los Angeles County as an approved and financially sound surety company, authorized to transact business in this State.

The bonds shall meet all of the requirements and contain the conditions required by Sections 3247 and 3248 inclusive, of the Civil Code, and other applicable provisions of the law and regulations of the State of California.

Failure to execute the contract and file acceptable bonds and proof of insurance coverage as provided therein within the time set forth herein shall be just cause for the annulment of the award and forfeiture of the proposal guarantee.

5. ADDENDA OR BULLETINS

Addenda or bulletins issued before the time to submit bids expires or forming a part of the contract documents furnished to the bidder for preparation of his bid, shall be covered in the bid and shall be made a part of the contract.

6. WITHDRAWAL OF BID

A bidder may withdraw the bid personally or by a signed written request prior to the scheduled time for opening of the bids (but not after).

7. AWARD OR REJECTION OF BIDS

The contract will be awarded to the lowest responsible bidder complying with these instructions and with the notice inviting sealed proposals. The TOTAL of the Base Bid Schedule and the Base Paving Schedule 1 will be the basis of determining the lowest responsible bidder and basis for award of contract. The District reserves the right to change, add, or delete any scope defined in the Base Bid Schedule at their sole discretion. The District reserves the right to deviate from the scope of work listed in the Base Bid Schedule prior or subsequent to award of contract. The District may reject bids or waive informality in bids. If in the judgment of the District a bid is unbalanced, or if the bidder is not responsible, it shall be considered sufficient grounds for rejection of the entire bid.

8. BIDDERS INTERESTED IN MORE THAN ONE BID

No person, firm or corporation shall make or file, or be interested in more than one bid for the same work, unless alternative bids are solicited. A person, firm or corporation submitting a subproposal to a bidder, or who has quoted prices on material to a bidder, is not disqualified from submitting a subproposal or quoting prices to other bidders.

9. OTHER REQUIREMENTS

Before award of the contract, a bidder upon request shall furnish a recent statement of financial condition and previous construction experience or other evidence of qualifications.

Before entering into a contract, the bidder to whom the contract has been awarded shall furnish satisfactory evidence of workers' compensation insurance and public liability and property damage insurance as specified in the special provisions.

*Contractor's License requirement for this project is: **Class A. General.***

PROPOSAL
to
LAS VIRGENES MUNICIPAL WATER DISTRICT
FOR THE CONSTRUCTION OF
CALLEGUAS-LVMWD INTERCONNECTION PROJECT

Name of Bidder: _____

License Number and Class.: _____

DIR Registration Number: _____

Business Address: _____

Phone No.: _____

The site of the work to be constructed and referred to herein is in the County of Los Angeles, California.

The work is to be in accordance with the specifications and contract documents and as shown on plans therefore entitled:

CALLEGUAS-LVMWD INTERCONNECTION PROJECT.

TO THE GOVERNING BOARD OF LAS VIRGENES MUNICIPAL WATER DISTRICT.

In compliance with your notice inviting sealed proposals (bids) and other documents, the undersigned bidder proposes to perform the work and in a workmanlike manner, in strict conformity with the plans and specifications and other contract documents, including Addenda Nos. ^[____], ^[____], and ^[____], on file in the office of the Secretary of the District for the contract unit prices herein.

The following Bid Schedules are included:

1. **Base Bid Schedule** Installation of 30 Inch Steel Pipeline
2. **Base Paving Bid Schedule 1** AC Surface Pavement for 30" Pipeline
3. **Additive Bid Schedule A** Installation of 3-2 Inch Conduit from Thousand Oaks Blvd. to Hedgewall Dr.
4. **Additive Bid Schedule B** Installation of 3-2 Inch Conduit from Thousand Oaks Blvd. to County Line
5. **Alternative Paving Bid Schedule 2** AC Surface Pavement Lindero Canyon Rd. All Lanes from Thousand Oaks Blvd. to County Line

Bid Schedules: Base Bid Schedule and Base Paving Bid Schedule 1 will be added together for the Base Bid and will be the basis of award.

Additive Bid Schedule A or B may be added to the Contract as determined by the District.

Alternative Paving Bid Schedule 2 may be substituted for Base Paving Bid Schedule 1 at the discretion of the District.

All Bid Schedules are required to filled out completely. Any omissions will be grounds for rejection of the Proposal.

**Base Bid Schedule
Installation of 30 Inch Steel Pipeline**

Item	Description	Pay Ref*	Unit	Quantity	Unit Price	Total Price
1	Mobilization	1.02	LS	1		
2	Demobilization at Project completion	1.03	LS	1		
3	Bonds and Insurance	1.04	LS	1		
4	Traffic Control	1.05	LS	1		
5	Trenching, Sheeting, & Shoring Safety protection	1.06	LS	1		
6	Installation of 30" CMLC Steel Water Main	1.07	FT	4979		
7	Connection to existing pipe at STA 56+88.95	1.08	LS	1		
8	Cathodic Protection	1.09	LS	1		
9	Air Vacuum Valve & Blow Off Assemblies for 30" Water Main	1.10	EA	6		
10	Curb and Gutter for Air Vacuum Valve & Blow off Assemblies	1.11	LF	130		
11	Water Sample Station for 30" Water Main	1.12	LS	1		
12	Sidewalk for Air Vacuum Valves & Blow Off Assemblies	1.13	SF	550		
13	30" Water Main – Slurry Backfill	1.14	CY	2500		
14	30" Water Main – AC Paving w/o 2" Surface Course Between Thousand Oaks Blvd & County Line	1.15	TONS	800		
15	30" Water Main – AC Paving Between County Line & Sta 7+05	1.15	TONS	120		
16	Flushing, Testing, and Disinfection of 30" Water Main	1.16	LS	1		
17	Installation of 6" & 4" PVC Recycled Water Main	1.23	FT	1,882		

Item	Description	Pay Ref*	Unit	Quantity	Unit Price	Total Price
18	4" Fusible HDPE – Horizontal Directional Drilling	1.24	FT	100		
19	Recycled Water Main – Slurry Backfill	1.25	CY	250		
20	Recycled Water Main – AC Paving w/o 2" Surface Course	1.26	TONS	120		
21	Remove and Relocate existing 4" meter	1.27	LS	1		
22	Air Vacuum Valve & Blow Off Assemblies for Recycled Water Main	1.28	EA	2		
23	Flushing, Testing, & Disinfection of Recycled Water Main	1.29	LS	1		
24	Contractor markups of the construction plans of changes to produce Record Drawings	1.30	LS	1		
25	Stormwater Pollution Prevention Plan and Environmental Protection Requirements for the entire Project including Mitigation Measures	1.31	LS	1		
26	Traffic Detector Loops Type D	1.32	EA	1		
27	Traffic Detector Loops Type E	1.32	EA	3		
TOTAL BASE BID SCHEDULE PRICE						

***See Section 01270 – Measurement and Payment, Part 1**

**Base Paving Bid Schedule 1
AC Surface Pavement for 30" Pipeline**

Item	Description	Pay Ref*	Unit	Quantity	Unit Price	Total Price
1	Mobilization	1.02	LS	1		
2	Demobilization at Project completion	1.03	LS	1		
3	Bonds and Insurance	1.04	LS	1		
4	Traffic Control	1.05	LS	1		
5	30" Water Main - AC Surface Paving	1.15	TONS	900		
6	Recycled Water Main - AC Surface Paving	1.26	TONS	90		
7	Contractor markups of the construction plans of changes to produce Record Drawings	1.30	LS	1		
8	Stormwater Pollution Prevention Plan and Environmental Protection Requirements for the entire Project including Mitigation Measures	1.31	LS	1		
9	Traffic Loops	1.32	LS	1		
	Total Base Paving Bid Schedule 1 Price					

*See Section 01270 – Measurement and Payment, Part 1

BASE BID

Total Base Bid Schedule Price \$ _____

Base Paving Bid Schedule 1 Price* \$ _____

TOTAL BASE BID PRICE \$ _____

*If Alternative Paving Bid Schedule 2 is selected by the District, Base Paving Bid 1 will be replaced. However, all items shown on the Base Bid Schedule and the Base Paving Bid Schedule 1 in the table above will form the basis of selection of the lowest responsible bidder and award of contract.

Additive Bid Schedule A
Installation of 3-2 Inch Conduit
from Thousand Oaks Blvd. to Hedgewall Dr.

Item	Description	Pay Ref*	Unit	Quantity	Unit Price	Total Price
1	Mobilization	1.02	LS	1		
2	Demobilization at Project completion	1.03	LS	1		
3	Bonds and Insurance	1.04	LS	1		
4	Traffic Control	1.05	LS	1		
5	Trenching, Sheeting, and Shoring Safety protection	1.06	LS	1		
6	Installation of 3-2" PVC Conduit	1.17	LF	2374		
7	3-2" PVC Conduit – Slurry Backfill	1.18	CY	200		
8	3-2" PVC Conduit - AC Paving w/o 2" Surface Course	1.19	TONS	150		
9	Pull Box	1.20	EA	6		
10	Curb and Gutter for Pull Boxes	1.21	LF	30		
11	Sidewalk for Pull Boxes	1.22	SF	150		
12	Contractor markups of the construction plans of changes to produce Record Drawings	1.30	LS	1		
13	Stormwater Pollution Prevention Plan and Environmental Protection Requirements for the entire Project including Mitigation Measures	1.31	LS	1		
	TOTAL ADDITIVE BID SCHEDULE A PRICE					

***See Section 01270 – Measurement and Payment, Part 1**

Additive Bid Schedule B
Installation of 3-2 Inch Conduit
from Thousand Oaks Blvd. to County Line

Item	Description	Pay Ref*	Unit	Quantity	Unit Price	Total Price
1	Mobilization	1.02	LS	1		
2	Demobilization at Project completion	1.03	LS	1		
3	Bonds and Insurance	1.04	LS	1		
4	Traffic Control	1.05	LS	1		
5	Trenching, Sheeting, and Shoring Safety protection	1.06	LS	1		
6	Installation of 3-2" PVC Conduit	1.17	LF	4642		
7	3-2" PVC Conduit – Slurry Backfill	1.18	CY	400		
8	3-2" PVC Conduit - AC Paving w/o 2" Surface Course	1.19	TONS	300		
9	Pull Box	1.20	EA	11		
10	Curb and Gutter for Pull Boxes	1.21	LF	55		
11	Sidewalk for Pull Boxes	1.22	SF	275		
12	Contractor markups of the construction plans of changes to produce Record Drawings	1.30	LS	1		
13	Stormwater Pollution Prevention Plan and Environmental Protection Requirements for the entire Project including Mitigation Measures	1.31	LS	1		
TOTAL ADDITIVE BID SCHEDULE B PRICE						

***See Section 01270 – Measurement and Payment, Part 1**

Alternative Paving Bid Schedule 2
AC Surface Pavement Lindero Canyon Rd. All Lanes
From Thousand Oaks Blvd. to County Line

Item	Description	Pay Ref	Unit	Quantity	Unit Price	Total Price
1	Mobilization	Section 01270 1.02	LS	1		
2	Traffic Control	Section 0127 1.05	LS	1		
3	Bonds and Insurance	Section 0127 1.04	LS	1		
4	2" Cold Mill	908-6	SF	336,879		
5	ARHM Overlay	909-4	TN	4,155		
6	High Tensile Fiber	909-4	LB	4,155		
7	Adjust Manhole Cover	913-2	EA	8		
8	Adjust Water Valve Cover Slip-Cans	914-2	EA	3		
9	Traffic Detector Loops Type D	916-2	EA	1		
10	Traffic Detector Loops Type E	916-2	EA	3		
11	Striping, Pavement Markings, Pavement Markers, and Traffic Signs	915-8	LS	1		
	TOTAL ALTERNATIVE PAVING BID SCHEDULE 2 PRICE					

It is understood the foregoing quantities are approximate only and are solely for the purpose of facilitating the comparison of bids. The Contractor's compensation will be computed upon the basis of the actual quantities in the complete work, whether they are more or less than those shown.

MATERIALS LIST

State manufacturers name and address for each type of material upon which this proposal is based.

TYPE OF MATERIAL

MANUFACTURER

SUBCONTRACTOR LIST

Contractor shall submit to District the following information:

- (1) The name and location of the place of business of each subcontractor performing work, labor or render construction services and each subcontractor licensed by the State of California specially fabricating and installing improvements according to detailed drawings or the plans and specifications, in an amount in excess of one-half of one percent of the Contractor's total bid.*
- (2) The portion of the work to be done by each subcontractor.*
- (3) Bidder shall list the California Contractor's license number of its listed subcontractors under the requirements for subcontractor listing and shall be solely responsible to correct any errors in the listing of the California Contractor's license number. Bidder shall submit corrected California Contractor's license number information within 24 hours after the bid opening by submitting the correction to the District representative provided within the Notice of Inviting Sealed Proposals. Bidder's failure to submit a corrected California Contractor's license number in compliance with the process set forth in the instructions to bidders will cause the bid to be nonresponsive.*

The contractor shall list only one subcontractor for each portion of the work identified in the bid.

DIVISION OF WORK OR TRADE	NAME OF SUBCONTRACTOR (LICENSE # / CLASSIFICATION) (DIR REGISTRATION NO.)	LOCATION OF MILL, SHOP OR OFFICE
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

SIGNATURE OF AUTHORIZED

OFFICER OF BIDDER: _____

PRINTED NAME: _____

DATED: _____

NOTE: If Bidder is a corporation, the legal name of the corporation shall be set forth above, together with the signature of the officer or officers authorized to sign contracts on behalf of the corporation. If Bidder is a co-partnership, the true name of the firm shall be set forth above, together with the signature of the partner or partners authorized to sign contracts on behalf of the co-partnership. If the Bidder is an individual, the signature shall be placed above. If a joint venture of a special partnership, the names of the general partners and special partners shall be submitted.

NONCOLLUSION DECLARATION

The undersigned declares under penalty of perjury as follows:

1. *I am employed by [_____] of [_____] , the party making the foregoing bid as [_____].*
2. *The bid is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization, or corporation.*
3. *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.*
4. *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.*
5. *All statements contained in the bid are true.*
6. *The bidder has not, directly or indirectly, submitted the 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.*

DATED: _____

By: _____

AGREEMENT FOR THE CONSTRUCTION OF CALLEGUAS-LVMWD INTERCONNECTION PROJECT

As of _____, Las Virgenes Municipal Water District, herein "Agency," and [**Contractor's name**], herein "Contractor," agree as follows:

GENERAL

SECTION 1. SCOPE OF WORK

Contractor will furnish labor, equipment and materials and will perform work for the construction of the facilities described in the plans and specifications.

SECTION 2. CONSIDERATION

Agency shall pay Contractor the sum set forth in Contractor's bid for the performance of the work.

SECTION 3. PAYMENTS

(a) Monthly progress payments shall be as follows:

(1) On or about the 25th day of each month, Contractor shall submit to Agency an invoice including an estimate of the cumulative amount and value of the work performed by Contractor prior to that date and subsequent to prior estimates. The estimate may include the value of acceptable materials and equipment delivered to the work site. The estimate shall be based on certified copies of paid invoices by the Contractor.

(2) The Agency shall review the request as soon as practicable to determine whether the payment request is proper. A payment request found not to be a proper payment shall be returned within seven days after receipt accompanied by a written description of the reasons why the request is not proper.

(3) Agency shall pay Contractor, 95% percent of the invoice amount reduced by: amounts due to Agency for equipment, services or materials furnished by Agency; amounts of claims or liens by the Agency or others, and amounts required to be deducted by federal, state or local governmental authorities.

(4) If the Agency fails to make progress payment within 35 days after receipt of an undisputed and properly submitted invoice, the Agency shall pay to the Contractor interest at the legal rate set forth in Code of Civil Procedure Section 685.101(a) from seven days after receipt of the invoice by the Agency until paid.

(5) Progress payments do not signify acceptance of the work, or any portion of the work. Payments do not preclude Agency from demanding and recovering damages for failure to fully perform.

(b) On satisfactory completion of the work, Agency shall pay Contractor ninety five percent of the value of the actual work less prior monthly progress payments.

(c) Within thirty days after recordation of a notice of completion, the undisputed amounts withheld by the Agency shall be released. Completion occurs on the acceptance by the governing body of the Agency; or the filing of a notice of cessation of labor.

(d) Notwithstanding the foregoing, contractor may receive payment in full, other than retention for claims by the Agency or third parties, if the contractor deposits approved securities or enters into an agreement with an escrow agent to hold earned retentions. The substitution of securities or the use of an escrow account shall be in the form and manner permitted by law.

SECTION 4. CONTRACT DOCUMENTS

(a) The complete contract includes the contract documents set forth herein, to wit: the Notice Inviting Sealed Proposals, Information For Bidders, Proposal or Bid Form, Non-collusion Declaration, this Agreement, Certificate of Insurance, Workers' Compensation Certificate, Plans and Specifications, and Addenda issued prior to Bid Opening.

(b) Any person making a bid or offer to perform the work shall set forth the following in the bid or offer:

- (1) Name, location and place of business;
- (2) Proof of Contractor's and Subcontractors' current registration with the Department of Industrial Relations as required by Labor Code Section 1725.5;
- (3) California contractor's license number of each subcontractor who will perform the work or render service to the prime contractor in excess of one-half (1/2) of one (1) percent of the prime contractor's total bid; and
- (4) Description of portion of work to be performed by each subcontractor.

SECTION 5. COMPLIANCE WITH PROVISIONS OF LAW

(a) This Agency is subject to laws relating to public agencies which are part of this contract though fully set forth herein.

(b) Contractor shall comply with laws relating to the work.

(c) This project is subject to compliance monitoring and enforcement by the Department of Industrial Relations.

SECTION 6. ATTORNEY FEES

The Court shall award reasonable costs and expenses, including attorney fees, to the prevailing party in an action or proceeding to enforce this Agreement.

SECTION 7. NOTICES

Notices required or permitted shall be given by personal delivery, by first class mail, postage prepaid, or facsimile transmission:

To: _____, Contractor

[Contractor's Address]

To: Las Virgenes Municipal Water District
4232 Las Virgenes Road
Calabasas, CA 91302-1994

SECTION 8. CONFLICT WITH PLANS AND SPECIFICATIONS

Conflict between the plans and specifications and this contract shall be brought to the attention of the Agency which shall resolve such conflict.

SECTION 9. ASSIGNMENT

(a) Contractor shall not assign this contract or payments under this contract.
(b) Contractor and each subcontractor hereby assign to the Agency rights, title, and interest in and to causes of action under Section 4 of the Clayton Act (15 U.S.C.A. Sec. 15) or under the Cartwright Act (Chapter 2 (commencing with Section 16700) of Part 2 of Division 7 of the Business and Professions Code), arising from purchases of goods, services, or materials for this contract or the subcontract. This assignment shall be made and become effective without further acknowledgment by the parties at the time the Agency tenders final payment to the Contractor.

SECTION 10. SECTION HEADINGS

Section headings are for the convenience of the parties and shall not affect the interpretation of this contract.

SECTION 11. AUTHORITY OF AGENCY REPRESENTATIVE

Agency's representative shall decide questions about the quality or acceptability of materials furnished and work performed, manner of performance and rate of progress of the work, the interpretation of the plans and specifications and the fulfillment of the contract by the Contractor.

WAGES, HOURS, AND WORKING CONDITIONS

SECTION 12. PREVAILING WAGES

(a) A determination of the general prevailing rates of per diem wages and holiday and overtime work where the work is to be performed is on file at the Agency's offices. Contractor and subcontractors will not pay less than the prevailing rates of wages. Contractor will post one copy of the prevailing rates of wages at the job site.

(b) Contractor shall forfeit as penalty to the Agency the sum of fifty dollars for each calendar day or portion thereof, and for each workman paid less than the prevailing rates under the contract or subcontractor.

SECTION 13. TRAVEL AND SUBSISTENCE PAYMENTS

Travel and subsistence payments shall be paid to each worker as defined in the applicable collective bargaining agreements filed with the Department of Industrial Relations for the particular craft, classification or type of work.

SECTION 14. HOURS OF WORK

(a) Eight hours labor constitutes a legal day's work. Workers shall be paid at a rate of one and one-half times the basic rate of pay for work in excess of eight hours during a calendar day or forty hours during a calendar week of the foregoing hours.

(b) Contractor shall keep and make available an accurate record showing the name each worker and hours worked each day and each week by each worker.

(c) Contractor shall furnish electronic certified payroll records to the Labor Commissioner in accordance with Labor Code Section 1771.4.

(d) As a penalty for failure to pay overtime when required, the Contractor shall forfeit to the Agency twenty-five dollars for each worker for each calendar day during which such worker works more than eight hours and is not paid overtime, and for each week during which such worker works more than forty hours and is not paid overtime.

SECTION 15. APPRENTICES

Contractor shall comply with the Labor Code concerning the employment of apprentices.

SECTION 16. SUBCONTRACTORS

Contractor shall comply with the *Subletting and Subcontracting Fair Practices Act* of Public Contracts Code.

SECTION 17. DISCRIMINATION

The Contractor shall not refuse to employ or promote any person, and shall not discriminate against any person with respect to compensation or terms and conditions of employment, and shall not discipline or discharge any person employed because of the person's race, religion, creed, color, national origin, ancestry or sex. The Contractor shall not refuse to accept otherwise qualified employees as indentured apprentices solely on the grounds of race, religion, creed, color, national origin, ancestry or sex.

SECTION 18. SAFETY

Contractor and subcontractors shall comply with the provisions of the Safety and Health Regulations for Construction, promulgated by the Secretary of Labor under the *Contract Work Hours and Safety Standards Act*, as set forth in Title 29, C.F.R. and by the California Division of Industrial Safety.

SECTION 19. CHARACTER OF WORKERS

Only competent workers shall be employed on the work. Workers who are incompetent, intemperate, troublesome, disorderly or otherwise objectionable, or who fail to perform work properly and acceptably, shall be immediately removed from the work by the Contractor and not re-employed.

INSURANCE, INDEMNIFICATION AND BONDS

SECTION 20. INSURANCE

(a) Before beginning the performance of the work, Contractor shall purchase and maintain insurance to protect the Contractor and the Agency from claims: (i) arising from Contractor's operations under the contract by the Contractor, a subcontractor or anyone employed by them, or anyone for whose acts any of them may be liable; (ii) under workers compensation, disability benefits and other similar benefit acts; (iii) for damages because of bodily injury, occupational sickness, or disease, or death of the Contractor's employees, or persons other than the Contractor's employees; (iv) for damages insured by usual personal injury liability coverage sustained by a person as a result of an offence related to employment of such person by the Contractor, or other persons; (v) for damages, other than the work itself, because of injury to or destruction of tangible property, including loss of use resulting therefrom; (vi) for damages because of bodily injury, death of a person or property damage arising from ownership, maintenance or use of a motor vehicle; (vii) involving contractual liability insurance applicable to the Contractor's obligations; and (viii) for damage to work in progress.

(b) The insurance required shall be written for not less than limits of liability specified in the contract documents or required by law, whichever is greater. The insurance shall be purchased from companies authorized to do business in the jurisdiction where the project is located. Coverages shall be written on an occurrence basis without interruption from the date of commencement of the work until date of final payment or until termination of coverage required to be maintained after final payment. Agency, its officers, agents and employees shall be named as additional insured.

(c) Certificates of insurance executed by the carrier(s) and acceptable to the Agency and copies of the policy shall be filed with the Agency prior to the commencement of the work. The Certificates and the insurance policies shall provide the policies will not be canceled or allowed to expire until at least thirty days prior written notice has been given to the Agency. If the insurance coverages are required to remain in force after final payment and are reasonably available, an additional certificate evidencing continuation of such coverage shall be submitted with the final application for payment. Information concerning reduction of coverage shall be furnished by the Contractor with reasonable promptness in accordance with the Contractor's information and belief.

(d) Contractor shall require each subcontractor to maintain policies of insurance covering the hazardous, and under the conditions, mentioned above and having the Agency, its officers, agents, volunteers and employees as additional insurers. Copies of the subcontractor's certificates of insurance and policies shall be filed with the Agency.

SECTION 21. INDEMNIFICATION

(a) Contractor shall indemnify and save the Agency, its officers, agents, volunteers and employees, free and harmless from costs, damages or liability, including attorney fees, arising out of any act or omission to act, including any negligent act or omission to act by Contractor, its officers, agents, subcontractors and employees with respect to the performance of the work or the Contractor's obligations under this contract.

(b) In addition to the foregoing, Contractor shall pay Agency costs, including attorney fees, incurred by the Agency in handling, responding to, or litigating stop notice

claims or other demands against money due to the Contractor or against the Contractor's payment bond by Contractor's officers, agents, employees or subcontractors.

SECTION 22. PAYMENT BOND

(a) Before beginning the performance of the work, Contractor shall file a payment bond with the Agency for its approval and acceptance. The payment bond shall be in the sum of one hundred percent of the contract price.

(b) The payment bond shall be in substantially the form of the bond attached hereto. The bond shall be executed by a representative of the surety having no financial interest in the contractor. The payment bond shall be separate and distinct from any other bond required by this contract.

SECTION 23. PERFORMANCE BOND

(a) Before beginning the performance of the work, Contractor shall file a performance bond with the Agency for its approval and acceptance. The performance bond shall be in the sum of one hundred percent of the contract price. The bond shall be payable by surety or sureties to Agency if Contractor fails to fully perform his obligations hereunder.

(b) The performance bond shall be in substantially the form of the bond attached hereto. The bond shall be executed by a representative of the surety having no financial interest in the contractor. The performance bond shall be separate and distinct from any other bond required by this contract.

PERFORMANCE

SECTION 24. TIME FOR COMPLETION

(a) All work under this Contract shall be completed within **one hundred eighty calendar days** after the date of the Notice to Proceed (hereafter "Completion Date"). The term "calendar days" includes Saturdays, Sundays, and holidays.

(b) The Agency expects the project to be completed on or before the Completion Date. If the work is not done by the Completion Date, the Agency will suffer damage and will incur substantial additional costs. Some of these damages and costs are and will be impractical and infeasible to determine, and some will be ascertainable. If the Agency determines, in its sole judgment, the failure to complete the work by the Completion Date is due to unforeseeable causes (which causes include Acts of God, or the public enemy, acts of the Government, acts of another contractor in the performance of another contract with the Agency, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes, unusually severe weather, or delays of Subcontractors due to such causes) or is due to causes within the control of the Agency, the fault or negligence of the Agency, then the Contractor shall not be liable for the Agency's liquidated damages or other damages or costs resulting from the failure to complete the work by the Completion Date. If the Agency determines, in its sole judgment, the failure to complete the work by the Completion Date is due to foreseeable causes, causes within the control of the Contractor, the fault or negligence of the Contractor, or weather conditions which are normal for the area and the season, the Contractor and the Contractor's Surety shall be liable for payment to the Agency of **both** of the following:

(i) Fixed and liquidated damages, which are not a penalty, equal to \$1500 for each calendar day of delay beyond the Completion Date.

(ii) Ascertainable costs and damages incurred by the Agency resulting from the failure to complete the work by the Completion Date, including, but not limited to supervision, engineering, inspection, incidental and overhead expenses directly related to the Contract.

(c) Within ten days from the beginning of the event or reason which will prevent the work under this contract from being completed by the Completion Date, the Contractor shall notify the Agency in writing of the cause of delay and shall request an extension of the Completion Date.

(d) Upon receipt from the Contractor of a request for extension of the Completion Date, the Agency shall ascertain the facts and extent of the delay. The Agency may extend the Completion Date if the Agency determines, in its sole judgment, the findings justify an extension and such extension is in the best interest of the Agency. Such an extension will increase the Agency's financial obligations and costs incurred for supervision, engineering, inspection, incidental and overhead expenses directly related to the Contract and which accrue as a result of the extension. If the Agency extends the Completion Date and determines, in its sole judgment, the extension is needed due to unforeseeable causes (which causes include Acts of God, or the public enemy, acts of the Government, acts of another contractor in the performance of another contract with the Agency, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes, unusually severe weather, or delays of Subcontractors due to such causes) or is due to causes within the control of the Agency, the fault or negligence of the Agency, then the Contractor shall not be liable for the Agency's damages or costs resulting from such extension. If the Agency extends the Completion Date and determines, in its sole judgment, the extension is needed due to foreseeable causes, causes within the control of the Contractor, the fault or negligence of the Contractor, or weather conditions which are normal for the area and the season, then the Contractor and its Surety shall be liable for an shall reimburse Agency for such costs before the final payment.

(e) The Agency may deduct the liquidated damages and any additional costs and damages for which the Contractor is liable under this Section, from progress payments or from the final payment. The payment of progress payments before and after the Completion Date shall not constitute a waiver of liquidated damages or of additional damages or costs for which the Contractor is liable under this Section. Release of any Bonds shall be contingent upon payment of these amounts.

SECTION 25. ACTS OF GOD

Contractor is not responsible for the cost of repairing or restoring damage to the work exceeding five percent of the contract price and determined to have been proximately caused by earthquakes in excess of the magnitude of 3.5 on the Richter Scale and tidal waves if damaged work is built in accordance with accepted and applicable building standards and the plans and specifications.

SECTION 26. UTILITY RELOCATION

(a) As between the parties, Agency is responsible for the timely removal, relocation or protection of existing main or trunk line underground utility facilities located on the job site, if such utilities are not identified by the Agency in the plans and specifications. As to such unidentified utilities, Contractor shall be compensated for: the costs of relocation; repairing damage not due to the failure of Contractor to exercise reasonable care; removing or relocating such utilities not included in the plans and specifications with reasonable accuracy, and equipment on the project necessarily idled during such work. Contractor shall not be assessed liquidated damages for delay in completion of the project, when the delay is caused by the failure of the Agency or the owner of the utility to remove or relocate the facilities.

(b) The Agency is not required to indicate the presence of existing service laterals or appurtenances when the presence of such utilities on the work site can be inferred from other visible facilities, such as buildings, metering junction boxes, on or adjacent to the work site.

(c) Contractor shall immediately notify the Agency and utility in writing, if the Contractor discovers utility facilities not identified by the Agency in the contract plans or specifications.

SECTION 27. PUBLIC CONVENIENCE

(a) Contractor's operation shall cause no unnecessary public inconvenience. The access rights of the public shall be considered at all times. Unless otherwise authorized, traffic shall be permitted to pass through the work or an approved detour shall be provided. Safe, adequate, continuous and unobstructed pedestrian and vehicular access shall be maintained to fire hydrants, residences, commercial and industrial establishments, churches, schools, parking lots, service stations, motels, fire and police stations, and hospitals, unless other arrangements are made satisfactory to the owners.

(b) Vehicular access to residential driveways shall be maintained to the property line except when necessary construction precludes such access for reasonable periods of time.

(c) Grading operations, roadway excavation and embankment construction shall provide a reasonably satisfactory surface for traffic. When rough grading is completed, the roadbed surface shall be brought to a smooth even condition satisfactory for traffic.

(d) The Contractor shall comply with applicable state and local requirements for closure of streets. Contractor shall provide barriers, guards, lights, signs, temporary bridges, flagmen and watchmen advising the public of detours and construction hazards. Contractor shall comply with additional public safety requirements arising during construction. Contractor shall furnish and install, and upon completion of the work promptly remove, signs and warning devices.

(e) At least forty-eight hours in advance of closing or partial closing or of reopening any street, alley or other public thoroughfare, Contractor shall notify the police, fire, traffic and engineering departments of jurisdictional agencies involved and comply with their requirements.

(f) Contractor shall post job site notices prescribed by state and federal regulations.

SECTION 28. EXCAVATIONS

(a) Contractor shall submit for Agency and Cities of Westlake Village and Thousand Oaks approval, a detailed plan showing the design of shoring, bracing, sloping or other provisions to be made for worker protection from the hazard of caving ground during the excavation of trenches five feet or more in depth. The plan shall be at least as effective as that required by the Construction Safety Orders of the California Division of Industrial Safety. If the plan varies from the shoring systems standards established by Safety Orders, the plan shall be prepared by a registered civil or structural engineer.

(b) At the close of each working day, Contractor shall completely backfill open excavation and cover the same with temporary asphalt mix in accordance with normal practice in the industry and the rules, regulations, laws and ordinances of the State of California, the County of Los Angeles and the City of Westlake Village California.

(c) If the work involves digging trenches of excavations extending deeper than four feet below the surface, the Contractor shall promptly, and before the conditions are disturbed, notify the Agency, in writing, of any: (1) material the Contractor believes hazardous waste, as defined in Section 25117 of the Health and Safety Code, and required to be removed to a Class I, Class II, or Class III disposal site; (2) subsurface or latent physical conditions at the work site differing from those indicated; or (3) unknown physical conditions at the work site of unusual nature, different material from those ordinarily encountered and generally recognized as inherent in the work of the character provided in the contract. The Agency shall promptly investigate the conditions. If the Agency finds the conditions are as alleged by the Contractor and conditions cause a change in the Contractor's cost, or the time required for performance, the Agency shall issue a change order. If a dispute arises whether the Agency's findings are correct, the Contractor shall proceed with the work. The Contractor shall retain rights by contract or law pertaining to resolution disputes and protests between the parties.

(d) Contractor shall comply with underground service alert regulations.

SECTION 29. EXTRA WORK

(a) The Agency may require changes in, additions to, or deductions from the work to be performed or to the materials to be furnished under this contract. No extra work shall be performed or change made except pursuant of a written order from the Agency stating the extra work or change is authorized, and setting forth the basis upon which payment is to be made. No claim for additional compensation shall be valid unless pursuant to such a change order. Nothing in this section shall excuse the Contractor from proceeding with the prosecution of the changed work. When required by the Agency, the Contractor shall furnish an itemized breakdown of the quantities and prices used in computing the value of any ordered change.

(b) Adjustments in the amounts to be paid to the Contractor by reason of any such change, addition or deduction shall be determined by one or more of the following methods:

- By an acceptable lump sum proposal from the Contractor.

- By unit prices contained in the Contractor's original bid and incorporated in the contract documents or fixed by subsequent agreement between the Agency and the Contractor.
- By ordering the Contractor to proceed with the work and to furnish daily reports of extra work. The reports shall itemize all costs for labor, material, and equipment rental. The reports for workmen shall include hours worked, rates of pay, names and classification; and for equipment shall include size, type, identification number and hours of operation. Records and reports shall be made immediately available to the engineer upon his request.

(c) When the Agency orders extra work and there is an agreement between the Agency and the Contractor to perform the work, the Agency may approve the method used by the Contractor to accomplish the work. At the request of the Agency, the method to be used shall be memorialized in writing prior to work being performed.

(d) If the contractor contends a proposed change is a substantial revision in the character of the work, the question shall be immediately submitted to an arbitrator for decision. The arbitrator's decision will be final and conclusive unless it is fraudulent, capricious, arbitrary or so grossly erroneous as to imply bad faith. Each party shall advise the other in advance of the arbitration of the material on which the party intends to rely and give the other a reasonable opportunity to refute or supplement such factual material.

SECTION 30. CLEAN-UP

On completion of the work, Contractor shall remove debris and surplus materials from the work site.

SECTION 31. MATERIALS

(a) Unless otherwise specified, shown, or permitted by the Agency, materials and equipment incorporated in the work shall be new and current manufacture. The Agency may request the Contractor to furnish manufacturer's certificates to this effect.

(b) Materials furnished and work performed shall be subject to inspection and testing by Agency's authorized agents at Agency's expense. If such inspection and testing reveals non-compliance with the requirements of this contract, the Contractor shall bear the cost of necessary corrective measures and the cost of subsequent inspecting and testing.

(c) The inspection of the work shall not relieve the Contractor of the obligations under the contract. Even though equipment, materials, or work required under the contract have been inspected, accepted, and estimated for payment, the Contractor shall replace or repair such equipment, materials, or work found to be defective or otherwise not to comply with the requirements of the contract up to the end of the maintenance and guarantee period.

SECTION 32. PERMITS AND LICENSES

(a) Contractor shall apply for and procure permits and licenses necessary for the work.

(b) Contractor shall give notices necessary and incidental to the due and lawful prosecution of the work and shall comply duly with the terms and conditions of permits and licenses.

(c) Contractor shall pay charges and fees in connection with permits and licenses.

SECTION 33. LAND AND RIGHTS OF WAY

(a) Agency shall provide land and rights-of-way where the work is constructed.

(b) Contractor shall procure additional rights-of-way desired by the Contractor to facilitate construction. Contractor shall enter into written agreements with property owners for such purposes and provide Agency with copies of the agreements.

(c) Except as provided above relating to utility relocation, when the work is to be performed in the vicinity of existing improvements, such improvements shall not be disturbed or damaged except for such removal or relocation in the land and rights-of-way provided by the Agency or unavoidable to accommodate the work.

SECTION 34. PLANS AND WORKING DRAWINGS SUBMITTED BY AGENCY

(a) The approved plans shall be supplemented by working drawings necessary to control the work adequately. Such drawings shall be consistent with the contract documents. Such drawings delivered to the Contractor shall be deemed written instructions to the Contractor.

(b) The Agency will furnish to the Contractor copies of drawings and specifications reasonably necessary for the execution of the work. The Contractor shall keep one set of drawings and specifications in good order available to the Agency's representative at the site of the work.

(c) The plans for the work show conditions supposed or believed by the Engineer to exist. It is not intended or inferred the plans constitute a representation such conditions actually exist. The Agency, its officers, agents and employees shall not be liable for loss sustained by the Contractor as a result of variance of the conditions as shown on the plans and the actual conditions revealed during the progress of the work.

SECTION 35. SHOP DRAWINGS SUBMITTED BY CONTRACTOR

(a) Shop drawings are drawings, diagrams, illustrations, schedules, performance charts, brochures and other data prepared by the Contractor or any subcontractor, manufacturer, supplier or distributor, and illustrating some portion of the work.

(b) The Contractor shall review, stamp with approval, and submit for review by the Agency's representative shop drawings for material and equipment to be incorporated into the work. Drawings shall be submitted via email in pdf format to the Agency's representative and be accompanied by a letter of transmittal listing the drawings submitted. Drawings shall show the name of the project, the name of the Contractor, the names of suppliers, manufacturers and subcontractors. Shop drawings shall be submitted with promptness and in orderly sequence to cause no delay in the work.

(c) Shop drawings shall be complete. If the shop drawings show deviations from the requirements of the plans and specifications because of standard shop practices or

other reasons, the deviations and the reasons therefor shall be set forth in the letter of transmittal.

(d) By approving and submitting shop drawings, the Contractor represents material, equipment and other work shown thereon conforms to the plans and specifications except for the deviations set forth in the letter of transmittal.

(e) Within ten calendar days after receipt of the drawings, the Agency will return via email in pdf format prints of the drawings to the Contractor with comments. If noted by the Agency, the Contractor shall correct the drawings and resubmit in the same manner as the original submittal. The Contractor shall direct attention in the letter of transmittal accompanying resubmitted shop drawings to revisions other than the corrections requested by the Agency's representatives on previous submittals.

(f) The review by the Agency's representative is for general conformance with the design concept of the project and general compliance with the plans and specifications and shall not be construed as relieving the Contractor of the full responsibility for: providing materials, equipment, and work required by the Contract; the proper fitting and reconstruction of the work; the accuracy and completeness of the shop drawings; selecting fabrication processes and techniques of construction; and performing the work in a safe manner.

(g) No portion of the work requiring a shop drawing submittal shall be commenced until the submittal has been reviewed by the Agency's representative and returned to the Contractor with a notation indicating re-submittal is not required.

SECTION 36. SUPERVISION BY THE CONTRACTOR

Before starting the work, the Contractor shall designate, in writing, a representative having authority to act for the Contractor. An alternate representative may be designated. (A joint venture shall designate only one representative and alternate.) The representative or alternate shall be present at the work site when work is in progress. Orders or communications given to this representative shall be deemed delivered to the Contractor. In the absence of the Contractor or designated representative, directions or instructions may be given by the Agency's representative to the superintendent or foreman having charge of the specific work to which the order applies. Such order shall be complied with promptly and referred to the Contractor or the representative.

SECTION 37. INSPECTION

(a) The Agency's representative shall have access to the work during construction and shall be furnished with reasonable facility for gaining knowledge of the progress, workmanship and character of materials used and employed in the work.

(b) When the Contractor varies the period during which work is carried on each day, Contractor shall give notice to the Agency's representative so proper inspection may be provided. Work done in the absence of the Agency's representative is subject to rejection.

(c) No materials shall be installed until approved by the Agency's representative. Installations to be backfilled shall be inspected and approved by the Agency's representative prior to backfilling. The Contractor shall give notice in advance of backfilling to the Agency's representative so proper inspection may be provided.

(d) If the Agency's Representative is required to conduct inspections of Contractor's work between the hours of 7 p.m. and 7 a.m., or is required to conduct inspections on Saturdays, Sundays or holidays, then the Agency will incur additional costs for inspection. If the Agency's Representative is required to conduct inspections between the hours of 7 p.m. and 7 a.m., or inspections on Saturdays, Sundays or holidays due to the actions or conduct of Contractor, and if the actions or conduct of Contractor are not otherwise authorized or addressed in the Specifications or in a Change Order, the Contractor shall be liable for the Agency's additional inspection costs. The Agency may deduct these additional inspection costs from progress payments or from the final payment.

SECTION 38. REMOVAL OF DEFECTIVE AND UNAUTHORIZED WORK

(a) Rejected work shall be removed and replaced by the Contractor in an acceptable manner and no compensation will be allowed for such removal or replacement. Work done beyond the lines and grades shown on the plans or established by the Agency's representative, or work done without written authority will be considered as unauthorized and not be paid for. Such work may be ordered removed at the Contractor's expense.

(b) Upon failure on the part of the Contractor to comply promptly with an order of the Agency's representative under this section, the Agency's representative shall have authority to cause defective work to be removed and replaced, and unauthorized work to be removed, and to deduct the costs from monies due the Contractor.

SECTION 39. ERRORS OR DISCREPANCIES NOTED BY CONTRACTOR

(a) If the Contractor finds discrepancy between the specifications and the drawings, and the physical conditions at the site of the work, or finds errors or omissions in the drawings or in any survey, Contractor shall promptly notify the Agency in writing of such discrepancy, error or omission. If the Contractor observes drawings or specifications at variance with applicable law, ordinance, regulation, order or decree, Contractor shall promptly notify the Agency in writing of such conflict.

(b) On receipt of any such notice, the Agency shall promptly investigate the circumstances and give appropriate instructions to the Contractor. Until such instructions are given, work done by the Contractor, after Contractor's discovery of such error, discrepancy or conflict, will be at Contractor's own risk and Contractor shall bear costs arising therefrom.

SECTION 40. EQUIPMENT

The Contractor must furnish adequate equipment and facilities to perform properly the work in a workmanlike manner in accordance with these specifications. Such equipment and facilities must be in a good state of repair and maintained in such state during the progress of the work and shall meet requirements of applicable ordinances and laws. No worn or obsolete equipment shall be used, and in no case shall the maker's rating of capacity for equipment be exceeded.

SECTION 41. STORAGE OF MATERIALS

Materials for use in the work shall be stored by the Contractor to prevent damage from exposure to the elements, admixture of foreign materials or from any other cause. The Contractor is responsible for damage to or loss of materials by weather or other causes.

MISCELLANEOUS

SECTION 42. GUARANTEES

Contractor guarantees work from defect in workmanship for the period of one year from the date of acceptance by the Agency and shall repair and replace such work, together with other displaced work, without expense to the Agency, ordinary wear and tear, usual abuse or neglect excepted. Agency may have the defects repaired and made good at the expense of the Contractor, if Contractor fails to comply with the above-mentioned conditions within a week after being notified in writing.

SECTION 43. RISK OF LOSS PRIOR TO FINAL ACCEPTANCE

Except as set forth above relating to acts of God, risk of loss from total or partial destruction of the work, prior to final acceptance, shall be borne by Contractor regardless of the cause. Contractor shall repair or replace such damages or destroyed work, to its prior undamaged condition before being entitled to additional progress payments or final payment. Total or partial destruction or damage shall not excuse Contractor from completion of the work.

SECTION 44. TERMINATION: CONTRACTOR AT FAULT

(a) The Agency may declare the Contractor in default, should the Contractor fail to meet the requirements of the Contract, or be placed in bankruptcy, or should a receiver be appointed for Contractor's properties, or should Contractor make an assignment for the benefit of creditors. In such event, the Agency will notify the Contractor in writing. On receipt of such written notice, the Contractor shall preserve site construction materials, equipment and plant, and undertake immediate steps to remedy such default.

If the Contractor fails to remedy such default within five calendar days after receipt of such written notice, the Agency may terminate the Contractor's right to proceed with the work as to which default has occurred. Upon receipt of such written notice, the Contractor shall for that work affected by any such termination:

- (1) assist the Agency in making an inventory of materials and equipment in storage at the site, en route to the site, in storage or manufacture away from the site, and on order from suppliers;
- (2) assign to the Agency, subcontracts, supply contracts and equipment rental agreements all as designated by the Agency; and
- (3) remove from the site, all construction materials, equipment and plant listed in said inventory other than such construction materials, equipment and plant which are designated in writing by the Agency to be used by the Agency in completing such work.

(b) The Agency may complete the work to which notice applies by contract or otherwise, and may take possession of the materials, plant, tools, equipment, supplies and property furnished by the Contractor which is designated by the Agency in writing for such purpose.

(c) The expense of completing such work, together with a reasonable charge for administering a contract for such completion, shall be charged to the Contractor. Such expense shall be deducted by the Agency out of such monies as may become due to the Contractor. If this expense exceeds the sum otherwise payable under the Contract, the Contractor and Contractor's sureties shall be liable. Upon written notice from the Agency, the Contractor promptly pays to the Agency, the amount of such excess. The Agency shall not be required to obtain the lowest bids for completing such work, but may make such expenditures as in the Agency's sole judgment will best accomplish such completion.

SECTION 45. TERMINATION: CONTRACTOR NOT AT FAULT

Agency may terminate the contract upon ten days written notice to the Contractor, if Agency finds reasons beyond the control of the parties make it impossible or against the Agency's interests to complete the work. In such a case, the Contractor shall have no claims against the Agency, except for the value of work performed to the date of termination, and the cost of materials and equipment on hand, in transit, or on definite commitment, as of the date of termination if such materials and equipment would be

needed in the work. The value of work performed and the cost of materials and shipment delivered to the site shall be determined by the Agency in accordance with the procedure prescribed for the making of a final estimate and payment.

SECTION 46. RESOLUTION OF CERTAIN CLAIMS

(a) Notwithstanding the foregoing, a demand of \$375,000, or less, by the Contractor for a time extension; payment of money or damages arising from the work done by or on behalf of the Contractor pursuant to this contract; or payment of an amount which is disputed by the Agency shall be processed in accordance with Public Contracts Code Sections 20104 *et seq.* relating to informal conferences, non-binding judicially supervised mediation and judicial arbitration.

(b) A single written claim shall be filed under this section prior to the date of final payment for all demands, including demands not subject to Public Contracts Code Sections 20104 *et seq.* arising out of the contract.

(c) Within thirty (30) days of the receipt of the claim, the Agency may request additional documentation supporting the claim or relating to defenses or claims the Agency may have against the Contractor. If the Amount of the claim is less than \$50,000, the contractor shall respond to the request for additional information within fifteen (15) days after receipt of the request. The contractor shall respond to the request within thirty (30) days of receipt if the amount of the claim exceeds \$50,000 but is less than \$375,000.

(d) Unless further documentation is requested, the Agency shall respond to the claim within forty-five (45) days if the amount of the claim is less than \$50,000 or within sixty (60) days if the amount of the claim is more than \$50,000 but less than \$375,000. If further documentation is requested, the Agency shall respond within the same amount of time taken by the Contractor to respond or fifteen (15) days, whichever is greater, after

receipt of further information if the claim is less than \$50,000. If the claim is more than \$50,000 but less than \$375,000 and further documentation is requested by the Agency, the Agency shall respond within the same amount of time taken by the Contractor to respond or thirty (30) days, whichever is greater.

(e) If the Contractor disputes the Agency's response, or the Agency fails to respond, the Contractor may demand an informal conference to meet and confer for settlement of the issues in dispute. The demand shall be served on the Agency within fifteen (15) days after the deadline of the Agency to respond or within fifteen (15) days of the Agency's response, whichever occurs first. The Agency shall schedule the meet and confer conference within thirty (30) days of the request.

(f) If the meet and confer conference does not produce a satisfactory request, the Contractor may pursue remedies authorized by law.

IN WITNESS WHEREOF, the parties hereto have executed this Agreement, or caused it to be executed as of the day, month and year first above written.

DISTRICT

BY: _____ DATE: _____
President

ATTEST: _____
Secretary

APPROVED: _____
Attorney for Owner

CONTRACTOR

BY: _____ DATE: _____
Authorized Representative of Contractor

PRINTED NAME: _____

TITLE: _____

SEAL IF CORPORATION:

WORKERS' COMPENSATION CERTIFICATE

I am aware of the provisions of Section 3700 of the Labor Code which requires every employer to be self-insured against liability for workers 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 this contract.

DATED: [_____]

[.....]

[.....]

NOTE: If Contractor is a corporation, the legal name of the corporation shall be set forth above, together with the signature of the officer or officers authorized to sign contracts on behalf of the corporation. If the Contractor is a partnership, the true name of the firm shall be set forth above, together with the signature of the partner or partners authorized to sign contracts on behalf of the co-partnerships. If the Contractor is an individual, the name of the firm shall be set forth together with the signature.

PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS:

WHEREAS, the Governing Board of Las Virgenes Water District (herein "Agency"), on _____, awarded to _____ (herein the "Principal"), a contract for Calleguas-LVMWD Interconnection Project.

WHEREAS, Principal is required to furnish a bond in connection with contract so if Principal or its subcontractors shall fail to pay for materials or supplies, for the performance of the work, or for labor done thereon, or for amounts due under the Unemployment Insurance Act, the Surety on the bond will pay the same.

NOW, THEREFORE, the Principal and _____, (herein "Surety"), are held and firmly bound unto the Agency in the penal sum of [_____] (\$_____) dollars, lawful money of the United States of America, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, and successors, jointly and severally, firmly by these promises.

THE CONDITION OF THIS OBLIGATION IS SUCH if Principal, its subcontractors, heirs, executors, administrators, successors, or assigns, shall fail to pay for materials, provisions, provender or other supplies or teams used in, upon, for or about the performance of the work contracted to be done, or for work or labor thereon of any kind, or fail to pay the persons named in California Civil Code Section 3181, or amounts due under the Unemployment Insurance Code with respect to work or labor performed under the contract, or for amounts required to be deducted, withheld, and paid over to the Employment Development Department from the wages of employees of the Contractor and subcontractors pursuant to Section 13020 of the Unemployment Insurance Code with respect to such work and labor, and other laws of the State of California and rules and regulations of its agencies, then Surety will pay the same in or to an amount not exceeding the amount hereinabove set forth, and also will pay, in case suit is brought upon this bond, such reasonable attorney fees as shall be fixed by the court, pursuant to Section 3181 of the California Civil Code.

This bond shall inure to the benefit of the persons named in Section 3181 of the California Civil Code, so as to give a right of action to them or their assigns in any suit brought upon this bond, such reasonable attorney fees as shall be fixed by the court, pursuant to Section 3181 of the California Civil Code.

No change, extension of time, alteration, or addition to the terms of the contract, or the work to be performed thereunder, or the specifications accompanying the same, shall affect Surety's obligation on this bond. Surety waives notice of 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, three identical counterparts of this instrument, each of which shall be deemed an original, have been duly executed by the Principal and Surety above named on the [_____] day of [_____, ____].

[_____]

(Principal)

By: _____

[_____]

(Surety)

By: _____

(Attorney-in-fact)

PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS:

WHEREAS, the governing board of Las Virgenes Water District (herein "Agency"), on [____], awarded to _____ (herein "Principal"), a contract for Calleguas-LVMWD Interconnection Project.

WHEREAS, Principal is required under the terms of the contract to furnish a bond for the faithful performance of the contract;

NOW, THEREFORE, the Principal and _____, (herein "Surety"), are held firmly bound unto the Agency, (herein "Agency"), in the penal sum of [_____] dollars (\$[____]) lawful money of the United States of America, for the payment of which sum well and truly to be made, we bond ourselves, our heirs, executors, administrators and successors, jointly and severally and firmly by these promises.

THE CONDITION OF THIS OBLIGATION IS SUCH that if the above-bounden Principal, 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 covenants, conditions, and agreements in the contract, including but not limited to the payment of liquidated damages, and any alteration thereof made as therein provided, on its part to be kept and performed at the time and in the manner therein specified, and in all respects according to their true intent and meaning, and shall indemnify and save harmless the Agency, its officers and agents, as therein stipulated, this obligation shall become null and void; otherwise it shall be and remain in full force and virtue.

Surety stipulates and agrees 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 affect its obligation on this bond. Surety waives notice of such change, extension of time, alteration or addition to the terms of the contract, or to the work or to the specifications.

Surety agrees in case suit is brought on this bond, Surety will pay Agency's reasonable attorney fees to be fixed by the court.

IN WITNESS WHEREOF, three identical counterparts of this instrument, each of which shall be deemed an original, have been duly executed by the Principal and Surety above named, on the [____] day of [_____, ____].

[_____] (Principal)

[_____] (Surety)

By: _____

By: _____ (Attorney-in-fact)

(Attach Acknowledgment)

SUPPLEMENT TO GENERAL PROVISIONS

A. DEFINITIONS

Whenever the following terms occur in the contract documents, their meaning is as follows:

OWNER	Las Virgenes Municipal Water District (LVMWD) 4232 Las Virgenes Road Calabasas, CA 91302
GOVERNING BODY	Owner's Board of Directors
PIPELINE ENGINEER	Cannon 11900 West Olympic Blvd. Suite 530 Los Angeles, CA 90064
OVERLAY ENGINEER	Willdan 13191 Crossroads Parkway North Suite 402 Industry, CA 91746
Notice to Proceed	Notice to Proceed will be given to the Contractor on the date of GOVERNING BODY action to award the contract

B. TERMS

Command type sentences used in the contract documents refer to and are directed to the Contractor.

C. PRECEDENCE OF CONTRACT DOCUMENTS

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

1. Permits issued by jurisdictional regulatory agencies.
2. Change Orders and/or Supplemental Agreements: whichever occurs last.
3. Contract/Agreement.
4. Addenda.
5. Bid/Proposal.
6. Special or Supplemental Provisions.
7. Plans.
8. Standard Plans.
9. Standard Specifications.
10. Reference Specifications.

Detail drawings shall take precedence over general drawings.

D. CONTRACTOR HOURS OF WORK

Unless otherwise noted, contractor hours of work shall be within the hours of 7:00 a.m. and 7:00 pm.

Traffic Control hours shall be as follows:

9:00 AM to 7:00 PM Southbound Lanes Monday through Friday

7:00 AM to 3:00 PM Northbound Lanes Monday through Friday

E. CONTRACTOR WORKING DAYS

The Contractor shall not work on Saturdays, Sundays, or on Holidays as defined below.

The Contractor shall not work on the below Owner Holidays. The number of working days required to complete the work as described in Section 24 of the Agreement excludes the below holidays (i.e., a Holiday does not count as a working day when determining days passed in the contract period). The Contractor may request to the Owner one week in advance of a Holiday to work on a Holiday, and the owner may at their discretion approve such request only if the Contractor pays overtime and associated overhead expenses for Owner labor.

If any of the below Holidays falls on the first day of the weekend, the Holiday will be observed on the previous work day. If any of the below Holidays falls on the last day of the weekend, the Holiday will be observed on the following work day.

District Holidays:

January 1, Martin Luther King Jr. Day, President's Day, Memorial Day, Independence Day, Labor Day, Columbus Day, Veterans Day, Thanksgiving Day and the Following Friday, December 24, December 25, and December 31.

F. EXTRA WORK

In addition to the requirements in Section 29 Extra Work in the Agreement Section of these Contract Specifications, if the Owner and Contractor cannot agree upon the cost of Extra Work, and/or cannot agree on if work is Extra Work or incorporated into the scope of existing bid items, the Owner reserves the right to direct the Contractor to proceed with work consistent with the requirements of Section 3-4 and 3-5 of the 2018 Edition of the Standard Specifications for Public Works Construction “Greenbook”, and the Contractor shall submit documentation as described in Section 3-3.3 of the “Greenbook”.

G. EXISTING CONDITIONS AND EXAMINATION OF CONTRACT DOCUMENTS

The Contractor represents that he has carefully examined the contract documents and the site where the work is to be performed and that he has familiarized himself with all local conditions and federal, state and local laws, ordinances, rules, and regulations that may affect in any manner the performance of the work. The bidder further represents that he has studied all surveys and investigation reports about subsurface and latent physical conditions pertaining to the jobsite, that he has performed such additional surveys and investigations as he deems necessary to complete the work at his bid price, and that he has correlated the results of all such data with the requirements of the contract documents. The submittal of a bid shall be conclusive evidence that the bidder has investigated and is satisfied as to the conditions to be encountered, including locality, uncertainty of weather and all other contingencies, and as to the character, quality, quantities, and scope of the work.

The plans and specifications for the work show subsurface conditions or otherwise hidden conditions as they are supposed or believed by the Engineer/Architect to exist; but it is not intended or to be inferred that the conditions as shown thereon constitute a representation that such conditions are actually existent. Except as otherwise specifically provided in the contract documents, the Owner, the Engineer/Architect, and their consultants shall not be liable for any loss sustained by the Contractor as a result of any variance of such conditions as shown on the plans and the actual conditions revealed during the progress of the work or otherwise.

Where the Owner or the Engineer or their consultants have made investigations of subsurface conditions in areas where the work is to be performed, such investigations were made only for the purpose of study and design. The conditions indicated by such investigations apply only at the specific location of each boring or excavation at the time the borings or excavations were made. Where such investigations have been made, bidders or Contractors may inspect the records as to such investigations subject to and upon the conditions hereinafter set forth. The inspection of the records shall be made at the office of the Engineer/Architect.

The records of such investigations are not a part of the contract and are shown solely for the convenience of the bidder or Contractor. It is expressly understood and agreed that the Owner, the Engineer/Architect, and their consultants assume no responsibility whatsoever in respect to the sufficiency or accuracy of the investigations; the records thereof; or of the interpretations set forth therein or made by the Owner's consultants, the Engineer/Architect or his consultants in the use thereof by the Engineer/Architect, and there is no warranty or guarantee, either express or implied, that the conditions indicated by such investigations or records thereof are representative of those existing throughout such areas, or any part thereof, or that unlooked-for developments may not occur, or that materials other than, or in proportions, densities, or other characteristics different from, those indicated may not be encountered.

Information described in this article is not to be construed in any way as a waiver of the provisions of the first paragraph in this article and a bidder or Contractor is cautioned to make such independent investigations and examination as he deems necessary to satisfy himself as to conditions to be encountered in the performance of the work.

No information derived from such inspection of records of investigations or compilation thereof made by the Owner, the Engineer/Architect, or their consultants will in any way relieve the bidder or Contractor from any risk or from properly fulfilling the terms of the contract nor entitle the Contractor to any additional compensation.

H. EQUIPMENT LEAD TIMES AND COMPLETION OF WORK

Bidders shall fully investigate lead times of critical equipment and materials implied or listed for use on the project and notify the Owner of any conflict in scheduling or other known concerns prior to the bid. After the Award of the project the Contractor shall develop a construction schedule that meets the completion times and milestones stated in the contract documents. A submission of bid constitutes acknowledgement that the required completion dates can be met. No such time extension will be granted for requests made by the Contractor after Award of Contract for such lead time issues that were known prior to Bid.

I. UTILITIES

The Engineer has endeavored to determine the existence of utilities at the site of the work from the records of the owners of known utilities in the vicinity of the work. The positions of these utilities as derived from such records are shown on the plans. The service connections to these utilities may not be shown on the plans.

The known public utilities contacts are:

City of Westlake Village Jeff Friedman, City Representative (818) 706-1613

Los Angeles County Sewer Maintenance Division (626) 300-3399
Los Angeles County Signal Maintenance Division (626) 458-1709
AT&T Repair Center of California (611) (800) 288-2020
AT&T (Transmission – Long Distance) Joe Forkert (714) 963-7964
AT&T California (Local) Rosemary Burnett (626) 817-4273
Southern California Edison, Rod King (805) 494-7065
Southern California Gas (Distribution) (818) 701-3326
Southern California Gas Company (Transmission) (805) 681-7928
Waste Management GI Industries (818) 782-2474

The Contractor shall make his own investigations, including exploratory excavations, to determine the locations and type of existing service laterals or appurtenances when their presence can be inferred from the presence of other visible facilities, such as buildings, meter and junction boxes, on or adjacent to the site of the work. If the Contractor discovers utility facilities not identified in the plans or specifications or in a position different from that shown in the plans and specifications, he shall immediately notify in writing the Owner's Representative and the owner of the utility facility.

The Owner shall have the responsibility for the timely removal, relocation, protection, and temporary maintenance of existing main or trunk line utility facilities which are not indicated in the plans and specifications with reasonable accuracy.

In case it should be necessary to remove, relocate, protect, or temporarily maintain a utility because of interference with the work, the work on such utility shall be performed and paid for as follows:

1. When it is necessary to remove, relocate, protect, or temporarily maintain an existing main or trunk line utility facility not indicated in the plans and specifications with reasonable accuracy, the Owner will compensate the Contractor for the costs of locating, for the costs of repairing damage not due to the failure of the Contractor to exercise reasonable care, for the costs of removing, relocating, protecting, or temporarily maintaining such utility facilities, and for the costs for equipment on the site necessarily idled during such work. These costs, the work to be done by the Contractor in locating, removing, relocating, protecting, or temporarily maintaining such utility facilities shall be covered by a written change order conforming to the provisions of the article on CHANGES IN THE WORK and the article on PAYMENT FOR CHANGES IN THE WORK. The Owner may make changes in the alignment and grade of the work to obviate the necessity to remove, relocate, protect, or temporarily maintain such utility facilities or to reduce the costs of the work involved in removing, relocating, protecting, or temporarily maintaining such utility facilities. Changes in alignment and

grade will be ordered in accordance with the article on CHANGES IN THE WORK.

2. When it is necessary to remove, relocate, protect, or temporarily maintain a utility (other than [1] existing main or trunk line utility facilities not indicated in the plans and specifications with reasonable accuracy, or [2] existing service laterals or appurtenances when their presence cannot be inferred from the presence of other visible facilities, such as buildings, meter and junction boxes, on or adjacent to the site of the work) the cost of which is not required to be borne by the owner thereof, the Contractor shall bear all expenses incidental to the work on the utility or damage thereto. The work on the utility shall be done in a manner satisfactory to the owner thereof; it being understood that the owner of the utility has the option of doing such work with his own forces, or permitting the work to be done by the Contractor. No representations are made that the obligations to remove, relocate, protect, or temporarily maintain any utility and to pay the cost thereof is or is not required to be borne by the owner of such utility, and it shall be the responsibility of the Contractor to investigate to find out whether or not said cost is required to be borne by the owner of the utility.
3. The right is reserved to governmental agencies and to owners of utilities to enter at any time upon any street, alley, right-of-way, or easement for the purpose of making changes in their property made necessary by the work and for the purpose of maintaining and making repairs to their property.

J. SAFETY

In accordance with generally accepted construction practices, the Contractor shall be solely and completely responsible for conditions of the jobsite, including safety of all persons and property during performance of the work, and the Contractor shall fully comply with all state, federal and other laws, rules, regulations, and orders relating to safety of the public and workers.

The right of the Engineer or the Owner's Representative to conduct construction review or observation of the Contractor's performance will not include review or observation of the adequacy of the Contractor's safety measures in, on, or near the construction site.

K. INDEMNITY

The Contractor shall indemnify and hold harmless the Owner, the Engineer, the Owner's Representative, and their consultants, and each of their directors, officers, employees, and agents, and Cities of Westlake Village and Thousand Oaks, there elected and appointed officials, officers, employees, volunteers, attorneys, agents (including those Cities agents serving as independent contractors in the role of Cities representatives), successors, and assigns (collectively "Indemnitees") from and against all losses, expenses, damages

(including damages to the work itself), attorneys' fees, and other costs, including all costs of defense, which any of them may incur with respect to the failure, neglect, or refusal of Contractor to faithfully perform the work and all of the Contractor's obligations under the contract. Such costs, expenses, and damages shall include all cost, including attorneys' fees, incurred by the indemnified parties in any lawsuit to which they are a party.

L. CONTRACTOR'S INSURANCE

1. General: The Contractor shall not commence or continue to perform any work unless he, at his own expense, has in full force and effect all required insurance. The Contractor shall not permit any subcontractor to perform work on this project unless the Worker's Compensation Insurance requirements have been complied with by such subcontractor.

The types of insurance the Contractor shall obtain and maintain are Worker's Compensation Insurance and Employer's Liability Insurance, Liability Insurance, Builders' Risk "All Risk" Insurance and, if so determined by the Owner at the time of award of the contract, Earthquake and Tidal Wave Insurance, all as set forth herein.

Worker's Compensation Insurance and Employer's Liability Insurance and Liability Insurance shall be maintained in effect for the full guarantee period.

2. Worker's Compensation Insurance and Employer's Liability Insurance: The Contractor shall provide employer's liability insurance in the amount of at least one million dollars (\$1,000,000) per accident for bodily injury and disease. Upon execution of the Agreement, the Contractor shall provide a certificate(s) of insurance certifying that he has obtained full Worker's Compensation Insurance coverage. At the same time, the Contractor shall provide the insurance endorsement(s) on the forms provided as part of the contract documents. This insurance shall be in strict accordance with the requirements of the most current and applicable state Worker's Compensation Insurance laws.
3. Liability Insurance: Upon execution of the Agreement, the Contractor shall provide a certificate(s) of insurance showing that he has Liability Insurance coverage.

Included in such insurance shall be contractual coverage sufficiently broad to insure the matters set forth in the article entitled INDEMNITY except those matters set forth in the third paragraph thereof.

The Liability Insurance coverage shall include each of the following types of insurance:

- a. Commercial General Liability: Insurance written on a per occurrence basis in the amount of two million dollars (\$2,000,000) combined single

limit per occurrence for bodily injury, personal injury, and property damage, and four million dollars (\$4,000,000) aggregate. All insurance Certificates shall state "*Las Virgenes Municipal Water District, its officers, employees, and agents are listed as additional insured on the General Liability Policy*" and "*Las Virgenes Municipal Water District, 4232 Las Virgenes Road, Calabasas, CA 91302*" as certificate holder.

All Insurance Certificates must include an ISO CG 20 10 04 13 or CG 20 37 07 04 Endorsement, or District approved equal endorsement, specifically naming "*Las Virgenes Municipal Water District, its officers, employees and agents*" as additional insured. The boilerplate verbiage "where required by written contract" is not acceptable. The Endorsement shall also state "*All work provided by insured for the District*" (or, insert the specific Project Title).

- b. Automobile Liability: One million (\$1,000,000) per occurrence for bodily injury and property damage each accident limit.
4. The Liability Insurance shall include as additional insureds: The Owner, the Engineer, the Owner's Representative, and their consultants, and each of their directors, officers, agents, and employees. The insurance afforded to these additional insureds shall be primary insurance. If the additional insureds have other insurance which might be applicable to any loss, the amount of the insurance provided under this article on LIABILITY INSURANCE shall not be reduced or prorated by the existence of such other insurance.
5. Builders' Risk "All Risk" Insurance: Upon execution of the Agreement certificate(s) of insurance showing that he has obtained for the period of the contract Builders' Risk "All Risk" completed value insurance coverage (including flood but excluding earthquake and tidal wave) upon the entire project which is the subject of the contract and including completed work and work in progress. The Contractor shall provide Builder's Risk Insurance (or Installation Floater) at 100% of the contract price. At the same time, the Contractor shall provide the insurance endorsement(s) on the forms provided as a part of the contract documents. Such insurance shall include as additional insureds: The Owner, the Engineer/Architect, the Owner's Representative, and their consultants, and each of their directors, officers, employees, and agents.
6. Contractor's Liability Not Limited by Insurance: Nothing contained in these insurance requirements is to be construed as limiting the liability of the Contractor or the Contractor's sureties.

M. CONTRACTOR’S INSURANCE – ADDITIONAL INSURED

The Liability Insurance required under Section 21 shall also include as additional insureds: the Engineer, the Owner’s Representative, and their consultants, and each of their directors, officers, agents, and employee and Cities of Westlake Village and Thousand Oaks, their elected and appointed officials, officers, employees, volunteers, attorneys, agents (including those City agents serving as independent contractors in the role of City representatives), successors, and assigns (collectively “Indemnitees”)s . The insurance afforded to these additional insureds shall be primary insurance. If the additional insureds have other insurance which might be applicable to any loss, the amount of the insurance provided under this article on LIABILITY INSURANCE shall not be reduced or prorated by the existence of such other insurance.

N. SALVAGE OF MATERIALS

Existing materials and equipment removed, and not reused as a part of the work, shall be offered to the OWNER. If the OWNER chooses not to take the materials and equipment, then the Contractor shall be responsible for the proper disposal of the items.

O. TEMPORARY FACILITIES

Water- The Contractor shall provide an adequate supply of water of a quality suitable for all domestic and construction purposes. Water used for domestic purposes shall be free of contamination and shall conform to the requirements of the State and local authorities for potable water. The Contractor shall be solely responsible for the adequate functioning of its water supply system and shall be solely liable for any claims arising from the use of same, including discharge or waste of water therefrom. The Contractor shall not make connection to or draw water from any fire hydrant or pipeline without first obtaining permission of the authority having jurisdiction over the use of said fire hydrant or pipeline and from the agency owning affected water system.

Sanitary Facilities - Fixed or portable chemical toilets shall be provided wherever needed for the use of the Contractor’s employees. Toilets at the construction site shall conform to the requirements of Subpart D, Section 1926.51 of the OSHA Standards for Construction.

P. LVMWD STANDARD PLANS AND SPECIFICATIONS

Unless otherwise noted in the contract documents, all work and materials shall conform to the requirements of the “LVMWD Standard Plans and Specifications for the Construction of Water Main Facilities.” This document is available on the District’s website: <http://www.lvmwd.com/home/showdocument?id=41>

Q. USE OF EQUIVALENT PRODUCTS

Where specific brand names or models have been cited in the specifications, the use of equivalent quality products will be acceptable, unless the specified product is required to match other products in use on the same project, or unless the specified product is unique or novel and its use serves the public interest. The Contactor shall have 35 days after award of the contract for submission of data substantiating a request for substitution of “an equal” item.

R. LABOR CODE PERMITS

Per Section 6500 of the State of California Labor Code, the Contractor shall obtain permits for construction of trenches or excavations which are five feet or deeper and into which a person is required to descend.

S. SHUTDOWN REQUESTS

1. Unless the Contract Documents indicate otherwise, the Contractor shall not remove from service any existing operating tank, pipeline, valve, or any other facility without permission from the District.
2. Modifications to existing facilities, the construction of new facilities, and the connection of new to existing facilities may require the temporary outage or bypass of existing facilities. In such cases, the Contractor shall coordinate Work with the District as described below. The Contractor shall submit a detailed Shutdown Plan and time schedule for all construction activities which will make it necessary to remove a tank, pipeline, valve, or other facilities from service.
3. The Shutdown Plans shall be submitted to the District for acceptance a minimum of three weeks in advance of the time that such deactivations are required. The Shutdown Plans shall be coordinated with the construction schedule and shall meet the restrictions and conditions of this Section. The Shutdown Plan shall describe the Contractor’s methods and the length of time required to complete the operation.

All costs for preparing and implementing the Shutdown Plans shall be the responsibility of the Contractor as part of the Work.

4. The Contractor shall not begin an alteration affecting existing facilities until specific written approval has been granted by the District in each case.
5. The District will coordinate the Contractor’s planned procedure with the operations personnel. The District has the authority to modify any proposed shutdown procedures if such procedures would adversely impact the water system operations.

6. If it becomes necessary for the proper operation or maintenance of portions of the system, the District may require the Contractor to reschedule an approved shutdown. If notice of said rescheduling is given to the Contractor at least 24 hours in advance of the scheduled shutdown, the Contractor shall not be entitled to additional compensation due to the impacts of rescheduling. The Contractor shall then reschedule its operations so there shall be no conflict with necessary operations or maintenance. The Contractor shall, within two working days, furnish the District a revised Shutdown Request and a plan for rescheduling the shutdown in accordance with the requirements of the construction schedule.
7. The District shall be notified in writing at least two working days in advance of the required Shutdown if the schedule for performing the Work has changed or if revisions to the Shutdown Plan are required.

The Contractor shall provide written confirmation of the Shutdown date and time two working days prior to the actual Shutdown. This notification shall also provide confirmation that the Contractor has all the required parts, materials, tools, and equipment on-hand to successfully undertake and complete the Shutdown.

T. SUBMITTALS

1. Except as may be provided in subsequent Specification, submittals will be returned within 10 days. When a submittal cannot be returned within that period, the Engineer will, within a reasonable time after receipt of the submittals, give notice of the date by which that submittal will be returned.
2. It is expected that the information required for each item shall be complete on the first submittal. In the event that a second submittal is required, the Contractor's submittal shall be complete and shall have addressed all requirements for acceptability. Costs associated with the review of any third and subsequent submittals shall be borne by the Contractor. Reimbursement to the District will be made by issuance of a deductive change order to cover the direct costs to the District.
3. The Contractor shall not be allowed to submit more than one (1) Manufacturer for any given product, equipment, or material unless otherwise approved by the District's representative.
4. A schedule of submittals shall be submitted to the District's representative within (14) calendar days after the date of receipt of the notice to proceed from the Owner. The schedule shall indicate the dates the Contractor proposes to furnish the submittals; the dates the materials, equipment, etc. are needed at the job site; and the date approval is needed by the Contractor. (A minimum of 30 days from the date the Engineer receives the shop drawings unless otherwise noted in the Contract Documents).

The following paragraphs amend or supplement existing sections of the Agreement. SC-

4. Supplement Section 4 of the Agreement as follows:

Reuse of Contract Documents

A. Contractor and any Subcontractor or Supplier or other individual or entity performing or furnishing any of the Work under a direct or indirect contract with District: (i). shall not have or acquire any title to or ownership rights in any of the Drawings, Specifications, or other documents (or copies of any thereof) prepared by or bearing the seal of the District's Engineer, including electronic media editions; and (ii) shall not reuse any of such Drawings, Specifications, other documents, or copies thereof on extensions of the Project or any other project without written consent of District and specific written verification or adaption by District, This prohibition will survive final payment, completion, and acceptance of the Work, or termination or completion of the Contract. Nothing herein shall preclude Contractor from retaining copies of the Contract Documents for record purposes.

SC-12 Delete Section 12 of the Agreement and add the following:

This project is subject to the requirements of Section 1720 et seq. of the California Labor Code requiring the payment of prevailing wages, the training of apprentices and compliance with other applicable requirements. Contractors and all subcontractors who perform work on the project are required to comply with these requirements. Prevailing wages apply to all projects over \$1,000 which are defined as a "public work" by the State of California. This includes: construction, demolition, repair, alteration, maintenance and the installation of photovoltaic systems under a Power Purchase Agreement when certain conditions are met under Labor Code Section 1720.6. This include service and warranty work on public buildings and structures.

1. The applicable California prevailing wage rate can be found at www.dir.ca.gov and are on file with the Agency's principal office, which shall be available to any interested party upon request. The contractor is also required to have a copy of the applicable wage determination posted and/or available at each jobsite.

2. Specifically, contractors are reminded of the need for compliance with Labor Code Section 1774-1775 (the payment of prevailing wages and documentation of such), Section 1776 (the keeping and submission of accurate certified payrolls) and 1777.5 in the employment of apprentices on public works projects. Further, overtime must be paid for work in excess of 8 hours per day or 40 hours per week pursuant to Labor Code Section 1811-1813.

3. Special prevailing wage rates generally apply to work performed on weekends, holidays and for certain shift work. Depending on the location of the project and the amount of travel incurred by workers on the project, certain travel and subsistence payments may also be required. Contractors and subcontractors are on

notice that information about such special rates, holidays, premium pay, shift work and travel and subsistence requirements can be found at www.dir.ca.gov.

4. Only bona fide apprentices actively enrolled in a California Division of Apprenticeship Standards approved program may be employed on the project as an apprentice and receive the applicable apprenticeship prevailing wage rates. Apprentices who are not properly supervised and employed in the appropriate ratio shall be paid the full journeyman wages for the classification of work performed.

5. The public entity for which work is being performed or the California Department of Industrial Relations may impose penalties upon contractors and subcontractors for failure to comply with prevailing wage requirements. These penalties are up to \$200 per day per worker for each wage violations identified; \$100 per day per worker for failure to provide the required paperwork and documentation requested within a 10-day window; and \$25 per day per worker for any overtime violation.

6. As a condition to receiving progress payments, final payment and payment of retention on any and all projects on which the payment of prevailing wages is required, the contractor agrees to present to the Agency, along with its request for payment, all applicable and necessary certified payrolls (for itself and all applicable subcontractors) for the time period covering such payment request. The term "certified payroll" shall include all required documentation to comply with the mandates set forth in Labor Code Section 1720 et seq, as well as any additional documentation requested by the Agency or its designee including, but not limited to: certified payroll, fringe benefit statements and backup documentation such as monthly benefit statements, employee timecards, copies of wage statements and cancelled checks, proof of training contributions (CAC2 if applicable), and apprenticeship forms such as DAS-140 and DAS-142.

7. In addition to submitting the certified payrolls and related documentation to the Agency, the contractor and all subcontractors shall be required to submit certified payroll and related documents electronically to the California Department of Industrial Relations. Failure to submit payrolls to the DIR when mandated by the project parameters shall also result in the withholding of progress, retention and final payment. Certified payroll information for this project shall be submitted electronically through LCPtracker. No hard copy payrolls will be accepted.

8. 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)].

9. 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. Contractors MUST be a registered "public works contractor" with the DIR AT THE TIME OF BID. Where the prime contract is less

than \$15,000 for maintenance work or less than \$25,000 for construction alternation, demolition or repair work, registration is not required.

10. All contractors/subcontractors and related construction services subject to prevailing wage, including but not limited to: trucking, surveying and inspection work must be registered with the Department of Industrial Relations as a “public works contractor”. Those you fail to register and maintain their status as a public works contractor shall not be permitted to perform work on the project.

11. Should any contractor or subcontractors not be a registered public works contractor and perform work on the project, Contractor agrees to fully indemnify the City for any fines assessed by the California Department of Industrial Relations against the City for such violation, including all staff costs and attorney’s fee relating to such fine.

12. This project is subject to compliance monitoring and enforcement by the Department of Industrial Relations.

13. The Agency shall withhold any portion of a payment; including the entire payment amount, until certified payroll forms and related documentation are properly submitted, reviewed and found to be in full compliance. In the event that certified payroll forms do not comply with the requirements of Labor Code Section 1720 et seq., the Agency may continue to hold sufficient funds to cover estimated wages and penalties under the contract.

14. Based on State funding sources, this project may be subject to special labor compliance requirements of Proposition 84.

SC-18. Supplement Section 18 of the Agreement as follows:

In accordance with generally accepted construction practices, the Contractor shall be solely and completely responsible for conditions of the jobsite, including safety of all persons and property during performance of the work, and the Contractor shall fully comply with all state, federal and other laws, rules, regulations, and orders relating to safety of the public and workers.

The right of the Engineer or the Owner's Representative to conduct construction review or observation of the Contractor's performance will not include review or observation of the adequacy of the Contractor's safety measures in, on, or near the construction site.

SC-20. Supplement Section 20 of the Agreement as follows:

- (e) The Cities of Westlake Village and Thousand Oaks and both their officers, employees, and agents shall be named as additional insured. Provide the insurance forms and endorsement as required by the Permits in the Appendices.

(f) Cannon and Willdan, its employees and subconsultants shall be named as additional insured.

(g) Contractor's Insurance:

1. General: The Contractor shall not commence or continue to perform any work unless he, at his own expense, has in full force and effect all required insurance. The Contractor shall not permit any subcontractor to perform work on this project unless the Worker's Compensation Insurance requirements have been complied with by such subcontractor. The types of insurance the Contractor shall obtain and maintain are Worker's Compensation Insurance and Employer's Liability Insurance, Liability Insurance, Builders' Risk "All Risk" Insurance and, if so determined by the Owner at the time of award of the contract, Earthquake and Tidal Wave Insurance, all as set forth herein. Worker's Compensation Insurance and Employer's Liability Insurance and Liability Insurance shall be maintained in effect for the full guarantee period.

2. Worker's Compensation Insurance and Employer's Liability Insurance: The Contractor shall provide employer's liability insurance in the amount of at least one million dollars (\$1,000,000) per accident for bodily injury and disease. Upon execution of the Agreement, the Contractor shall provide a certificate(s) of insurance certifying that he has obtained full Worker's Compensation Insurance coverage. At the same time, the Contractor shall provide the insurance endorsement(s) on the forms provided as part of the contract documents. This insurance shall be in strict accordance with the requirements of the most current and applicable state Worker's Compensation Insurance laws,

3. Liability Insurance: Upon execution of the Agreement, the Contractor shall provide a certificate(s) of insurance showing that he has Liability Insurance coverage. Included in such insurance shall be contractual coverage sufficiently broad to insure the matters set forth in the article entitled INDEMNITY except those matters set forth in the third paragraph thereof. The Liability Insurance coverage shall include each of the following types of insurance:

a. General Liability: One million dollars (\$1,000,000) per occurrence for bodily injury and property damage. If Commercial General Liability Insurance or other form with a general aggregate limit or products-completed operations aggregate limit is used, either the general aggregate limit shall apply separately to the project/location (with ISO CG 2503, or ISO CG 2504, or insurer's equivalent endorsement provided to the District) or the general aggregate limit and products-completed operations aggregate limit shall be twice the required occurrence limit.

b. Automobile Liability: One million (\$1,000,000) per occurrence for bodily injury and property damage each accident limit.

4. The Liability Insurance shall include as additional insureds: The Owner, the Engineer, the Owner's Representative, and their consultants, and each of their directors, officers, agents, and employees. The insurance afforded to these additional insureds shall be primary insurance. If the additional insureds have other insurance which might be applicable to any loss, the amount of the insurance provided under this article on LIABILITY INSURANCE shall not be reduced or prorated by the existence of such other insurance.'

5. Builders' Risk "All Risk" Insurance: Upon execution of the Agreement certificate(s) of insurance showing that he has obtained for the period of the contract Builders' Risk "All Risk" completed value insurance coverage (including flood but excluding earthquake and tidal wave) upon the entire project which is the subject of the contract and including completed work and work in progress. The Contractor shall provide Builder's Risk Insurance (or Installation Floater) at 100 percent of the contract price. At the same time, the Contractor shall provide the insurance endorsement(s) on the forms provided as a part of the contract documents. Such insurance shall include as additional insureds: The Owner, the Engineer, the Owner's Representative, and their consultants, and each of their directors, officers, employees, and agents.

6. Contractor's Liability Not Limited by Insurance: Nothing contained in these insurance requirements is to be construed as limiting the liability of the Contractor or the Contractor's sureties.

SC-21. Supplement Section 21 of the Agreement as follows: Following paragraph (a), add the following:

(1) To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Engineer, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the performance of the Work, provided that any such claim, cost, loss, or damage is attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property (other than the Work itself), including the loss of use resulting there from but only to the extent caused by any negligent act or omission of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work or anyone for whose acts any of them may be liable.

(2) In any and all claims against Engineer or any of their respective consultants, agents, officers, directors, partners, or employees by any employee (or the survivor or personal representative of such employee) of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation herein shall not be

limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for Contractor-or any such Subcontractor, Supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.

(3) The indemnification obligations of Contractor under Paragraph (1) shall not extend to the liability of Engineer and Engineer's officers, directors, partners, employees, agents, consultants and subcontractors arising out of:

1. the preparation or approval of, or the failure to prepare or approve, maps, Drawings, opinions, reports, surveys, Change Orders, designs, or Specifications; or
2. giving directions or instructions, or failing to give them, if that is the primary cause of the injury or damage.

SC-24(f). Supplement Section 24 of the Agreement as follows:

Substantial Completion is further defined as (i) that degree of completion of the Project's operating facilities or systems sufficient to provide the District the full time, uninterrupted, and continuous beneficial operation of the Work; and (ii) all required functional, performance and acceptance or startup testing has been successfully demonstrated for all components, devices, equipment, and instrumentation and control to the satisfaction of the District in accordance with the requirements of the Specifications; and (iii) all inspections required have been completed and identified *defective* Work replaced or corrected.

SC-24(g). Supplement Section 24 of the Agreement as follows:

Partial Utilization

A. Use by District at District's option of any substantially completed part of the Work which has specifically been identified in the Control Documents, or which District and Contractor agree constitutes a separately functioning and usable part of the Work that can be used by District for its intended purpose without significant interference with Contractor's performance of the remainder of the Work, may be accomplished prior to Substantial Completion of all the Work subject to the following conditions.

1. District at any time may request Contractor in writing to permit District to use any such part of the Work which District believes to be ready for its intended use and substantially complete. If Contractor agrees that such part of the Work is substantially complete, Contractor will certify to District that such part of the Work is substantially complete and request District to issue a certificate of Substantial Completion for that part of the Work. Contractor at any time may notify District in writing that Contractor considers any such

part of the Work ready for its intended use and substantially complete and request District to issue a certificate of Substantial Completion for that part of the Work. Within a reasonable time after either such request, District and Contractor shall make an inspection of the part of the Work to determine its status of completion. If District does not consider that part of the Work to be substantially complete, District will notify Contractor in writing giving the reasons, therefore. If District considers that part of the Work to be substantially complete, the provisions of SC-24 of the Supplement to General Provisions will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.

SC-28. Delete Section 28 (b) and add the following paragraph (b)

(b) At the close of each working day, Contractor shall completely backfill open excavation and cover the same with steel plates in accordance with normal practice in the industry and the rules, regulations, laws and ordinances of the State of California, the County of Los Angeles and the City of Westlake Village California. All plates shall be recessed to match existing pavement surfaces and all plates shall be tack welded.

SC-30. Supplement Section 30 of the Agreement as follows:

Removal of Debris During Performance of the Work: During the progress of the Work Contractor shall keep the Site and other areas free from accumulations of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris shall conform to applicable Laws and Regulations.

Cleaning: Prior to Substantial Completion of the Work, Contractor shall clean the Site. At the completion of the Work Contractor shall remove from the Site all tools, appliances, construction equipment and machinery, surplus materials, all waste materials, rubbish and other debris, and shall restore to original condition all property not designated for alteration by the Contract Documents.

SC-31. Supplement-Section 31 of the Agreement as follows: SC-31(d). As follows:

Substitute Items

A. If in the District's sole discretion an item of material or equipment proposed by Contractor does not qualify as an "or-equal" item it will be considered a proposed substitute item.

B. Contractor shall submit sufficient information to allow the District to determine that the item of material or equipment proposed is essentially equivalent to that named and an acceptable substitute, therefore. Requests for review of proposed substitute items of material or equipment will not be accepted by District from anyone other than Contractor.

C. Contractor may submit data substantiating requests for substitutions of equivalent items at any time after Notice of Award. Under no circumstances shall Contractor be entitled to an increase in Contract Time as a result of the submission or review of a substitution request.

SC-33(a). Add Section 33(a) 1 of the Agreement as follows:

SC-33(a) 1. Agency will not provide land and rights-of-way for the Contractors staging and storage.

SC-35. Supplement Section 35 of the Agreement as follows:

SC-35(h). Refer to Section 01300, Submittals, for submittal submission requirements.

SC-36 Supplement Section 36 of the Agreement as follows:

The Contractor shall supervise and direct the work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the work in accordance with the contract documents. The Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction, but the Contractor shall not be solely responsible for the negligence of others in the design or selection of a specific means, method, technique, sequence, or procedure of construction which is indicated in and required by the contract documents.

The Contractor shall be responsible to see that the completed work complies with the contract documents.

The Contractor shall designate and keep on the work at all times during its progress a competent superintendent who shall not be replaced without written notice to the Owner's Representative. The superintendent will be the Contractor's representative at the site and shall have authority to act on behalf of the Contractor. All communications given to the superintendent shall be as binding as if given to the Contractor. During periods when the work is suspended, the Contractor shall make appropriate arrangements for any emergency work which may be required.

Whenever the superintendent is not present on any particular part of the work where the Owner's Representative may desire to inform the Contractor relative to interpretation of the plans and specifications or to disapproval or rejection of materials or work performed, the Owner's Representative may so inform the foreman or other worker in charge of the particular part of the work in reference to which the information is given. Information so given shall be as binding as if given to the superintendent.

SC-37. Supplement Section 37 of the Agreement as follows:

SC-37(f). District will employ and pay for the services of an independent testing laboratory to perform all inspections, tests, or approvals required by the Contract Documents except: (a) for inspections, tests, or approvals covered by Section SC-37(g) and SC-37(h) below; (b) as otherwise specifically provided in the Contract Documents.

The Contractor shall provide access to the work for the special inspector during construction, and the special inspector shall be furnished with reasonable facility for gaining knowledge of the progress, workmanship, and character of materials used and employed in the work as well as obtaining all required test samples.

SC-37(g). If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested, or approved by an employee or other representative of such public body, Contractor shall assume full responsibility for arranging and obtaining such inspections, tests, or approvals, pay all costs in connection therewith, and furnish District the required certificates of inspection or approval.

SC-37(h). Contractor shall be responsible for arranging and obtaining and shall pay for all costs in connection with any inspections, tests, or approvals required for District's acceptance of materials or equipment to be incorporated in the Work, or acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work. Such inspections, tests, or approvals shall be performed by organizations acceptable to the District.

SC-37(i). If any Work (or the work of others) that is to be inspected, tested, or approved is covered by Contractor without written concurrence of District, it must, if requested by the District, be uncovered for observation.

SC-37(j). If any testing or inspection reveals failure of the portions of the Work to comply with requirements established by the Contract Documents, all costs made necessary by such failure, including those of repeated inspections and compensation of the District's inspection and special inspector's additional expenses, shall be at the Contractor's expense.

SC-37(k). The District shall have access to the Work and the right to audit all of Contractor's books, ledgers, records, correspondence, instructions, drawings, receipts, vouchers, memoranda, and other documents pertinent to all cost and pricing data used by Contractor in the determination of Contractor's bid for the Work, in pricing, negotiating, or costing work covered by a Change Order or claim, or otherwise relating to the Work, and Contractor shall preserve and make available at Contractor's office at all reasonable times all such records.

SC-37(l). Unless otherwise agreed in writing, the Contractor shall continue to carry out its responsibilities under the Agreement during any dispute, and the District shall continue to make payments in accordance with the Agreement.

SC-38(c). Supplement Section 38 of the Agreement as follows:

SC-38(c). If, instead of requiring correction or removal and replacement of defective Work, District prefers to accept it, District may do so. Contractor shall pay all Claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) attributable to District's evaluation of and determination to accept such defective Work and the diminished value of the Work to the extent not otherwise paid by Contractor pursuant to this sentence. If any such acceptance occurs prior to District's recommendation of final payment, a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work, and District shall be entitled to an appropriate decrease in the Contract Price, reflecting the diminished value of Work so accepted. If the parties are unable to agree as to the amount thereof, District may make a Claim therefore as provided in Section 46 of the Agreement. If the acceptance occurs after such recommendation, an appropriate amount will be paid by Contractor to District.

SC-42(a). Supplement Section 42 of the Agreement as follows:

The Performance and Payment Bonds shall remain in effect at least until one year after the date when final payment becomes due, except as provided otherwise by Laws or Regulations or by the Contract Documents. Contractor shall also furnish such other Bonds as are required by the Contract Documents.

SC-46. Supplement Section 46 of the Agreement as follows:

SC-46(g). Contractor shall carry on the Work and adhere to the progress schedule during all disputes or disagreements with District-No Work shall be delayed or postponed pending resolution of any disputes or disagreements, except District and Contractor may otherwise agree in writing.

SC-47. Add the following Section to the Agreement as follows:

Section 47 Contractor not Agent of District

Contractor shall perform all work under this Agreement as an independent contractor and shall not be considered an agent of the District, nor shall Contractor's subcontractors or suppliers or employees be considered agents of District Contractor and not the District shall be solely responsible to any and all Subcontractors and Suppliers and all those employed by them for their costs, expenses, fees and profits, if any, in performing the Work.

SC-48. Add the following Section to the Agreement as follows:

Section 48. Record Documents

Contractor shall maintain in a safe place at the Site one copy of all Drawings, Specifications, Addenda, Written Amendments, Change Orders, Work Change Directives, Field Orders, As-Builts, and written interpretations and clarifications in good order and annotated to show changes made during construction. All of this information shall be contained and marked on the As-Builts set of Drawings. These record documents together with all -approved Samples and a counterpart of all approved Shop Drawings will be available to the District for reference. Upon completion of the Work, these record documents, Samples, As-Builts and Shop Drawings will be delivered to the District.

SC-49. Add the following Section to the Agreement as follows:

Section 49. Labor Compliance Program

The funding of this project is partially provided by a grant from Prop 84 and the Labor Compliance Program Handout will be strictly followed. See Appendix C – Labor Compliance Program Handout

SC-50. Add the following Section to the Agreement as follows:

Section 50. Protection of Survey Monuments

The Contractor shall protect existing survey monuments, if any exist within the work limits, during the entire project. Asphalt overlaying of existing survey monuments in the roadway will not be permitted. In the event a surveyed monument lies within an area to be cold planed, removed or reconstructed, the Contractor shall tie out, reset, and file corner records per the LA County Surveyor's office requirements for re-establishing survey monuments.

The Contractor shall bear all Agency costs incurred to reestablish destroyed survey monuments.

SC-51. Add the following Section to the Agreement as follows:

Section 51 Project Signs.

The Contractor shall provide Project Sign at each end of the project limits seven (7) calendar days prior to the start of construction. Notification sign legend and details shall be per Appendix D Proposition 84 Sign Guidelines and approved by the Engineer in advance. Sign(s) shall be posted at two locations. The locations will be approved by the Cities of Westlake Village and Thousand Oaks.

Section-52. Add the following Section to the Agreement as follows:

Section 52 Coordination with Others

Construction may be performed concurrently with construction of other projects in the area. The Contractor shall coordinate all construction activities, including work areas, traffic control, and schedules, with other contractors working in the project area. The Contractor and its Subcontractors shall cooperate in the coordination of their separate activities in a manner that will provide the least interference with LVMWD's operations and other contractors and/or utility companies working in the area. If any difficulty or dispute should arise, the problem shall be brought immediately to the attention of LVMWD. All contractors working on the Site are subject to this requirement for cooperation and shall abide by LVMWD's decision in resolving project coordination problems without additional cost to LVMWD.

Calleguas Municipal Water District (Calleguas) will be constructing a Pump Station north of the County line and a 30" pipeline in Lindero Canyon from the Pump Station north into Thousand Oaks. The Calleguas project may or may not be under construction at the same time as the construction of this project. If construction does proceed simultaneously, coordination between the two contractors is imperative to minimize the impact to the residents of Westlake Village and Thousand Oaks and to the two construction projects.

Section-53. Add the following Section to the Agreement as follows:

Section 53 COVID-19 Exposure Control Plan

If required at the time of construction, the Contractor shall develop and submit a comprehensive COVID-19 exposure control plan, which includes control measures such as physical distancing; hygiene; decontamination procedures; and training. The plan shall apply to the Contractor, their subcontractors, suppliers, vendors, and delivery drivers. The plan shall include all required provisions contained in any local, state, or federal order, and shall include, at a minimum, the following provisions:

- 1) Whenever possible, practice physical distancing by maintaining a minimum 6-foot separation from others. When 6-foot separation cannot be maintained, wear a face covering.
- 2) Preclude gatherings of any size to the extent possible. Any time two or more people must meet, ensure minimum 6-foot separation. If meetings must be held, conduct them outside.
- 3) Provide appropriate personal protective equipment (PPE), such as gloves, goggles, face shields, and face masks as appropriate for the activity being performed.
- 4) Designate a project-specific COVID-19 Supervisor to enforce this guidance. A designated COVID-19 Supervisor shall be present on the construction site at all times during construction activities. The COVID-19 Supervisor can be a designated on-site worker.
- 5) The Contractor shall use a contact-free thermometer to check the temperature of all employees and visitors entering the Site. No one with a temperature exceeding 100.4°F will be allowed on the Site.

- 6) Identify “choke points” and “high-risk areas” where workers may be close together, and eliminate or control them to the extent possible so physical distancing is maintained.
- 7) Minimize interactions when picking up or delivering equipment or materials to ensure minimum 6-foot separation.
- 8) Stagger the trades as necessary to reduce worker density and maintain minimum 6-foot separation physical distancing wherever possible.
- 9) Discourage workers from using other workers’ phones, desks, offices, work tools and equipment. If necessary, clean and disinfect them before and after each use.
- 10) Place wash stations or hand sanitizer dispensers in appropriate locations to encourage hand hygiene through training and monitoring.
- 11) Do not allow anyone who exhibits the symptoms of COVID-19 to enter the Site.
- 12) Require anyone who starts to exhibit the symptoms of COVID-19 while at the Site to leave the Site immediately.
- 13) Direct employees to inform their supervisor if they have a household member with symptoms of or a positive test for COVID-19. No one who has a member of their household who has symptoms of COVID-19 or who has been tested positive for COVID-19 will be able to enter the Site until a 14 Calendar Day period has passed and the employee and/or household member not shown any symptoms of COVID-19 for at least 72 hours or have tested negative for COVID-19.
- 14) Any confirmed instance of COVID-19 infection by someone who is present at the job site should initiate a work stoppage and testing program to confirm the extent of the exposure and ensure all workers have a confirmed negative test prior to returning to the jobsite.
- 15) Maintain a daily attendance log of all workers and visitors and make it available to the Owner when requested.
- 16) Post, in areas visible to all workers, required hygienic practices including:
 - a. Don’t touch face or face masks with unwashed hands or with gloves.
 - b. Wash hands often with soap and water for at least 20 seconds.
 - c. Use hand sanitizer with at least 60% alcohol.
 - d. Clean and disinfect frequently touched objects and surfaces such as workstations, keyboards, telephones, machines and equipment, control panels, shared tools, handrails, doorknobs and handles, switches, and padlocks.
 - e. Cover the mouth and nose with a tissue when coughing or sneezing and discard the tissue. Wash hands immediately afterward.
 - f. Implement any other hygienic recommendations by the Centers for Disease Control and local public health authorities.

END OF SECTION

SECTION 01010

SUMMARY OF WORK AND CONTRACT CONSIDERATIONS

PART 1 - GENERAL

1.01 WORK COVERED BY CONTRACT DOCUMENTS

- A. The project includes: Construction of a 30" water pipeline connecting to the District's waterlines and Calleguas Municipal Water District's portion of the water pipeline. The approximate pipeline length is 5,000 feet. The pipeline is specified as AWWA C200 CML&C steel pipe. The pipeline will be constructed within the public ROW along Lindero Canyon Road from Thousand Oaks Blvd to the point of connection with Calleguas's portion of the water pipeline near the County of Los Angeles County Line. Optional Three 2" PVC conduit may be installed in trench alongside the 30" water pipeline. There are two conduit length options. The conduit will be installed from Thousand Oaks Blvd to either Hedgewall Drive or to the County Line. Pull boxes will be installed approximately every 500 ft. In addition, a new recycled water line extension is part of this work including approximately 950 ft of 6" PVC will connect to the existing LVMWD's recycled water line located near Lindero Canyon Road and Hedgewall Drive and extend north along Lindero Canyon Road. It will then split into two 4" PVC pipelines. One extending across Lindero Canyon Road and to the Canyon Oak Park. The pipe installed across Lindero Canyon Road will be installed using Horizontal Directional Drilling method. This pipeline will be constructed in a District easement. The other 4" pipeline will extend an additional 275 ft to the Yerba Buena school and connect to its existing recycled water meter. An optional bid to AC pave the entire Lindero Canyon Road from Thousand Oaks Blvd to the County Line is also part of this work.

1.02 TYPE OF CONTRACT

- A. The Work covered by these Contract Documents shall be provided under a single lump sum Contract with both unit price and lump sum items providing the total lump sum price.

1.03 DOCUMENTING EXISTING

- A. Prior to commencing the Work, tour the site with the Owner and the Engineer.

Examine and document with video recording, 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 video and provide a minimum of 72 each 10 mega pixel digital photographs to document that tour. The contractor shall provide all video on two (2) DVD's and all digital photographs on two (2) DVD's and CDROM's to the owner for record purposes. The contractor shall deliver the CDROM's with a letter stating the date the video and photographs were made and shall include a notebook of the photos printed on regular white paper.

- B. After completion of the Work, tour the site with the Owner and the Engineer.

Examine and document via video recording, 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 actions by others and shall be signed by all parties making the tour. Record existing conditions on video and provide a minimum of 72 each 10 mega pixel digital photographs to document that tour. The contractor shall provide all video on two (2) DVD's and all digital photographs on two (2) DVD's and CDROM's to the owner for record purposes. The contractor shall deliver the CDROM's with a letter stating the date the video and photographs were made and shall include a notebook of the photos printed on regular white paper.

1.04 SHUTDOWN OF EXISTING UTILITIES, SERVICES OR OPERATIONS

- A. Obtain the District'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. Base bids on work performed during normal working hours. The Owner may authorize a Change Order if work must be performed during premium time hours. The Contractor's Bid shall include the cost of premium time to perform work requiring utility shutdowns on weekends or outside of normal working hours.
- 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.

1.05 SCHEDULE OF VALUES

- A. The Contractor's Schedule of Values shall be in a form acceptable to the

District and have at least the following level of detail: a separate line item for each technical specification section, for site mobilization, for Construction Scheduling, for bonds and insurance, for final cleanup and for final deliverables. Subdivide final deliverables into: Record Drawings; Operation and Maintenance Manuals with Parts Lists; surveyor's record survey of in place coordinates and elevations to the top of pipe, and Special Guarantees. Include the appropriate specification section and paragraph number for each line item. Subdivide major trades or portions of the work into multiple line items that relate to observable milestones to aid monthly progress evaluations in accordance with the following example:

1. Concrete Work:
 - a. Foundations
 - b. Slab on grade
 - c. First floor walls and columns
 - d. Second floor beams and slabs
 - e. Second floor walls and columns, etc.

1.06 APPLICATION FOR PAYMENT

- A. Applications for Payment may be made as required by the Agreement. Line items on the Application for Payment shall be the same as those used on the Schedule of Values. Applications for Payment shall contain the Contractors Certification that the work was performed in accordance with the contract requirements.

1.07 UNIT PRICE WORK

- A. When the Contract Documents include Unit Price Work, the Contract Price shall include an amount equal to the sum of Unit Prices bid for each item times the estimated quantity for that item listed on the Bid Form.
- B. The estimated quantities listed on the Bid Form are not guaranteed to be accurate but are intended solely to determine a Contract Price. If actual quantities differ from estimated quantities by more than plus or minus 25% the unit prices may be adjusted by negotiation. Payment to the Contractor shall be based on actual quantities for each type of work as determined by the Engineer from certified quantity surveys.
- C. For the purpose of determining quantities for payment, the Contractor shall submit certified surveys by a licensed surveyor or other certified measurements of quantities to the Engineer with each application for payment. The Engineer will determine the quantities for payment based on data submitted by the Contractor and the Engineer's written determination shall be final unless appealed within 14 days.
- D. Unit Prices shall include all of the Contractor's cost including overhead and profit.

1.08 CONTRACT MODIFICATIONS

- A. Methods of modifying the Contract Documents are covered in the General Section 29.

1.09 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. Uniform Building Code (UBC)
 - 2. Uniform Fire Code (UFC)
 - 3. Uniform Plumbing Code (UPC)
 - 4. California Code of Regulations:
 - a. Title 8, Industrial Relations: Especially CAL-OSHA and Elevator Safety Orders.
 - b. Title 19, Public Safety: Portions of the work regulated by the State Fire Marshal.
- B. The latest edition of the requirements in effect at the date of submission of bids shall apply.
- C. Agreement cover the Contractor's responsibility to comply with laws and codes applicable to Means and Methods for performing the Work.
- D. Agreement cover the Contractor's responsibility to report code deficiencies in the design to the Engineer prior to proceeding with the Work.
- E. In cases where the Contract Documents are more restrictive than applicable codes, the Contractor shall comply with the Contract Documents.

1.10 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 in the Agreement. Provisions in referenced standards with regard to measurement and payment shall not apply to this Work unless specifically cited.

1.11 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.

1.12 DEFINITIONS

- A. The following terms, when used in the Contract Documents, shall have the meanings listed:
 - 1. ACCEPTABLE "acceptable to the Engineer"
 - 2. PERFORM "perform all operations required to complete the work referred to in accordance with the intent of the Contract Documents"
 - 3. 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 perform the intended function"
 - 4. REQUIRED "required by the Contract Documents or required to the Work and produce the intended results"
 - 5. SATISFACTORY "acceptable to the Engineer"
 - 6. SHOWN "as indicated on the Drawings"
 - 7. SITE "geographical location of the Project and land within the area shown on the contract drawings and within which

- | | |
|--------------|--|
| 8. SPECIFIED | Work will be installed or built"
"as written in the Contract Documents including the Specifications and the Drawings" |
| 9. SUBMIT | "submit to the Engineer" |

1.13 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	American Society for Testing and Materials
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
CBC	California Building Code
CBM	Certified Ballast Manufacturers
CBR	California Bearing Ratio

<u>Abbreviation</u>	<u>Stands for</u>
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 Assoc.
NETA	International Electrical Testing Assoc.
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

<u>Abbreviation</u>	<u>Stands for</u>
SSPC	Structural Steel Painting Council
TCA	Tile Council of America
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

SECTION 01040

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. Provide accommodations for items to be furnished and installed by Owner and labeled "NIC" (not in contract) on the Drawings and for Owner Furnished Contractor Installed items.

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. The mechanical/electrical coordinator shall assure compliance with the requirements of this paragraph 1.02.
- 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.
- C. Prepare large scale coordinated detailed installation drawings showing the work of all affected trades to coordinate the actual installed location of all equipment and of all mechanical and electrical work. Review coordination drawings with Engineer and all affected trades before proceeding.
- D. For pipeline projects provide lay sheets showing how the pipe will be laid and the pipe number for each pipe.
- E. 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.
- F. 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.

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. Remove and replace defective and non-conforming work.
- 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. Refinish surfaces to match adjacent finishes. For continuous surfaces, refinish to nearest intersection; for an assembly, refinish entire unit.
 - 6. Report any hazardous or unsatisfactory conditions to the Engineer.

1.04 ALTERATION PROJECT PROCEDURES

- A. Plan, schedule and perform alteration work as required to minimize impacting the Owner's continued operations. See Section 01010 paragraph titled "Contractor's Use of Site and Owner's Continued Operations."
- B. Schedule utility interruptions, piping connections as required to permit continued compliance with regulatory requirements and to meet Owners use of pipelines.
- C. Perform cutting fitting and patching in accordance with provisions in other paragraphs of this Section. Where new work abuts or aligns with existing work perform a smooth even transition.
- D. Provide new construction in accordance with the technical specifications or if not specified provide new construction matching adjacent or similar

existing work in material and finish.

1.05 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. Call DigAlert toll free at 811 to schedule utility locations at least 48 hours in advance of beginning work. Give Engineer 24-hours notice before 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, process 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 in the 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 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 Engineer's attention to differing existing conditions that may require a clarification or change. Refer also to Specification Section 02302, 3.02.
- E. Shutdown of existing utilities, services or operations shall be done in accordance with Section 01010.

1.06 FIELD ENGINEERING AND LAYOUT

- A. The drawings show reference points used by the surveyor for preparation of the topographic mapping.
- B. Accurately layout the Work using the coordinate points shown on the drawings.
- C. Employ a Registered Land Surveyor to layout all detailed dimensions and elevations from reference points. Use recognized engineering survey methods and documentation techniques.
- D. Refer to Section 01700, Contract Closeout paragraph 1.05.A for additional requirements.

1.07 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. Owner Provided Items or Work and Owner Furnished Contractor Installed items
10. Early Beneficial or Partial Occupancy
11. Final Testing, Startup, and Balancing
12. Punch Lists and Project Closeout Procedures
13. Final Deliverables including Record Drawings, Operation and Maintenance Manuals, and Special Guarantees.

1.08 PROGRESS MEETINGS

- A. The District will conduct weekly progress meetings with Contractor and Engineer (as necessary) at job site. Attendance required by Contractor's project manager, superintendent and affected Subcontractors and suppliers. The District 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 three week look ahead of 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 Owners and Engineers "Items of Concern List."
 9. Discuss impact of proposed changes on progress Schedule.
 10. Other business.

1.09 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 in italics 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 engineers licensed in the State of California.
- 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 design.

1.10 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. For exterior storage of fabricated products, place items on sloped

- supports or sleepers aboveground.
- 3. Cover products subject to deterioration from moisture, dust, or sunlight with opaque watertight but breathable sheet covering.
- 4. Provide offsite storage and protection including insurance coverage when site does not permit onsite storage or protection.
- 5. Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.
- 6. Provide facilities, equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.
- 7. 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. Refer to the General Conditions.

1.11 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 01010 and in accordance with Seismic Design Requirements in this Section. 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.

1.12 SAFETY

- A. In accordance with generally accepted construction practice, applicable law and the General Conditions 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.

- 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. *Job site safety is the sole responsibility of the contractor.*
- 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 property, and to comply with all applicable laws and regulations including CALOSHA, 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 as required by the General Conditions.
- 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.
- F. Prior to starting work each day the contractor shall conduct tail gate safety meetings to review the day's hazards and discuss safety issues. Prepare a Safety Briefing Sheet and have each worker sign the sheet showing that they were present at the safety briefing. Maintain the Safety Briefing Sheet in the Job Shack during construction.

1.13 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 of California 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.

1.14 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 to Engineer 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 these Contract Documents shall take precedence.
- E. The Contractor shall provide assistance required by the Engineer to adequately inspect the Work including ladders, scaffolding, lighting, ventilation and other aids to facilitate access and provide a safe working environment.

1.15 TESTING LABORATORY SERVICES AND CERTIFIED LABORATORY REPORTS

- A. The contractor shall provide the following laboratory testing requirements.

Specification Section	Item	Testing Service Retained and Paid for by Contractor
03300, Cast- In-Place Concrete		
	<i>Reinforcing Steel and Portland Cement</i>	<i>Mill certificates or test reports by an independent testing laboratory if certificates are not available.</i>
	<i>Concrete Aggregate</i>	<i>Independent Testing Laboratory</i>
	<i>Slump Tests</i>	<i>(by District Representative)</i>
	<i>Compression Tests</i>	<i>(Cylinders cast by District Representative) Cylinders cured at job site in a curing box provided by Contractor and meeting ASTM recommendations. Cylinders picked up at the jobsite and tested by Contractor's testing laboratory. One set of three cylinders required for each 150 cu. yards or fraction for each concrete class placed each day. Provide the engineer with the compaction rod used to make the cylinders.</i>
	<i>Testing of Concrete in place if required</i>	<i>Independent Testing Laboratory</i>
11003 Disinfection		
	<i>Water Testing</i>	<i>Sample obtained by the DISTRICT using bottles supplied by the testing laboratory.</i>
15050 Pipe Valves	Steel Piping	
	<i>Welders Qualifications</i>	<i>Submit ANSI/AWS D1.1 qualifying tests current for the project</i>
	<i>Test Weld by Each Welder</i>	<i>Witnessed by ENGINEER.</i>
	<i>Welding Inspection</i>	<i>Witnessed by ENGINEER</i>

1.16 PERMITS

- A. Contractor is advised that there are a number of permits required to construct the project. These permits include, but are not limited to:
 - 1. Cities of Westlake Village and Thousand Oaks Encroachment Permits
 - 2. LACFCD Flood Permit
 - 3. CalOSHA Mining and Tunneling Permit
- B. The District has obtained the permits listed in paragraph A above and included them in the Appendices. The Contractor shall obtain, and pay for, all other permits required for the completion of the work. If any of the above Agency's requires the Contractor to obtain permits, or double permits (as required by the Caltrans permit), for the completion of the work, then the Contractor shall obtain and pay for those permits.
- C. The Contractor shall comply with the requirements of all permits.
- D. The Contractor shall provide the insurance indicated on all permits.

END OF SECTION

SECTION 01070

STORM WATER POLLUTION PREVENTION PLAN (SWPPP)

PART 1 - GENERAL

1.01 REFERENCES

- A. California State Water Resources Control Board (SWRCB), Order No, 2009-0009- DWQ, NPDES CAS000002 (General Permit or NPDES General Permit) at www.swrcb.ca.gov/water_issues/programs/stormwater.

1.02 SUBMITTALS

- A. Within 15 calendar days after the receipt of Notice of Award, the Contractor shall submit its Stormwater Pollution Prevention Plan (SWPPP), and permit registration documents that are fully compliant with the General Permit to the Engineer for review and approval fully compliant with the SWRCB. The SWPPP and permit registration documents shall be resubmitted if determined unacceptable by the Engineer. The SWPPP and permit registration documents shall be submitted on paper copies and in PDF format upon approval by the Engineer, and shall contain the following:
 1. Names and qualifications of its SWPPP Manager, Qualified SWPPP Developer (QSD), and Qualified SWPPP Practitioner (QSP).
 2. Statement indicating the Contractor's intent to comply with the terms of the General Permit for storm water discharges associated with construction activity until the Contractor-prepared SWPPP is reviewed and accepted by Las Virgenes.
- B. All annual compliance certifications, monitoring program reports, and data as required by terms and conditions of the permit and SWPPP.

1.03 RELATED ACTIVITIES BY LAS VIRGENES MUNICIPAL WATER DISTRICT

- A. The site maps of the project shall be developed from the plans for the project and risk assessment level shall be developed from the regulations for the Effluent Standards required by the General Permit. The project is LUP Type 1 project for the purposes of the SWPPP.
- B. Upon acceptance of Contractor-prepared SWPPP, Las Virgenes will file the SWPPP together with the Notice of Intent (NOI) and obtain a Waste Discharge Identification number (WDID) from the SWRCB.
- C. Las Virgenes will also file any revisions to the SWPPP that is submitted by the Contractor and approved by the Engineer during the course of the contract.

1.04 PERMIT REGISTRATION DOCUMENTS (PRDS)

- A. This information will be posted electronically by Las Virgenes on State Water Board's Stormwater Multi-Application and Report Tracking System (SMARTS) website. Information submitted by Las Virgenes may be viewed on SWRCB website.

1.05 STORM WATER POLLUTION PREVENTION PLAN

- A. The Contractor shall use an acceptable SWPPP template for developing the SWPPP.
- B. The Contractor shall not mobilize or perform any sitework until Las Virgenes has accepted the Contractor's SWPPP and obtained a WDID from SWRCB.
- C. During the course of the contract, the Contractor shall revise and update the SWPPP as required by SWRCB and resubmit to the Engineer for review and approval.
- D. The Contractor shall prepare and implement a site specific SWPPP in accordance with the requirements of the SWRCB, the NPDES General Permit, and the Construction BMP Handbook Web-based portal developed by CASQA. The SWPPP and all Contractor activities shall be coordinated with other construction activities and SWPPPs at the site.
 - 1. The SWPPP for this project shall conform to the requirements which include:
 - a) Eliminate/reduce non-storm water discharges to storm systems and other U.S. waters.
 - b) Develop and implement a site specific SWPPP that specifies BMPs to prevent all construction pollutants from contacting storm water, limit erosion and sediment transport, and keep all products of erosion and pollutants from moving off site.
 - c) Perform inspections and maintenance of all BMPs (storm water control structures and pollution prevention measures) and comply with the risk level requirements set-forth by the General Permit.
 - 2. The SWPPP shall adequately address these requirements and shall contain as required:
 - a) Site and source descriptions (including the elements and characteristics specific to the site),
 - b) Descriptions of BMPs for erosion and sediment control,
 - c) BMPs for construction waste handling and disposal,
 - d) Implementation of approved local plans,
 - e) A sampling plan and/or sampling contingency plan, as required and based on project risk level,
 - f) Comply with post-construction BMPs for post-construction erosion and sediment control in accordance with the SWPPP and Non-storm water management.
 - 3. Erosion and sediment control shall include the following practices:

- a) Prevent runoff from flowing over unprotected slopes.
 - b) Keep disturbed areas to the minimum necessary for construction.
 - c) Control sediment transport within the site and prevent sediment transport from the site, using appropriate BMPs, including but not limited to check dams, fiber rolls sand bags, and siltation fences. Reduce sediment transport off site through construction of appropriately designed desilting and retention ponds.
 - d) Remove and dispose of all construction-generated siltation collected within or behind BMPs, including retention ponds.
 - e) Confine soil disturbance activities to the dry season, whenever possible. If construction needs to be scheduled for the wet season, ensure that erosion and sediment transport control measures are implemented prior to disturbance of soil and/or vegetation.
 - f) Stabilize disturbed areas as quickly as possible but in no case shall the time of stabilization exceed the time limits specified by the RWQCB and the requirements of the NPDES General Permit.
 - g) Maintain existing temporary controls until they are replaced with permanent controls.
 - h) Maintain and improve existing controls as necessary to comply with the NPDES General Permit for construction activity.
- E. Storm water management and erosion/sediment controls shall be installed in accordance with the approved SWPPP and the requirements of the General Permit. Controls and procedures shall conform to the latest edition of California Storm Water BMP Handbook (Web-based portal) for Construction Activity, as it may be amended from time to time.
- F. The Contractor shall amend the SWPPP prior to and during the course of the work as required by field conditions, construction procedures, or the Engineer. Changes shall be properly documented in the SWPPP. Copies of all amendments shall be submitted to Las Virgenes.
- G. Maintenance and Inspections:
1. The Contractor shall maintain the work area in a neat, clean and sanitary condition at all times and to the satisfaction of the Agency/Owner having the jurisdiction over the area, including the Cities of Westlake Village and Thousand Oaks, and Las Virgenes MWD. Streets shall be kept clean of debris, with dust and nuisances being controlled at all times. Mechanical cleaning with a street sweeper will be required. The Contractor shall also be responsible for any clean up on adjacent streets affected by the construction.
 2. The Contractor shall make visual inspections of all erosion control and sediment transport devices as necessary to ensure proper operation not less than once per week, and promptly before and after every rainstorm and at least every 24 hours during an extended rainfall event. If such inspection reveals that additional measures are needed to prevent erosion and sediment transport, the Contractor shall promptly maintain, modify, or install additional devices as needed. The Contractor shall use the forms

in the SWPPP for all inspections, and all completed forms shall be included in the SWPPP and submitted to Las Virgenes.

3. The Contractor shall perform routine maintenance, which shall include maintenance and repair of BMPs, debris removal, silt/sediment removal, clearing of vegetation around flow control devices to prevent clogging, and maintenance of healthy vegetative cover.

H. Removal and Formal Clean-up:

1. Once the site has been successfully stabilized against erosion and sediment transport, and post construction BMPs have been established, the Contractor shall remove temporary sediment control devices and all accumulated silt and debris. The Contractor shall dispose of silt and waste materials in a proper manner. The Contractor shall restore all areas disturbed during this process and stabilize against erosion with surfacing materials.

I. Post-Construction BMPs Installation:

2. Post-Construction BMPs, as described in the approved SWPPP, shall be installed before the end of the project.

J. Failure to Adopt and/or Implement an Acceptable SWPPP

1. If the Contractor fails to adopt and implement an acceptable SWPPP, Las Virgenes reserves the right to stop the Contractor's work without recompense, and withhold payments owed to the Contractor until such time as an acceptable SWPPP is adopted and implemented, and/or design and implement an acceptable SWPPP, using Las Virgenes or other Contractor forces with costs for same deducted from monies owed the Contractor. In addition, Las Virgenes reserves the right to suspend work for failure of the Contractor to adopt and implement an acceptable SWPPP in accordance with Article 13 of the General Conditions
2. Fines levied by authorities having jurisdiction for failure of the Contractor to adopt and implement an acceptable SWPPP shall be deducted from monies owed the Contractor or reimbursed as applicable.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01140

ENVIRONMENTAL PROTECTION

1.01 SCOPE

- A. 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, until completion of the construction project.

1.02 SUBMITTALS

- A. Develop an Environmental Protection Plan in detail and submit to the Engineer in the Product Information category within thirty (30) days from the date of the Notice to Proceed. Distribute the plan to all employees and to all subcontractors and their employees. The Environmental Protection Plan shall include, but not be limited to, the following items:
 - 1. Copies of required permits.
 - 2. Proposed sanitary landfill site.
 - 3. Other proposed disposal sites.
 - 4. 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.

1.03 MITIGATION OF CONSTRUCTION IMPACTS

- A. Requirements: All operations shall comply with all federal, state and local regulations pertaining to water, air, solid waste and noise pollution.
- B. Mitigation Measures from the **Final Environmental Impact Report** that are required for this project are attached to the end of this section in a table entitled Summary of Significant Impacts and Mitigation Measures. These mitigation measures shall become a part of the Contract Documents and the Contractor shall adhere to those requirements during construction.
- C. Definitions of Contaminants:
 - 1. Sediment: Soil and other debris that have been eroded and transported by runoff water.
 - 2. 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.
 - 3. Chemical Waste: Includes petroleum products, bituminous materials, salts, acids, alkalis, herbicides, pesticides, disinfectants, organic chemicals and inorganic wastes. Some of the above may be classified as "hazardous."
 - 4. Sanitary Wastes:
 - a. 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 hazardous material contamination, if encountered will constitute a changed site condition. The Owner may retain a separate contractor to dispose of undisclosed hazardous material encountered.

D. 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. 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 Engineer.
 - a. Protection: Protect trees that are located near the limits of the Contractor's work areas which may possibly be defaced, bruised or injured or otherwise damaged by the Contractor's operations. No ropes, cables or guys shall be fastened to or attached to any existing nearby trees or shrubs for anchorages unless specifically authorized. Where such special emergency use is permitted, the Contractor shall be responsible for any damage resulting from such use.
 - b. Trimming: Trim and seal tree limbs overhanging the line of the work and in danger of being damaged by the Contractor's operations in accordance with recognized standards for such work. Remove other tree limbs under the direction of the Engineer, so that the tree will present a balanced appearance.
 - c. Treatment of Roots: Do not cut roots unnecessarily during excavating or trenching operations. Expose major roots encountered in the course of excavation and do not sever. Wrap them in burlap as a protective measure while exposed. Neatly trim all other roots larger than one (1) inch in diameter that are severed in the course of excavation at the edge of the excavation or trench and paint them with a heavy coat of an approved tree seal.
 - d. Repair or Restoration: Repair or replace any trees or other landscape features scarred or damaged by equipment or construction operations as specified below. The repair and/or restoration plan shall be favorably reviewed prior to its initiation.
 - e. Temporary Construction: Repair 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 Engineer. 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.

- f. Sweep clean all areas as necessary.
3. Water Resources: Investigate and comply with all applicable federal, state and local regulations concerning the discharge (directly or indirectly) of pollutants to the underground and natural waters. Perform all work under this Contract in such a manner that any adverse environmental impacts are reduced to a level that is acceptable to the Engineer and regulatory agencies.
 - a. 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.
 4. Water Resources:
 - a. Investigate and comply with all applicable federal, state and local regulations concerning the discharge (directly or indirectly) of pollutants to the underground and natural waters. Exercise every reasonable precaution to protect streams, lakes, reservoirs, bays and coastal waters 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. Water pollution control work is 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 Engineer.
 - c. The Contractor shall provide temporary water pollution control measures, including but not limited to, dikes, basins, and ditches, and shall apply straw and seed, which become necessary as a result of his operations. The Contractor shall coordinate water pollution control work with all other work done on the Contract.
 - d. Submit a plan to control water pollution effectively during construction of the Work. Such program shall show the schedule for the erosion control work included in the Contract and for all water pollution control measures, which the Contractor proposes to take in connection with construction of the project to minimize the effects of his operations upon adjacent streams and other bodies of water.
 - e. The Owner will not be liable to the Contractor for failure to accept all or any portion of an originally submitted or revised water pollution control plan, nor for any delays to the work due to the Contractor's failure to submit an acceptable water pollution control plan.
 - f. The Contractor may request the Engineer to waive the requirement for submission of a written plan for control of water pollution when the nature of the Contractor's operation is such that erosion is not likely to occur. Waiver of this requirement will not relieve the Contractor from responsibility for compliance with the other provisions of this Section.

Waiver of the requirement for a written plan for control of water pollution will not preclude requiring submittal of a written plan at a later time if the Engineer deems it necessary because of the effect of the Contractor's operations.

- g. If the measures being taken by the Contractor are inadequate to control water pollution effectively, the Engineer may direct the Contractor to revise his operations and his water pollution control program. Such directions will be in writing and will specify the items of work for which the Contractor's water pollution control measures are inadequate. No further work shall be performed on said items until the water pollution control measures are adequate; and if also required, a revised water pollution control plan has been accepted.
- h. Where erosion which will cause water pollution is probable due to the nature of the material or the season of the year, the Contractor's operations shall be so scheduled that permanent erosion control features will be installed concurrently with or immediately following grading operations.
- i. Nothing in the terms of the Contract nor in the provisions in this Section shall relieve the Contractor of the responsibility for compliance with other applicable statutes relating to prevention or abatement of water pollution.
- j. The Contractor shall also conform to the following provisions:
 - 1) Where working areas encroach on live streams, barriers adequate to prevent the flow of muddy water into streams shall be constructed and maintained between working areas and streams and during construction of such barriers, muddying of streams shall be held to a minimum.
 - 2) Removal of material from beneath a flowing stream shall not be commenced until adequate means, such as a bypass channel, are provided to carry the stream free from mud or silt around the removal operations.
 - 3) Should the Contractor's operations require transportation of materials across live streams, such operations shall be conducted without muddying the stream. Mechanized equipment shall not be operated in the stream channels of such live streams except as may be necessary to construct crossings or barriers and fills at channel changes.
 - 4) Water containing mud or silt from aggregate washing or other operations shall be treated by filtration, or retention in a settling pond, or ponds, adequate to prevent muddy water from entering live streams.
 - 5) Oily or greasy substances originating from the Contractor's operations shall not be allowed to enter or be placed where they will later enter a live stream.
 - 6) Portland cement or fresh Portland cement concrete shall not be allowed to enter flowing water of streams.
 - 7) 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.

- 8) Material derived from roadway work shall not be deposited in a live stream channel where it could be washed away by high stream flows.
- 9) Where there is possible migration of anadromous fish in streams affected by construction on the project, the Contractor shall conduct his operations so as to allow free passage of such migratory fish.
- k. Chlorinated Water: Take special measures to prevent chlorinated water from entering the ground or surface waters. Dechlorinate chlorinated water prior to discharge.
5. Fish and Wildlife Resources: Perform all work and take such steps required to prevent any interference or disturbance to fish and wildlife. The Contractor will not be permitted to alter water flows or otherwise significantly disturb native habitat adjacent to the project area which are critical to fish and wildlife except as may be indicated or specified.
6. Cultural Resources: It is conceivable that archaeological sites could be discovered during the construction. Refer to paragraph 1.03.B above. 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 Engineer, and comply with applicable law.
7. Revegetation of Disturbed Areas:
 - a. Tree and Shrub Replacement: Replace trees and shrubs damaged by the construction or as noted on the Drawings after completion of earthwork in the area. Plant nursery stock of the same species and variety, in 5-gallon cans on a one-for-one basis. Plant in the early fall. If planting is not feasible in early fall, the Engineer will reschedule the tree planting operations.
 - b. Planting of Trees and Shrubs:
 - 1) Selection: Deliver trees and shrubs to the site in the nursery containers, with the nursery tags identifying the species and variety. The trees and shrubs should be selected for shape and symmetrical branching habit, which at maturity will produce strong, full foliated specimens. The specimens shall have grown in the designated size of container for a sufficient length of time for the root system to hold the earth when taken from the container, but not long enough to become rootbound or cause a "hardening off" of the root system. Specimens which are loose in the root ball will be rejected. Remove all rejected specimens from the site and replace with specimens as specified. Specimens shall be sound, healthy, vigorous and free from insects, pests, plant diseases and injuries.
 - 2) Protection: Specimens which cannot be planted within one day of delivery shall be properly protected and kept moist to prevent drying.
 - 3) Planting Procedure: Planting hole shall be twice the width of the root ball and at least one and one-half times the height of the root ball. Fill the planting hole with water and let drain away. Mix excavated soil with a planting mix appropriate for the type and condition of the soil and the species of tree or shrub and place the mixed soil in the planting hole to the depth necessary to bring the root ball slightly higher than the surrounding soil. Remove the specimen from the container carefully so that the root ball remains

- unbroken. Place in planting hole and fill with mixed soil to one-half the height of the root ball, tamp thoroughly, then water. Set specimens at such a level that after settlement the top of the root ball is level with the surrounding finish grade. Add mixed soil to form watering basin, fill basin twice with water immediately after planting. Water as frequently as required to keep the specimens adequately moist until well established. The Contractor will be responsible for maintaining specimens for a minimum of one year after final acceptance or planting, whichever is later.
- 4) Staking: Use 2-inch x 2-inch redwood or cedar stakes of length adequate to support each tree. Drive a stake on each side of each specimen outside of the root ball, to a depth of 3 feet. Support tree to stakes using twisted galvanized wire covered with reinforced rubber hose where in contact with the specimen.
 - 5) Mulching: Fill all watering basins of trees and shrubs with a layer of mulch not less than 2 inches thick.
 - 6) Other disturbed areas should be revegetated in accordance with the Stormwater Water Pollution Prevention Plan prepared under Section 01070.
8. Noise Control: The following noise control procedures shall be employed:
- a. Maximum Noise Levels within 1,000 Feet of any Residence, Business, or Other Populated Area: Noise levels for trenchers, pavers, loaders, and trucks shall not exceed 90 dBA at 50 feet as measured under the noisiest operating conditions. For all other equipment, noise levels shall not exceed 85 dBA at 50 feet.
 - b. Equipment: Jack hammers shall be equipped with exhaust mufflers and steel muffling sleeves. Air compressors should be of a quiet type such as a "whisperized" compressor.
 - c. Operations: Keep noisy equipment as far as possible from noise-sensitive site boundaries. Machines should not be left idling. Use electric power in lieu of internal combustion engine power wherever possible. Maintain equipment properly to reduce noise from excessive vibration, faulty mufflers, or other sources. All engines shall have mufflers.
 - d. Scheduling: Schedule noisy operations so as to minimize their duration at any given location.
 - e. Monitoring: To determine whether the above noise limits are being met and whether noise barriers are needed, the Contractor shall use a portable sound level meter meeting the requirements of American National Standards Institute Specification S1.4 for Type 2 sound level meters. If non-complying noise levels are found, the Contractor shall be responsible for monitoring and correction of excessive noise levels.
9. Dust Control, Air Pollution and Odor Control: Employ measures to prevent the creation of dust, air pollution and odors.
- a. Unpaved areas where vehicles are operated shall be periodically wetted down or given an equivalent form of treatment, to eliminate dust formation.
 - b. Store all volatile liquids, including fuels or solvents in closed containers.
10. Construction Storage Areas: Storage of construction equipment and materials shall be limited to the designated Contractor's storage area.
- a. Store and service equipment at the designated Contractor's storage

area where oil wastes shall be collected in containers. Oil wastes shall not be allowed to flow onto the ground or into surface waters.

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. No dumping of surplus concrete or grout on the site will be permitted.

11. Sanitation: During the construction period, provide adequate and conveniently located chemical sanitation facilities, properly screened, for use of construction crews, the Engineer, and visitors to the site. Facilities shall be regularly maintained.
12. 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.
13. Erosion and Sediment Transport Control: Erosion and Sediment Transport Control shall be addressed through the preparation of a Stormwater Pollution Prevention Plan in accordance with Section 01070.

1.04 DISPOSAL OPERATIONS

A. Solid Waste Management:

1. Supply solid waste transfer containers. 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 will not be permitted. Remove any excess concrete to the sanitary landfill.

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. Garbage: Store garbage in covered containers, pick up daily and dispose of in a sanitary landfill.

D. 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.

E. Excavated Materials:

1. Native soil will not be used for backfill.
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 at the disposal site indicated in the Environmental Protection Plan. No additional compensation will be paid to the

Contractor for such disposal. Include all such costs in the lump sum prices bid for the project.

- 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

Table 2-1. Summary of Project-Specific Significant but Mitigable Environmental Impacts and Mitigation Measures

DESCRIPTION OF IMPACT	MITIGATION MEASURES
<p>Impact AQ-1: Construction activities associated with implementation of the proposed project would result in air pollutant emissions that may affect regional or local air quality – significant, but mitigable.</p> <p>Construction of new facilities would generate air pollutant emissions, including exhaust emissions from heavy equipment, heavy-duty trucks and worker vehicles. In addition, earthwork (excavation, trenching, stockpiling, loading earth material, etc.), vehicle operation on unpaved surfaces, and wind erosion of exposed soil and soil stockpiles would generate fugitive dust. Peak day construction PM₁₀ emissions within Los Angeles County (SCAB) would exceed the applicable Local Significance Threshold and are considered significant. The portion of the project within Los Angeles County is subject to SCAQMD Rule 403. The portion of the project within Ventura County is subject to relevant VCAPCD requirements. Best available control measures from both jurisdictions to minimize fugitive dust have been provided as mitigation measures.</p>	<p>MM AQ-1: Applicable construction mitigation measures listed in Section 7.4 of the VCAPCD Air Quality Assessment Guidelines and applicable Best Available Control Measures listed in SCAQMD Rule 403 would be implemented.</p>
<p>Impact BIO-1: Construction of the PS and PRS would occur adjacent to aquatic habitat in Lindero Creek that may support western pond turtle and two-striped garter snake – significant, but mitigable.</p> <p>The suitability of Lindero Creek to support these species is reduced by development of the upper watershed with residential and golf course land uses, channelization of the lower reach (Lake Lindero Country Club), surrounding residential development and roadway culverts. In addition, tracks of potential predators of these species (raccoon, coyote) were commonly observed in the streambed of Lindero Creek during the field survey. Western pond turtle and two-striped garter snake have not been reported from the Lindero Canyon watershed and were not observed during the field survey. However, focused surveys for these two species were not conducted. The proposed temporary construction easement is located immediately west of Lindero Creek, and construction activities may adversely affect these species (if present) through inadvertent mortality.</p>	<p>MM BIO-1: Aquatic Reptile Surveys and Exclusion Measures.</p> <p>Focused surveys for western pond turtle and two-striped garter snake shall be conducted in Lindero Creek adjacent to the PS/PRS site no more than seven days prior to any earthwork or vegetation removal. If any of these species are detected, exclusion fencing (Ertec special-status species fencing, or equivalent) shall be installed along the eastern boundary of the temporary construction easement area near Lindero Creek.</p>

Table 2-1. Continued

DESCRIPTION OF IMPACT	MITIGATION MEASURES
<p>Impact BIO-2: Pipeline installation and other project-related construction activities may disrupt breeding of migratory birds – significant, but mitigable.</p> <p>Vegetation (including landscaping) removal would occur at the PS/PRS site, air/vacuum relief valve sites, and along the Canyon Oaks Park Lateral pipeline alignment. Vegetation removal, noise, dust, and heavy equipment activity associated with project construction may result in direct impacts (loss of nests during vegetation removal) and indirect impacts (nest abandonment, alteration of breeding behavior) to breeding birds. These impacts may result in violation of the Migratory Bird Treaty Act and Sections 3503 and 3513 of the California Fish and Game Code and are considered potentially significant.</p>	<p>MM BIO-2: Breeding Migratory Bird Avoidance Measures. Vegetation removal and pipeline installation and related construction activity adjacent to tree windrows or native vegetation shall avoid the migratory bird and raptor breeding season (February 15 to August 15).</p> <ul style="list-style-type: none"> • If construction in these areas cannot be avoided during this period, a nest survey within the area of impact and a 200 foot buffer for passerines and any available raptor nesting areas within 500 feet shall be conducted by a qualified biologist no earlier than 14 days and no later than 5 days prior to any native habitat removal or ground disturbance to determine if any nests are present. • If an active nest is discovered during the survey, a buffer of 200 feet for migratory birds or 500 feet for raptors (or as determined by the biologist based on a field assessment) shall be established around the nest. The buffer area may be reduced if nest monitoring by a qualified biologist indicates construction activities are not adversely affecting nesting success. No construction activity shall occur within the buffer area until a biologist determines that the nest is abandoned, or fledglings are adequately independent from the adults.
<p>Impact N-1: Noise generated by project construction activities may adversely affect noise-sensitive receptors – significant, but mitigable.</p> <p>A peak day during construction was used to estimate construction noise at sensitive receptors in proximity to project-related construction activities. Construction noise analysis scenarios are based on potential impacts to noise-sensitive receptors as defined in the Ventura County General Plan noise policies. Other affected cities do not have construction-related noise standards other than municipal code prohibitions for nighttime construction work. Noise modeling indicates Ventura County General Plan construction noise policy thresholds would not be exceeded. Nighttime construction work would be very limited in duration and scope, but would violate the municipal codes of the City of Thousand Oaks and the City of Westlake Village. Therefore, construction noise impacts are considered potentially significant.</p>	<p>MM N-1. The project shall comply with applicable municipal codes restricting nighttime construction work:</p> <ul style="list-style-type: none"> • Obtain a permit for nighttime (after 7 p.m.) pipeline tie-in work to the Lindero Feeder No. 2 from the City of Thousand Oaks Public Works Director in accordance with Section 8-11.01 of the City's Municipal Code. • Obtain written permission from the Westlake Village City Manager for nighttime (after 7 p.m.) pipeline tie-in work to the LVMWD potable water system in accordance with Section 4.4.050(D) of the City's Municipal Code.

Table 2-1. Continued

DESCRIPTION OF IMPACT	MITIGATION MEASURES
<p>Impact CR-1: Project-related excavation has the potential to adversely affect unreported archeological resources – significant, but mitigable.</p> <p>Based on the cultural resources records search and previous archeological field surveys, no previously recorded cultural resources are located within or immediately adjacent to proposed pipeline alignments or facility sites. The PS/PRS site is located near a stream, which are commonly sites of prehistoric occupation by Native Americans. An isolated prehistoric artifact (P-19-100211) was recorded within 260 feet of the PS/PRS site. Construction of the PS, PRS, and related facilities would require extensive excavation and cultural resources (isolated artifacts, intact deposits, burials) may be encountered. Impacts are unknown but potentially significant.</p>	<p>MM CR-1. The following mitigation measures are consistent with the guidelines of the State Office of Historic Preservation and shall be implemented during project construction.</p> <ul style="list-style-type: none"> • A worker cultural resources sensitivity program shall be implemented for all project components. Prior to any ground-disturbing activity, a qualified archeologist shall provide an initial sensitivity training session to all affected CMWD and LVMWD staff, contractors, subcontractors, and other workers prior to their involvement in any ground-disturbing activities, with subsequent training sessions to accommodate new personnel becoming involved in the project. The sensitivity program shall address: <ul style="list-style-type: none"> ✓ The cultural sensitivity of the affected site and how to identify these types of resources; ✓ Specific procedures to be followed in the event of an inadvertent discovery; ✓ Safety procedures when working with monitors; and, ✓ Consequences in the event of non-compliance. • Prior to any ground disturbance at the PS/PRS site, an Extended Phase I Survey shall be completed in all areas of planned excavation and consist of shovel test probes and auger probes to determine whether or not intact subsurface cultural deposits are present. A qualified archaeologist shall oversee the Extended Phase I Survey and a Native American representative shall monitor all excavation. <ul style="list-style-type: none"> ✓ If intact subsurface cultural deposits are discovered during the Extended Phase I Survey, Phase II subsurface testing and evaluation shall be performed to determine the vertical and horizontal extent and composition of cultural deposits. ✓ If intact subsurface cultural deposits are determined to be significant after Phase II testing, project redesign or Phase III Data Recovery mitigation will be required. ✓ If intact subsurface cultural deposits are not found during the Extended Phase I Survey, no further work or mitigation is required at the PS/PRS site. <p><u>The Extended Phase I Survey was completed by Padre Associates' archaeologists during the Draft EIR public review period. The survey included three 50-centimeter diameter shovel test probes excavated in 20-centimeter increments to a minimum depth of one meter. In addition, an auger was used to excavate in 20-centimeter increments to a total depth of 1.6 to 3.8 meters. All material removed from the excavations was dry screened in the field using a 1/8 inch diameter mesh to identify any cultural materials. No cultural materials were found, and no further investigation or monitoring during project construction was recommended.</u></p> • If human remains are unearthed, State Health and Safety Code Section 7050.5 requires that no further disturbance shall occur until the County Coroner has made the necessary findings as to origin and disposition pursuant to Public Resources Code Section 5097.98. CMWD and LVMWD shall be immediately notified of any human remains found. If the remains are determined to be of Native American descent, the coroner has 24 hours to notify the Native American Heritage Commission (NAHC).

Table 2-1. Continued

DESCRIPTION OF IMPACT	MITIGATION MEASURES
<p>Impact HAZ-2: Excavation associated with construction of the PS and PRS may expose the public and environment to contaminated soil – less than significant, but mitigable.</p> <p>Installation of the proposed below-ground PS, PRS, and related components would require extensive excavation in an area adjacent to a previously contaminated site (Yerba Buena Elementary School site) and may result in discovery of soil containing pesticides and/or arsenic associated with historic agricultural land use. Contaminated soil may result in exposure of the public (adjacent residential areas and Wistful Vista Open Space) and the environment (surface water and wildlife habitat in adjacent Lindero Creek) to hazardous materials.</p> <p><u>Soils at the PS/PRS site were assessed by Rincon Consultants in accordance with mitigation measure MM HAZ-1 during the Draft EIR public review period. The assessment included sampling five locations at two depths (0-0.5 feet, 2.5-3 feet) using a hand auger. Each of the ten soil samples were analyzed for organochlorine pesticides, total petroleum hydrocarbons and arsenic by BC Laboratories. Dichlorodiphenyldichloroethylene (DDE), Dichlorodiphenyltrichloroethylene (DDT), petroleum hydrocarbons (hydraulic oil/motor oil) and arsenic were detected in at least one of the ten samples. However, DDE, DDT and petroleum hydrocarbons concentrations were less than the Regional Screening Levels (residential and industrial uses) established by the U.S. Environmental Protection Agency, which are based on a target cancer risk of one in a million. Arsenic concentrations detected were within the range of background concentrations in California as identified by the Kearney Foundation of Soil Science at the University of California Riverside. Therefore, soils to be excavated during construction at the PS/PRS site are considered non-hazardous and no further testing or monitoring is warranted, such that Impact HAZ-2 is considered less than significant.</u></p>	<p><u>Mitigation measure MM HAZ-1 was fully implemented during the Draft EIR public review period and hazardous soil contamination was not found.</u></p> <p>MM HAZ-1: All areas proposed for excavation at the PS/PRS site shall be tested and evaluated to identify soil contamination. A Site Evaluation Plan shall be developed and implemented prior to any soil disturbance. The Site Evaluation Plan shall include as a minimum:</p> <ul style="list-style-type: none"> • Identification of soil sampling locations to encompass the entire footprint of proposed facilities. • Soil testing for organochlorine pesticides, petroleum hydrocarbons, and arsenic to the depth of probable historic agricultural cultivation. • Identification of soil contamination screening values. <p>All soil with contamination exceeding California Human Health Screening Levels (or other approved screening levels) shall be segregated, stockpiled and covered as they are excavated. Contaminated soil shall be removed from the PS/PRS site to an appropriate solid waste disposal facility prior to completion of construction.</p> <p>Soil testing shall be coordinated with archeological testing (see Section 4.5.4.1) to avoid disturbance of unreported cultural resources. Therefore, any boring or excavation associated with soil testing shall be conducted after archeological testing indicates the lack of any cultural deposits or following Phase II subsurface testing and Phase III data recovery, as appropriate.</p>

SECTION 01270

MEASUREMENT AND PAYMENT

PART 1 - GENERAL

1.01 SUMMARY

- A. Section includes: Descriptions for payment purposes of the various elements, components, actions, equipment, and materials that are included in each bid item. Also included is a description of how measurement of the bid item will be made. Lump Sum bid items will have no measurement description, since the quantity is one.
- B. The Lump Sum price includes full compensation for furnishing all labor, tools, materials, equipment, and incidentals required to complete the work in accordance with the Contract Documents. No other compensation will be allowed therefor.
- C. Work for which no separate payment is provided will be considered as a subsidiary obligation of the contractor, and the cost thereof shall be included in the applicable contract price for the item to which the work most closely applies.

1.02 MOBILIZATION

- A. Payment: Mobilization shall be a lump sum price not to exceed 3 percent of the total bid price for the project and shall include all mobilization for the entire project. The lump sum price for mobilization shall include compensation for mobilizing equipment, tools, materials, and other items to allow construction to proceed.
- B. Measurement:
 - 1. After mobilization has been completed payment shall be made for 50 percent of the amount bid.
 - 2. After 10 percent of the contract has been earned, an additional 25 percent of the bid item will be paid.
 - 3. After 25 percent of the contract has been earned, the remainder of the bid item will be paid.

1.03 DEMOBILIZATION

- A. Payment: Demobilization shall be a lump sum price not to exceed 2 percent of the total bid price for the project and shall include all demobilization for the entire project. The lump sum price shall include all work to completely demobilize from the site include disposal of all trash, removal of all traffic control devices, sweeping the streets as required to clean up any debris left, and other items to complete demobilization.
- B. Measurement: Complete payment at issuance of the Final Completion Notice.

1.04 BONDS AND INSURANCE

- A. Payment: Bonds and Insurance shall be a lump sum price to provide bonds and insurance for the project as detailed in the Contract Documents.
- B. Measurement: Payment shall be made monthly proportional to the total amount earned on the project.

1.05 TRAFFIC CONTROL

- A. Payment: Payment shall be made for this bid item to provide traffic control in accordance with the traffic control drawings, requirements of Specification 01550, permit requirements from the City of Westlake Village and other requirements of the Project Manual.
- B. Measurement: Payment shall be made monthly proportional to the total amount earned on Section 1.07, 1.14, 1.16, and 1.18. For example, if the progress payment of 25 percent for Section 1.07 has been earned and paid, then 25 percent of this item will be paid.

1.06 TRENCHING, SHEETING, AND SHORING SAFETY PROTECTION

- A. Payment: Payment shall be made for this bid item to provide worker trench safety protection in accordance with CalOSHA requirements and other requirements of the Contract Documents.
- B. Measurement: Payment shall be made monthly proportional to the total amount earned on Section 1.07. For example, when a progress payment of 25 percent has been earned for Section 1.07, then 25 percent of this item will be paid.

1.07 30-INCH CML&C STEEL PIPELINE

- A. Payment: Payment shall be made for this bid item based on the number of feet of pipeline, AWWA C200 CML&C Welded Steel Pipe, constructed from Station 7+05.06 to Station 56+88.95 including construction staking, potholing all utilities, excavation, bedding, hauling and proper disposal of excess backfill, installation of valves, appurtenances, enclosures, etc. unless noted otherwise in other bid items. The contractor shall provide breakdown on the schedule of values of the cost of the valves and appurtenances so that payment may be made on completed portions.
- B. Pipeline Measurement: Measurement shall be a horizontal distance (not pipe length) based on walking with a measuring wheel accurate to three (3) inches rounded up to the next foot of that portion of the pipeline installed, backfilled and compacted with cold patch that has been completed that period. Length measured shall include valves and appurtenances.
- C. Valves and Appurtenances Measurement: Measurement shall be made for completed valves and appurtenances as shown on the schedule of values.

1.08 CONNECTION TO EXISTING PIPELINE AT STATION 56+88.95.00

- A. Payment: Payment shall be made for the completed connection to existing 14-inch and 16-inch per Detail 1 on Sheet 12 that is backfilled and tested including all valves, piping, and appurtenances. This bid item shall include the pipe and appurtenances to Station 56+88.95.00.
- B. Measurement: Measurement shall be based on the District's Representatives opinion that this item is completed.

1.09 CATHODIC PROTECTION

- A. Payment: Payment shall be made for cathodic protection requirements for AWWA C200 CML&C Welded Steel Pipe construction, as shown in the details and on the plan and profile drawings.
- B. Measurement: Measurement shall be made based on the breakdown shown on the contractor's schedule of values as the items are completed.

1.10 AIR VACUUM VALVE AND BLOW OFF ASSEMBLIES

- A. Payment: Payment shall be made for construction of the air vacuum valves and blow off assemblies along the 30-inch CML&C steel pipeline including excavation, valves, fittings, and associated appurtenances.
- B. Measurement: Measurement shall be based on the District's Representatives opinion that the item is complete.

1.11 CURB AND GUTTER FOR AIR VACUUM VALVE AND BLOW OFF ASSEMBLIES

- A. Payment: Payment shall be made for replacement of the concrete curb and gutter removed for the air vacuum valve and blow off assemblies as shown on the plan and profile drawings including all labor, material and equipment necessary.
- B. Measurement: Measurement shall be a horizontal distance based on walking with a measuring wheel accurate to three (3) inches rounded up to the next foot of that portion of the curb and gutter installed.

1.12 WATER SAMPLE STATION FOR 30" WATER MAIN

- A. Payment: Payment shall be made for construction of the water sample station along the 30-inch CML&C steel pipeline including 1-inch copper line, connection to the water main, excavation, valves, fittings, associated appurtenances excavation, hauling and proper disposal of materials, all labor, material, and equipment necessary.
- B. Measurement: Measurement shall be based on the District's Representatives opinion that the item is complete.

1.13 SIDEWALK FOR AIR VACUUM VALVE AND BLOW OFF ASSEMBLIES

- A. Payment: Payment shall be made for replacement of the concrete sidewalk

to existing score lines for the air vacuum valve and blow off assemblies as shown on the plan and profile drawings including all labor, material and equipment necessary.

- B. Measurement: Measurement shall be a horizontal distance of the length and width of the sidewalk rounded up to the next square foot.

1.14 SLURRY BACKFILL OF 30-INCH WATER MAIN

- A. Payment: Payment shall be made for placing one sack cement slurry in the pipeline trench above the bedding for the 30-inch water main, as shown on the drawings. Slurry above the 2-inch conduits is not included in this bid item.
- B. Measurement: Measurement shall be on a cubic yard basis of slurry placed above the 30-inch water main as shown on the drawings, specified in the contract documents and as required by the City of Westlake per Detail 1 on Sheet 13. The depth of the slurry above the bedding and below the AC Pavement times the width of the trench per Detail 1 on Sheet 13 will be used to calculate the cubic yards of slurry placed. The horizontal measurement shall be a horizontal distance based on walking with a measuring wheel accurate to three (3) inches rounded up to the next foot of that portion of the slurry installed. The District Representative will create a chronological spreadsheet of the quantities and reconcile them with the Contractor after each weekly progress meeting. Requests for payment shall only include quantities that have been reconciled.

1.15 AC PAVING OF 30-INCH WATER MAIN

- A. Payment: Payment shall be made for placing and compacting AC paving constructed along the 30-inch water main as specified and to the thickness shown on the drawings, including the grinding, and tee cut. The maximum pay width for pavement shall be based on the paving section shown on the Detail 1 on Sheet 13 of the contract drawings. Construction of the trench wider than shown on the drawings, resulting in an increased paving section, will be at no additional cost to the District. Irregular sloughing of the pavement into a raveling trench wider than shown on the trench detail and/or cave-ins of the trench and pavement shall be saw cut at right angles and finish paved at no additional cost to the District.
- B. Measurement: Measurement shall be on a per ton basis of finish course AC placed to the thickness above the 30-inch water main, shown on the drawings and specified in the contract documents. Original weigh tickets shall be delivered to the District Representative at the end of each day. The District Representative will create a chronological spreadsheet of the quantities and reconcile them with the Contractor after each weekly progress meeting. Requests for payment shall only include quantities that have been reconciled.

1.16 FLUSHING, TESTING, AND DISINFECTION OF 30-INCH WATER MAIN

- A. Payment: Payment shall be made for the completed connection of the

required disinfection and testing apparatus, required connections to the pipeline to be tested, blow off assemblies, air/vacuum testing assemblies, bulkheads, testing pump, bacteriological testing and results, and removal of equipment and reconnection of the piping.

- B. Measurement: Measurement shall be based on the District's Representatives opinion that this item is completed.

1.17 THREE-2-INCH PVC CONDUIT

- A. Payment: Payment shall be made for this bid item based on the number of feet of 3-2" conduits, (Measurement is for the length of 3-2" conduits not each 2" conduits) Schedule 40 PVC, constructed from Station 10+00 to Station 56+88.95 including excavation, bedding, hauling and proper disposal of excess backfill, sweeps to the pull boxes, appurtenances, enclosures, etc. unless noted otherwise in other bid items. The contractor shall provide breakdown on the schedule of values of the cost of the appurtenances so that payment may be made on completed portions.
- B. Pipeline Measurement: Measurement shall be based on walking with a measuring wheel accurate to three (3) inches rounded up to the next foot of that portion of the conduit installed, backfilled and compacted with cold patch that has been completed that period.

1.18 SLURRY BACKFILL OF THREE-2-INCH PVC CONDUIT

- A. Payment: Payment shall be made for placing one sack cement slurry in the pipeline trench above the bedding for the 2-inch PVC conduits, as shown on the drawings.
- B. Measurement: Measurement shall be on a cubic yard basis of slurry placed in the trench for the conduit as shown on the drawings, specified in the contract documents and as required by the City of Westlake per Detail 1 on Sheet 13. The depth of the slurry above the conduit and below the AC Pavement times the width of the trench per Detail 1 on Sheet 13 will be used to calculate the cubic yards of slurry placed. The horizontal measurement shall be a horizontal distance based on walking with a measuring wheel accurate to three (3) inches rounded up to the next foot of that portion of the slurry installed. The District Representative will create a chronological spreadsheet of the quantities and reconcile them with the Contractor after each weekly progress meeting. Requests for payment shall only include quantities that have been reconciled.

1.19 AC PAVING OF THREE 2-INCH PVC CONDUIT

- A. Payment: Payment shall be made for placing and compacting AC paving constructed above the trench of the 2-inch PVC conduits as specified and to the thickness shown on the drawings. The maximum pay width for pavement shall be based on the paving section shown on the Detail 1 on Sheet 13 of the contract drawings. Construction of the trench wider than shown on the drawings, resulting in an increased paving section, will be at no additional cost to the District. Irregular sloughing of the pavement into a raveling trench wider than shown on the trench detail and/or cave-ins of the trench and pavement shall be saw cut at right angles and finish paved at no additional cost to the District.
- B. Measurement: Measurement shall be on a per ton basis of finish course AC placed to the thickness above the 2-inch PVC conduits, shown on the drawings and specified in the contract documents. Original weigh tickets shall be delivered to the District Representative at the end of each day. The District Representative will create a chronological spreadsheet of the quantities and reconcile them with the Contractor after each weekly progress meeting. Requests for payment shall only include quantities that have been reconciled.

1.20 PULL BOX

- A. Payment: Payment shall be made for construction of the pull boxes including excavation and associated appurtenances.
- B. Measurement: Measurement shall be based on the District's Representatives opinion that the item is complete.

1.21 CURB AND GUTTER FOR PULL BOXES

- A. Payment: Payment shall be made for replacement of the concrete curb and gutter removed for the pull boxes as shown on the plan and profile drawings including all labor, material and equipment necessary.
- B. Measurement: Measurement shall be a horizontal distance based on walking with a measuring wheel accurate to three (3) inches rounded up to the next foot of that portion of the curb and gutter installed.

1.22 SIDEWALK FOR PULL BOXES

- A. Payment: Payment shall be made for replacement of the concrete sidewalk to existing scour lines removed for the pull boxes as shown on the plan and profile drawings including all labor, material and equipment necessary.
- B. Measurement: Measurement shall be a horizontal distance of the length and width of the sidewalk rounded up to the next square foot.

1.23 6-INCH AND 4-INCH PVC RECYCLED WATER MAIN

- A. Payment: Payment shall be made for this bid item based on the number of feet of pipeline, C900 DR 18 PVC, including excavation, bedding, native backfill, surface restoration outside of paved area to match existing, hauling and proper disposal of excess native backfill, installation of valves, appurtenances, enclosures, etc. unless noted otherwise in other bid items. The contractor shall provide breakdown on the schedule of values of the cost of the valves and appurtenances so that payment may be made on completed portions.
- B. Pipeline Measurement: Measurement shall be based on walking with a measuring wheel accurate to three (3) inches rounded up to the next foot of that portion of the pipeline installed, backfilled and compacted with cold patch that has been completed that period.
- C. Valves and Appurtenances Measurement: Measurement shall be made for completed valves and appurtenances as shown on the schedule of values.

1.24 4-INCH FUSIBLE HDPE – HORIZONTAL DIRECTIONAL DRILLING

- A. Payment: Payment shall be made for the completed horizontal directional drill of the 4-inch fusible HDPE, including excavation of pit, hauling and proper disposal of excess native backfill, all labor, material, and equipment necessary.
- B. Measurement: Measurement shall be based on the District's Representatives opinion that this item is completed.

1.25 SLURRY BACKFILL OF RECYCLED WATER MAIN

- A. Payment: Payment shall be made for placing one sack cement slurry in the pipeline trench above the bedding for the recycled water main along Lindero Canyon Road, as shown on the drawings.
- B. Measurement: Measurement shall be on a cubic yard basis of slurry placed for the recycled water main as shown on the drawings, specified in the contract documents and as required by the City of Westlake. Original delivery tickets shall be delivered to the District Representative at the end of each day. The District Representative will create a chronological spreadsheet of the quantities and reconcile them with the Contractor after each weekly progress meeting. Requests for payment shall only include quantities that have been reconciled.

1.26 AC PAVING OF RECYCLED WATER MAIN

- A. Payment: Payment shall be made for placing and compacting AC paving constructed for the recycled water main along Lindero Canyon Road as specified and to the thickness shown on the drawings. The maximum pay width for pavement shall be based on the paving section shown on the trench detail of the contract drawings. Construction of the trench wider than shown on the drawings, resulting in an increased paving section, will be at no additional cost to the District. Irregular sloughing of the pavement into a

raveling trench wider than shown on the trench detail and/or cave-ins of the trench and pavement shall be saw cut at right angles and finish paved at no additional cost to the District.

- B. Measurement: Measurement shall be on a per ton basis of finish course AC placed to the thickness above the recycled water main, shown on the drawings and specified in the contract documents. Original weigh tickets shall be delivered to the District Representative at the end of each day. The District Representative will create a chronological spreadsheet of the quantities and reconcile them with the Contractor after each weekly progress meeting. Requests for payment shall only include quantities that have been reconciled.

1.27 REMOVE AND RELOCATE EXISTING 4-INCH METER

- A. Payment: Payment shall be made for the removal and relocation of the existing 4-inch recycled water meter including excavation, curb and gutter removal and replacement, fittings, and associated appurtenances.
- B. Measurement: Measurement shall be based on the District's Representatives opinion that the item is complete.

1.28 AIR VACUUM VALVE AND BLOW OFF ASSEMBLIES FOR RECYCLED WATER MAIN

- A. Payment: Payment shall be made for construction of the air vacuum valves and blow off assemblies for the Recycled Water Main including excavation, curb and gutter removal and replacement, valves, fittings, and associated appurtenances.
- B. Measurement: Measurement shall be based on the District's Representatives opinion that the item is complete.

1.29 FLUSHING, TESTING, AND DISINFECTION OF RECYCLED WATER MAIN

- A. Payment: Payment shall be made for the completed connection of the required disinfection and testing apparatus, required connections to the pipeline to be tested, blow off assemblies, air/vacuum testing assemblies, bulkheads, testing pump, bacteriological testing and results, and removal of equipment and reconnection of the piping.
- B. Measurement: Measurement shall be based on the District's Representatives opinion that this item is completed.

1.30 CONTRACTOR MARKUPS OF THE CONSTRUCTION PLANS FOR RECORD DRAWINGS

- A. Payment: Payment shall be made monthly for changes added to the drawings including, but not limited to, RFI's, Clarifications, shop drawings, and field changes.

- B. Measurement: Measurement shall be based on the Engineer's opinion that the item is complete.

1.31 STORMWATER POLLUTION PREVENTION PLAN AND ENVIRONMENTAL PROTECTION REQUIREMENTS FOR THE ENTIRE PROJECT INCLUDING MITIGATION MEASURES

- A. Payment: Payment shall be made for this bid item to provide, follow and maintain the Stormwater Pollution Prevention Plan (SWPPP) and environmental protection and mitigation of environmental issues on the project as provided in Sections 01070 and 01140 and other requirements of the Contract Documents.
- B. Measurement: Payment shall be made monthly proportional to the total amount earned on the project. For example, when a progress payment of 25 percent has been earned, then 25 percent of this item will be paid.

1.32 TRAFFIC LOOPS

- A. Payment: Payment shall be made for replacing any traffics loops destroyed during construction including testing.
- B. Measurement: Payment shall be at the unit prices bid for each type and shall include full compensation for furnishing all labor, tools, equipment, materials and incidentals necessary to complete the work in accordance with the Plans and the Specifications.

END OF SECTION

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SECTION 01300

SUBMITTALS

PART 1 - GENERAL

1.01 SUBMITTAL PROCEDURES

- A. Accompany each submittal with a Submittal form, which contains the following information:
 - 1. Contractor's name and the name of Subcontractor or supplier who prepared the submittal.
 - 2. The project name and identifying number.
 - 3. Description of the submittal and reference to the Contract requirement or technical specification section and paragraph number being addressed.
- B. Submit the number and type of copies for each submittal and follow the procedures described below or in other paragraphs in this Section. Submit via email in pdf format copies of submittals not covered in this Section 01300.
 - 1. Designation of Superintendent: Submit via email in pdf format copies for information. Include name, address, home telephone number and a brief resume.
 - 2. List of Subcontractors and Major Suppliers: Submit via email in pdf format copies for information. Include address, telephone number and name of responsible party.
 - 3. Schedule of Values, in a form acceptable to the Engineer: Submit via email in pdf format copies for information. The Schedule of Values shall start from the bid schedule items and include additional detail to make determination of monthly progress payments. This will most likely take three rounds of submittals.
 - 4. Subcontractors'/Suppliers'/Manufacturers' Affidavits. Submit three copies for items specified in the Technical Specifications.
 - 5. Environmental Protection Plan. Submit three copies for information.

1.02 SCHEDULE OF SUBMITTALS

- A. Submit via email in pdf format copies for information. No copy will be returned.
- B. Within 15 days after the Notice to Proceed, submit a Schedule of Submittals showing the date by which each submittal required for Product Review or Product Information will be made. Identify the items that will be included in each submittal (see paragraph 1.04 of this Section) by listing the item or group of items and the Specification Section and paragraph number under which they are specified. Indicate whether the submittal is required for Product Review of Proposed Equivalents, Shop Drawings, Product Data or Samples or required for Product Information only.

1.03 CONSTRUCTION SCHEDULE

- A. Submit via email in pdf format copies for information. No copy will be returned.
- B. The Contractor's Construction Schedule shall be in the form of a computer generated network analyses diagram and supporting mathematical analysis using the Critical Path Method (CPM) under concepts and methods outlined in

the Associated General Contractor's publication, "The Use of CPM's Construction - A Manual for General Contractors and the Construction Industry." Provide a copy of the software used to the Engineer.

1. Draw network diagram to scale using actual calendar dates. Show work subdivided into identifiable activities within each trade. Show order and interdependencies of each activity.
 2. Use actual calendar dates to show planned and actual performance and show:
 - a. Preceding and following event numbers.
 - b. Activity description.
 - c. Estimated duration of activity.
 - d. Earliest start date.
 - e. Earliest finish date.
 - f. Actual start date.
 - g. Actual finish date.
 - h. Latest start date.
 - i. Latest finish date.
 - j. Total and free float. The float is a share resource not owned by the contractor and shall be available to the Owner to resolve conflicts as well as the contractor.
 - k. Monetary value of activity, keyed to Schedule of Values.
 - l. Percentage of activity completed.
 - m. Dates for making submittals of Proposed Equivalents, Product Data and Shop Drawings.
 3. The Contractor's construction schedule shall include at least ten (10) lost days on the CPM schedule critical path due to inclement weather.
 4. The Contractor's construction schedule shall include at least thirty (30) lost days on the CPM schedule critical path due to shut downs because of "Red Flag" fire conditions and delays due to archaeological work. In both cases, the Contractor is required to prove that the days claimed within this provision affected the critical path of the contract for compensation.
 5. The Contractor's construction schedule shall include at least fifteen (15) lost days on the CPM schedule critical path due to shut downs because of "Traffic Delays" which redirect traffic from U.S Highway 101 to Las Virgenes and Mureau Roads. The Contractor is required to prove that the days claimed within this provision affected the critical path of the contract for compensation.
 6. The Contractor's construction schedule shall include a minimum of fourteen (14) days for review of submittals by the Engineer and a minimum of fourteen (14) days for review of resubmittals.
- C. If the Construction Schedule does not reflect the *CPM* format requirements, the specified work, or the Contract Time, it will be returned to the Contractor for modification.
- D. Revise the Construction Schedule and submit at the time of application for Contractor's Application for Payment. The District will withhold the Contractor's Application for Payment for failure to revise and submit the Construction Schedule. Application for Payment will be processed upon receipt and favorable review of the revised construction schedule.
- E. Accelerated Work if Required to Meet Schedule: Give Engineer 3 days prior notice of construction that will take place outside of normal work hours or work days. Compensate Owner for extra inspection cost caused by Accelerated Work required to meet Schedule.

- F. Give Engineer 3 days prior notice of normal work days on which construction will not take place or of scheduled construction that will not take place. Compensate Owner for extra inspection cost resulting from failure to give notice.

1.04 SHOP DRAWING 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. Submittals required for information only are referred to as Product Information submittals in the Technical Specifications and are covered in paragraph 1.06 of this Section.
- B. Number and type of submittals:
 - 1. Shop Drawings: Submit via email in pdf format. Copies will be marked, stamped and returned via email in pdf format to the Contractor. The Contractor shall make and distribute the required number of copies to its superintendent, subcontractors and suppliers.
 - 2. Product Data: Submit via email in pdf format. Copies will be marked, stamped and returned via email in pdf format. The Contractor shall make and distribute the required number of copies to its superintendent, subcontractors and suppliers.
 - 3. Samples: Submit three labeled samples or three sets of samples of manufacturers 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. Use an arrow in the margins to indicate items within the submittal and add text to the arrow also in the margins that references the specification section.
 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 01040 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 01040.
- G. 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.
- H. 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 were 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.
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.
- I. 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.
 - J. 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.
 - K. Intent and Limitation on Engineer's Review: 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.

1.05 PROPOSED EQUIVALENTS

- A. Submit Proposed Equivalent submittal form, attached to this Section, and comply with the submittal requirements for Shop Drawings, Product Data, and Samples submitted for Product Review in another paragraph of this Section.
- B. Time of Submittal:
 - 1. Submit Proposed Equivalents within 25 days of the Notice to Proceed. The Engineer may agree to a later submittal date if requested in writing within 25 days of the Notice to Proceed. The request shall identify the item, give the Specification reference, and proposed manufacturer and model number of the item that will be submitted and the proposed submittal date.
 - 2. The Engineer's agreement to a later submittal date shall be in writing and shall not be construed as Favorable Review or acceptance of the manufacturer or item proposed.
- C. Content of submittals shall be the same as that required for Product Data,

Shop Drawings 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.

- D. When the Contractor has listed specific maker's products on Designation of Equipment or Material Manufacturers submitted with its Bid no changes will be permitted without submittal of acceptable evidence justifying the change and the Engineer's written approval.
- E. 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. No guarantee is made that proposed equivalents will be approved.

1.06 PRODUCT INFORMATION SUBMITTALS

- A. Submit via email in a pdf format. No copies will be returned.
- 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.

1.07 OPERATION AND MAINTENANCE MANUALS AND PARTS LISTS

- A. Submit three complete sets.
- 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 not later than 60 days after Favorable Review of Product Review submittal.
- D. Provide the number of copies specified in paragraph 1.01 of this Section. 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.

1.08 MANUFACTURER'S CERTIFICATES

- A. Submit via email in pdf format.
- 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 01500

CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS

1.01 TEMPORARY UTILITIES

- A. Sanitary Facilities: Provide and maintain self-contained portable sanitary facilities for the Contractors, subcontractors, Engineers, and Owners use. Facilities shall comply with applicable regulations and shall be serviced, cleaned and disinfected frequently.
- B. Temporary Water Service: Obtain a water meter(s) from the District. Install at location(s) agreed upon with the District. Provide a backflow prevention device for each meter. The District will not charge for construction water used on this project.
- C. Temporary, Power and Telephone Service: Provide all temporary utility service required for the project. Pay all utility service connection and use charges.
- D. 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. See General Conditions and Section 01040.
- B. Construct adequate trench shoring to provide a safe working environment for pipe layers in the trench. Provide temporary bridges and decking to maintain vehicular and pedestrian access. Design shoring 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, including California Code of Regulations Title 8 and Cal/OSHA.

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. Provide heavy planking to protect curbs, gutters, culverts, paving and similar surfaces from damage by heavy equipment or vehicles.

1.05 SECURITY

- A. Provide security and facilities to protect the Work.
- B. Employ the services of a licensed security firm to patrol the site if necessary.

1.06 PARKING AREAS

- A. Parking: Arrange for workers to park remote from the site of the work. Transport them to the site using the contractor's vehicles that are necessary for the work.

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 trenches prior to backfilling. Clean mud from vehicles as required.
 - 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 01700.
- 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. Prevent sediment from entering streams or other water bodies.
- D. Pest and Rodent Control: Avoid creating conditions conducive to pests and rodents. Comply with regulations governing the use of chemicals to control pests and rodents.

1.08 PROJECT SIGN

- A. The Contractor shall install the District provided project signs. The District anticipates up to 2 project signs with dimensions of, up to and including, 3' X 5' will be provided to the Contractor.
 - 1. Contractor shall fabricate the Project Sign per the requirements of Supplemental Provisions.
 - 2. Erect the sign where directed by the Cities of Westlake Village and Thousand Oaks and District's Representative. Locate bottom edge of the sign 8 feet above the ground, or as otherwise determined by the District.
 - 3. Maintain sign in good condition and remove upon completion of the project.

END OF SECTION

SECTION 01550

TRAFFIC REGULATION

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes: Requirements for managing traffic control on the project.

1.02 OBJECTIVES

- A. The Contractor shall provide for safe movement of vehicular, bicycle and pedestrian traffic through and around construction operations. Traffic control requirements set forth herein are the minimum requirements imposed. The Contractor shall be solely responsible for providing all protective measures necessary.
- B. Proper traffic movement through the work area depends upon the driver controlling and directing his vehicle properly under unexpected situations and pedestrian attention to signs. The means of clarifying such conditions to the public include signs, flaggers, pavement markings, K-Rail, barricades, lights, cones and delineators.
- C. No one standard sequence of signs or control devices will suit all conditions, which may result from construction operations. Even for the same work, the conditions may vary from hour to hour, requiring adjustment and revision of the traffic control program in effect.
- D. The traffic control subcontractor shall have all necessary materials (signs, cones, etc.), vehicles, and staff on hand prior to initiating setup and for all required adjustments.
- E. The traffic control requirements specified herein are intended to establish general principles to be observed in the control and regulation of traffic through and around construction operations anticipated for this project. All pedestrian, bicycle, and vehicular detours are subject to review by the traffic engineer, police chief, sheriff or enforcement officer of the agencies having jurisdiction, and the Contractor shall revise the detours as ordered at no additional cost.
 - a. **Construction related traffic is not allowed in the residential street surrounding the project. This includes work trucks of any kind such as pickups, concrete trucks, dirt haulers, and contractor personnel vehicles. Contractor personnel shall park at of site and be bused to and from the site.**
 - b. **The staging of any construction related vehicles or equipment on Lindero Canyon Road or any other street/streets within the Cities of Westlake Village and Thousand Oaks is prohibited until traffic control is in place. Vehicles in violation of this requirement will be barred from the project.**

- c. **Calleguas Municipal Water District (Calleguas) will be constructing a Pump Station north of the County line and a 30" pipeline in Lindero Canyon from the Pump Station north into the City of Thousand Oaks. The Calleguas project may or may not be under construction at the same time as this project. If the two projects are being constructed at the same time, the traffic control plans will be collaborated between the two contractors.**
- F. Clean up site each day after completing work and remove all traffic hazards. Daily traffic control measures shall continue until cleanup activities have been satisfactorily completed and all of the Contractor's equipment has been removed from the traveled way area.
- G. Vehicular and pedestrian access to street intersections, public and private parking lots, commercial businesses, residences, and other public and private properties must be maintained at all times except at locations where the Engineer determines that certain items of work cannot be accomplished without access restriction. At those locations, access restriction shall be limited to the time period required to accomplish the particular item of work. At least 72 hours in advance of starting any work that may affect the access to private properties, the Contractor shall provide written notice to such property owners.
- H. Pedestrian circulation shall be maintained at all times. It is not normally acceptable to require pedestrians to cross the street; instead, an appropriate path shall be provided, or a dedicated flagger shall be assigned to watch for and escort pedestrians around/through the work area.
- I. **All traffic control shall be designed and implemented by one qualified subcontractor that satisfies both of the following criteria: (i) holds an active C31 contractor's license; and (ii) has no involvement with the project other than traffic control design and implementation. This specification precludes the Contractor from performing traffic control design and implementation even if the Contractor holds an active C31 license. The Contractor shall acknowledge this requirement and identify the subcontractor in the Contractor's proposal.**
 - 1. **The traffic control subcontractor shall have experience designing and implementing traffic control on local city streets, for which the requirements and constraints are different than freeways and highways. The Contractor shall furnish to the City a 24-hour telephone number of at least one person responsible for the traffic control.**

1.03 DESCRIPTION OF WORK

- A. Work Included:
 - 1. At all times, the Contractor shall provide safe and adequate passage for vehicular, bicycle, and pedestrian traffic through, around and adjacent to all construction operations by use of detours, bridging, backfilling, paving, traffic barriers or other favorably reviewed means.
 - 2. The Contractor shall establish and maintain detours and conduct his

- construction operations in such a manner as to minimize hazard, inconvenience and disruption to the public.
3. Traffic control shall be directed equally to the regulation and protection of pedestrian traffic including pedestrians, bicyclists, joggers, skaters, skateboarders, etc.
 4. The Contractor shall provide for protection of pedestrians and separation of pedestrians from construction operations at all times.
 5. The Contractor shall direct, divert and detour traffic through, around and adjacent to construction operations in accordance with the traffic control plans as specified herein or in accordance with other approved Traffic Control Plans. The Contractor may revise the Traffic Control Plan as necessary only with the approval of the District Representative and the Cities of Westlake Village and Thousand Oaks.
 6. The Contractor shall provide and maintain steel traffic plates securely over excavated areas at the end of the Working Day and when otherwise required. Unless otherwise approved, the plates shall be secured flush with the pavement or sidewalk.
 - a. All plates shall be tack welded at the corners to minimize movement and noise.
 7. Any parking impacts associated with any traffic control shall be reflected on the plans.

1.04 REFERENCES

- A. California Manual of Uniform Traffic Control Devices (CAMUTCD), California Department of Transportation (Most recent edition as of the date project is advertised for bids).
- B. Part 6 of the SSPWC (Greenbook), most recent edition.

1.05 SUBMITTALS

- A. Traffic Control Plan:
 1. Submit a Traffic Control Plan under the Product Review category to clearly describe proposed changes to approved traffic control measures. The plan shall be generally in accordance with the illustrations included in the CAMUTCD.
 2. The Contractor shall submit a traffic control plan to the respective City for review and approval prior to the preconstruction meeting and shall not proceed with the work until the City has reviewed and accepted the plan. **The Contractor must anticipate and provide for a review/revision/approval process of at least 2-3 weeks.** Any delay in acquiring traffic control plan approval will be at the Contractor's expense and no additional Working Days will be granted.
 - a. **The traffic control plan shall be prepared by a qualified subcontractor per the previous subsection of these Special Provisions.**
 3. The plan shall indicate in detail how vehicular and pedestrian traffic will be maintained and controlled throughout the construction period, including general contractor and subcontractor phases such as, but not limited to, the following:
 - Survey
 - Saw cutting
 - Excavation

- Delivery of Material
 - Curb ramp & sidewalk construction
 - Potholing
 - Pavement removal & reconstruction (digouts)
 - Crack Treatment
 - Pavement overlay
 - Pavement slurry seal
 - Manhole/Valve Box adjusting
 - Signing & striping
 - Electrical work
 - Landscape & irrigation work
 - Staging areas
4. Although the plan does not have to be drawn to scale, it must show all relevant details such as dimensions, intersections, driveways, stop signs, traffic signals, speed limits, striping, etc. The traffic control plan shall address how traffic control will be set up for deliveries. The traffic control plan for deliveries shall also show or define proposed travel/haul routes; said routes are subject to the Engineer's approval. The traffic control design shall conform to the most recent Manual on Uniform Traffic Control Devices, adopted by and in current use by the State of California, Department of Transportation. Review of the traffic control plan by the respective City is only for general conformance with the applicable traffic control standards and guidelines. The City does not assume the responsibility for choosing, placing, and/or maintaining traffic control devices. The Contractor shall be solely responsible for any accidents directly or indirectly related to the implementation of traffic control through work zones.
 5. The drawings shall show signs, traffic control devices and flaggers as required.
 6. Full street closures will not be allowed without express approval of the Engineer.
 7. Unless otherwise approved, the Contractor shall maintain at least one lane of traffic in each direction through the project area at all times in a manner satisfactory to the Engineer.
 8. Unless otherwise approved, whenever a left turn pocket is closed, the nearest upstream left turn pocket and nearest downstream left turn pocket shall be kept open.
 9. Unless otherwise approved, the Contractor shall not divert traffic to the opposite side of a median.
 10. It is very important to the Cities to minimize traffic delays, even during nighttime and other off-peak periods. Traffic stoppages shall not occur unless approved by the Engineer. If approved, **such stoppages shall not exceed five (5) minutes**. The Contractor shall plan the work tasks and mobilize sufficient labor and material resources to avoid stoppages exceeding this limit.
 11. The traffic control plan shall be approved by and subject to the requirements of the Cities of Westlake Village and/or Thousand Oaks prior to construction.
 12. During any period when two-way traffic is not provided, the contractor shall employ properly trained flaggers to control traffic through the construction zone.

13. The traffic control plan may have to take into account other construction projects in the area.

PART 2 - PRODUCTS

2.01 CONSTRUCTION SIGNS

- A. Construction signs shall conform to the standards of the CAMUTCD.
- B. Temporary warning signs in construction areas shall have a black legend on an orange background. Color for other signs shall follow the standard for all highway signs.
- C. All signs used during hours of darkness shall be reflectorized or illuminated.
- D. Portable Changeable Message Boards (PCMS) shall be furnished, placed, operated, and maintained at the locations selected by the respective Cities. Four (4) PCMS shall be provided for the duration of the project.

2.02 OTHER TRAFFIC CONTROL DEVICES

- A. General: Traffic control devices shall conform to the standards of the CAMUTCD.
- B. Cones or Delineators:
 1. Cones or delineators shall consist of cylindrical or cone shaped plastic devices, which shall be a minimum of 28 inches or 36 inches in height, respectively.
 2. Cones or delineators shall have a flexible base of suitable weight, which will ensure stability.
 3. Cones used during hours of darkness shall be internally illuminated or reflectorized meeting the requirements of the CAMUTCD.
- C. Barricades:
 1. Barricades shall be Type II or Type III barricades as set forth in the CAMUTCD.
 2. Barricades used during hours of darkness shall be equipped with Type A flashing yellow warning lights.

PART 3 - EXECUTION

3.01 TRAFFIC CONTROL HOURS

- A. Traffic Control hours shall be as follows:
 1. 9:00 AM to 7:00 PM Southbound Lanes Monday through Friday
 2. 7:00 AM to 3:00 PM Northbound Lanes Monday through Friday
 3. No traffic impacts allowed on holidays or weekends, unless approved.

3.02 DIVERTING PEDESTRIAN TRAFFIC

- A. Whenever construction operations obstruct the flow of pedestrian traffic or present a hazard to pedestrians, the Contractor shall take appropriate action to protect and separate pedestrians from the work area.

- B. Such action may include placement of barricades, fencing or other barrier, as appropriate, between pedestrians and work areas, placement of warning signs, and provision of personnel as required to protect pedestrians as conditions warrant.

3.03 DIVERTING VEHICULAR TRAFFIC

- A. Whenever construction operations obstruct the flow of vehicular traffic or present a hazard to vehicles operating in the vicinity of construction operations, the Contractor shall take appropriate action to warn, detour and otherwise protect approaching drivers and vehicles.
- B. Traffic restrictions or closure of traffic lanes on streets that provide direct access to businesses or residences shall be pursuant to these Special Provisions. All existing permanent traffic control signs, striping, barricades, and devices shall remain in effective operation unless a substitute operation is arranged for and approved

3.04 TRAFFIC CONTROL

DEVICES A. General:

1. Traffic control devices shall be provided in sufficient quantities and types as required providing safe and adequate traffic control.
2. During hours of darkness, approved lights shall be included, in proper working order, to illuminate signs and hazards and alert approaching traffic.
3. Barricades shall be furnished and maintained along all open trenches in contact with traffic.
4. No work may begin on any day or at any time before traffic control devices have been placed, test driven and, if required, adjusted and revised.

B. Placement:

1. All traffic control devices shall be placed in accordance with the Manual of Traffic Controls and the approved Traffic Control Plan.
2. Locations of devices shall be adjusted to suit the conditions and circumstances of each detour situation. In all cases, signs shall be placed to most effectively convey their messages to approaching traffic.

C. Test Drive of Detour:

1. Immediately after traffic control devices have been placed, the traffic control shall be test driven by the District Representative and Contractor's representative.
2. Test drive shall include approach to the work zone from each possible direction and traversing full length of the work zone.
3. The Contractor shall adjust and revise all traffic control devices as determined to be required by test drive through and shall repeat test drive if determined necessary by the District Representative.
4. The Contractor shall provide additional traffic control devices if required to maintain flow of traffic through construction operation.

D. Maintenance of Devices:

1. The Contractor shall maintain all traffic control devices, at proper locations and in proper working order, at all times during construction operations and whenever a hazard resulting from Contractor's operations exists.

2. The Contractor shall adjust and revise traffic control devices, placement, etc., to suit changing conditions around construction operations.
- E. Removal of Devices:
1. Traffic control devices shall remain in place at all times when necessary to alert approaching traffic of upcoming hazards.
 2. After hazard has been removed, all traffic control devices shall be removed.

3.04 FLAGGERS

- A. General: The Contractor shall employ flaggers:
1. As required for each specific detour.
 2. At all locations on a construction site where barricades and warning signs cannot control the moving traffic.
 3. At all locations where necessary to intercept and escort pedestrians safely past the work zone.
- B. Placement: Where flaggers are required, they shall be logically placed in relation to the equipment or operation so as to give adequate warning and shall be placed approximately 100 feet ahead of impact point or as appropriate.
- C. Warning Signs:
1. Warning signs shall be placed ahead of flaggers as appropriate.
 2. During hours of darkness, flagger stations shall be illuminated such that the flagger will be clearly visible to approaching traffic. Lights for illuminating the flagger station shall receive favorable review by the District Representative.
- D. Equipment:
1. Unless otherwise approved, Contractor and subcontractor forces working in the public right of way shall wear high visibility clothing conforming to ANSI Class 3 standards. During hours of darkness, the high visibility clothing shall include long pants (Class 3 compliance may be achieved as an ensemble).
 2. When flagging during hours of darkness, the flagger shall be illuminated or shall signal with an internally illuminated traffic control baton.
 3. Flaggers shall be provided with approved hand signs and two way radios for communication.

3.05 NOTICE TO AGENCIES

- A. The Contractor shall notify in writing all agencies having jurisdiction at least forty- eight (48) hours, excluding holidays and weekends, prior to instituting any lane closure or detour. At the end of each day's work, the Contractor shall inform the ambulance services, police and fire departments of the status of all detours and/or lane or road closures.
- B. List of Agencies:
1. City of Westlake Village (818) 706-1613
 2. City of Thousand Oaks (805) 449-2400
 3. Consolidated Fire Protection District of Los Angeles County (818) 889-0610
 4. Los Angeles County Sheriff's Department (818) 878-1808
 5. Las Virgenes Unified School District (818) 880-4000

3.06 EMERGENCY VEHICLE ACCESS THROUGH DETOURS

- A. During all detours and/or street closures the Contractor shall provide for movement of emergency vehicles through the work area.
- B. It is essential that the Contractor's work and equipment does not impede egress from any fire or police station to other areas of their service area.

3.07 ACCESS TO PRIVATE PROPERTY

- A. General: The Contractor shall schedule operations to minimize disruption of access to private property.
- B. Notice to Residents: Prior to blocking access to any private driveway or parking lot entrance, the Contractor shall notify the resident or business owner or tenant of pending closure and allow resident to remove vehicles.
- C. Nights: During non-working hours no driveway, house or parking lot shall be denied access to a public roadway.

3.08 NIGHT DETOURS

- A. General: The Contractor shall not be permitted to maintain any lane closure or road closure during non-working hours without first obtaining written approval of the District Representative and the Cities of Thousand Oaks and Westlake Village.
- B. Restoration of Pavement:
 - 1. During non-working hours the Contractor shall restore travel lanes to their original alignment and configuration by means of backfilling and temporary pavement or bridging.
 - 2. The Contractor shall place "ROUGH ROAD" signs conforming to the CAMUTCD at uneven temporary pavement or bridging.

3.09 PARKING RESTRICTIONS

- A. General: The Contractor shall post approved "NO PARKING" signs at all locations necessary to establish work areas and detour traffic.
- B. Signs:
 - 1. Signs shall read: "NO PARKING - CONSTRUCTION TOW-AWAY ZONE." Show hours of parking restriction and indicate telephone number of police agency having jurisdiction.
 - 2. Signs shall be placed at least 72 hours in advance of restriction.

3.10 BRIDGING OVER TRENCHES AND EXCAVATIONS

- A. General: Bridging shall be placed across all trenches and excavations in existing streets and at driveways when work is not in progress.
- B. Design of Bridging:
 - 1. Bridging for vehicular traffic shall be of sufficient width to accommodate the required number of travel lanes.
 - 2. Bridging shall be designed to support H-20 vehicular traffic.
 - 3. All bridging shall be set flush with the travel surface.
 - 4. All bridging shall be non-skid type.
 - 5. Provide temporary pavement between bridging and the asphalt surface, as necessary, for a smooth transition.

3.11 TEMPORARY TRAFFIC LANES

- A. Temporary traffic lanes shall be at least 11 feet wide. Provide an additional 2 feet of clearance from vertical obstructions. The length of temporary lanes should be limited to the area under construction and the distance necessary to divert traffic.

3.12 Portable Changeable Message Signs (PCMS)

- A. PCMS shall be located as directed by the respective Cities.
 - 1. The locations of the PCMS may change during the construction of the project. The relocating of the PCMS shall not be an extra cost.
 - 2. Provide six (6) PCMS for the duration of the project.
- B. PCMS shall provide advance construction notification for a least thirty (30) calendar days prior to the start of construction.
 - 1. The message on the PCMS shall be approved by the respective Cities.

- 3.13 The Contractor and subcontractors shall provide adequate traffic control at all times. If, in the sole judgment of the Engineer, the Contractor/subcontractors fail to comply with this requirement at any time, the Contractor shall be issued a noncompliance notice. The consequences of noncompliance are as follows:

First Notice of Noncompliance

The Contractors superintendent shall meet with LVMWD and respective City representatives to discuss the problem and identify corrective measures to be implemented. LVMWD will solicit proposals from other traffic control contractors to perform the traffic control work.

Second Notice of Noncompliance

Work on all non-publicly noticed tasks shall stop until a meeting is held between the Contractors superintendent, LVMWD, and respective City representatives and appropriate steps are taken to fully resolve the problem.

Third Notice of Noncompliance

LVMWD will directly engage a traffic control contractor to assume responsibility for traffic control and all related costs shall be borne by the Contractor. Work shall stop until the traffic control contractor engaged by LVMWD is able to mobilize, but the number of working days shall not be reduced for any such delays.

3.14 STAGING AREAS

- A. The Contractor shall provide his own staging areas.

END OF SECTION

SECTION 01700

CONTRACT CLOSEOUT

PART 1 - GENERAL

1.01 FINAL CLEANUP

- A. Prior to Final Inspection clean the entire construction area and all other areas affected by the performance of work under this Contract. Perform cleaning using personnel specializing in and skilled in cleaning and maintenance work. Perform repair work using personnel skilled in executing the type of work being repaired. Perform all work to the highest trade standards applicable to that type of work.
1. Remove all temporary construction, signs, tools, equipment, excess material, and debris.
 2. Remove all lumps, splatters, spots and stains caused by paint, adhesive, asphalt, concrete, mortar, sealant, or other foreign material from exposed or finished surfaces. Remove all temporary labels.
 3. Repair, patch or replace new or existing work including pavement, sidewalks, curbs, gutters, catch basins, gratings, manholes, covers, landscaping, plant materials, and other items that have been damaged, broken, cracked, or chipped as a result of performing this Work.
 4. Sweep clean and wash down all exterior pavement. Remove all hazardous material and material that may cause sediment in drainage systems prior to washdown. Remove all grease and oil stains on pavement caused by Contractor's equipment.

1.02 CONTRACTOR'S ACTION LIST OF ITEMS TO BE CORRECTED AND/OR COMPLETED

- A. During construction, the Contractor shall maintain an action list of items to be corrected and/or completed. The Contractor shall regularly add items and update the list as information becomes available or as requested by the District's Representative. The Contractor shall deliver a current copy of the list to the District's Representative at each progress meeting.

1.03 SEMIFINAL INSPECTION/SUBSTANTIAL COMPLETION

- A. When the Contractor considers the Work nearly complete, the Contractor shall review the Contract Documents, inspect the Work, and use the Contractor's action list to prepare a Contractor's Punch List of all deficient or uncompleted items. The Contractor shall complete or correct items on the Punch List. When the Work is Substantially Complete, the Contractor shall notify the Engineer in writing that the Contractor has reviewed the Contract Documents, inspected the Work and believes that the Work is Substantially Complete and ready for Semifinal Inspection.
- B. On receipt of the Contractor's Punch List and notice that the work is ready for Semifinal Inspection, the District's Representative will inspect the Work. The District's Representative may add additional items to the Contractor's Punch List, may find that the work is not ready for inspection, is ready for inspection but not Substantially Complete or that the Work is Substantially Complete. When the District's Representative finds the Work is Substantially Complete,

he/she will prepare a Final Punch List and a notice of Substantial Completion, which will state the date of Substantial Completion and the time agreed to by the Owner and the Contractor (not to exceed 30 days) in which the Work shall be fully complete and ready for Final Inspection.

1.04 FINAL INSPECTION, FINAL COMPLETION AND FINAL PAYMENT

- A. When the Contractor has completed or corrected all the items on the District's Representative Final Punch List, the Contractor shall give the District's Representative written notice that the Work is ready for Final Inspection. When the District's Representative finds the Work acceptable and fully complete in accordance with the Contract Documents, and upon receipt of a final Application for Payment and all final submittals, the District's Representative will recommend that the Owner issue a Notice of Final Completion, make Final Payment and Accept the Work stating that to the best of the District's Representative knowledge, information and belief, and on the basis of the District's Representative observations and inspection, the Work has been fully completed in accordance with the terms and conditions of the Contract Documents.
- B. Final Submittals include:
1. Operation and Maintenance Manuals and Parts Lists.
 2. Record Drawings.
 3. Extra Materials.
 4. Special Guarantees.
 5. Insurance Certificate showing required continuation of coverage beyond Final Payment.
 6. Release of Liens.
 7. Waiver of Claims by Contractor.
 8. And any other submittals required by the Contract Documents and not previously received.
- C. Please note that no final payment will be made to the contractor for this project until all submittals are received by the Engineer including but not limited to the Redlined Record drawings.

1.05 RECORD DRAWINGS

- A. Provide a drawing prepared by the surveyor that shows the coordinates and elevation of all horizontal and vertical changes in alignment. This will require that the surveyor be present during the installation of the pipeline when the contractor approaches those points. The use of GPS instrumentation is acceptable provided the data is post processed to resolve the coordinates and elevations to 0.01 feet. Submit this information as a point file and as an ACAD Civil 3D version 2010 or newer alignment file of the pipelines to aid in creation of a Record Drawing (AS- BUILT) for this project. This is a bid item in the bid schedule.
- B. The Contractor shall maintain on the jobsite, a complete set of Contract Documents and a complete file of all addenda, contract modifications and favorably reviewed submittals. The Contractor shall prepare a set of Record Drawings concurrently with the construction of the Work and in accordance with the following:
1. Show the horizontal location of underground utilities using Northing, Easting, and elevation to the top of the utility

2. The Contractor's copy of Contract Documents, Contract Modifications and Record Drawings shall be available to the Engineer for weekly verification that the records are being currently updated. No progress payments will be made until this updated information is shown on the drawings.
- C. Submit Record Drawings markups on a regular basis as the work is completed so that the changes may be included in the Record Set on a regular basis. Obtain acceptance of all construction changes having been submitted to the Owner prior to completion.

1.06 TWELVE-MONTH INSPECTION

- A. Thirty (30) days prior to the expiration of the one-year guarantee period, the Contractor shall tour the project with the District's Representative and/or the Owner to prepare a list of corrective work required under the 12-month guarantee. The Contractor shall correct all items found to be defective within twenty (20) days of receipt of the list of items to be corrected.

END OF SECTION

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SECTION 02302
EARTHWORK FOR PIPELINES

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes: Perform all excavation, shoring, dewatering, backfilling, compaction and grading necessary or required for the construction of the work as covered by these Specifications and indicated on the Drawings. The excavation shall include, 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.

1.02 REFERENCES

- A. American Society for Testing and Materials (ASTM).
- B. Standard Specifications for Public Works Construction (Greenbook) Latest Edition

1.03 SUMITTALS

- A. Submit in accordance with Section 01300.
- B. Submit the following:
 - 1. Sheeting and Shoring Plan: Refer to Paragraph 1.08 below. Also see Section 01040, paragraph 1.13.
 - 2. Potholing Report as described in Paragraph 3.02.
 - 3. Samples and Test Results: Furnish, without additional cost to the Owner, such quantities of import materials as may be required by the Engineer for test purposes. Cooperate with the Engineer and furnish necessary facilities for sampling and testing of all materials and workmanship. Submit test results for import materials. Tests shall be performed within 60 days of the submission. All material furnished and all work performed shall be subject to rigid inspection, and no material shall be delivered to the site until it has been favorably reviewed by the Engineer, or used in the construction work until it has been inspected in the field by the Engineer.
 - 4. Material identified in Paragraph 2.01.

1.04 QUALITY ASSURANCE

- A. Source Quality Control: Test import materials proposed for use to demonstrate that the materials conform to the specified requirements. Tests shall be performed by an independent testing laboratory.
- B. Field Quality Control:
 - 1. The Owner will:
 - a. Review and test materials proposed for use.
 - b. Inspect foundations, site grading and borrow operations.
 - c. Inspect placement and compaction of fill.
 - d. Test soils during placement of fill.

2. Contractor shall excavate holes for in-place soil sampling. Contractor shall be responsible for costs of additional inspection and re-testing resulting from non-compliance.

C. Testing Methods:

1. Durability Index: Manual of Test, State of California, Department of Transportation.
2. Specific Gravity: ASTM D854.
3. Laboratory Compaction: ASTM D1557, Method A or C.
4. In-Place Density: ASTM D1556 or ASTM D2922.
5. Particle Size Analysis of Soils: ASTM D422.
6. Plastic Limit and Plasticity Index: ASTM D4318.
7. Soil Classification: ASTM D2487.
8. In-Place Moisture Content: ASTM D3017.

D. Definition:

1. Relative Compaction: In-place dry density divided by the maximum dry density laboratory compaction express as a percentage.

1.05 EXPLOSIVES

- A. The use of explosives will not be permitted on this project, unless specifically authorized, in writing, by the Engineer.

1.06 SUBSURFACE INVESTIGATIONS

- A. Geotechnical investigations for design purposes for this project were made for the Las Virgenes Municipal Water District by Earth Systems in the following report:
1. Geotechnical Engineering Report for Proposed Interconnection of Water Mains between Calleguas and Las Virgenes Municipal Water Districts dated October 10, 2017.
 2. A copy of the report is attached as Appendix F. While the records of data obtained 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.
- B. Potholing was performed on several utilities along the alignment. A copy of the pothole report is in an Appendix G to these Contract Documents. The potholing was performed based on an earlier version of the plans and therefore, the stationing is incorrect, but close.
- C. The bidders may make additional subsurface investigations at the site prior to the bidding of the project. Prior to making any drillings or excavations, the bidder shall secure permission from the Cities of Westlake Village and Thousand Oaks, Owner and property owners if on private property.

1.07 REFERENCE SPECIFICATIONS

- A. Whenever the words "Standard Specifications" are referred to, the reference is to the Greenbook latest edition.

1.08 ADDITIONAL SAFETY RESPONSIBILITIES

- A. The Contractor shall select, install and maintain shoring, sheeting, bracing, and sloping as necessary to maintain safe excavations. The

Contractor shall be responsible for ensuring 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. All earthwork shall be performed in strict accordance with applicable law, including local ordinances, applicable OSHA, CalOSHA, California Civil Code, and California Department of Industrial Safety requirements.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Crushed Rock: 3/4-inch maximum aggregate base, Section 200-1.2
- B. Bedding: Coarse to fine sandy material with a sand equivalent value of 50 or better per ASTM D2419.
- C. Slurry Backfill: Greenbook Table 201-1.1.2 Concrete Class 100-E-100.
- D. Water: The water used shall be reasonably free of objectionable quantities of silt, oil, organic matter, alkali, salts and other impurities. Water quality must be acceptable to the Engineer.
- E. Aggregate Base: Refer to Section 02700.
- F. Warning Tape: 3-inch-wide, inert, fade-resistant plastic film resistant to acids, alkalis, and other components likely to be encountered in soil. Tape shall be blue for water transmission main, imprinted with "*CAUTION WATER MAIN BELOW*," Tape shall be orange for conduits imprinted with "*CAUTION FIBER OPTICS BELOW*", Griffolyn Terra Tape; equivalent product, or equal.
- G. Detection Tape: Plastic metallic type consisting of a blue or orange color coded polyethylene or melinex film, a solid core aluminum foil detection layer and other layers as required. The tape shall be resistant to acids, alkalines and other components likely to be encountered in soils. It shall be designed for both conductive and inductive locating procedures. The tape shall be blue, imprinted with "*CAUTION WATER MAIN BELOW*." Terra Tape "D" by Griffolyn Company; Detectatape by Allen Systems; or equal.
- H. Steel Trench Plates: Steel trench plates shall be able to withstand H-20 traffic loading without any movement and shall meet the ASTM A36 steel requirements. Plate thicknesses shall be as follows:
 - 1 inch thick steel plate for 25 mph or less
 - 1 ¼ inch thick steel plate for 35 mph or greater
- I. Asphalt Pavement: Refer to Section 02700.

PART 3 - EXECUTION

3.01 CONTROL OF WATER

- A. All excavations shall be kept free from water and all construction shall be in the dry.
1. Water will be encountered on this project. It should be presumed that dewatering operations will be required. Furnish, install, maintain, and operate all necessary pumping and other equipment for dewatering all excavations. At all times, have on the project sufficient pumping equipment for immediate use, including standby pumps for use in case other pumps become inoperable.
 2. Provide a sufficient number of pumps so as to hold the groundwater level at an elevation of not less than 1 foot below the lowest elevation of the pipe, or other material to be placed.
 3. Coordinate dewatering water disposal to the Districts sewer system with the District's Representative. Prevent disposal of sediments to the sewer by employing whatever methods are necessary, including settling basins.
 4. The dewatering operation shall be continuous, so that the excavated areas shall be kept free from water during construction, while concrete is setting and achieves full strength, and until backfill has been placed to a sufficient height to anchor the work against possible flotation.
 5. Continue dewatering during backfilling operations such that the groundwater is at least 1 foot below the level of the compaction effort at all times. No compaction of saturated materials will be allowed.
 6. Dewatering devices must be adequately filtered to prevent the removal of fines from the soil.
 7. The Contractor shall be responsible for any damage to the foundations or any other parts of existing structures or of the new work caused by failure of any part of the Contractor's protective works. After temporary protective works are no longer needed for dewatering purposes, they shall be removed by the Contractor.
 8. If pumping is required on a 24-hour basis, requiring engine drives, then engines shall be equipped in a manner to keep noise to a minimum. Refer to Section 01140 for noise control requirements.
- B. The Contractor shall be responsible for furnishing temporary drainage facilities to convey and dispose of surface water falling on or passing over the site. Refer to Sections 01070 and 01140.

3.02 EXISTING UTILITIES

- A. General: The known existing buried utilities and pipelines except building connections are shown on the Drawings in their approximate location. The Contractor shall exercise care in avoiding damage to all utilities as he will be held responsible for their repair if damaged. There is no guarantee that all utilities or obstructions are shown, or that locations indicated are accurate. Utilities are piping, conduits, wire, cable, poles, ducts, manholes, pull boxes and the like, located along the pipeline right-of-way.
- B. Check on Locations (Potholing):
1. Contact all affected utility owners and request they locate their respective utilities prior to the start of "potholing" procedures. The utility owner shall

- be given seven days written notice prior to commencing potholing. If a utility owner is not equipped to locate its utility, the Contractor shall locate it.
2. Clearly paint the location of all affected utility underground pipes, conduits and other utilities on the pavement or identify the location with suitable markers if not on pavement. In addition to the location of metallic pipes and conduits, non-metallic pipe, ducts and conduits shall also be similarly located using surface indicators and detection tape, if present, and shall then be similarly marked.
 3. After the utility survey is completed, commence "potholing" to determine the actual location and elevation of all utilities where crossings, interferences, or connections to the new pipelines are shown on the Drawings, marked by the utility companies, or indicated by surface signs. Prior to the preparation of piping shop drawings, or the excavating for any new pipelines or structures, the Contractor shall locate and uncover these existing utilities including services and laterals to a point 1 foot below the utility. Submit a report identifying each underground utility and its depth and station. Any variation in the actual elevations and the indicated elevations shall be brought to the Engineer's attention. Allow the engineer time to resolve the conflict. Negotiate the time to resolve with the engineer.
 4. Excavations around underground electrical ducts and conduits shall be performed using extreme caution to prevent injury to workmen or damage to electrical ducts or conduits. Similar precautions shall be exercised around gas lines, telephone, and television cables.
 5. Pothole excavations shall have surface dimensions of no more than 18" x 18". Air spades and vacuum excavators shall be used to limit the size of excavations and damage to adjacent facilities. Backfill each hole after completing potholing. In existing streets, pave with 1 inch of cutback. If out of the pipeline trench, backfill each hole with hot mix AC to match existing.
- C. Interferences:
1. If interferences occur at locations other than shown on the Drawings, the Contractor shall notify the Engineer, and a method for correcting said interferences shall be supplied by the Engineer. Payment for interferences that are not shown on the plans, nor which may be inferred from surface indications, shall be in accordance with the provisions of the General Conditions. If the Contractor does not expose all required utilities prior to shop drawing preparation, he shall not be entitled to additional compensation for work necessary to avoid interferences, nor for repair to damaged utilities.
 2. Any necessary relocations of utilities, whether shown on the Drawings or not, shall be coordinated with the affected utility. The Contractor shall perform the relocation only if instructed to do so in writing from the utility and the Engineer.
- D. Shutdowns: Planned utility service shutdowns shall be accomplished during period of minimum use. In some cases, this may require night or weekend work. Such work shall be at no additional cost. Program the work so that service will be restored in the minimum possible time and shall cooperate with the utility companies in reducing shutdowns of utility systems to a minimum.
1. Disconnections: No utility shall be disconnected without prior written approval from the utility owner. When it is necessary to disconnect a utility, the Contractor shall give the utility owner not less than 72-hour

notice when requesting written approval. The Contractor shall program his work so that service will be restored in the minimum possible time.

- E. Overhead Facilities: There are existing overhead electric street lights adjacent to the pipeline routes. These overhead utilities are shown in most cases on the Drawings. The contractor shall perform their work so as to not disturb these utilities. Extreme caution shall be used when working in the vicinity of overhead utilities so as to prevent injury to workmen or damage to the utilities. The Contractor shall be required to comply with the applicable provisions of the California Construction Safety Orders when working anywhere on this project.
- F. Existing gas, water, sewer and telephone house laterals are not specifically shown on the Drawings but do exist along the pipeline routes. Protect all service laterals from damage due to construction operations. If any laterals are damaged, notify the Engineer and the affected utility immediately. The cost of repair shall be borne by the Contractor.

3.03 GENERAL CONSTRUCTION REQUIREMENTS

- A. Site Access: Access to the site will be over public and private roads. Exercise care in the use of such roads and repair at own expense any damage thereto caused by Contractor's operations. Such repair shall be to the satisfaction of the owner or agency having jurisdiction over the road. Take whatever means are necessary to prevent tracking of mud onto existing roads and keep roads free of debris.
- B. Traffic Regulation: Provide such flagmen, patrols, pilot cars, drivers, lighted barricades, flares, lights, warning signs, and safety devices as may be required for control of traffic adjacent to all areas of work. A minimum of one lane of traffic shall be kept open at all times on public roads, refer to Section 01550 for Traffic Regulation.
- C. Barriers: Barriers shall be placed at each end of all excavations and at such places along excavations as may be necessary to warn all pedestrian and vehicular traffic of such excavations. Lights shall also be placed along excavations from sunset each day to sunrise of the next day until such excavation is entirely restored.
- D. Access: Free access must be maintained to all fire hydrants, water valves and meters, and private driveways.
- E. Open Trench Limitations: The Engineer shall have the authority to limit the amount of trench to be opened or left open at any one time. In public roads, excavation and pipe laying shall be coordinated so that a minimum of interference with public traffic will result. In existing streets, no more than 300 feet of trench shall be open at any time on any single heading. An open trench in existing streets shall be defined as any trench which has not been completely backfilled, satisfactorily compacted, and the trench steel plated. In the non-street ROW areas of the project, no more than 400 feet of trench shall be open at any one time on any single heading.
 - 1. All steel trench plates shall be installed flush with existing surfaces by cold milling the existing surface the thickness of the plate.
 - 2. All gaps between the plates and the existing surfaces shall be filled with temporary asphalt.
 - 3. All steel plates shall extend a minimum of 12 inches beyond the edges of the excavation.

4. When two or more plates are used, the plates shall be tack welded together at each corner to reduce or eliminate vertical movement.
 5. Steel plates shall be installed to resist bending, vibration, and propagation of noise.
 6. Wedges or other non-asphaltic devices shall be used for leveling as required to eliminate rocking of the plates.
- F. Demolition of Pavement: Where trenching or excavation occurs in paved areas, the pavement shall be saw-cut and broken ahead of the trenching or excavation operation. The extent of paving removed shall be limited to the minimum necessary for the excavation.
- G. Dust Control: Take proper and efficient steps to control dust.
- H. Permits: Refer to Supplement to General Provisions.
- I. Storage of Materials: Storage of material is not allowed on the project site.
- J. Temporary Pavement: Place temporary pavement on trenches in existing streets shall not be placed for at least 24 hours after the trench has been backfilled with slurry. Maintain temporary pavement until permanent pavement is to be placed but not less than two weeks to allow any additional compaction settlement to occur.

3.04 TRENCH EXCAVATION

- A. Excavation for pipe shall be in open cut. The trench shall be as wide as necessary for sheeting and bracing and the proper performance of the work up to the maximum width permitted by the typical cross-sections shown on the Drawings. The sides of the trenches shall be vertical in existing streets. The bottom of the trench shall be constructed to the grades and shapes indicated on the Drawings. Should the Contractor desire to use other equivalent methods, he shall submit his method of construction to the Engineer for favorable review prior to its use.
- B. Take care not to over-excavate. Accurately grade the bottom of the trenches to provide uniform bearing and support for each section of the pipe 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, and as hereinafter specified. Dig bell holes and depressions for joints after the trench bottom has been graded, and, in order that the pipe rest on the bedding for its full length, bell holes and depressions shall be only of such length, depth and width as required for properly making the joint. Remove stones as necessary to avoid point bearing.
- C. Backfill and compact over-excavations to 95% relative compaction with bedding material. There shall be no additional payment to the Contractor for over-excavations not directed by the Engineer. Remove unsatisfactory material encountered below the grades shown as directed by the Engineer and replace with 18" crushed rock wrapped in geotextile fabric, Mirafi 500X, or equal, for foundation stabilization. Payment for removal and replacement of such unsatisfactory material directed by the Engineer shall be made in accordance with the provisions of the General Conditions.
- D. Grade trenches so that they are uniformly sloped between the pipe elevations shown on the Drawings. Comply with the minimum and maximum trench widths shown on the Drawings. Notify the Engineer if the trench width

exceeds the maximum allowable width for any reason.

- E. Provide ladders for access to the trench by construction and inspection personnel.

3.05 BACKFILL AND COMPACTION

- A. Place bedding and backfill materials true to the lines, grades, and cross-sections indicated on the Drawings and compacted to the degree specified on the Drawings. Place bedding in horizontal lifts not to exceed 6 inches in thickness measured before compaction. The difference in level on either side of a pipe shall not to exceed 4 inches. Bedding shall be placed to one foot over the top of the pipe prior to placing the backfill.
- B. The initial fill of bedding material shall not proceed above the spring line of the pipe until the bedding has been compacted under the pipe haunches. Failure to perform compaction of the bedding under the haunches shall be deemed a defect and the contractor shall remove and reinstall the pipe prior to progress payment.
- C. Backfill material shall not be placed over the pipe until after it has been inspected by the District's Representative.
- D. It shall be incumbent upon the Contractor to protect the pipe from damage during the construction period. It shall be his responsibility to repair broken or damaged pipe at no extra cost. Tamping of backfill over the pipe shall be done with tampers, vibratory rollers and other machines that will not injure or disturb the pipe. Carefully place backfill around and over the pipe.
- E. Do not allow construction traffic nor highway traffic over the pipe trench until the trench backfill has been brought back even with existing grade.

3.06 SUPPORT OF EXCAVATIONS

- A. Adequately support excavation for trenches and structures to meet all applicable requirements in the current rules, orders and regulations. Excavation shall be adequately shored, braced and sheeted 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. Take all necessary measures to 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. Attention is directed to Section 832 of the Civil Code of the State of California relating to lateral and subjacent supports, and wherever structures or improvements adjacent to the excavation may be damaged by such excavation, the Contractor shall comply with this law.
- C. The support for excavation shall remain in place until the pipeline installation and initial backfill has been completed. During the backfilling of the pipeline or structure, the shoring, sheeting and bracing shall be carefully removed so that there shall be no voids created and no caving, lateral movement or flowing of the subsoils.

3.07 ROCK SUBGRADE UNDER STRUCTURES

- A. Place a 6-inch layer of crushed rock, compacted to 95% relative compaction, under structures.

3.08 FINISH GRADING

- A. Except where shown otherwise in the Drawings, restore the finish grade to the original contours and to the original drainage patterns. Grade surfaces to drain away from structures. The finished surfaces shall be smooth and compacted.

3.09 DISPOSAL OF EXCAVATED MATERIAL

- A. Dispose of unsuitable material or excavated material in excess of that needed for backfill offsite in accordance with the requirements of Section 01140.

END OF SECTION

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SECTION 02050

DEMOLITION

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Section includes: All demolition required to perform the work covered under this contract including without limitation:
 - 1. Remove existing construction shown to be removed.
 - 2. Where utilities that are not shown pass through new construction notify the District's Representative before disrupting service.
 - 3. Store and protect adjacent utilities.
 - 4. Assume ownership of debris and unwanted materials, remove from the site, and dispose of at an approved disposal site.
 - 5. Include the cost of removing and disposing of hazardous material.

1.02 NOISE AND DUST CONTROL

- A. Perform work in accordance with requirements in Division 1.
- B. Employ all available techniques for construction noise abatement.

1.03 WARNING

- A. The Contractor is advised that no known hazardous material exists within the project site. If the Contractor encounters hazardous material all work in the area of the hazardous material shall stop and the Owner notified. The Contractor is to take all necessary precautions to ensure the safety of workers and property.

1.04 SUBMITTALS

- A. Submit for approval agreements with disposal sites for disposal of trench excavation.
- B. Submit for approval agreements with the hazardous waste treatment, storage, and disposal facility (TSDF) licensed to receive the hazardous materials.

PART 2 - PRODUCTS (NOT APPLICABLE)

PART 3 - EXECUTION

3.01 UTILITY RELOCATE AND DEMOLITION

- A. In all cases where utility service will be disturbed, inform the affected properties, determine their needs, and provide for that during construction. Provide for this in the bid under the main pipeline construction bid items as there is no separate bid items for demolition/restoration or utility relocate.
- B. There are electrical conduits that carry street lighting power that may or may not be shown on the drawings. Some electrical vaults or manholes are

shown on the drawings but without the conduit runs shown between them. Locate, demolish, and restore as required for the construction. Coordinate with the Cities of Westlake Village, Thousand Oaks, and District as appropriate to arrange for construction through these areas.

3.02 REMOVAL AND DISPOSAL OF MATERIAL

- A. Dispose of trench excavation at an approved disposal site. Provide the name and location of the disposal site chosen for record purposes.
- B. Dispose of hazardous materials at the approved Treatment Storage and Disposal Facility (TSDF). Provide the name and location of the TSDF chosen for record purposes.

END OF SECTION

SECTION 02320

HORIZONTAL DIRECTIONAL DRILLING (HDD)

PART 1 - GENERAL

1.01 DESCRIPTION

The work specified in this section consists of furnishing and installing underground utilities using the horizontal directional drilling (HDD) method of installation, also commonly referred to as directional boring or guided horizontal boring. This work shall include all services, equipment, materials, and labor for the complete and proper installation, testing, restoration of underground utilities and environmental protection and restoration.

1.02 REFERENCE STANDARDS

The publications listed below form part of this specification to the extent referenced and are referred to in the text by the basic designation only. Reference shall be made to the latest edition of said standards unless otherwise called for.

- A. Plastics Pipe Institute Handbook of Polyethylene Pipe – Chapter 12
Horizontal Directional Drilling
- B. Caltrans – Encroachment Permits Guidelines and Specifications for
Trenchless Technology Projects

1.03 RELATED WORK SPECIFIED ELSEWHERE

- A. Standard Plans
- B. Technical Specifications
- C. Specification 15050 – Piping, Valves and Accessories

1.04 QUALITY ASSURANCE

The requirements set forth in this document specify a wide range of procedural precautions necessary to ensure that the very basic, essential aspects of a proper directional bore installation are adequately controlled.

Strict adherence shall be required under specifically covered conditions outlined in this specification. Adherence to the specifications contained herein, or the Engineer's approval of any aspect of any directional bore operation covered by this specification, shall in no way relieve the Contractor of their ultimate responsibility for the satisfactory completion of the work authorized under the Contract.

Contractor shall have been actively engaged in horizontal directional drilling for a minimum of at least 5 years. All field supervisory personnel shall also be experienced in the performance of the work and tasks as stated herein.

1.05 SUBMITTALS

A. WORK PLAN

Prior to beginning work, the Contractor must submit to the Engineer a general work plan outlining the procedure and schedule to be used to execute the project. A Frac-Out Contingency Plan shall be submitted to the Engineer to minimize the potential for a frac-out. Plan should document the thoughtful planning required to successfully complete the project.

B. EQUIPMENT

Contractor will submit specifications on directional drilling equipment to be used to ensure that the equipment will be adequate to complete the project.

C. MATERIALS

Specifications on material to be used shall be submitted to Engineer. Material shall include the pipe, fittings and any other item which is to be an installed component of the project.

PART 2 MATERIALS

2.01 EQUIPMENT

The directional drilling equipment shall consist of a directional drilling rig of sufficient capacity to perform the bore and pullback the pipe, a drilling fluid mixing & delivery system of sufficient capacity to successfully complete the crossing, a guidance system to accurately guide boring operations and trained and competent personnel to operate the system. All equipment shall be in good, safe operating condition with sufficient supplies, materials and spare parts on hand to maintain the system in good working order for the duration of this project.

2.02 DRILLING SYSTEM

A. DRILLING RIG

The directional drilling machine shall consist of a hydraulically powered system to rotate, push and pull hollow drill pipe into the ground at a variable angle while delivering a pressurized fluid mixture to a guidable drill (bore) head. The machine shall be anchored to the ground to withstand the pulling, pushing and rotating pressure required to complete the crossing. The hydraulic power system shall be self-contained with sufficient pressure and volume to power drilling operations. Hydraulic system shall be free of leaks. Rig shall have a system to monitor and record maximum pull-back pressure during pull-back operations.

B. DRILL HEAD

The drill head shall be steerable by changing its rotation and shall provide the necessary cutting surfaces and drilling fluid jets.

C. MUD MOTORS (if required)

Mud motors shall be of adequate power to turn the required drilling tools.

D. DRILL PIPE

Drill pipe shall be constructed of high quality 4130 seamless tubing, grade D or better, with threaded box and pins. Tool joints should be hardened to 32-36 RC.

2.03 GUIDANCE SYSTEM

The Guidance System shall be of a proven type and shall be setup and operated by personnel trained and experienced with this system. The Operator shall be aware of any magnetic anomalies and shall consider such influences in the operation of the guidance system if using a magnetic system.

2.04 DRILLING FLUID (MUD) SYSTEM

A. MIXING SYSTEM

A self-contained, closed, drilling fluid mixing system shall be of sufficient size to mix and deliver drilling fluid composed of bentonite clay, potable water and appropriate additives. Mixing system shall be able to molecularly shear individual bentonite particles from the dry powder to avoid clumping and ensure thorough mixing. The drilling fluid reservoir

tank shall be sized for adequate storage of the mud. Mixing system shall continually agitate the drilling fluid during drilling operations.

B. DRILLING FLUIDS

Drilling fluid shall be composed of clean water and an appropriate additive. Water shall be from a clean source with a pH of 8.5 – 10 and/or as per mixing requirements of the Manufacturer. Water of a lower pH or with excessive calcium shall be treated with the appropriate amount of sodium carbonate or equal. The water and additives shall be mixed thoroughly and be absent of any clumps or clods. No hazardous additives may be used. Drilling fluid shall be maintained at a viscosity sufficient to suspend cuttings and maintain the integrity of bore wall.

C. DELIVERY SYSTEM

The mud pumping system shall have a minimum capacity to supply mud in accordance with the drilling equipment pull-back rating at a constant required pressure. The delivery system shall have filters in-line to prevent solids from being pumped into the drill pipe. Connections between the pump and drill pipe shall be relatively leak-free. Used drilling fluid and drilling fluid spilled during drilling operations shall be contained and properly disposed of. A berm, minimum of 12" high, shall be maintained around drill rigs, drilling fluid mixing system, entry and exit pits and drilling fluid recycling system (if used) to prevent spills into the surrounding environment. Pumps and or vacuum truck(s) of sufficient size shall be in place to convey excess drilling fluid from containment areas to storage facilities.

2.05 OTHER EQUIPMENT

A. PIPE ROLLERS

Pipe rollers, if required, shall be of sufficient size to fully support the weight of the pipe while being hydro-tested and during pull-back operations. Sufficient number of rollers shall used to prevent excess sagging of pipe.

B. PIPE RAMMERS

Hydraulic or pneumatic pipe rammers may only be used if necessary and with the authorization of Engineer.

C. RESTRICTIONS

Other devices or utility placement systems for providing horizontal thrust other than those previously defined in the preceding sections shall not be used unless approved by the Engineer prior to commencement of the work. Consideration for approval will be made on an individual basis for each specified location. The proposed device or system will be evaluated prior to approval or rejection on its potential ability to complete the utility placement satisfactorily without undue stoppage and to maintain line and grade within the tolerances prescribed by the particular conditions of the project.

PART 3 - EXECUTION

3.01 GENERAL

The Engineer must be notified 48 hours in advance of starting work. The Directional Bore shall not begin until the Engineer is present at the job site and agrees that proper preparations for the operation have been made. The Engineer approval for beginning the installation shall in no way relieve the Contractor of the ultimate responsibility for the satisfactory completion of the work as authorized under the Contract. It shall be the responsibility of Engineer to provide inspection personnel at such times as appropriate without causing undue hardship by reason of delay to the Contractor.

3.02 PERSONNEL REQUIREMENTS

All personnel shall be fully trained in their respective duties as part of the directional drilling crew and in safety.

3.03 DRILLING PROCEDURE

A. SITE PREPARATION

1. Prior to any alterations to work-site, contractor shall photograph or video tape entire work area, including entry and exit points. One copy of which shall be given to Engineer and one copy to remain with contractor for a period of one year following the completion of the project.
2. Work site as indicated on drawings, within right-of-way, shall be graded or filled to provide a level working area. No alterations beyond what is required for operations are to be made. Contractor shall confine all activities to designated work areas.

B. DRILL PATH SURVEY

Entire drill path shall be accurately surveyed with entry and exit stakes placed in the appropriate locations within the areas indicated on drawings. If contractor is using a magnetic guidance system, drill path will be surveyed for any surface geo-magnetic variations or anomalies.

1. Contractor shall monitor and record x, y, and z coordinates of the drill head relative to an established surface survey bench mark. Deviations between the recorded and design bore path shall be calculated and reported on the daily log. Deviations that exceed the tolerances specified shall be immediately reported to the District Engineer.
2. Drill pipe thrust and torque shall be measured and recorded at least once per drill pipe length or at 30 feet or 30-minute intervals, whichever is more frequent. Loss of circulation or sudden increases in torque or thrust shall be reported to the District Engineer immediately. Thrust and torque measurements shall be made during pilot hole drilling, pre-reaming, reaming, and pullback, and shall be written in daily logs. Instances of thrust, torque, or pullback exceeding allowable limits of the pipe or equipment shall be reported immediately to the District Engineer.
3. Drilling fluid pressures and flow rates shall be continuously monitored and recorded at the pump discharge. These measurements shall be made during pilot hole drilling, reaming, and pullback operations.
4. The Contractor shall measure and record drilling fluid viscosity and density at least three times per shift with at least two hours between readings, using calibrated Marsh funnel and mud balance. These measurements shall be included in daily logs. The Contractor shall document modifications to the drilling fluids, by noting the types and quantities of drilling fluid additives and the dates and times when introduced. The reason for the addition of drilling fluid additives or other modifications shall be documented and reported.

C. ENVIRONMENTAL PROTECTION

Contractor shall place silt fence between all drilling operations and any drainage, wetland, waterway or other area designated for such protection by contract documents, state, federal and local regulations. Additional environmental protection necessary to contain any hydraulic or drilling fluid spills shall be put in place, including berms, liners, turbidity curtains and other measures. Contractor shall adhere to all applicable environmental regulations. Fuel or oil may not be stored in bulk containers within 200' of any water-body or wetland.

D. SAFETY

Contractor shall adhere to all applicable state, federal and local safety regulations and all operations shall be conducted in a safe manner. Safety meetings shall be conducted at least weekly with a written record of attendance and topic submitted to Engineer.

E. PIPE

Pipe shall be fused together in one length, if space permits. Pipe will be placed on pipe rollers before pulling into bore hole with rollers spaced close enough to prevent excessive sagging of pipe.

Contractor shall cease operations if the pipe is damaged and shall repair the pipe in a manner acceptable to the District Engineer before resuming installation. Damage to the pipe shall be repaired by the Contractor at no additional cost to the District. To confirm no damage was inflicted on the pipeline or conduit, upon completion the installation, the Contractor shall pull a mandrel through the entire length of the pipeline or conduit. If the mandrel cannot pass through the pipeline or conduit, it shall be considered collapsed and damaged.

F. PILOT HOLE

1. Pilot hole shall be drilled on bore path with no deviations greater than 5% of depth over a length of 100'. In the event that pilot does deviate from bore path more than 5% of depth in 100', Contractor will notify Engineer and Engineer may require Contractor to pull-back and re-drill from the location along bore path before the deviation.
2. In the event that a drilling fluid fracture, inadvertent returns or returns loss occurs during pilot hole drilling operations, contractor shall cease drilling, wait at least 30 minutes, inject a quantity of drilling fluid with a viscosity exceeding 120 seconds as measured by a March funnel and then wait another 30 minutes. If mud fracture or returns loss continues, contractor will cease operations and notify Engineer. Engineer and contractor will discuss additional options and work will then proceed accordingly.

G. REAMING

Upon successful completion of pilot hole, contractor will ream bore hole to a minimum of 25% greater than outside diameter of pipe using the appropriate tools. Contractor will not attempt to ream at one time more than the drilling equipment and mud system are designed to safely handle.

H. PULL-BACK

1. After successfully reaming bore hole to the required diameter, contractor will pull the pipe through the bore hole. Once pull-back operations have commenced, operations must continue without interruption until pipe is completely pulled into borehole. During pull-back operations contractor will not apply more than the maximum safe pipe pull pressure at any time. Pullback speed shall be calculated based on the capacity of the drilling mud pump and annular space. At no time shall the pullback speed be greater than the pump can handle.
2. In the event that pipe becomes stuck, contractor will cease pulling operations to allow any potential hydro-lock to subside and will commence pulling operations. If pipe remains stuck, contractor will notify Engineer. Engineer and contractor will discuss options and then work will proceed accordingly.
3. Pull detection wire along with the pipe.
4. The pipe shall be isolated from excessive torsional and axial stresses by a swivel device with a pre-established breakaway tensile capacity that is lower than the allowable tensile strength of the pipe.
5. The pipe shall be inserted "wet." The pipe shall be filled with water as it enters the ground to ensure that adequate internal pressure is maintained at all points to counterbalance collapse pressures.

I. DETECTION WIRE

Install detection wire by attaching the wire to the pipeline securely before pipeline pullback. Provide a minimum of 10 feet of additional wire at each end to allow the wire to be pulled into the locator box. Terminate detection wire in locator boxes at the entry and exit points if valve boxes are not installed at those locations. The Contractor may, at his/her option install two sets of detection wire, one as a backup in the event that a wire is damaged during installation.

Detection wire shall be tested for continuity by applying an electrical current across the wire. Detection wire shall be tested for continuity twice. The detection wire pulled in with the PVC pipe shall be tested immediately after pullback. After backfill of the entry/exit pits and trenches for adjacent appurtenances, the detection wire shall be tested again. If the test for continuity is negative, repair or replace the wire at the District Engineer's discretion at no additional cost to the District.

3.04 OBSTRUCTIONS

The Contractor shall notify the District Engineer immediately in the event that any obstruction is encountered that prevents further advancement of the drill stem, or pullback of the pre-reamer, reamer or pipe. The Contractor and District Engineer will investigate the cause and formulate an appropriate plan on action, which may include substitution of the equipment or methods, retraction and redrilling of a portion of the bore, or abandonment of the hole. If abandonment is deemed necessary, the Contractor shall recover, to the extent practical, any drill pipe and tools in the bore, and properly abandon the bore, unless otherwise directed in writing by the District Engineer. If the bore is abandoned, the Contractor shall pressure-grout the abandoned bore with a lean cement-sand grout mixture, or other approved material. If the bore is abandoned, the Contractor shall begin a second attempt to install the pipeline at an alternate location approved in writing by the District Engineer.

The Contractor shall take all reasonable actions to complete the installation with minimal delays. The extra costs associated with encountering the obstruction shall be negotiated between the District and Contractor, based on the labor and materials required. For purposes of this Contract, an obstruction is defined as any hard object lying completely or partially within the design pathway of the bore and pipeline that prevents further advancement of the drill bit, pre-reamer, reamer or pipe.

3.05 PIPE TESTING

Sections 11003 and 15050 shall be followed in its entirety following pull-back of the pipe.

3.06 SITE RESTORATION

Following drilling operations, contractor will de-mobilize equipment and restore the work-site to original condition. All excavations will be backfilled and compacted to 95% of original density. Landscaping will be restored to original. All mud shall be disposed of by the CONTRACTOR.

3.07 RECORD KEEPING

A. AS-BUILTS

Contractor shall maintain a daily project log of drilling operations and a guidance system log with a copy given to Engineer at completion of project. As-built drawings shall be certified as to accuracy by the Engineer.

END OF SECTION

SECTION 02700

PAVING

PART 1 - GENERAL

1.01 SUMMARY

- A. Section includes: furnishing all labor, material, equipment, tools and services required for the placing and compacting asphalt concrete pavement as specified herein.
 - 1. Also included shall be the repair and resurfacing of existing roadway and area paving damaged or removed during construction.
- B. Related Sections: Repair or replace concrete curbs, gutters and sidewalks damaged by the work in accordance with Section 02775.

1.02 REFERENCE SPECIFICATIONS

- A. Whenever the words "Standard Specifications" are referred to, the reference is to the latest edition of the Standard Specifications for Public Works Construction, "Greenbook".
- B. American Society for Testing and Materials (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. D2027 Specification for Cutback Asphalt (Medium Curing Type)
 - 4. D2922 Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)

1.03 SUBMITTALS

- A. Submit in accordance with Section 01300.
- B. Submit the following under the Product Information category.
 - 1. Samples: 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.
 - 2. Submit test results and a signed verification from each source of supply for each construction material employed on this project indicating that the materials meet the Specification requirements. Tests shall be performed within 60 days of the submission and within 120 days of placement. Submit updated test results and signed verifications for each 120 day period.
 - 3. Mix design for asphalt concrete and test results for California Tests 217, 303, 305, 307, 366, and 367.
 - 4. Submit manufacturer's certification of the actual volatile organic compounds (VOC) content for all pavement paints and bituminous pavement sealers proposed for use on this project. VOC content shall

be measured in grams per liter by weight of coating as applied excluding water and color added to the tint base.

5. Submit verification that bituminous pavement sealers and paint products furnished meet applicable AQMD regulations as to allowable VOC content for the time and place of application and use intended.

1.04 QUALITY ASSURANCE

- A. Comply with the Standard Specifications for Public Works Construction.
- 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.

1.05 REGULATORY REQUIREMENTS

- A. All work, material, procedures and practices under this Section shall conform to requirements of the California Air Resources Board (CARB) and the local Air Quality Board.

PART 2 - PRODUCTS

2.01 ASPHALT CONCRETE

- A. Asphalt Concrete: Asphalt Concrete shall be as follows:
 1. Base Course: Type III B PG 64-10.
 2. Surface Course: Type III C2 PG 64-10. Surface course thickness shall be a minimum of 8-inches.
 3. Total Asphalt Concrete Thickness: Total asphalt concrete thickness shall be 8-inches.
- B. Liquid asphalt (cutback) MC-800 conforming to the requirements of Section 203-2 of the Standard Specifications shall be used as the asphalt binder for temporary paving mix.

2.02 TACK COAT

- A. Material for tack coat shall be SS-1h grade emulsified asphalt conforming to Section 203-3 of the Standard Specifications.

2.03 PRIME COAT

- A. Material for prime coat shall be liquid asphalt MC-70 or MC-250 conforming to the requirements of Sections 203-2.

2.04 AGGREGATE BASE (NOT USED)

- A. Aggregate base shall conform to the applicable requirements of the Standard Specifications Section 200-2.4, for crushed miscellaneous base.
- B. Aggregate base thicknesses shall match existing.

2.05 TRAFFIC STRIPES AND PAVEMENT MARKINGS

- A. Thermoplastic material and glass beads shall comply with Section 210-1.6 of

the Standard Specifications.

2.06 TEMPORARY PAVEMENT (COLD MIX)

- A. Temporary pavement shall conform to Section 203-6.4.3, Class D2 of the Standard Specifications and bitumen shall conform to grade SC-800 of Section 203-2.4, Slow Curing Product Table.

2.07 LIQUID ASPHALT DISTRIBUTOR

- 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.
- B. Distributors and booster tanks shall be so maintained as to prevent dripping of asphalt from any part of the equipment.
- C. 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.
- D. 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.
- E. 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.
- F. 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. Installation of temporary or new pavement resurfacing must comply with

Section 306-1.5.

- B. Where trenching or other construction activity has resulted in damage to a localized area of pavement, the damaged pavement shall be saw cut back 6 inches and shall be removed and replaced. If the damage is within a street lane, the entire width of the lane shall be removed and replaced.
- C. Where the 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 cut away, removed and repaired.
- D. Structures such as valve boxes, manhole frames and covers, and electrical vaults shall be adjusted to grade as necessary within paved areas.
- E. Existing asphalt pavement islands of 50 ft² or less and strips 18 inches or less in width shall be removed and replaced.
- F. Adjust existing manholes, meter boxes, cleanouts, etc. to match the new grade.

3.02 PAVEMENT CUTTING

- A. After backfilling and prior to paving, proper tools and equipment shall be used in marking and breaking so that the pavement shall be cut accurately and on neat lines parallel to the trench. The asphalt pavement shall be saw cut (using a concrete saw) to a minimum depth equal to or greater than one-half the thickness thereof. The pavement shall be cut back on each side of the trench or excavation wall as shown on the Drawings. 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, those affected pavements shall be neatly saw cut in straight lines and replaced after the voids have been filled.
- B. Construct joints between successive runs 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.
- C. Prior to placing any pavement the edges shall be saw cut straight and a 1.5-foot wide strip ground down 1-1/2 inches. The top pavement layer shall overlap this ground edge. The edge shall have a prime coat applied as required below.

3.03 PLACEMENT OF AGGREGATE BASE

- A. Subgrade Preparation: The subgrade shall be watered or dried as required to bring the soil, as close as practicable, to the optimum moisture content for proper compacting and then compacted, as specified, to a relative compaction of not less than 95% in the upper 6 inches. When compaction of the subgrade areas on fill and embankments has been properly obtained, only such additional rolling will be required as necessary to obtain a thoroughly compacted subgrade immediately prior to placing the aggregate base thereon.
- 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 0.05 foot above or 0.10 foot 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. The aggregate base thickness shall match the existing. 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 301-2.3 of the Standard Specifications. Water aggregate base after compaction.

3.04 PRIME COAT APPLICATION

- A. Prime Coat: In advance of spreading paving materials, a prime coat of liquid asphalt shall be applied to all base course surface areas to be covered with asphaltic concrete.
 - 1. Preparation of Base Course: 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: Liquid asphalt shall be applied by pressure distributors at a temperature between 125 and 200°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 2/10 and 3/10 gallon per square yard. Excess liquid asphalt, which has failed to penetrate the base, shall be covered with fine sand. All loose sand shall be removed from the treated areas before placing any surfacing material thereon. Liquid asphalt 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. Immediately in advance of paving asphalt concrete surfacing, additional prime coats shall be applied, as directed by the Engineer, to areas where the prime coat has been damaged.

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. When two or more lifts of asphaltic concrete are required, a tack coat shall be applied between each lift.
 - 1. Preparation: Immediately before applying a tack coat, the area to be surfaced shall be cleaned of all loose material.
 - 2. Application: The tack coat shall be applied by means of pressure distributors by pressure hand-spray equipment. The rate of application shall be 1/20 gallon per square yard. Emulsified asphalt shall not be applied when the atmospheric temperature is below 40°F.

3.06 PLACEMENT OF ASPHALT CONCRETE

- A. Asphalt Concrete shall be placed in accordance with Section 306-1.5.
- B. Delivery and Spreading: Bituminous mixtures shall be delivered to the roadbed at temperatures specified in the Standard Specifications. All loads shall be covered with tarpaulin or other material during transportation.
- C. Spreading: Spreading of the mixture shall be in accordance with Section 302-5 of the Standard Specifications. Asphalt concrete shall be laid in courses in accordance with Table 302-5.5(A). No layer shall be thicker than 3 inches. Not less than two layers shall be placed.
- 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 saw 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 compaction, 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 APPLICATION OF FOG SEAL

- A. A fog seal shall be applied to the upper surfaces of all installed asphalt concrete. It shall be applied in accordance with the applicable requirements of Section 302-10.3 of the Standard Specifications.

3.08 PAVEMENT RESTORATION

- 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 cutback. 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 primed aggregate base surface is approved by the Engineer. Final paving shall not occur until the backfill and aggregate base have rested for not less than 7 days.

3.09 PAVEMENT MARKINGS

- A. Preparation: Immediately before applying the pavement markings, 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.
- B. Tolerances: Marking and striping shall be within 2 inches of the correct alignment. Dimensions of marking and stripings shall be within 1/2-inch.
- C. 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.

- D. Application: Pavement 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. Allow ten days between the application of a bituminous seal coat and the permanent pavement marking. The paint shall not bleed, curl or discolor when applied to bituminous surfaces. If bleeding or discoloring occurs, apply an additional coat of paint.
 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.
- E. 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

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SECTION 02775

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 REFERENCE SPECIFICATIONS

- A. Wherever the words "Standard Specifications" are referred to, the reference is to the State of California, Department of Transportation, Standard Specifications current edition.

1.03 SUBMITTALS

- A. Submit in accordance with Section 01300.
- B. Submit certificate of compliance indicating that the concrete complies with the specifications as Product Information submittals.

PART 2 - PRODUCTS

2.01 CONCRETE

- A. Comply with the Standards Specifications, Paragraph 73-1.01.
 - 1. Cement: Type II Modified.

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.

END OF SECTION

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SECTION 03310

REINFORCING STEEL, CAST-IN-PLACE CONCRETE, AND CONCRETE FINISHES

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Reinforcing steel.
 - 2. Cast-in-place concrete.
 - 3. Concrete finishes.

1.02 REFERENCES

- A. American Concrete Institute (ACI):
 - 1. ACI 301 Specifications for Structural Concrete for Buildings
 - 2. ACI 305 Hot Weather Concreting
 - 3. ACI 306 Cold Weather Concreting
 - 4. ACI 347 Guide to Formwork for Concrete
- B. American Society for Testing and Materials (ASTM) Standard Test Method:
 - 1. A185 Steel Welded Wire, Fabric, Plain, for Concrete Reinforcement
 - 2. A615 Deformed and Plain Billet Steel Bars for Concrete Reinforcement
 - 3. C150 Portland Cement
 - 4. C260 Air-Entraining Admixtures for Concrete
 - 5. C494 Chemical Admixtures for Concrete
- C. Standard Specifications:
 - 1. CALTRANS State of California Department of Transportation
 - 2. CAL PWC Public Works Construction, Southern California Chapter, American Public Works Association

1.03 SUBMITTALS

- A. Submit in accordance with Section 01300.
- B. Product Data:
 - 1. Concrete materials certifications.
 - 2. Concrete mix design, including test results.
 - 3. Concrete placement method and sequence.
 - 4. Reinforcing steel shop drawings.
 - 5. Concrete curing method.

1.04 QUALITY ASSURANCE

- A. Standard: CALTRANS
- B. Concrete Tests: CALTRANS

1.05 DELIVERY, STORAGE AND HANDLING

- A. General: Provide storage and handling of all materials so that upon delivery they are undeteriorated and ready for use.

PART 2 - PRODUCTS

2.01 CONCRETE MATERIALS

- A. CALTRANS Section 90 except as modified below:
 - 1. Cement: ASTM C150, Type II, low alkali.
 - 2. Aggregate: 3/4-inch maximum size.
 - 3. Admixtures:
 - a. Air entraining: ASTM C260.
 - b. Water reducing: ASTM C494 Type A.

2.02 REINFORCEMENT

- A. CALTRANS Section 52 except as modified below.
 - 1. Reinforcing bars: ASTM A615 Grade 60.
 - 2. Welded wire fabric: ASTM A185; sheets.

2.03 CONCRETE MIX DESIGN

- A. Concrete Class: A
- B. Specified 28-Day Compressive Strength: 4500 psi
- C. Minimum Cementitious Material Content: 564 lbs.
- D. Water-Cementitious Material Ratio: 0.50
- E. Minimum Air Content: 4-1/2%

2.04 FORMS

- A. General: Take responsibility for adequacy of forms, bracing and shoring. Satisfy ACI 347. Provide mortar-tight construction.
- B. Tolerances: ACI 301.

PART 3 - EXECUTION

3.01 CONSTRUCTION

- A. General: CALTRANS Section 51 except as modified below.
- B. Preliminary Work: Provide a 6-inch gravel layer to 95% compaction below base slabs.
- C. Embedded Items: Locate accurately and securely in place prior to concreting.
- D. Concrete Cover to Reinforcement: ACI 301.
- E. Cold Weather: ACI 306 when temperature is below 40°F. F. Hot Weather: ACI 305 when temperature is above 75°F. G. Exposed Corners: Chamfer 3/4-inch.
- H. Surface Finish: Ordinary Surface Finish using a stiff broom.

END OF SECTION

SECTION 09960

PROTECTIVE COATINGS

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes: Coat all facilities and equipment which are part of this Contract, except:
1. Metal completely embedded in concrete (except aluminum).
 2. Piping buried in ground or encased in concrete.
 3. Galvanized grating, galvanized bolts, and galvanized grating frames.
 4. Chain link fence and galvanized fence gates.
 5. Plastic pipe, including: polyvinyl chloride, polyethylene, and polypropylene piping, except as noted.
 6. Bronze, brass.
 7. Nameplates and grease fittings.
 8. Factory fusion epoxy coated items (except for field touchup).
 9. Aluminum handrail and aluminum guardrail.
 10. Concrete, except as defined herein, as specified elsewhere, or as shown on the Drawings.
- B. The Contractor is to base this bid on using the products specified. If the products specified are not available in formulations that meet applicable regulations on volatile organic compounds (VOC) levels at time of application, the Contractor is to submit for review products of equivalent quality and function that comply with regulations in effect at that time. A reasonable difference in cost of material between the first named items specified and the products that are required to meet regulations that change after the bid date and are in effect at the time of application may be approved for payment by Change Order.

1.02 REFERENCES

- A. Where standards of surface preparation are described by citing SSPC specification numbers reference is made to the "Steel Structures Painting Manual" Volume 2 published by the Steel Structures Painting Council.
- B. American Society of Testing and Materials (ASTM):
- C. ASTM D4060 Test Method for Abrasion Resistance of Organic Coatings by the Taber Abraser
- D. ASTM D2794 Test Method for Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact)
- E. ASTM D4541 Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Testers
- F. ASTM F1249 Test Method for Water Vapor Transmission Rate through Plastic Film and Sheeting using a Modulated Infrared Sensor

1.03 DEFINITIONS

- A. Dry Film Thickness (DFT) - The prime coat and the sum of all fully cured applied coats for the paint system.
- B. Exterior Surface - Surface that is not inside a building or structure and is exposed to the weather. Epoxy surfaces that are affected by the ultraviolet rays from the sun shall be considered an exterior surface if the sun can shine on the surface.
- C. Stripe Coat - Coating applied to the edge, corner, welds or bolts, which is applied prior to application of additional system coats.
- D. Submerged - Surfaces that are under water or the vertical extension of those walls that are partly under water during normal operating conditions.

1.04 SUBMITTALS

- A. Submit in accordance with Section 01300.
- B. Prior to ordering material, submit a complete schedule of materials to be used. Include manufacturer's brand name, product name, and designation number for each coat of each system to be used.
- C. Prior to commencing work, submit a detailed list of all surfaces and equipment items upon which the Contractor intends to apply protective coatings.
- D. Provide the following information on each paint product:
 - 1. Abrasion resistance, ASTM D4060, 1 kg load at 1000 cycles, CS-17 wheel.
 - 2. Impact resistance, ASTM D2794, direct and reverse.
 - 3. Moisture vapor transmission, ASTM F1249.
 - 4. Adhesion, ASTM D4541.
- E. If materials other than those listed are submitted, submit additional information to fully define the proposed substitution. The Engineer may further require the Contractor to furnish additional test results from an independent paint laboratory comparing the proposed substitution with one of the named products, at no additional cost to the Owner. For substituted materials, provide a list of references, including contact person and phone number, where proposed substitute paint system has been used in similar exposures. Provide a minimum of five (5) references (no duplicate owners or agencies).
- F. Provide Material Safety Data Sheets (MSDSs) for all products.
- G. Manufacturer's Certification: That products furnished meet applicable Air Quality Management District regulations as to allowable volatile organic compound (VOC) content for the place of application and use intended.
- H. Submit a full range of the manufacturer's standard and let down finish colors for review and selection by the Engineer. The owner will select colors.

1.05 QUALITY ASSURANCE

- A. Environmental Regulatory Requirements:
 - 1. All work, material, procedures, and practices under this Section shall

conform with requirements of the local Air Resources Board or Air Quality Management District having jurisdiction. Prime or finish coat painting done in locations other than the project site shall be in accordance with air quality regulations in effect at the place the coating is applied. Products specified herein are, to the best of the Design Engineer's knowledge, in compliance with the applicable volatile organic compounds (VOC)¹ levels allowable at the date these Specifications were issued for bid.

2. The Air Resources Board or Air Quality Management District having jurisdiction may prohibit the sale or application of paints and enamels containing more than the stipulated percentages of volatile organic solvents manufactured after a stated date. Provide material meeting applicable regulations effective at the date of manufacture, or if not available, provide top of the line materials developed as replacements for specified materials and meeting applicable regulations as to VOC solvents content.
3. If the Contractor applies coatings that have been modified or thinned other than as recommended by manufacturer, he will be responsible for any fines, costs, remedies or legal actions that may result.

1.06 WARNINGS

- A. Be advised that application of paint, epoxy and protective coating materials may be hazardous. Take all necessary precautions to ensure the safety of workers and property.
- B. Be advised that as a part of this work abrasive blasting may be required. This may require the use of special equipment. Become familiar with the existing site conditions and take all steps necessary to protect adjacent facilities and personnel, at no additional cost to the Owner. In addition, abrasive blasting and painting is called for in, on or around mechanical equipment, which may be damaged by grit, dust, or painting overspray. Mask, wrap, enclose and provide all protection required to safeguard this equipment at no additional cost to the Owner.
- C. Perform abrasive blasting activities in a manner that will not cause a nuisance to adjacent public and private property and equipment.

1.07 DELIVERY, STORAGE AND HANDLING

- A. Deliver all coating materials in unopened containers with manufacturer's label, which must include name, batch number and date and VOC content.
- B. Store in an assigned area onsite with concurrence from the coating manufacturers. Maintain storage area clean and fire safe. Dispose of used rags, thinner and buckets daily. Store solvents in closed approved storage containers.
- C. Submerge solvent soaked rags in water.

1.08 PROJECT CONDITIONS

- A. Environmental Requirements:
 1. Provide ambient temperatures recommended by manufacturer of material to be applied.
 2. Provide adequate ventilation.

3. Provide 40- to 50-foot candles of illumination on all surfaces in areas to be painted including floors, walls and ceiling even though they do not require painting.
4. Use temporary dust barriers to close off areas being painted from areas where other work is being performed.

¹ Measured in grams per liter by weight of coating as applied, excluding water and color added to be base tint.

1.09 COLORS AND SAMPLES

- A. Before starting work, obtain favorably reviewed color schedule.
- B. Colors are to be factory mixed, using light-fast colorants proportioned by accurate measurement into proper type base. All coatings must be formulated to perform in the climate and environment to which they will be exposed.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Paints used in each system to be the product of one manufacturer.
- B. Shop applied prime coats shall be compatible with the systems included in these specifications.
- C. Substituted coating systems shall be of the same generic type as those specified.
- D. Coating systems shall not contain lead.
- E. Abrasives shall not be classified a hazardous material under California Title 22.
- F. Materials: Paints and protective coatings listed in the Paint Systems and the Schedule in Part 3 of this Section refer to the following manufacturers and are specified as levels of quality. It is understood that the words "or equal" are included herein.
 - Sherwin Williams (SW)
 - Kop Coat (K)
 - Tnemec Co. (T)
 - Roto Metals (RG)
 - Protecto Wrap (PW)
 - Tapecoat (TC)
 - Chemical Products Co. (ZRC)
 - Ameron (A)
 - Thermecoat-Welco (TW)
 - CRC Industries (CRC)

2.02 PAINT SYSTEMS

System 1: General Ferrous Exposed to Atmosphere

1 st Coat – bare metal or over existing manufacturer coating	High solids Epoxy	(T) Series 135 (A) Amerlock 400
Finish Coat(s) Total DFT = 12 mils	High Solids Epoxy	(A) Amerlock 400 (T) Series 135
Final coat for exterior surfaces DFT = 2 mils additional	Aliphatic Polyurethane	(A) Amercoat 450HS (T) Series 74

System 2: Galvanized Metal Surface Repair

One Coat:

To be left unpainted:	Eutectic-type repair	(TW) Gal-Viz (RG) ReGalv
To be painted: DFT = 2 mils	High zinc content	(ZRC) Cold Galv. Compound (CRC) Zinc It

System 3: Buried Ferrous Metal

Two coats DFT = 12 mils	High Solids Epoxy	(A) Amerlock 400 (T) Series 140, Pota-Pox Plus
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System 8: Buried Valves

One full brush coat DFT = 20 - 30 mils		(PW) 160/160 H Mastic (TC) TC Masti
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PART 3 - EXECUTION

3.01 SURFACE PREPARATION

- A. Perform surface preparation in accordance with Paragraph 3.02 below and the latest revision of the following requirements or manufacturer's requirements, whichever is more stringent:
1. Shop Prime: Shop prime all steel surfaces not subject to abrasive blasting. Clean surfaces in accordance with the Structural Steel Painting Council specifications SSPC-SP 2, "Hand Tool Cleaning," and SSPC-SP 3, "Power Tool Cleaning."
 2. Brush Clean: Remove dirt, dust, loose rust and foreign matter in accordance with specification SSPC-SP 2, "Hand Tool Cleaning."
 3. Solvent Clean: Solvent clean metallic surfaces to be painted to remove all oils or grease in accordance with specification SSPC-SP 1, "Solvent Cleaning." Use solvents recommended by manufacturer of paint to be used in each area. In addition, lightly hand sand copper piping.
 4. Abrasive Blast: Conform to the requirements of SSPC-SP 10, "Near White Blast Cleaning." Paint all blasted surfaces within 8 hours of blasting unless the Engineer gives specific permission to do otherwise. Remove all weld spatter by grinding or chipping prior to sandblasting.
 5. Commercial Blast Cleaning: Conform to the requirements of SSPC-SP 6 Paint all blasted surfaces within 8 hours of blasting unless the

Engineer gives specific permission to do otherwise. Remove all weld spatter by grinding or chipping prior to cleaning.

3.02 APPLICATION

- A. All steel coating application to be done in accordance with the latest revision of SSPC-PA: When successive coats of paint of the same colors are specified, tint alternate coats sufficiently to produce enough contrast to indicate complete coverage of the surface.
- B. Apply all material in strict accordance with manufacturer's instructions. Apply first coat immediately after surface preparation. Keep all paints at a consistency and applied in accordance with the printed directions of the manufacturer. The painting shall be done by **HAND** in conformance to individual paint manufacturer's recommendations. The Engineer and paint supplier will review all surfaces to be painted on the job prior to application of any coatings. Once the Contractor begins undercoating or priming, this will be his guarantee that the surface is acceptable to paint. All painted surfaces are to be free from drips, ridges and brush marks. The following stipulations also apply:
1. Thinning permitted only when recommended by the manufacturer and only with thinner recommended for use with the particular product.
 2. The use of additives to improve working characteristics or to lengthen or shorten set time is prohibited.
 3. Items difficult or impossible to paint after installation are to be painted before installation and touched up after installation.
 4. Apply each coat to a uniform, even coating; lay material on in one direction and finish at right angles. Allow material to thoroughly dry between coats. Scuff, sand and remove all runs, sags, overspray, surface roughness and other defects between each coat. Dust and wipe surface clean before applying next coat.
 5. Cutting in is to be sharp and straight, free from overlaps or fuzzy edges. Redo any imperfect work.
 6. Apply not less than the number of coats or dry film thickness specified. Apply additional coats if required for uniform coverage, full hiding, and to achieve film continuity. Finish work to be uniform in color, full coverage, smooth and free of sags and brush marks.
 7. Do not apply coating when temperature is below 55°F or when the temperature of the surface to be painted is less than 4°F over the dew point temperature. Perform coating operations only under favorable environmental conditions. Take all steps necessary to protect and completely cure the work. Correct defective work to the full satisfaction of the Engineer.
 8. Apply the last finish coat on all work after all major construction is complete and the work areas have been cleaned up and are dust free.

3.03 PIPE AND EQUIPMENT IDENTIFICATION

- A. Identify all piping and equipment exposed to the atmosphere, both interior and exterior, and including pipe located in concrete pipe trenches, by a combination of color coding, stenciling or pressure-sensitive tape and direction arrows.

3.04 FIELD QUALITY CONTROL

A. Pinhole and Continuity Testing:

1. After the application of the prime and finish coats of Paint Systems 3 and 9 surface protective coating systems on metal surfaces, perform continuity and pinhole checking by means of a low voltage electrical resistance meter and check thickness with a magnetic thickness gauge to determine that pinhole free condition and specified film thickness of the paint system has been achieved over all of the painted surfaces. Repair all deficiencies in film integrity and thickness in accordance with the manufacturer's instructions.
2. The Engineer or an independent testing consultant may perform its own continuity and pinhole checking and thickness checks in addition to the Contractor's required tests. The appropriate equipment and necessary support, if requested, is to be provided by the Contractor. Repair any additional deficiencies in film integrity and thickness per the manufacturer's instructions and to the satisfaction of the Engineer.
3. **THE CONTRACTOR'S ATTENTION IS DIRECTED TO THE FACT THAT PAST USE OF THIS INSTRUMENT HAS DEMONSTRATED THAT THE PAINTER MUST APPLY AT LEAST TWO AND USUALLY THREE OR MORE STRIPE COATS ALONG ALL EDGES AND ANGLES AND CREVICES FORMED BY JOINING MEMBERS IN ADDITION TO THE COATS SPECIFIED IN ORDER TO ACHIEVE A PINHOLE FREE**

B. Adhesion Testing: Where there is a question of paint or coating adhesion to surfaces, demonstrate to the Engineer's satisfaction that the coating adhesion to the area in question is equal to or greater than that which the paint manufacturer literature states may be achieved by his product. An "Elcometer Adhesion Tester" is to be used by the Contractor to accomplish this demonstration.

C. Continuity, Pinhole and Adhesion Testing Support: Provide scaffolding, ladders, lighting and labor as required to facilitate the Engineer's check. Repair any areas damaged during and by the testing operation.

3.05 CLEANING AND COMPLETION

- A. At the completion of this portion of the work, remove all debris, remove all paint and stains from work for which paint finish is not intended, touchup all marred surfaces, and leave all buildings and structures in a clean condition, ready for use.
- B. Refinish all damaged or imperfect painting to the satisfaction of the Engineer prior to final acceptance of the facility.
- C. Finish work, except waterproofing mastics, is to present an even, pleasing and uniform color and appearance. Surfaces exhibiting coatings with shadows, streaks, overlap marks, sags, drips, roughness or non-uniform sheen will be considered as improperly applied and will not be considered acceptable.
- D. Leave all machinery nameplate data tags clean and readable and all grease fittings clean and usable.

3.06 APPLICATION SCHEDULE

A. Provide coatings in accordance with the following exposure schedule:

<u>Exposure</u>	<u>Surface Preparation</u>	<u>Paint System</u>	<u>Note (see below)</u>
General ferrous exposed to atmosphere	Bare Metal: Sandblast Shop Primed: Hand Tool Cleaned	1	1
Galvanized metal surface Repair	Hand Toll Cleaning	2	2
Buried ferrous metal	Abrasive Blast except Solvent Clean Galvanized items	3	3
Buried valves, flanges, etc.	Solvent Clean and Hard Tool Cleaning	8	4

Notes to Application Schedule

1. These surfaces include, but are not limited to: general miscellaneous ferrous metal; machinery; pumps; blowers; compressors; supports; valve handwheels and stands; valve bodies; piping systems; structural steel; steel elements; except where other systems in this schedule are more specifically applicable.
2. Use galvanize-repair paint to repair-galvanize surfaces to be painted. Use eutectic-type repair to repair-galvanize surfaces to remain unpainted.
3. Apply this system to ferrous metal submerged in or suspended over water or sludge. These surfaces include, but are not limited to, machinery parts, piping, valves, brackets and supports, and miscellaneous supports, braces, and pump columns. Coat inaccessible surfaces prior to erection.
4. Buried steel and cast-iron valves, operators, steel flanges, and other buried ferrous metals.

END OF SECTION

SECTION 11003

DISINFECTION

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Disinfect all inside surfaces with which water may come in contact in all pipelines including equipment and accessories.
 - 2. Dispose of disinfection solution.
- B. Related Sections:
 - 1. Section 01140: Environmental Protection Procedures
 - 2. Section 15050: Piping, Valves and Accessories

1.02 REFERENCES

- A. American Water Works Association (AWWA):
 - 1. C651 AWWA Standard for Disinfecting Water Mains

1.03 SCHEDULING

- A. Schedule and coordinate the work with District operating personnel. Once disinfection has been satisfactorily accomplished, no further entry to the interior of the pipeline will be allowed unless entry must be made to perform repairs, in which case repeat disinfection on a localized basis at no additional cost to the District. The Contractor shall be responsible for maintaining security of the disinfected facilities.
- B. Disinfect pipelines following successful pressure testing.

1.04 SUBMITTALS

- A. Submit in accordance with Section 01300.
- B. Submit a Disinfection Plan in the Product Review category including the procedures, methods, materials and schedules proposed for disinfecting the required surfaces, and method of disposal of chlorinated water.

1.05 QUALITY ASSURANCE

- A. Laboratory testing related to disinfection will be performed by and paid for by the District.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Water: Use treated water. The Contractor may obtain water for testing and disinfection from the District. Coordinate with the District to obtain a meter and establish location(s) for installing the meter. The Contractor shall provide an air gap or reduced pressure backflow valve system to prevent backflow into the water source.

PART 3 - EXECUTION

3.01 PREPARATION

- A. Provide all necessary appurtenances required for the disinfection procedures including taps, temporary piping, connections and shutoff valves. Submit data on appurtenances which will be permanently installed for review by the Engineer.
- B. The Contractor is advised that precautions taken to keep surfaces clean during construction and avoiding the entry of deleterious substances on the work during construction will facilitate achieving the disinfection requirements of this project.
- C. Prior to disinfecting, thoroughly clean accessible surfaces of dust, dirt, foreign matter and deleterious substances remove any oil by contact with absorbents. Use water sprays, steam cleaning, vacuum cleaning, swabbing, hand brushing or a combination of methods and rinsing to effect the cleaning, but do not use any method that will be detrimental to the finish surfaces. Flush inaccessible surfaces clean. Flushing water shall be discharged to the District's Sewer System.

Coordinate discharge location and flow rate with the District and prevent disposal of sediments to the sewer by whatever methods necessary, including settling basins.

3.02 APPLICATION

- A. After completing all construction activities including pressure testing, disinfect the required surfaces with chlorine solutions in accordance with the following procedures. Following disinfection and flushing, the District will take water samples for bacteriological analysis of the water. If the specified bacteriological requirements are not satisfied, repeat disinfection procedure until the requirements are met.
- B. Pipelines:
 - 1. Standard: AWWA C651 as amended herein.
 - 2. Forms of Chlorine: Sodium hypochlorite or calcium hypochlorite
 - 3. Method: Continuous feed.
 - 4. Preparation: Provide the system with a 1-inch minimum service cock or valve or other means to inject chlorine solution at a point within 2 or 3 feet of its junction with the supply source. When system is complete, thoroughly flush it by fully opening every outlet until clear water flows from all of them. Discharge water as indicated in 3.04 below.
 - 5. Disinfecting Agent: Sodium hypochlorite or calcium hypochlorite in sufficient quantities to produce chlorine concentration of at least 50 parts per million in the system.
 - 6. Disinfecting Procedure:
 - a. Connect a hand-operated pump, or other means of injecting the disinfecting agent, to one-inch minimum service cock or valve or other injection device. Pump must provide a pressure greater than that of supply of system.
 - b. With system completely full of water and supply valve open,

- proceed to adjust every outlet of system so that a trickle of water flows from each. Discharge water as indicated in 3.04 below.
- c. Inject disinfectant slowly and continuously at an even rate, not in slugs, until a test at each outlet shows a free chlorine residual concentration of at least 50 parts per million.
 - d. Close all outlets and valves, including valve connecting to supply line and one-inch minimum service cock on solution injection connection. Maintain condition for 24 hours. After 24 hours, test for residual chlorine at each outlet. The free residual chlorine concentration indicated should be not less than 10 ppm. If the indicated free chlorine concentration is less than 10 ppm, repeat disinfection procedure until an approved result is obtained.
 - e. When the above procedure has been completed to the satisfaction of the Engineer, flush out entire system with fresh water until tests at all outlets show a residual of not more than 0.5 ppm. Discharge water as indicated in 3.04 below.

3.03 FIELD QUALITY CONTROL

- A. Chlorine Residual Testing: AWWA C651, Appendix A, DPD Drop Dilution Method, except where otherwise specified. Testing shall be performed by the Contractor.
- B. Bacteriological Analyses of Water: After the completion of disinfecting procedure, including the final flushing as described in AWWA C651 and heretofore, the District will obtain water samples from this system for bacteriological analyses. Requirements for satisfactory disinfection of water supply are that bacteriological analyses indicate that water samples are negative for coliform organisms, and that Heterotrophic plate count (standard plate count) is less than 100 colony forming units per milliliter. If bacteriological analyses do not satisfy the above requirements, then repeat disinfection procedure until these requirements are met.

3.04 DISPOSAL OF DISINFECTION SOLUTION AND FLUSHING WATER

- A. Dispose of disinfection water and flushing water to the District's Sewer System. Coordinate discharge location(s) and flow rate with the District and prevent disposal of sediments to the sewer by whatever methods necessary, including settling basins.

3.05 PROTECTION OF DISINFECTED PIPELINES

- A. If required to re-enter a disinfected pipeline, the work shall be conducted utilizing techniques and work methods as necessary to maintain the disinfected status. This shall include use of disinfected foot coverings, tools, and the like. In the event the Contractor contaminates the pipeline, effect decontamination must be performed by the Contractor at no additional cost to the Owner.

END OF SECTION

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SECTION 13118
CORROSION MONITORING SYSTEM

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes: Materials, equipment, and apparatus necessary for a complete corrosion monitoring system.
- B. Related Sections:
 - 1. Section 15050: Piping, Valves and Accessories
 - 2. Section 09960: Protective Coatings

1.02 REFERENCES

- A. American Society for Testing and Materials (ASTM):
 - 1. D229 Test Methods for Rigid Sheet and Plate Materials Used for Electrical Insulation

1.03 SUBMITTALS

- A. Submit material or equipment data in accordance with Section 01300.
- B. Submit the following:
 - 1. A complete list of equipment and materials. Include name and manufacturer, catalog number, size, finish, and any other pertinent data necessary to determine conformance with Specifications.
 - 2. Certification by the cable manufacturer covering conformance of cable insulation to designated Specification.
 - 3. Report of findings of corrosion survey.

1.04 QUALITY ASSURANCE

- A. General: Perform all work to the satisfaction of the Engineer.
- B. Exothermic welds shall be performed by an experienced subcontractor who specializes in this type of work.

PART 2 - PRODUCTS

2.01 GENERAL

- A. All materials shall conform to the requirements set forth herein or as designated on the Drawings, unless otherwise specified. Furnish all materials new, free from defects, and made of the best commercial quality for the purpose specified. Provide all necessary items and accessories not shown on the Drawings or specified herein, but which are required to fully carry out the specified intent of the work, without additional cost to the Owner.

2.02 TEST STATION

- A. Traffic Rated Boxes:
 - 1. Size: Minimum 12 inches in inside diameter by 12 inches high.

2. Body: concrete.
3. Lid and 1-inch grade ring seat: cast iron rattle and vandal proof.
4. Engrave cast iron lid with letters CTS-####. Identify each station with a four digit number. For instance Station 20+11 would be 2011.
5. Design for AASHTO H-20 traffic loading.

2.03 TERMINAL BOXES

- A. Terminal Box: Molded from fiberglass reinforced polyester, with lockable cover, terminal board and integral compression fit base, and complete terminal hardware, with terminals completely accessible from both sides of the terminal board. Fit the terminal box with weather resistant rubber grommets for each test cable.
- B. Manufacturer: Tinker & Razor; or equal.

2.04 INSULATING FLANGED JOINTS

- A. Provide a full face central gasket, a full length sleeve for each flange bolt, two insulating washers and two stainless steel washers for each stainless steel bolt. Complete assembly shall have ANSI pressure rating equal to that of the flanges it is installed between.
 1. Central gasket: 1/8-inch-thick, high dielectric phenolic, exceeding 18,000 megohms electrical resistance, temperature rated to 300°F, and water absorbance of less than 5% when tested in accordance with ASTM D229.
 2. Bolt sleeves: high density polyethylene or mylar.
 3. Insulating washers: fabric reinforced phenolic resin.
- B. Manufacturer: PSI, Inc. Linebacker 61 Sealing and Isolating Gasket Kit; or equal.

2.05 INSULATING FLEXIBLE COUPLING JOINTS

- A. Insulating Flexible Couplings: Baker insulating coupling Series 216; Rockwell 416 Insulating Coupling; or equal.

2.06 CONDUCTORS

- A. Conductors for Cathodic Test Stations and Bonding: Copper, stranded single conductor, insulated for 600 Volts, Type UF. Provide sizes shown on the Drawings.

2.07 WIRE MARKERS

- A. Wire Markers: Vinyl cloth adhesive type, or plastic sleeve type. Wire numbers shall be permanently imprinted on the markers.

2.08 EXOTHERMIC WELDS

- A. Make all cable connections to pipe or fittings by the exothermic process using "Cadweld" by Erico Products, Inc.; "Thermoweld" by Continental Industries, Inc.; or equal. Fit each cable with a copper sleeve for making the weld. Cartridge sleeves and molds for each weld shall be by the same manufacturer.

2.09 EPOXY

- A. Epoxy for Sealing Cable to Pipe Connections: Concessive No. 1011, Master Builders; Scotchcast Resin No. 4, 3-M Company; CC-1 Potting Compound, PSI Products; or equal.

PART 3 - EXECUTION

3.01 GENERAL

- A. Joint Bonding: Bond all nonwelded joints, except where insulated joints occur at the flexible connector adjacent to each building. Joint bonding shall occur across buried valves and isolated flexible connectors not adjacent to buildings.

3.02 CABLES

- A. Cables Buried in the Ground: Lay straight without kinks; minimum cover of 30 inches. Lay each cable run continuous in length and free of joints or splices. Use care during installation to avoid punctures, cuts and similar damage to insulation. Any damage to insulation will require replacement of the entire cable length.

3.03 JOINT BONDING

- A. Non-welded Rubber Gasket Joints, Mechanical Joints, Flanged Joints, Valves and Fittings: Bond in accordance with details shown on the Drawings. Install with a cable loop extended above the field joint coating. Make the overall length of the conductor sufficient to provide flexibility at the pipe joint without transferring any tensile stress to the cable.

3.04 CABLE CONNECTIONS TO PIPE AND FITTINGS

- A. Install in the manner and at the location shown on the Drawings. Remove coating materials from the surface over an area just sufficient to make the connection. Clean the metal pipe surface to bare metal by grinding or filing prior to welding the conductor. Use of resin impregnated wheel for the purpose of grinding will not be permitted. Weld the conductor to the pipe by the exothermic process with a copper sleeve fitted over the conductor. Remove only sufficient insulation from the conductor to allow placing in welding mold. After the weld has cooled, remove all slag and test the weld with a sharp hammer blow to assure proper metallurgical bond. Remove and replace all defective welds. Cover all exposed metal surfaces with a minimum thickness of 1/2-inch of insulating material as shown on the Drawings.

3.05 CATHODIC TEST STATIONS

- A. Install ground level test stations at locations shown on the Drawings. Identify the terminal end of each cable with a permanent cable marker.

3.06 INSULATING FLANGED JOINTS

- A. Install insulating flanged joints at locations shown on the Drawings. Clean all insulating components of the insulating flanged gasket set of all dirt, grease, oil, and other foreign materials immediately prior to assembly. Align bolt holes in mating flanges at the time bolts and insulating sleeves are inserted to

prevent damage to the insulation. After flange bolts have been tightened, inspect each insulating washer for cracks or other damage. Replace all damaged washers. After assembly, measure resistance between each bolt and flange with a favorably reviewed ohmmeter. Minimum resistance shall be 50,000 ohms. Where the insulating joint is assembled in the shop and shipped as a unit, measure resistance between the flanges and between each bolt and flange in the shop.

3.07 INSULATING FLEXIBLE COUPLING JOINTS

- A. Clean the insulating boot and pipe of all dirt, grease, oil, and other foreign materials immediately prior to assembly. Extend the boot over one end of the pipe beyond the end of the coupling, to prevent any metal-to-metal contact between the pipe ends. After assembly, measure the resistance between the coupling and pipe with a favorably reviewed ohmmeter. The minimum resistance between pipe and couplings shall be 50,000 ohms.

3.08 TESTING

- A. Make electrical continuity tests of metallic pipe sections, fittings, and test cables.
- B. Make a resistance test at each insulating flange joint and insulating flexible coupling, using an insulation tester. This test will be witnessed by the Engineer.
- C. Make a corrosion survey of the entire corrosion monitoring system. Include continuity testing, pipe-to-soil testing, checking that all test leads are properly attached and checking that all cathodic test stations are correctly constructed and in their proper locations.
- D. Notify the Engineer a minimum of 15 calendar days prior to testing. Provide a report on the Corrosion Monitoring System to the Engineer including final corrosion survey data, recommendations for maintenance and operation, and notification of any deficiencies detected. Correct any and all deficiencies and retest prior to final acceptance. Costs for retesting shall be paid by the Contractor.

END OF SECTION

SECTION 15050

PIPING, VALVES AND ACCESSORIES

PART 1 - GENERAL

1.01 SUMMARY

- A. Section includes: Provide all piping, including fittings, valves, supports, and accessories as shown on the Drawings, described in the Specifications and as required to completely interconnect all equipment with piping for complete and operable systems, including equipment drains.
- B. Related Sections Including Work Provided in this Section:
 - 1. Section 02302: Earthwork for Pipelines
 - 2. Section 09960: Protective Coatings
 - 3. Section 11003: Disinfection

1.02 REFERENCES

- A. ASTM International (ASTM)
- B. American Society of Mechanical Engineers (ASME)
- C. American National Standards Institute (ANSI)
- D. American Water Works Association (AWWA)
- E. American Welding Society (AWS)
- F. Cast Iron Soil Pipe Institute (CISPI)
- G. Manufacturers Standardization Society of the Valve and Fittings Industry (MSS)

1.03 SUBMITTALS

- A. Shop Drawings:
 - 1. Verify by excavation, inspection and measurement all installation conditions, including existing utilities and structures, for buried OR all pipe before preparation of Shop Drawings. Submit field measurements and photos with Shop Drawings where exposed conditions are significantly different than indicated on the Drawings. See also paragraph 3.02, Existing Utilities of Section 02302.
 - 2. Layouts and Schematics: Submit detailed installation drawings of all piping. Schematics may be submitted for piping 4 inches and smaller. The Drawings and schematics shall include: pipe support locations and types, fittings, valves, other appurtenances. (Product Review)
 - 3. Submit data to show that the following items conform to the Specification requirements:
 - a. Pipe, fittings, and accessories (Product Review).
 - b. Fabricated pipe supports and other pipe supports (Product Review).
 - c. Pipe couplings and flexible pipe pieces (Product Review).
 - d. Valves and Accessories (Product Review).
 - e. Thermal insulation (Product Review).

4. Pipe, fittings and joint fabrication details for welded steel pipe (WSP) (Product Review).
 5. Submit reinforcement calculations for WSP to demonstrate compliance with AWWA M11.
 6. Submit procedures for welding field joints of welded steel pipe and welder qualifications (Product Review).
 7. Submit samples of gaskets and other materials where required by the detailed specifications.
 8. Submit certified test reports as required herein and by the referenced standard specifications (Product Information).
 9. All items that are submitted for use on water or reclaimed water pipelines, including, but not limited to, pipe and valve linings, solvent cements, welding materials, gaskets and gasket lubricants and additives in concrete or cement mortar shall (in accordance with Section 64591 of the California Water Works Standards) be NSF certified for use in water systems. Submit proof of NSF certification for each item submitted.
- B. Samples:
1. Solder and flux for copper pipe (CUP).
 2. Gaskets for PVC-4 pipe.
- C. Manuals: Furnish manufacturer's installation and operation manuals, bulletins, and spare parts lists for the following items:
1. Valves 4 inches and larger.
 2. Air Valves.
- D. Field test reports as required in Part 3.

1.04 QUALITY ASSURANCE

- A. Materials and equipment furnished under this Section shall be of manufacturers who have been regularly engaged in the design and manufacture of the materials and equipment for a period of at least 5 years. Demonstrate to the satisfaction of the Engineer that the quality is equal to the materials and equipment made by the manufacturers specifically named herein, if an alternate manufacturer is proposed.
- B. Factory Quality Control: The Contractor shall test all products as noted herein and by the reference specifications.
- C. Field Quality Control:
1. The Owner will:
 - a. Inspect field welds and test the welds if it is deemed necessary.
 - b. Perform bacteriological analysis for pipelines to be disinfected.
 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.

1.05 POTHOLING (CHECK ON LOCATIONS)

- A. Do not prepare any shop drawings for, or make final order for, or design any pipe materials for any particular section of pipeline until all utilities in that section of pipeline have been exposed, as specified in paragraph 3.02 of Section 02302 and until such time as no interferences are found between said existing utilities and the proposed pipeline alignment. If interferences are found in any particular section of pipeline, do not prepare any shop drawings for, or make final order for, or design any pipe materials for that particular section of pipeline until the pipeline alignment has been modified by the Engineer to eliminate all such interferences.

1.06 CONSTRUCTION SCHEDULING/SEQUENCING

- A. Construction under this Contract may involve expansion and/or modification of an existing piping system which must continue to provide service during construction.
- B. Connections and utilities changes must be programmed to provide the least possible interruptions of service. Prior to any shutdown, all materials, fittings, supports, equipment and tools shall be on the site and all necessary labor scheduled prior to starting any connection work. The Contractor shall notify the Engineer in writing at least 7 days in advance of any required shutdowns so that affected customers may be notified. In general, shutdowns shall not exceed four hours in duration unless specifically authorized or indicated in the suggested construction sequence. If a shutdown of more than four hours is required, the Contractor shall first install temporary service connections to all affected houses and other buildings. All temporary piping shall be disinfected in accordance with Paragraph 3.06 before being put into service (water and recycled water piping systems only).
- C. All work under this Contract shall be conducted in a manner which will minimize shutdowns, open roadways, or traffic obstructions caused by the construction. Shutdowns causing damage to adjacent public and private property shall not be permitted, and any damage resulting shall be the sole responsibility of the Contractor.
- D. Planned utility service shutdowns shall be accomplished during periods of minimum use. In some cases, this will require night or weekend work, which shall be at no additional cost to the Owner. The Contractor shall program his work so that service will be restored in the minimum possible time, and shall cooperate with the Owner in reducing shutdowns of the utility system to a minimum. No utility interruption will be permitted without the prior approval of the Engineer.

1.07 PIPING SYSTEMS

- A. The various piping systems are identified by a multi-letter code on the Drawings. Unless otherwise shown on the Drawings, each system shall be constructed using the materials indicated for that system in the Piping Identification Schedule. Piping materials are identified by type designation in

the schedule unless otherwise noted, and most valves and accessories are identified by a valve and accessory system unless otherwise noted.

1.08 APPURTENANCES

- A. Furnish and install all necessary guides, inserts, anchors and assembly bolts, washers and nuts, hangers, supports, gaskets, couplings 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.

1.09 ABOVE GROUND PIPE SUPPORTS

A. General:

1. Piping 6 Inches and Larger: Pipe supports are shown on the Drawings for piping 6 inches and larger in diameter, where the piping is shown on layout drawings. Each pipe support used is designed to resist seismic loading except where the support is of the sliding type for thermal expansion. Other supports are provided to resist axial seismic loading of pipes designed for thermal expansion. Pipe supports that are considered seismic resistant are so noted on the pipe support detail sheets on the Drawings. The location and types of supports and braces are indicative and may be modified by the Contractor to suit field conditions, provided the modified support system conforms to the design criteria stated herein, and receives the favorable review of the Engineer. Where piping is shown schematically only, it shall be the Contractor's responsibility to support all such piping in accordance with the design criteria stated herein and using support details shown on the Drawings. Pipe supports have been designed assuming flanged joints on ductile iron pipe and steel pipe, unless otherwise indicated on the Drawings. If groove type mechanical couplings are used as an alternative, provide additional supports where required, particularly to resist rotation. Shop drawings of these additional supports shall be favorably reviewed by the Engineer prior to installation.
2. Piping Less Than 6 Inches: Pipe supports are generally not shown for piping less than 6 inches in diameter. Where supports are not shown, it shall be the Contractor's responsibility to support all such piping in accordance with the design criteria stated hereinafter and the support details shown on the Drawings. Piping 2-½ inches and larger and all piping for hazardous chemicals shall be supported with pipe supports designed to resist seismic loads. Piping smaller than 2-½ inches with non-hazardous contents may be supported with non-seismic resistant supports.
3. Where not detailed or otherwise indicated, pipe support types and spacing shall be in accordance with the Manufacturer's Standardization Society (MSS) Standard Practice No. SP-58 and No. SP-69, except as superseded by the requirements of these Specifications. Hangers and supports used as components of a fire protection system shall comply with NFPA Standard No. 13 and be listed and labeled by UL and FM.

PART 2 - PRODUCTS

2.01 GENERAL

- A. Pipe and valve sizes are nominal inside diameter unless otherwise noted.
- B. Construct vents of materials specified for the pipe system for which they serve.
- C. All materials delivered to the job site shall be new, free from defects, and marked to identify the material, pressure class, and other appropriate data such as thickness for piping.
- D. 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.

2.02 GENERAL MATERIAL REQUIREMENTS

- A. Gaskets: Except where specified otherwise, gaskets shall be SBR rubber.
- B. 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. Exposed: Electroplated zinc or cadmium steel.
 - 2. Submerged: Type 316 stainless steel minimum tensile strength: 60,000 psi.
 - 3. Concrete Encased: Steel.
 - 4. Buried: Type 316 stainless steel, minimum tensile strength: 60,000 psi.
 - 5. Apply an anti-gauling compound to the threads of stainless steel bolts.
- C. Fusion Epoxy Coating: AWWA C213; except application shall be by fluid bed only unless the greatest dimension of the article to be coated exceeds ten feet, in which case electrostatic spray or flocking application may be used.
- D. All products used on this project must meet the NSF 61 Certification requirements of the CA Water Works Standards.

2.03 PIPING MATERIALS

- A. Pipe and Fitting Designation: Piping materials are identified by a "Type" designation in these Specifications. The "Type" designation identifies not only the pipe itself but the associated fittings and appurtenances and the installation and test procedures described for that "Type." The designation of a particular type shall indicate a complete installation including fittings, joints, cleaning and testing. The pipe and fitting materials for each type designation shall be as specified herein and summarized in the Pipe Type Schedule.
- B. Pipe Type Schedule: Pipe material, joints and fittings shall be as summarized below. A detailed specification of each pipe type follows. (The detailed specification supersedes the schedule in case of any conflicts.)

Pipe Type	Pipe Description	Field Joints	Fittings
CUP	Copper	Solder or Flare	Wrought Copper or Bronze
DIPB	Ductile Iron Bell & Spigot Pipe	B&S	DI
DIPF	Ductile Iron Flanged Pipe	Flange Coupling	DI
PVC-4	PVC, Pressure	B&S	DI
WSP	Welded Steel Pipe	Weld flanged where required	WS

C. Pipe Flanges: There are several types of flanges required on the pipe for this project. The Contractor shall coordinate with the pipe supplier to make sure that the proper class fittings are procured matching the connections to valves and other appurtenances.

D. CUP:

1. Pipe: Copper, ASTM B88.
 - a. Buried: Type K (soft drawn).
 - b. Exposed: Type L (hard drawn).
2. Joints:
 - a. Buried: Soldered or flared.
 - b. Exposed: Soldered.
3. Solder: ASTM B32, Alloy Grade SN 94, SN 95 or SN 96. Solder and flux shall contain less than 0.2% lead.
4. Fittings:
 - a. Soldered: Wrought copper, ASTM B73 for materials and ANSI B16.22 for dimensions; or cast bronze, ASTM B62 for materials and ANSI B16.18 for dimensions.

E. DIPB:

1. Pipe: Ductile iron bell and spigot pipe, AWWA C151.
 - a. Minimum Pressure Class: 250 psi
2. Joints: Push-on or mechanical joint AWWA C111 as modified, except where flanged joints are shown on the Drawings or where making connections to valves.
 - a. Gaskets: SBR.
 - b. Restrained joints:
 - 1) Where required by the Drawings provide restrained joints for pipe and fittings capable of deflection after restraint is installed. Joints shall not separate under an internal pressure of 250 psi. For push-on joints use TR FLEX or Field Lok by United States Pipe & Foundry Company; equivalent product by American Cast Iron Pipe Company; or equal.

- 2) For mechanical joints use Megalug restraints by EBAA Iron, or equal.
 - c. Buried Tee-Head Bolts and Nuts for Mechanical Joints: Type 316 stainless steel.
- 3. Fittings: Ductile iron with push-on joints per AWWA C110 and AWWA C153.
 - a. Special Fittings: Special fittings not available in ductile iron or cast iron pipe may be fabricated of welded steel pipe with a design pressure of 260 psi. Line and coat with NSF 61 approved fusion epoxy. Design and wall thickness shall be submitted to the Engineer for review.
 - b. Compact Fittings: Tyton per AWWA C-153, or approved equal.
- 4. Lining: Standard thickness cement mortar lining for pipe and fittings, AWWA C104, except where noted otherwise in the Drawings or in the Piping Identification Schedule. Cement mortar linings shall be seal coated. Alternatively, fittings may be fusion epoxy lined and coated per AWWA C116.
- 5. Coating: Buried pipe shall receive asphalt coating per AWWA C151. Exposed or submerged pipe requiring protective coating per Section 09960 shall be shipped bare or shall be factory primed compatible with selected field paint system.
- 6. Protection for buried pipe and fittings: Polyethylene encasement, black, AWWA C105. Single-wrap pipe, double-wrap flanged fittings, mechanical joints, or other appurtenances with significantly different outside diameters from the pipe. Tape to seal seams and over laps at least 2 inches wide.
- 7. Bonding: Bond ductile iron to provide electrical continuity, except that insulating flanges without bonding shall be provided where shown on the Drawings.
- 8. Pipe Taps:
 - a. Direct threaded taps are not acceptable. Pipe branch line connections shall be made using service saddles, by using reducing flanges on tees, or by tapping blind flanges on tees.
 - b. Service Saddles:
 - 1) Materials: Ductile iron saddle with electro-galvanized straps and hardware for above ground and bronze or 316 stainless steel for buried, and SBR gaskets.
 - 2) Type: For ductile iron pipe 4 inches and less, single strap saddles may be used. For pipe greater than 4-inch, double-strap saddles shall be used.
 - 3) Manufacturers: Smith-Blair Model 311 or 313; equivalent by Mueller; or equal.
- 9. Field Closure Connections for Restrained Joints: Pipe cut in the field where necessary and when favorably reviewed by the Engineer shall be connected by one of the following methods.
 - a. Mechanical joint sleeve with two Series 1100 Megalug restraints by EBAA Iron, Inc.; or equal.
 - b. Series 3800 Mega-Coupling by EBAA Iron, Inc.; or equal.

- F. DIPP:
1. Pipe: Flanged end ductile iron per AWWA C115 including Appendix A
 - a. Minimum Pressure Class: 250 psi
 2. Flanges: Ductile iron, plain faced, AWWA C115. Submit certification that flanges comply with AWWA C115. Provide insulating flanges with two cathodic test stations for buried ductile iron to steel connections.
 3. Fittings:
 - a. Flanged: Ductile iron, AWWA C110 or AWWA C153.
 - b. Special Fittings: Special fittings not available in ductile iron may be fabricated with NSF 61 approved fusion epoxy lined and coated welded steel pipe with a design pressure of 260 psi. Submit design and wall thickness to the Engineer for review.
 - c. Where shown on the drawings to meet pressure requirements provide EBBA Iron Series 2100 MegaFlange Restrained Flange Adaptor for connection to PVC pipe.
 - d. Buried bolts and nuts for flanged and grooved end joints shall be Type 316 stainless steel.
 - e. Provide insulating flanges with two cathodic test stations for buried ductile iron to steel connections.
 4. Lining: Standard thickness cement mortar lining for pipe and fittings, AWWA C104, except where noted otherwise in the Drawings or in the Piping Identification Schedule. Cement mortar lining shall be seal coated.
 5. Coating: Buried pipe shall receive asphalt coating per AWWA C115. Exposed or submerged pipe requiring protective coating per Section 09960 shall be shipped bare or shall be factory primed compatible with selected field paint system.
 6. Protection for buried pipe and fittings: Polyethylene encasement, black, AWWA C105. Single-wrap pipe, double-wrap flanged fittings, mechanical joints, or other appurtenances with significantly different outside diameters from the pipe. Tape to seal seams and over laps at least 2 inches wide.
 7. Bonding: Bond ductile iron to provide electrical continuity, except that insulating flanges without bonding shall be provided where shown on the Drawings.
 8. Gaskets: Provide full face gaskets, 1/8-inch thick SBR rubber AWWA C115, Appendix A.
 9. Flange Bolts: 316 Stainless Steel per paragraph 2.02.
 10. Pipe Taps:
 - a. Direct threaded taps are not acceptable. Pipe branch line connections shall be made using service saddles, by using reducing flanges on tees, or by tapping blind flanges on tees.
 - b. Service Saddles:
 - 1) Materials: Ductile iron saddle with electro-galvanized straps and hardware for above ground and bronze or 316 stainless steel for buried, and nitrile or neoprene gaskets.
 - 2) Type: For ductile iron pipe 4 inches and less, single strap saddles may be used. For pipe greater than 4-inch, double strap saddles shall be used.

- 3) Manufacturers: Smith-Blair Model 311 or 313; equivalent by Mueller; or equal.
11. Field Closure Connections for Restrained Joints: Pipe cut in the field where necessary and when favorably reviewed by the Engineer shall be connected by one of the following methods:
 - a. Mechanical Joint Sleeve with two Series 1100 Megalug Restraints by EBAA Iron, Inc.; or equal.
 - b. Series 3800 Mega-Coupling by EBAA Iron, Inc.; or equal.
- G. PVC-4:
1. Pipe: Polyvinyl chloride pressure pipe, cast iron pipe outside dimensions.
Pipe shall be UL listed or Factory Mutual Approved.
 - a. 4- to 12-inch: AWWA C900.
 - b. 14- to 36-inch: AWWA C905.
 - c. Solvent welding is not allowed.
 2. Pressure Class: 235 psi.
 3. Couplings: No stops except at closures.
 4. Joints:
 - a. Unrestrained Joints: Bell and spigot, gasketed; or twin gasket coupling.
 - b. Restrained Joints:
 - 1) Bell and spigot (push-on) gasketed: Series 2800 by EBAA Iron; equivalent by Uni-Flange; or equal.
 - 2) Mechanical Joint: Series 2000PV by EBAA Iron; equivalent by Uni-Flange; or equal.
 - 3) Flanged: Series 2100 Megaflange by EBAA Iron; equivalent by Uni-Flange; or equal.
 - c. Provide restrained joints where indicated on the Drawings.
 - d. Protection for Buried Restraining Devices: Double-wrap with polyethylene encasement, AWWA C105 and tape the edges of the encasement with PVC tape.
 5. Gaskets: SBR
 6. Fittings: as follows.
 - a. DIPB or DIPF as required on the drawings and/or as specified herein.
 7. Locating Wire: Provide a 12 gauge insulated copper wire continuous along the pipeline between successive valve boxes including air and vacuum and adjacent valve boxes associated with fire hydrants and blow-off assemblies. Terminate in a concrete box with a soldered spade lug attached to a stainless-steel terminal strip and a water proof tag indicating the stations for which the wire is installed on each end.
 8. Factory Testing: Perform testing at the factory in accordance with AWWA C905. Testing shall be done by an independent testing laboratory. Provide a letter certifying the testing for this batch of pipe.
- H. WSP:
1. Pipe: Cement mortar lined steel cylinder pipe, AWWA C200 except as modified herein. Pipe shall be cement mortar coated where buried, and if required elsewhere by the Drawings or

Specifications. Steel shall be ASTM A36.

- a. Dimensions: Nominal inside diameter shall be the minimum net inside clear lined diameter.
- b. Steel Cylinder Thickness: The pipe manufacturer shall design steel cylinder for pipe and fittings for the depth of cover shown on plan and profile drawings, in accordance with AWWA M-11. The minimum cylinder thickness for pipe with welded joints shall be 12-gauge. Design criteria are as follow:
 - 1) Superimposed external load: AASHTO H20
 - 2) The hydraulic grade line of the pipeline, including surge allowance, shall be assumed as 1350 feet MSL.
 - 3) Internal negative pressure: 15 psi
 - 4) Minimum Steel Yield Strength: 36,000 psi
 - 5) Maximum allowable stress: 50% of minimum yield point.
 - 6) Maximum deflection permitted: 2 percent
 - 7) For tapered sections, minimum cylinder and mortar lining thicknesses shall conform to the requirements for the larger pipe diameter.
- c. The following table lists the minimum steel cylinder thickness, minimum lining thickness, and minimum coating thickness.

**TABLE 1
WSP PIPE WALL THICKNESS AND MORTAR LINING AND COATING THICKNESS**

Nominal Size (Inches)	Steel Cylinder Minimum Wall Thickness (inches)	Minimum Lining Thickness (inches)	Minimum Coating Thickness
14"	0.1875	½	1
16"	0.1875	½	1
30"	See Drawings	½	1

2. Joints:

- a. Welded Joints: Welded joints shall be butt strap, split butt strap, or lap joint. Butt straps and lap joint details shall be submitted to the Engineer for favorable review. The joint shall be designed to withstand all loads associated with installation and operating conditions. Rolled lap joints are not acceptable. The radius of the bell bends shall be greater than 15 times the cylinder wall thickness. Joint configuration and welding shall conform to the requirements of AWWA M-11 and AWWA C206 except Section 6-2 testing, which are modified herein. The size of fillet welds shall be equal to the thickness of the smaller plate being joined. Butt welds shall be full penetration. The strap thickness shall be the same thickness as the pipe but not less than 6 gauge, 10 inches wide, rolled to fit the pipe OD, and centered over the joint. Weld on a 5" diameter steel coupling to the top of the butt strap

- with a solid steel plug welded to the coupling after applying the cement mortar.
- b. Bell and Spigot Joints: Bell and spigot ends with rubber gaskets shall be in accordance with AWWA C200 Section 4.13.6. For restrained joints, a continuous rod shall be welded around the pipe.
 - c. For pipe less than 24-inch-diameter, the procedure described in AWWA C205, paragraph 4.7.2.2.2 utilizing a burlap-covered ball shall be used for applying cement mortar lining to the insides of the joints.
 - d. Cement mortar lining shall be patched after joint testing and may be hand applied. Conform to AWWA C205, Appendix A.
 - e. Provide special closure lap joints at approximately 500-foot intervals in accordance with AWWA C206.
3. Electrically Bonded Connections: Provide electrically bonded connections between all non-welded steel joints as shown on the drawings.
 4. Fittings: Fittings shall be made of hydrostatically tested cylinders of the same material and minimum thickness as the pipe, except that elbows shall have greater thickness if necessary, to compensate for stress concentrations. They shall be as detailed on the Drawings or, if not detailed on the Drawings, shall be designed by the pipe manufacturer by the method stated in the AWWA Pipe Manual M11 as modified herein, subject to the favorable review of the Engineer. Unless otherwise noted or detailed on the Drawings, fitting dimensions shall conform to AWWA C208. Adding pipe to the fittings does not change the requirement that the fittings conform to AWWA C208 dimensionally, nor does it reclassify the pipe portion as part of the fitting. Use 150 psi for the design pressure.
 - a. Provide reinforcement for fittings (outlets, tees and wyes, etc.) in the form of collars, wrappers or crotch plates, in accordance with the current revision of AWWA M11, Table 13-2. Coat buried fitting reinforcement with cement mortar.
 - b. Crotch plates shall be designed in accordance with AWWA M11, using a minimum plate thickness of 1-inch.
 - c. Elbow dimensions (unless otherwise noted or detailed on the Drawings):
 - 1) Minimum number of pieces for mitered elbows:
 - a) 68° to 90°: five pieces.
 - b) 46° to 67°: four pieces
 - c) 23° to 45°: three pieces
 - d) Up to 22½°: two pieces
 - 2) Radius, R, to pipe centerline:
 - a) 2.5 pipe diameters unless shown otherwise on the drawings.
 - 3) Wrought steel elbows complying with ANSI B16.9 and ASTM A234 may be substituted for mitered elbows as long as they meet, as a minimum, the radius, wall thickness and internal diameter requirements of this specification.
 - d. Nozzles 3 inches and less shall be Schedule 40 weld fittings. Wheeling Pipe-O-Lets; Allied Branchlets; or equal. They may be

- unreinforced.
- e. Flares: Flare diameter shall be equal to the flange O.D. for the same size pipe. Fabricate flares from two sections of truncated cones, one angled 22 ½ degrees from pipe axis, the other 45 degrees. Grind all interior welds and edges perfectly smooth before lining.
5. Lining: Cement mortar, 1/2-inch thick AWWA C205 except as modified herein. Cement shall be Type II. On pipe 27-inch diameter and larger, the lining shall be reinforced using a plain 2x4-inch, 13x13-gauge welded wire mesh welded to the inside of the pipe, fitting, or steel plate special. If the cement mortar lining is applied by the centrifugal process, the reinforcement may be omitted. Wire reinforcement shall conform to ASTM A185. Paint interior edges and other unlined surfaces in accordance with System 3 in Section 09960.
 6. Coating:
 - a. Cement mortar coating (buried pipe): 1-inch thick, AWWA C205. Cement shall be Type II. Reinforcement shall be in accordance with AWWA C205.
 - b. Non-cement mortar coating: Pipe without cement mortar coating shall be painted in accordance with Section 09960. Shop prime with products compatible with final coats. Hold back coatings of concrete encased portions of pipes from a point 2 inches within face of concrete encasement.
 - c. On buried piping where the cement mortar coating is held back for flexible couplings or other similar connections, edges shall be ground smooth and the exposed pipe shall be painted with System 8 in Section 09960, Protective Coatings, and shall overlap the cement lining and mortar coating. Stripe coat edges between finish coats.
 7. Protection for buried pipe and fittings: Polyethylene encasement, black, AWWA C105. Single-wrap pipe, double-wrap flanged fittings, mechanical joints, or other appurtenances with significantly different outside diameters from the pipe. Tape to seal seams and over laps at least 2 inches wide.
 8. Flanges and Bolts:
 - a. Steel ring flanges conforming to AWWA C207, Class E (ANSI B16.1, Class 125-pound drilling). Bolt holes and circles shall be drilled in conformance with AWWA C207 Table 5 and bottom notes except as needed to match equipment or other pipeline items. Bolts shall be sized in accordance with AWWA C207 Table 5 and the bottom notes.

Welding shall conform to AWWA C207. The inside diameter of all flanges shall be as required by AWWA C207 Table 5 and the bottom notes. Flanges shall be welded to the cylinder without warping and with flange face perpendicular to the longitudinal axis of the cylinder.
 - b. Where ductile pipe joins with steel cylinder pipe, the steel flange is to be modified to be compatible, in pressure rating and configuration, with the ductile iron pipe. Provide insulating flanges with two cathodic test stations for buried ductile iron to steel

- connections.
- c. Exposed metal on the flanges shall be coated in accordance with Section 09960. In addition, buried flanges, couplings and other mechanical connections shall be double-wrapped with polyethylene encasement, AWWA C105, and extended to overlap the cement mortar coating with edges of the encasement taped with PVC tape.
9. Flange Gaskets: SBR full face gaskets, 1/8-inch thick for flat face flanges. Provide drop in type 1/8-inch thick for raised face flanges.
 10. Interior Bracing: Each section of pipe 24-inch and larger shall have adequate interior bracing to prevent the pipe from being deformed during handling, transportation, storage, and installation. Bracing shall not be removed until construction operations are complete.
 11. Factory Testing: Perform hydrostatic pressure tests of pipe and tests of specials in accordance with Section 5.2 of AWWA C200. Test methods are subject to the favorable review of the Engineer and the tests may be witnessed by the Engineer.
 12. Marking: Cylinders and completed pipe and fittings shall be marked in accordance with AWWA C200-97, Section 6.1. The manufacturer shall maintain records that identify the cylinder used for all completed pipe and fittings. All test results and other documentation required to be furnished to the Engineer shall identify the cylinders and completed pipe and fittings by use of this marking system.
 13. Interior Moisture Control: Maintain interior moisture and provide plastic sheet end caps during storage and transportation.
 14. Protective Coating: Exposed steel at joints, flanges and other locations shall be painted with 10 mils dry film thickness of high build epoxy, Tnemec Series 104, or equal.

2.04 PIPE COUPLINGS AND FLEXIBLE PIPE PIECES

- A. General: For typical pipe joints refer to pipe material specifications. Other joint devices shall be furnished where called for on the Drawings and as specified below.
- B. Split Sleeve Style Couplings (Depend-O-Lok FxF Type 2 Modified)
 1. Coupling Housing: Coupling shall be manufactured from ASTM A36 for carbon steel couplings or ASTM A240 Type 316/316L for stainless steel couplings.
 2. Gasket: Isoprene or EPDM conforming to ASTM D2000 for water service within the temperature range of -20 to 180° F.
 3. Studs and Nuts: Stainless Steel. Studs shall conform to ASTM A193 Class 2 Grade B8M (Type 316) with a minimum tensile strength equal to 95,000 psi. Nuts shall conform to ASTM F594 Alloy Group 2 (Type 316).
 4. Restraint Rings: Carbon steel restraint rings shall conform to ASTM A108 Grade 1018.
 5. Lining: Fusion Bonded Epoxy lining in accordance with AWWA C213.
 6. Coating: Fusion Bonded Epoxy coating in accordance with AWWA C213.
 7. Pressure Rating: 260 psi
 8. Manufacturer: Victaulic Depend-O-Lok FxF Type 2 Modified.
 9. Protection for Buried Connectors: Double wrap with polyethylene

encasement, AWWA C105 and tape the edges of the encasement with PVC tape.

C. Flexible Couplings and Flange Coupling Adaptors:

1. Sleeve: Cast iron or fabricated steel.
2. Followers: Cast iron, ductile iron, or steel.
3. Sleeve Bolts: ASTM A325, Type 3; malleable iron; or equivalent, except for buried and submerged, which shall be Type 304 SS and Type 316 SS, respectively.
4. Coating: Fusion epoxy line and coat sleeve and followers.
5. Pressure Rating: The test pressure of the applicable service or 50 psi, whichever is greater.
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 441; Dresser Style 38 or 138; or equal.
 - 2) Connecting Pipe with Slightly Different Outside Diameters: Smith- Blair 413 or R441; Dresser Style 62; or equal.
 - b. Flange Coupling Adaptors: EBAA Iron Megaflange; Smith-Blair 912 or 913; Dresser Style 128-W; or equal. (Not PVC Pipe, See Section 2.03.G.)
10. Gaskets: SBR rubber.
11. Electrically Bonded Connections: Provide electrically bonded connections between all non-welded steel and ductile iron joints as shown on the drawings.
12. Protection for Buried Couplings and Adaptors:
 - a. Double-wrap with polyethylene encasement, AWWA C105 and tape the edges of the encasement with PVC tape.

2.05 VALVES AND ACCESSORIES

- A. Valve and Accessory System Designation: Most valves and accessories to be furnished and installed are identified by a valve and accessory system designated by a letter symbol in the Piping Identification Schedule.
- B. General Requirements for Valves:
 1. All valves of each type shall be the product of one manufacturer.
 2. All threaded stem valves shall open by turning the valve stem counter- clockwise.
 3. All exposed valves and valve operators shall have a non-bleeding shop coat, unless otherwise specified. Buried valves and operators shall be painted with System 8 as specified in Section 09960.
- C. General Requirements for Accessories: Pressure Gauges: If included in the project, provide shutoff valves for all pressure gauges.

- D. Valve and Accessory Systems:
1. Valve and Accessory System A: Applicable Service Condition: Clean Water and air.
 - a. Gate Valves (2-inch through 10-inch): Provide gate valves in accordance with Table D in Appendix A (250 psi working pressure).
 - b. Butterfly Valves:
 - 1) Standard: AWWA C504, except as modified herein.
 - 2) Type:
 - a) 14-inch through 72-inch: Short body flanged.
 - b) Geared operator, resilient seated, 90° seating.
 - 3) Pressure Class:
 - a) 14-inch through 72-inch: both pressure class 150 and 250 are required. For all valves located below elevation 910 MSL the pressure class is 250 psi. For all valves located above elevation 910 MSL the pressure class shall be 150 psi.
 - b) Valves shall be leak-tight at rated pressure in either direction.
 - 4) Materials:
 - a) Body: Cast Iron; ASTM A126, Class B, or ASTM A48, Class 40.
 - b) Disk: Cast or ductile iron with Ni-Chrome or Type 316 stainless steel edge.
 - c) Valve Shaft: Type 304 or Type 316 stainless steel.
 - d) Seats: Buna-N.
 - 5) Construction:
 - a) Seats: Applied to body. Cartridge type seats with retaining rings are not acceptable.
 - b) Disk to Shaft Connection: Stainless steel taper pins or torque plug.
 - c) Valve Diameter Limitation: Internal diameter of valve at the throat shall be no less than the nominal diameter of the valve less 1-½ inches.
 - d) Bearings shall be self-lubricating and corrosion-resistant.
 - 6) Finish:
 - a) Buried Exterior: Shop coat with System 8 per Section 09960.
 - b) Interior: Shop line with two-component, high solids epoxy, AWWA C550.
 - 7) Testing: Test in accordance with AWWA C504, except that leakage test shall be in both directions. Submit certified test results for tests specified in Section 5.2 for valves 24 inches and larger.
 - 8) Actuators:
 - a) Type: Manual
 - b) Manual Actuators: Traveling nut, self-locking, or worm gear above 48 inches.

- (1) Buried: Designed for buried service, watertight up to 10 psi. Provide 2-inch-square standard AWWA operating nut, with extension stem to reach the ground surface as shown on the Drawings, and with a ground level position indicator. Extension stem shall also have a 2-inch square standard AWWA operating nut.
- 9) Pressure Ratings: The profiles show the pressure class for the pipelines. The contractor is cautioned to coordinate with the valve manufacturer to assure getting the correct pressure class valves for the location within the pipeline and then to coordinate with the pipe supplier to assure getting the proper fittings to mate up with the valve.
- 10) Manufacturer:

Size Range	Type	Above 950 MSL Class	Below 950 MSL Class	Second Name
Buried 10-inch through 30-inch	Flanged	Pratt Groundhog	Pratt HP-250II with Class 125 flange drilling	or equal

- c. Air Valves (2-inch):
 - 1) Standard: AWWA C512, except as modified herein.
 - 2) Combination Air Valves – Air Vacuum Air Release (AVAR):
 - a) Size: 2”.
 - b) Connection type: threaded.
 - c) Function: Exhausts large volumes of air during pipeline filling, releases accumulated air under pressure and allows air back in when pipeline pressure drops below atmospheric pressure.
 - d) Provide a stainless steel screen, threaded hood, on the outlet small enough to prevent insect entry to the valve.
 - e) Materials: Cast or ductile iron body; stainless steel float.
 - f) AVAR Pressure Rating: 300 psi.
 - g) Manufacturers: Valmatic Series 200C; APCO Series 140C or 150C; or equal.
 - 3) Accessory Valves:
 - a) Provide a 2” James Jones Co. Model E-372. This valve is called out on Detail PW-115 on the construction drawing as J-372.
 - 4) AVAR Enclosures:
 - a) Provide Armorcast Products model P6002001 or equal enclosures.
 - b) Provide enclosures that are UV resistant.
 - c) Color selected by the District.
- d. Air Valves (4-inch):
 - 1) Combination Air Valves – Air Vacuum Air Release (AVAR):

- a) Size: 4"
 - b) Connection type: Flanged, Fusion Bonded Epoxy Powder Coated.
 - c) Function: Exhausts large volumes of air during pipeline filling, releases accumulated air under pressure and allows air back in when pipeline pressure drops below atmospheric pressure.
 - d) Materials: Stainless steel barrel, nuts, tie rods, washers, nozzle and nozzle seat retaining plate, baffle plate, HDPE upper and lower floats, and EPDM O-ring seals
 - e) Options: Provide optional test cock.
 - f) AVAR Pressure Rating: 363 psi.
 - g) Manufacturers: Vent-o-Mat Series RBX, DN100 or equal.
- 2) AVAR Enclosures:
- a) Provide Armorcast Products model P6002001 or equal enclosures.
 - b) Provide enclosures that are UV resistant. Color selected by the District

E. Miscellaneous Accessories:

1. Link-Type Seals: Link-type seals shall be interlocking synthetic rubber links connected by 316 stainless steel bolts and nuts to form a continuous belt. Tightening of the bolts shall expand the rubber to form a watertight seal of the annular space between a pipe and the hole or sleeve in the wall.
2. Pipe Service Saddles for PVC Pipe: Service saddles shall be the broad band strap type and be suitable for the following service:
 - a. Rated for 250 psi working pressure.
 - b. Body shall be 316 stainless steel with ¾-inch NPT tap, except where other size is required on the Drawings.
3. Valve Boxes for Buried Valves: Refer to LVMWD Standard Drawing PW-118.
4. Concrete Vaults and Valve Boxes: Precast reinforced concrete, of the size and orientation shown on the Drawings. Unless otherwise shown or noted, all vaults, boxes and their covers shall be designed for H20 AASHTO wheel loads. Steel lids shall be galvanized. Provide Christy, Brooks, or equal.

2.06 LOCATION WIRE FOR NON METALLIC PIPING

- A. Locating Wire: Provide a 12 gauge insulated copper wire continuous between successive valve boxes including air and vacuum and adjacent valve boxes associated with fire hydrants and blow-off assemblies. Terminate in a concrete box with a soldered spade lug attached to a stainless-steel terminal strip and a waterproof tag indicating the stations for which the wire is installed on each end.

PART 3 - EXECUTION

3.01 PIPING INSTALLATION

- A. General Handling and Placing:
1. Exercise great care to prevent injury to or scoring of the pipe lining and coating, as applicable, during handling, transportation or storage. Handle fusion epoxy coated pipe in accordance with AWWA C213. Do not store pipe on rough ground and do not roll the pipe on the coating. Any damaged pipe sections, specials, or fittings shall be repaired or replaced at the expense of the Contractor as satisfactory to the Engineer.
 2. Carefully inspect each pipe, fitting, valve and accessory before installation to insure there is no defective workmanship or obstructions. Inspect the interior and exterior protective coatings and patch all damaged areas in the field or replace to the satisfaction of the Engineer.
 3. Place or erect all piping to accurate line and grade and backfill, support, hang, or brace against movement as specified or shown on the Drawings, or as required for proper installation. Remove all dirt and foreign matter from the pipe interior prior to installation and thoroughly clean all joints before joining.
 4. Use reducing fittings where any change in pipe size occurs. Do not use bushings unless specifically noted on the Drawings. Use eccentric flat top reducing fittings wherever necessary to provide free drainage of lines.
 5. Cover polyvinyl chloride (PVC), chlorinated polyvinyl chloride (CPVC) and polyethylene (PE) pipe stored outside for more than two months with canvas or other opaque material. Provide for air circulation under the covering.
- B. General Buried Piping Installation:
1. Trenching, bedding, and backfill for buried piping shall be as shown on the Drawings and as specified in Section 02302.
 2. Where pipe grade elevations are shown on the Drawings, install the pipe with straight grades between the indicated elevations.
 3. Where no pipe grade elevations are shown on the Drawings, install buried piping with at least 3 feet of cover to finished grade. Where piping crosses under buried electrical ducts, provide at least 4 feet 6 inches of cover. Provide 12 inches minimum separation between the buried pipes and ducts.
 4. Provide each pipe with a firm, uniform bearing for its full length in the trench except at field joints. Do not lay pipe in water or when trench conditions or weather are unsuitable for such work.
 5. Protect buried piping against thrust by use of restrained pipe joints. All exposed free pipe ends shall be securely braced. Cap or plug pipe ends that are left for future connections as shown on the Drawings and in a manner favorably reviewed by the Engineer.
 6. Snake buried PVC pressure pipe from side to side in the trench in long sweeps.

7. Do not pull bell and spigot, gasketed joints more than 50% of the maximum deflection permitted by the pipe manufacturer.
8. Coat bolts on buried flanges or other buried appurtenances in accordance with Paint System 8 in Section 09960. Wrap the appurtenance with polyethylene encasement and tape the encasement tightly closed to the pipe.

C. Water Main Installation:

1. The Contractor is advised that precautions taken to keep the pipeline clean during construction will facilitate achieving the disinfection requirements of this project with a minimum of effort and expense. Compliance with these suggested minimum procedures will not relieve the Contractor of the disinfection requirements.
2. Prior to installation, thoroughly clean the interior of each length of pipe and each fitting or valve and inspect to ensure that no foreign material remains. Cover both ends with plastic and do not uncover them until just prior to completing the joint.
3. Whenever pipe laying is discontinued for short periods, or whenever work is stopped at the end of the day, close the open ends of the pipe with water-tight plugs or bulkheads.
4. Provide adequate trench pumping to ensure against groundwater contacting the inside of the pipeline at any tie. Do not lower any pipe or fitting into a trench where groundwater is present and may enter the pipe. When necessary, pump the water from trenches and keep the trench dry until the joint have been completed and the open ends of the pipe have been closed with a water-tight plug. Do not remove the plug until the trench has again been pumped dry.
5. Keep new pipe sections clean and dry.
6. When making the final connection between a new pipeline and an existing pipeline, or when repairing a damaged pipe, take the following extra precautions:
 - a. Clean the exterior of the existing pipeline of all dirt and debris, and spray or swab with a standard 5.25% or stronger chlorine solution (as specified) in the immediate vicinity of the work. Clean equipment and materials, including new pipe and fittings, to be used in making these connections of all dirt and debris and disinfect them. Allow at least 30 minutes contact time before the chlorine solution is diluted or rinsed off. Provide sufficient trench pumps to prevent flooding of the trench.
 - b. When an old line is opened either by accident or by design, the excavation may be wet or badly contaminated from groundwater. Apply liberal quantities of standard chlorine solution tablets to the open trench areas to lessen the danger from such pollution. Tablets are recommended because they dissolve slowly and continue to release hypochlorite as water is pumped from the excavation. Scatter liberally around and locate the tablets so that flow entering the work site will contact the disinfecting agent. Trenching application should be done very carefully to avoid contact by skin and clothing with chlorine solution. Minimally, safety dictates wearing safety goggles and rain gear.

- c. When excavating a leaking or broken pipeline, "valve-off" the system gradually to less than water-tightness. This is to prevent causing areas of zero pressure which would allow entry of foreign material. A flow should be maintained which is slightly less than trench pump capability.

Once the break is exposed and cleaned to disallow site contamination, the valving can then be made water-tight.

D. Pipe Welding:

1. General: Unless specified otherwise, shop and field welding of pipe shall conform to ANSI B31.1 as amended by this paragraph.
2. All field and shop welding shall be done by the electric arc process unless otherwise specified. All field welding shall be done in passes not thicker than 1/4-inch. Size and type of electrodes, and current and voltages used, shall be subject to the favorable review of the Engineer. Give particular attention to the alignment of edges to be joined, so that complete fusion and penetration will be effected throughout the bottom of the weld. Welds shall contain no valleys or undercuts in the center or edges of the weld. Thoroughly clean each pass, except the final one, of dirt, slag, and flux before the succeeding bead is applied.
3. Clean completed field welds of pipe joints of dirt, slag and flux, and then visually inspect. Completely chip out all defects in welds discovered during field inspection in a manner that will permit proper and complete repair by welding subject to the favorable review of the Engineer. Under no circumstances will caulking of defective welds be permitted.
4. All welding shall be done by experienced, skilled operators familiar with the methods and materials to be used. Hand welding will be done only by welders qualified under the standard qualification procedure of Section IX of the ASME Boiler and Pressure Vessel Code. The Contractor shall conduct tests of his welders, when required by the Engineer, in accordance with that code and in the presence of the Engineer. An independent testing laboratory, favorably reviewed by the Engineer, shall supervise the testing and determine the quality of the test work. All welder shall qualify in the down, vertical, and overhead position. The Engineer may require test specimens at any time. Any welder whose work is found unsatisfactory shall not remain employed on this Contract, regardless of the quality of his earlier work. Each hand weld specimen shall be plainly marked with the welder's identifying symbol. The Contractor shall furnish all materials required and pay all costs for qualifying welders.
5. Field welds shall follow as closely as possible to the laying operation. All field welds shall be complete before lining or coating of the joints in steel pipe is begun. Where pipe is fusion epoxy lined and/or coated, follow AWWA C-213 procedures for field welded joints.
6. A single, continuous, watertight, full fillet weld shall be the minimum required at all field joints. Double welded joints are required on all piping specifically noted to be double welded.
7. See also installation specifics for welding of pipe.

E. Installation Specifics:

1. CUP:

- a. Bends shall be made in a manner that does not crimp or flatten pipe.
- b. Dielectric unions shall be installed at connections with ferrous piping.
- c. Pipe shall have joints squarely cut clean, soldered joints shall be properly fluxed and heated before solder is placed in the joint. Joints must be driven up tight before solder is added. Brazing shall be in accordance with ANSI B31.1.
- d. Install piping tight to slabs, beams, joists, columns, walls, and other permanent elements of the building. Provide space to permit insulation applications, with 1-inch clearance outside the insulation. Allow sufficient space above removable ceiling panels to allow for panel removal.
- e. Install drains at low points in mains, risers, and branch lines consisting of a tee fitting, $\frac{3}{4}$ -inch ball valve, and short $\frac{3}{4}$ -inch threaded nipple and cap.
- f. Exterior Wall Penetrations: Seal pipe penetrations through exterior walls using steel sleeves and mechanical sleeve seals.
- g. Fire Barrier Penetrations: Where pipes pass through fire rated walls, partitions, ceilings, and floors, maintain the fire rated integrity.
- h. Install branch connections to mains using tee fittings in main with take- off out the bottom of the main, except for up-feed risers, which shall have take off out the top of the main line.
- i. Install strainers on the supply side of each control valve, pressure reducing valve, pressure regulating valve, solenoid valve, inline pump, and elsewhere as indicated. Install nipple and ball valve in blowdown connection of strainers 2 inches and larger.

2. DIPB:

- a. Install buried pipe in accordance with AWWA C600.
- b. Support and brace encased pipe to support the pipe and to prevent movement during testing and placement of the concrete encasement. The braces and supports shall be erected of materials and by methods that will prevent any future contact of the pipe with the environment surrounding the encasement.
- c. Wrap buried pipe with 8 mil polyethylene film in accordance with AWWA C105. Continuously seal seams and overlaps with tape. Seal overlaps with two turns of tape, half lapped. Gather excess polyethylene on top of pipe so as not to block backfill material from getting under bottom of pipe. Use caution so as not to rip or cut the polyethylene film. Seal rips or cuts in the film with tape.
- d. Install restrained joints in accordance with manufacturer's instructions. Pull the slack out of restrained joints after they are made up.
- e. Provide an insulated flanged joint on all buried ductile iron piping 6 inches in diameter and larger within 2 feet of each structure. Provide an electrolysis test station with a pair of leads on each side of the insulated flange.

- f. Wherever a water pipeline crosses over or under a sewer main or house service lateral or a reclaimed water pipeline, center a standard length pipe, 18-foot minimum, on said sewer main or lateral or reclaimed water pipeline so as to have the pipeline joints as far as possible away from sewer. This may require field cutting of some pipe pieces.
3. DIPP:
 - a. Flanged Joints: Flanged joints shall be made up tight with care being taken to avoid undue strain in the flanges, fittings, and other accessories. Bolt holes shall be aligned for each flanged joint. Bolts shall be full size for bolt holes; use of undersize bolts to make up for misalignment of bolt holes or for any other purpose will not be permitted. Adjoining flange faces shall not be out of parallel to such a degree that the flanged joint cannot be made watertight without overstraining the flange. Any flanged pipe or fitting whose dimensions do not allow the making of a proper flanged joint as specified herein shall be replaced by one of the proper dimensions. Clean flanges prior to making joints. Buried flanged pipe connections shall be made with the smallest practical "bell" hole. After the joint is completed take special care to completely fill the "bell" hole under and around the pipe with compacted backfill.
 - b. Wrap buried pipe with 8 mil polyethylene film in accordance with AWWA C105. Continuously seal seams and overlaps with tape. Seal overlaps with two turns of tape, half lapped. Gather excess polyethylene on top of pipe so as not to block backfill material from getting under bottom of pipe. Use caution so as not to rip or cut the polyethylene film. Seal rips or cuts in the film with tape.
4. PVC-4:
 - a. Place PVC pipe within the installation areas at least 24 hours prior to installation to permit temperature equalization.
 - b. Cut pipe ends squarely, ream and deburr inside and out.
 - c. Solvent Weld Joints: Not allowed.
 - d. PVC-4 Pipe: Conform to AWWA M23, Chapters 6 and 7, except as modified herein.
5. WSP:
 - a. Installation of pipe shall be in accordance with AWWA C600.
 - b. The maximum trench width at the top of the pipe shall be the pipe outside diameter plus 3 feet.
 - c. Field welding of joints shall be in accordance with AWWA C206. Acceptance of field welds will be based on visual inspection and non-destructive testing by the Engineer while the welds are being made and after they are completed. Hand or power wire brush each weld thoroughly after completion to facilitate the inspection. Correct defects not complying with AWS Code D1.1 Sections 3.6 and 8.15. Determine the cause of defects and take corrective measures to prevent a reoccurrence.
 - d. Following satisfactory testing of the weld, the interior of all joints shall be cement mortar lined. Pipe 24 inches and less shall be finished using the ball and burlap procedure described in

AWWA C-205, paragraph 4.7.2.2.2. The exterior of the joints of buried pipe shall be cement mortar coated in accordance with Appendix A of AWWA C205. Prior to coating the exterior, tack weld one layer of wire mesh to the pipe.

- e. Steel edges not encased in concrete or cement mortar shall receive a protective coating as specified in Part 2 of this section.
- f. Wrap buried pipe with 8 mil polyethylene film in accordance with AWWA C105. Continuously seal seams and overlaps with tape. Seal overlaps with two turns of tape, half lapped. Gather excess polyethylene on top of pipe so as not to block backfill material from getting under bottom of pipe. Use caution so as not to rip or cut the polyethylene film. Seal rips or cuts in the film with tape.

3.02 COUPLING 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. Wipe gaskets 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. Tighten bolts 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 adaptors shall be installed so as to lock into holes drilled through the pipe wall in accordance with manufacturer's recommendation.
- B. Split-sleeve (Depend-O-Lok) Couplings shall be installed in strict accordance with the latest published instructions of Victaulic Company. The Split-sleeve coupling manufacturer's factory trained representative shall provide on-site training for contractor's field personnel in the use of coupling tools and installation of couplings. The representative shall periodically visit the jobsite and review contractor is following best recommended practices in product installation. (A distributor's representative is not considered qualified to conduct the training or jobsite visit(s).)
- C. Each coupling shall be thoroughly cleaned prior to installation. (Particular attention shall be given to the gasket sealing surfaces). In no case shall the deflection in the joint between the pipe ends exceed the maximum deflection for the coupling as recommended by the manufacturer. Tighten all bolts and studs to secure uniform gasket compression between the housing and the pipe. (Bolts shall be tightened uniformly). The housing shall be in uniform contact around the circumference of the pipe
- D. Tie Rods: Except where double-nutting is required, install the nuts snug. Tighten the nuts gradually and equally at opposite sides of the pipe until snug to prevent misalignment and to ensure that all rods carry equal loads. If double-nutting is required, double-nut each end of each tie rod. The

space between the pairs of nuts shall be ½-inch greater than the distance between the lugs. Provide double-nutting at buried locations and where otherwise required on the Drawings.

- E. Double wrap all couplings with polyethylene encasement, AWWA C105 and tape the edges of the encasement with PVC tape.

3.03 INSTALLATION OF VALVES AND ACCESSORIES

- A. Wrap buried valve bodies as specified for flexible couplings and flanged coupling adapters.
- 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 flat top eccentric reducing fittings wherever necessary to provide free drainage of lines.
- C. Install valves and accessories such that all parts are easily accessible for maintenance and operation. Provide valve boxes for buried valves.
- D. Connections between ferrous and non-ferrous piping, valves, accessories or pipe supports shall be made using a dielectric coupling, union, or flange.
- E. Where valves or other pipeline items require metal full-face connecting flanges, provide intermediate flanges if the connecting flange is not adequate.
- F. 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.
- G. Install butterfly valves in accordance with AWWA C504, Appendix A, Sections A.2 through A.5, inclusive.

3.04 FIELD QUALITY CONTROL

- A. The Owner will:
 - 1. Inspect field welds and test the welds if it is deemed necessary.
 - 2. Perform bacteriological analysis for pipeline to be disinfected.
- B. Factory Quality Control: The Contractor shall test all products as required herein and by the reference specifications.
- C. The Contractor shall
 - 1. Perform leakage tests.
 - 2. Be responsible for the costs of additional inspection and retesting by the Owner resulting from non-compliance.

3.05 CLEANING

- A. Prior to testing, thoroughly clean the inside of each completed piping system of all dirt, loose scale, sand and other foreign material. Cleaning shall be by sweeping or flushing with water with a velocity of at least 3 feet per second. The Contractor shall install temporary strainers, temporarily disconnect equipment or take other appropriate measures to protect

equipment while cleaning piping. Cleaning shall be completed after any pipeline repairs. Flushing water shall be discharged to the District's Sewer System. Coordinate discharge location(s) and flow rate with the District and prevent disposal of sediments to the sewer by whatever methods necessary, including settling basins.

3.06 FIELD TESTING

- A. General: Perform leakage tests on all pipe installed in this project. Furnish all equipment, material, personnel and supplies to perform the tests and make all taps and other necessary temporary connections. The test pressure, allowable leakage and test medium shall be as specified and as shown in the following Schedule/Paragraphs. Leakage tests shall be performed on all piping at a time agreed upon and in the presence of the Engineer. All visible leaks shall be repaired, regardless of the test results. The Contractor may obtain water for construction, cleaning, testing, and disinfection of the pipelines from the District at a fire hydrant designated by the District. At any connection to the District water system, the Contractor shall provide an air-gap or reduced pressure backflow valve system to prevent backflow into the water source.
- B. Buried Piping: The leakage test for buried piping shall be made after all pipes are installed and backfilled (with exception to the location of the test). However, the Contractor may conduct preliminary tests prior to backfill. If the Contractor elects to conduct preliminary tests, provide any necessary temporary thrust restraint.
- C. Accessories: It shall be the responsibility of the Contractor to block off or remove equipment, valves, gauges, etc., which are not designed to withstand the full test pressure.
- D. Testing Apparatus: Provide pipe taps, nozzles and connections as necessary in piping to permit testing including valves (**No test shall be conducted against existing valves.**) to isolate the new system, addition of test media, and draining lines and disposal of water, as is necessary. **Pressure gauges shall read in one (1) psi increments. Meters shall totalize flow in gallons.** These openings shall be plugged in a manner favorably reviewed by the Engineer after use. Provide all required temporary bulkheads.
- E. Correction of Defects: If leakage exceeds the allowable, the installation shall be repaired or replaced, and leakage tests shall be repeated as necessary until conformance to the leakage test requirements specified herein have been fulfilled. All visible leaks shall be repaired even if the pipeline passes the allowable leakage test. Test water shall be discharged to the District's Sewer System. Coordinate discharge location and flow with the District and prevent disposal of sediments to the sewer by whatever methods necessary, including settling basins.
- F. Reports: The Contractor shall keep records of each piping test, including:
 - 1. Description and identification of piping tested.
 - 2. Test pressure.

3. Date of test.
 4. Witnessing by Contractor and Engineer.
 5. Test evaluation.
 6. Remarks, to include such items as:
 - a. Leaks (type, location).
 - b. Repairs made on leaks.
 7. Test reports shall be submitted to the Engineer.
- G. Venting: Where not shown on the Drawings, the Contractor may install valved "tees" at high points on piping to permit venting of air. Valves shall be capped after testing is completed.
- H. Testing Specifics (continued):
1. CUP:
 - a. Duration: Four hours.
 - b. Pressure: to elevation 1350.
 - c. Medium: Water
 - d. Allowable Leakage: None.
 2. DIPB:
 - a. Duration: Four hours.
 - b. Pressure: to elevation 1350.
 - c. Medium: Water.
 - d. Allowable Leakage:

$$L = \frac{N D P^{1/2}}{7400}$$

Where:

- L = allowable leakage, gal. per hour.
- N = number of joints being tested.
- P = pressure, psi.
- D = nominal pipe diameter, inches.

3. DIPF:
 - a. Duration: Four hours.
 - b. Pressure: to elevation 1350.
 - c. Medium: Water
 - d. Allowable Leakage: None.
4. PVC-4:
 - a. Duration: Four hours.
 - b. Pressure: to elevation 1350.
 - c. Medium: Water.
 - d. Allowable Leakage:

$$L = \frac{NDP^{1/2}}{7400}$$

Where:

- L = allowable leakage, gal. per hour.
- N = number of joints being tested.
- P = pressure, psi.
- D = nominal pipe diameter, inches.

5. WSP:

- a. Duration: Four hours.
- b. Pressure: to elevation 1350.
- c. Medium: Water
- d. Allowable Leakage: None.
- e. Allowable Leakage (gasketed joints):

$$L = \frac{NDP^{1/2}}{7400}$$

Where:

- L = allowable leakage, gal. per hour.
- N = number of joints being tested.
- P = pressure, psi.
- D = nominal pipe diameter, inches.

6. Air Testing of Closure Butt Strap:

- a. Pressure: 40 psi
- b. Medium: Air
- c. Duration: Hold pressure until all welded seams have been checked with soap solution.
- d. Allowable Leakage: None.
- e. General: Contractor shall weld closed all test holes after testing results have been accepted by the Engineer.

3.07 DISINFECTION OF POTABLE WATER SYSTEM

- A. Refer to Specification Section 11003.

END OF SECTION

City of Westlake Village Encroachment Permit

SECTION 900
CITY OF WESTLAKE VILLAGE
SPECIFICATIONS FOR
Additive Bid Schedule D

SECTIONS 900 THROUGH 905 NOT A PART OF THIS CONTRACT

906 MISCELLANEOUS REMOVALS

906-1 GENERAL

Removals shall be done in accordance with the provisions of Section 300-1 and 300-2 of the SSPWC, as modified in these Special Provisions and as shown on the Project Plans. Work under this section shall consist of performing all work involved with, but not limited to:

Saw cutting and removal of all AC pavement, pavement fabric, base material, and spoil material to an approved disposal site. The areas of AC Pavement to be removed will be designated by the Engineer prior to beginning of construction.

Coordinate affected utility relocation activities.

The Contractor shall remove only those improvements within the designated removal sections. All tree root repair locations and limits shall be approved by the Engineer prior to saw cutting. Tree root removals shall be coordinated with and performed in the presence of the City's Landscape Architect. Any areas removed by the Contractor, that were not approved by the City, shall be at the Contractor's expense.

906-2 SCOPE

906-2.1 ASPHALT CONCRETE REMOVAL

All asphalt concrete pavement to be removed shall be sawcut to a true line where new pavement is to join existing pavement. Pavement removal operations shall be performed without damage to any portion which is to remain in place. All damage to the existing pavement, which is to remain in place, shall be repaired to a condition equal to that which existed prior to the beginning of removal operations.

906-2.2 TREE ROOT REPAIRS

Tree root repair shall consist of sawcutting, removing and disposing of asphalt concrete pavement, tree roots as directed by the Landscape Architect (arborist), base materials and unclassified excavation, furnishing and installing root barriers where directed by the Landscape Architect, preparing sub-base, furnishing and installing aggregate base, compacting, and paving the patch. Tree roots shall be sawcut and removed as directed

by the Landscape Architect. All tree root repairs shall be supervised by a Landscape Architect furnished by the City. Contractor shall notify the assigned Landscape Architect 48 hours in advance of commencing tree root repairs and coordinate observation accordingly.

AC reconstruction for tree root repairs shall conform to the section titled Asphalt Pavement Construction and Repair in these Special Provisions.

906-3 MEASUREMENT AND PAYMENT

Measurement and Payment for Miscellaneous Removals shall be considered included in the contract prices for the various items of work requiring the removals and no additional compensation will be allowed therefor.

Tree Root Repair shall be at the contract price per square foot for Tree Root Repair and shall include full compensation for furnishing all labor, materials, tools, equipment, transportation, and other incidentals for doing all work involved in completing tree root repairs, complete and in place, from sawcut and removal through backfill and AC paving.

END OF SECTION 906

907 MISCELLANEOUS CONCRETE

907-1 GENERAL

Miscellaneous Portland cement concrete (PCC) as shown on the plans shall include, but not be limited to: ADA curb ramps, curb and gutter, median concrete and sidewalk.

This work shall consist of removal of all cuttings, tree roots, base and spoil material, and removed concrete, excavation, preparation of sub-grade, placement of fill, compaction of sub-base and aggregate base, construction of concrete sidewalks, curbs, gutters, access ramps and driveways. All work shall conform to Sections 300-1, 301-1, 302-6 and 303-5 of the SSPWC, except as amended or modified herein.

907-2 CONSTRUCTION MATERIALS

A. Portland Cement Concrete

All Portland Cement Concrete (PCC) shall conform to Section 201-1 of the SSPWC, except as amended or modified by these special provisions and standard plans or drawings.

All Portland cement concrete shall be Class 520-C-2500 and shall conform to Section 201 of the SSPWC. Curing compound shall comply with Subsection 201-4.1, Type 1.

PCC shall be Transit-Ready-Mixed conforming to the appropriate ASTM Designation.

Concrete mixers and other equipment determined by the Engineer not to be adequate or suitable for the work shall be removed and suitable equipment provided by the Contractor at his own expense.

The allowance of slump shall not be more than four inches (4"). The amount of slump shall be twelve inches (12") minus the height after subsidence.

Test Specimens may be taken by the Engineer at any time deemed advisable from the transportation unit at the point of discharge and tested in conformance with the Standard Method of test for Compressive Strength of Molded Concrete cylinders, pursuant to the appropriate ASTM Designation.

B. Expansion Joint Filler

All expansion joint filler used for treating joints in PCC shall conform to Section 201-3 of the SSPWC, except as amended or modified herein.

Expansion joint filler shall be pre-molded strips, one-half inch (1/2") thick, be shaped to fit the geometry of the curbs, gutters and/or sidewalks and extend for the full depth of the curbs, gutters and/or sidewalks.

C. Asphalt Concrete (AC)

All AC materials shall conform to Section 203-6 of the SSPWC, except as amended or modified herein.

Asphalt concrete for slot paving shall be Class C2 PG64-10 and shall comply with Section 203-6 of the SSPWC.

D. Paving Asphalt

Paving Asphalt (also referred to as tack coat) shall conform to Section 203-1 of the SSPWC.

E. Truncated Domes

No truncated domes shall be installed on curb ramps.

907-3 EXPANSION JOINT, WEAKENED PLANE JOINT, AND SCORE LINE

Work under this section shall conform to Section 303-5.4.2 and 303-5.4.3 of the SSPWC, except as amended or modified herein.

907-4 CURB AND GUTTER

Work under this section shall conform to Section 303-5.5.2 and 303-5.5.4 of the SSPWC, except as amended or modified herein.

907-5 ADA CURB RAMPS

Work under this section shall conform to Section 303-5.5.5 of the SSPWC, except as amended or modified herein), or as direct by the Engineer.

All curb ramps shall be installed in conformance with Standard Plans for Public Works Construction (Greenbook) Standard Plan 111-5. The Case and Type of ramp at each location shall be as designated on the construction plans.

To replace cracked, broken, heaved, or otherwise unacceptable concrete, the entire curb and gutter and/or sidewalk shall be removed and reconstructed, as directed by the Engineer.

Construction limits for access ramps shall extend from BCR to ECR. No utility pull box, utility pole, traffic signal pull box, traffic signal pole foundation or any other facility that is visible on or above the surface of a curb ramp may be located within the area of a curb ramp.

For the purpose of these Special Provisions, the area of the curb ramp shall be the area including and bounded by ECR and BCR on either side of the included portion of the ramp, the gutter section and the curb along the back of the sidewalk. The limit may be extended up to the nearest score mark per the Engineer's direction.

Contractor shall be responsible for installing curb ramp such that runoff does not accumulate at the flow line.

907-5 SLOT PAVING

Unless otherwise directed, adjacent to all areas of PCC removed, a two-foot (2') minimum width, two-inch (2") minimum depth of existing roadway pavement shall be saw cut and removed and replaced with AC pavement to a minimum thickness of one inch greater than existing.

907-6 MEDIAN CONCRETE RECONSTRUCTION

Where noted on the plans, damaged median concrete shall be removed and replaced. This work shall include replacement of the existing damaged electrical pull box and lid.

The finish surface of the concrete and pull box shall be painted to match the existing color. Paint shall be Seal Krete Epoxy-Shell WB 50, or approved equal. Surface preparation and paint application shall be in accordance with the manufacturer's recommendations.

907-7 CURB DRAINS

Where noted on the plans, existing curb drains shall be removed and replaced as required to re-establish existing drainage patterns from on site properties to curb and gutter which is being reconstructed.

907-8 MEASUREMENT AND PAYMENT

Measurement and Payment for ADA Curb Ramps shall be at the unit prices bid per each, for each type and case specified, and shall include, but not limited to, full compensation for furnishing all labor, materials, tools, equipment, transportation, and incidentals for doing all work including, but not limited to, layout, removal and reconstruction of curb ramps, adjustment of any pull boxes or manhole covers within the curb return, and slot paving, complete and in place, as shown on the plans, and no additional compensation will be allowed therefor. Payment for each item shall be payable after the task is performed completely.

Measurement and Payment for Sidewalk Construction shall be at the unit price bid per square foot and shall include, but not limited to, full compensation for furnishing all labor, tools, materials, equipment, and incidentals necessary to construct sidewalk in accordance with the Specifications, complete, and in place, and no additional compensation will be allowed therefor.

Measurement and Payment for Median Nose Concrete shall be at the unit price bid per square foot and shall include, but not limited to, full compensation for furnishing all labor, tools, materials, equipment, and incidentals necessary to construct median concrete in accordance with the Specifications, including but not limited to, removals, pull box replacement, new concrete, and painting of finish surface, complete, and in place, and no additional compensation will be allowed therefor.

Measurement and Payment for Curb and Gutter Reconstruction shall be at the unit price bid per linear foot and shall include, but not limited to, full compensation for furnishing all labor, tools, materials, equipment, and incidentals necessary to remove and reconstruct curb and gutter in accordance with the Specifications, complete, and in place, and no additional compensation will be allowed therefor.

Measurement and Payment for Curb Drain Reconstruction shall be at the unit price bid per each and shall include, but not limited to, full compensation for furnishing all labor, tools, materials, equipment, and incidentals necessary to remove and reconstruct curb drains in accordance with the Specifications, complete, and in place, and no additional compensation will be allowed therefor.

END OF SECTION 907

908 ASPHALT PAVEMENT CONSTRUCTION AND REPAIR

908-1 GENERAL

This work shall consist of all asphalt milling, excavation, subgrade preparation, tack coat, tree root repairs, and asphalt concrete installation to be performed in the locations indicated on the plans. All work shall conform to Section 301-1, 301-2, 302-1 and 302-5 of the Standard Specifications, except as amended or modified herein.

Asphalt concrete removal and reconstruction areas (“digouts”) provided on the plans are approximate. Locations will be marked out in the field by the Engineer. Digouts will have a minimum width of four (4) feet.

Subgrade preparation shall be scarified at least six (6) inches below subbase elevation, or as shown on the plans, and recompact to at least 95 percent relative compaction.

Asphalt concrete shall be placed to provide a smooth transition with existing pavement as indicated on the plans.

Preparation shall also include trimming of interfering trees, shrubbery and ground growth, removing trimmed vegetation, controlling nuisance water and sweeping. Immediately prior to overlay, the surface shall be cleaned of dust, dirt and other foreign material.

Work under this section shall include construction and installation of miscellaneous improvements not covered by other items of work

908-2 MATERIALS

Diesel fuel shall not be used for cleaning purposes within any of the streets within the project. Linseed oil shall be used.

908-2.1 ASPHALT TACK COAT

Asphalt tack coat material shall be Thermoplastic Polymer Modified HPS No Track Tack (No Track Tack) by Paramount Petroleum, or an approved equal.

This item shall consist of full coverage of No Track Tack to be applied as tack coat between all contact surfaces for overlay and patch repairs. The Material is to be applied at 325 to 425 degrees F with a distributor truck at typical application rates of 0.08 to 0.15 gal/square yard. The exact application rate will be determined by surface conditions at time of application.

The Thermoplastic Polymer Modified HPS No Track Tack shall meet the following criteria:

Test	Method	Typical Properties	Specification
Digested whole tire rubber		2	1-3
Softening Point Degree F	D36	165	160 Min
Penetration @ 77 Deg. F 100g, 5 sec, Dmm	D-5	16	10 Min
Brookfield Viscosity @ 275 Deg. F cPs*	D4402	975	3000 Max
Brookfield Viscosity @ 350 Deg. F cPs*	D4402	185	300 Max

*BKF LV II, spdI #21 @ 20 RPM

The tack coat shall be applied to the existing pavement on the areas to receive the ARHM or AC where specified. The Engineer shall approve the exact rate and number of applications. Two heavy coats of SS 1h shall be applied to vertical joints for patching. All contact surfaces with new asphalt shall be painted tack coat immediately before the asphalt concrete is placed.

The tack coat shall be applied as specified in Subsection 302-5.4 of the Standard specifications and these special Provisions. Thermoplastic Polymer Modified No Track Tack shall be applied only when the existing surface is dry and the atmospheric temperature is 50 deg. F and rising. NO material shall be applied when rain is imminent.

The Thermoplastic Polymer Modified No Track Tack shall be heated slowly to 325-425 degrees F. At no time shall the product be heated above 450 degrees F. The product shall be applied through a distributor truck equipped with a heating unit and shall maintain tack coat at or above 325 degrees F. It shall be equipped with a full circulating spreader bar and pumping system capable of applying the Thermoplastic Polymer Modified No Track Tack material within + 0.01 gallons per square yard tolerance of specified application rate and give uniform covering of the surface to be treated. The distributor shall also include a tachometer, pressure gauge, and volume measuring device and thermometer. The application rates shall be 0.15 gallons per square yard for all ARHM or AC overlay or as otherwise directed by the Engineer. If the pavement temperature reaches over 130 degrees F, the application rate will be reduced to minimum 0.08 gallons per square yard on overlay applications.

Paving asphalt shall not be applied until the preparation of the existing surface has been completed and thoroughly cleaned, and then only so far in advance of placing the asphalt concrete overlay as permitted by the Engineer. The No Track Tack shall not be left exposed overnight.

Existing concrete curb faces and all concrete not to be overlaid shall be protected against disfigurement from the asphalt tack coat. Residue of the material shall be removed from

concrete surfaces to return the concrete to its original condition unless otherwise directed by the Engineer.

Excessive tracking of tack coat or asphalt material onto adjacent pavements will require immediate clean-up. If significant amounts of material are tracked onto existing adjacent pavements, the contractor shall be required to clean it off to the satisfaction of the City Engineer or provide a slurry seal to restore the pavement at their own expense. This shall apply to the entirety of asphalt haul routes to and from the project sites.

On all vertical joints of AC patching, apply SS-1H tack coat uniformly in two coats of .20 gallons per square yard each with full "break" in between, or .20 gallons per square yard of HPS No Track Tack uniformly in one coat. Tack coat shall not be applied when the temperature of the surface to be tacked is below 40° F in the shade. A tack coat shall be applied at the following:

1. Pavement joints;
2. Areas where new pavement meets existing pavements;
3. Areas where lift sections from pavement placed on different days meet;
4. Trenches;
5. Areas where existing striping has been sandblasted; and
6. Raised valves and manhole covers.

908-2.2 ASPHALT CONCRETE

Asphalt concrete for base course paving shall be Class B PG 64-10 and asphalt concrete for finish course shall be Class C2 PG64-10 and shall comply with Section 203-6 of the Standard Specifications.

908-3 COMPACTION

The words: "relative compaction" or "relative density" shall mean the ratio of the field density to the laboratory maximum density expressed in percent.

The addition of high tensile fiber does not require any change to standard asphalt concrete compaction procedures and specifications.

908-4 COLD MILLING

Cold milling asphalt concrete pavement shall conform to Section 302 of the Standard Specifications as modified below:

302-1 COLD MILLING ASPHALT CONCRETE PAVEMENT.

302-1.1 General. The following is hereby added to the first paragraph of Subsection 302-1.1:

Such straight edge grade along the edge of the cold plane area shall not deviate more than ¼-inch below nor ⅛-inch above the grade specified in the Plans or

Specifications. Removal of undulations in the existing paved surface shall be included in this item of work.

Cold milling shall not be performed more than 2-working days ahead of paving.

All cold milled streets must be accepted by the Engineer as clean after cold milling, at least the day before paving. Sweepers used for cold milling shall not enter on streets approved as clear after cold milling.

The Contractor shall remove existing asphalt concrete and slurry from gutters adjacent to any area specified to be cold milled.

After cold milling, Contractor shall provide temporary AC ramping at all drive approaches. Temporary ramping at header end cuts shall be extended to 6 feet from end of cut line and at edges of bus pads and cross gutters. Temporary pavement transitions shall be constructed on Kraft paper or other suitable bond breaker such that upon removal of the temporary pavement transition a clean notch remains.

Unless indicated otherwise on the Plans, any pavement repairs within designated cold milling areas shall be completed prior to cold milling operations. Paving shall begin not later than two (2) working days after completion of cold milling in each location and shall proceed without interruption from start to finish. Any painted crosswalk or stop bar obliterated, either partially or entirely, by cold milling shall be immediately replaced by temporary tabs.

908-5 POTHOLE REPAIRS

This work shall consist of constructing hot mix asphalt concrete repair of miscellaneous potholes at various locations throughout the City during the course of this contract. As the need arises, and upon formal notification from the City, Contractor shall mobilize personnel, equipment, and materials within ten working days to perform said repairs. Repairs shall include removing all loose material, cleaning, applying tack coat, and placing hot mix asphalt to fill the pothole flush with the surrounding surface.

Traffic control for pothole repairs shall be provided per the WATCH Manual. For any pothole repairs on arterial streets which require traffic control plans, preparation of traffic control plans will be compensated as extra work.

908-6 MEASUREMENT AND PAYMENT

Measurement and Payment for Full Width Cold Mill, at the depth indicated, shall be at the unit price bid per square foot, and shall include, but not be limited to, full compensation for furnishing all labor, materials, tools, equipment, transportation and other incidentals for doing all work involved in cold milling as indicated in the contract documents, complete and in place, and no additional compensation will be allowed therefor.

Measurement and Payment for AC Pavement Removal and Reconstruction shall be at the unit price bid per square foot, and shall include, but not be limited to, full compensation for furnishing all labor, materials, tools, equipment, transportation and other incidentals for doing all work involved in grading, compacting subgrade material, furnishing and installing aggregate base, and constructing asphalt concrete, as indicated in the contract documents, complete and in place, and no additional compensation will be allowed therefor.

Measurement and Payment for Asphalt Tack Coat shall be considered as included in the contract prices bid for items requiring its use and no additional compensation shall be allowed therefor.

Measurement and Payment for Pothole Repair shall be at the unit price bid per each, and shall include, but not be limited to, full compensation for furnishing all labor, materials, tools, equipment, transportation and other incidentals for doing all work involved in constructing asphalt concrete pothole repairs, as indicated in the contract documents, complete and in place, and no additional compensation will be allowed therefor.

END OF SECTION 908

909 ASPHALT-RUBBER HOT MIX GAP GRADED (GG) OVERLAY WITH AND WITHOUT HIGH TENSILE FIBER (HTF)

909-1 GENERAL

Work under this section shall consist of performing all work involved with providing and placing an Asphalt-Rubber Hot Mix (ARHM) overlay and pavement resurfacing including tack coat, as shown on the Contract Drawings, in accordance with the Standard Specifications and as modified herein below.

909-2 CRUMB RUBBER MODIFIED (CRM) BINDERS AND PAVEMENTS - WET PROCESS

ARHM overlay shall conform to Section 203 of the Standard Specifications as modified below.

203-11 ASPHALT RUBBER HOT MIX (ARHM) WET PROCESS.

203-11.2 Materials.

Contractor shall maintain a minimum quality control plan as follows:

- a) Perform sieve analysis test Caltrans Test 202 on a sample taken immediately after 300 tons of production and every 500 tons thereafter.
- b) Perform binder content test Caltrans Test 382 on a sample taken immediately after 300 tons production and every 500 tons thereafter. Material for the test shall be sampled with a hot clean shovel and the material shall be spread in

approximate uniform thickness over the surface of the pan prior to placement in the oven.

Tests shall be performed at the production plant laboratory and completed without interruption directly after samples are procured.

Contractor shall provide the correction factor for Caltrans Test 382 for ARHM material at least 5 working days prior to paving.

A copy of test results shall be provided to the Engineer immediately upon completion of each test or upon request thereafter if Engineer is not present at time of the test. Adjustments shall be made immediately if test results indicate a need for adjustment.

203-11.2.3 Crumb Rubber Modifier (CRM).

The first paragraph of Subsection 203-11.2.3 is hereby deleted and replaced with the following:

The material shall consist of a combination of scrap tire CRM and high natural CRM meeting the requirements of this subsection. Scrap tire CRM shall consist of ground or granulated rubber derived from any combination of automobile tires, truck tires or tire buffings. Whole scrap tire rubber shall be derived from scrap tires generated within the State of California, and the certification of compliance shall so certify.

The high natural rubber shall be a single source material and not a blend of more than one source.

The high natural CRM and CRM rubber components shall not be premixed prior to mixing with paving asphalt.

The fifth paragraph of Subsection 203-11.2.3.1 is hereby deleted and replaced with the following:

The percentage of high natural CRM shall be equal to 1000 divided by the percentage of natural rubber in the high natural CRM (using whole number percentages), e.g., 1000/40% equals 25 percent. The remainder of CRM shall be scrap tires.

The binder material must contain a minimum of 300 pounds (equivalent to 15% by weight) of tire-derived crumb rubber per ton of rubberized binder.

The maximum value for Natural Rubber Content in Table 203-11.2.3.1(B) is hereby deleted.

The sixth (last) paragraph of Subsection 203-11.2.3.1 is hereby deleted.

203-11.3 Composition and Grading. The gradation ranges shown in Table 203-11.3 shall be considered the Contract Compliance Range. The Operating Range

for the first sieve size below 100 percent passing, shall be the target percentage specified in this Subsection with a tolerance of ± 2.5 percent, and the tolerance for target percentage of the No. 4 and No. 8 sieves, if specified, shall be ± 3 percent. If the gradation testing results do not meet the Operating Range requirements but meet the Contract Compliance Range, placement of ARHM may be continued for the remainder of the day. However, another day's work shall not be started until tests, or other information, indicate to the satisfaction of the Engineer that the next material to be used in the work will comply with the requirements specified for Operating Range.

ARHM shall be Class GG-C or OG-C as specified in the contract drawings.

Target gradations shall be based on 95 percent passing ½ inch sieve.

Except where an operating range is specified, it is the intent of the Specifications that the target percentage be the central value in the Contract Compliance Range. Adjustments shall be made when there is deviation into the margin within 2 percentage points of the maximum or minimum values of the Contract Compliance Range.

Variations of percent air voids below the minimum specified will be cause to terminate paving operations until changes to conform to the specified percent air voids are demonstrated and approved by the Engineer.

203-11.4 Mixing Asphalt and CRM.

The first sentence of the third paragraph of Subsection 203-11.4 is hereby deleted and replaced with the following:

The required mixing/reaction time is hereby modified to 75 minutes minimum. The minimum reaction period shall be the time from complete incorporation of materials into the mix to the time that the asphalt-rubber meets all specifications for reacted material, but no less than 75 minutes. Reaction shall be considered complete only after the second of two viscosity readings taken 15 minutes apart is less than the first. The Engineer's decision shall be final for determination of the minimum reaction period.

The maximum value for Haake Field Viscosity @191 degrees C (375 degrees Fahrenheit), (Centipoise) in Table 203-11.4(A) is hereby changed to 2400.

All material shall be tested for viscosity and verified as to complete reaction prior to transfer to any storage tank or use of the reaction tank for feed to the hot mix plant. Material reacted lower than specified temperature, but above 185 degrees C (365 F), or transferred to a storage tank prior to completion of reaction as specified, shall be reacted for total period of 3 hours prior to use. Any such transfer shall be described in the comments column of the Asphalt Rubber Batch Log.

Contractor shall test viscosity and record the following information for every tank of asphalt rubber prior to being transferred to storage or directed to feed to the hot mix plant:

- Temperature of stored asphalt cement material at time of loading
- Time at which the reaction tank is fully loaded
- Tons of asphalt rubber added to the tank for the batch
- Total asphalt rubber in the tank after loading
- The beginning time of reaction (Fully loaded and above 380° F)
- Binder temperature at time of sampling
- Temperature of tested material
- Viscosity reading
- Time of viscosity test (All test results must be prior to use.)

(A log sheet form will be provided at the preconstruction meeting.)

A copy of the Asphalt Rubber Batch Log shall be provided to the Engineer upon request. A copy of the batch log sheet and all circle charts for the day shall be faxed to the Engineer within 12 hours of ending production of ARHM for the day.

Construction shall be considered unauthorized until Contractor has faxed the log to the Engineer as arranged at the preconstruction meeting and has in his possession a fax confirmation sheet with a time and date conforming to specification. Under any other circumstances, Engineer must be contacted for clearance to pave.

203-11.4.1 Hand Held Viscometer Test

The second and third sentences of item number 3, under Test Procedure is hereby deleted and replaced with the following:

In one continuous operation, turn off the spindle rotation, remove the spindle vertically from the binder (after heating), discontinue stirring the binder and immediately insert the spindle back into the center of the binder. While holding the viscometer level, turn the spindle on and watch the needle on the viscometer dial and record the maximum value obtained on the dial.

203-11.5 Equipment for production of Asphalt-Rubber.

Add the following to Item C) of 203-11.5:

A) Reaction Tank. The asphalt-rubber material shall be held in a reaction tank separate from the storage tank feeding the ARHM plant, until the reaction is complete. The reaction tank shall have agitation sufficient to increase the viscosity of the mixture to a peak viscosity reading at least 20 percent higher than the viscosity reading of the material measured at a time that the material otherwise meets specifications for reacted material. The time of reaction may be extended as needed to produce this result. It shall

be the responsibility of the Contractor to demonstrate to the Engineer through viscosity readings at appropriate times that the equipment conforms to these requirements. If this can not be demonstrated, the reaction time shall be 3 hours. Once established, the reaction time shall be the minimum time for reaction unless there are changes in materials or equipment, in which case a new reaction time shall be established per specifications. The Engineer's decision shall be final.

B) Storage Tank. After a complete reaction is verified by viscosity readings acceptable to the Engineer, the material shall be held in a storage tank that is fully isolated from material that is not fully reacted. This tank shall be the only tank feeding the ARHM plant.

909-2.1 ARHM OVERLAY CONSTRUCTION

The Contractor shall continuously check the depth of the asphalt thickness. At no time shall the compacted asphalt thickness be less than the minimum required thickness called out on the Contract Drawings and Specifications. In the event the minimum thickness is not achieved, the Contractor shall reconstruct the deficient areas by a method approved by the Engineer.

Join lines between successive runs shall be within 6 inches of lane lines or a minimum of 12 feet outside of the outermost lane line.

The Contractor shall match existing grade at the SCE vaults and utility covers located in Lindero Canyon Road. The Contractor shall mill the existing asphalt pavement around the vaults and covers to match the depth of the ARHM overlay. The Contractor shall construct the overlay to match the existing vault and utility covers and construct, in the opinion of the Engineer, a smooth travel surface when driving across the cover at the posted speed limit. No deviations will be allowed in the finished surface of the travel lane for one car length each side of the vault cover. ARHM overlay construction shall conform to Section 302 of the Standard Specifications as modified below.

302-9 ASPHALT-RUBBER HOT MIX (ARHM).

302-9.1 General. Contractor's attention is directed to Subsection 302-5.8, Manholes, for requirements for patching manholes and miscellaneous, frames and covers in ARHM pavements.

All PCC surfaces, to be crossed by trucks used to haul ARHM, that are within 500 feet of the work limits shall be covered with sand or other durable covering prior to applying tack coat.

Contractor shall have sufficient power brooms on site during all periods of distribution and spreading to provide for cleanup of haul routes and work areas.

Power broom shall provide miscellaneous cleanup of ARHM spoils as directed by the Engineer.

Power brooms used ahead of paving operations after acceptance of cold milling shall only sweep areas that are accepted as completed for cold milling. Power brooms shall not be operated more than 80 percent full of sweepings. Power brooms that have swept areas not accepted as completed for cold milling shall not enter onto areas that are accepted as completed for cold milling.

302-9.2 Mixing Binder with Aggregate. Proportioning shall be performed using an automatic batching system, and the proportioning device shall be automatic to the extent that the only manual operation required for proportioning all materials shall be a single operation of a switch or starter.

For drum plants, the system shall run fully automatic with the only input to the AC plant computer being information transmitted automatically from a Corealis mass flow meter on the line of the asphalt-rubber feed to the AC plant. All automatic shutdown features of the AC plant shall be fully functional.

302-9.4 Distribution and Spreading. The temperature of ARHM shall be high enough upon delivery that pavement temperature after two passes with the breakdown roller exceeds 240 degrees Fahrenheit.

To avoid picking up loose rock in the overlay area, the tires of all trucks must be lightly oiled with linseed oil or soy bean oil or approved equal. Diesel fuel will not be allowed on the project at all for oil down of any equipment. Raking of ARHM shall be eliminated as much as possible. ARHM material shall not be cast across the mat under any circumstance. Raking shall be just enough to set up edges for uniform joints without casting material. Screed controls shall be the predominant means of controlling material at joints. In areas where paving machines can not be used due to space constraints, material shall not be thrown by shovels. Material shall be removed directly from the paving machine hopper and shall be placed directly in its final location, to be distributed with minimal raking. Material may be dumped directly from a truck, but further material distribution shall be by shovel directly to its final location with minimal raking. A small rubber tire tractor with a screed type attachment may be used to spread a pile dumped from a truck, but raking shall be minimized after spreading.

The paving machine screed shall not be pulled across an area already paved with ARHM, even adjacent to narrow areas to be paved. Such narrow areas shall have ARHM distributed by methods specified by shovel or rubber tire tractor, unless the adjacent area has hardened enough and will not be significantly marred by passing the screed over it. Even if hardened adequately, Contractor shall spread rock dust by hand tools to avoid cohesion of the ARHM in the screed to the existing surface of such areas of freshly cured ARHM.

Contractor shall maintain a functioning infrared heat measurement device in close proximity to each paving machine at all times. Contractor shall provide a pavement temperature reading, with an infrared heat measurement instrument, when requested by the Engineer. Inaccessibility of a heat measurement shall be cause for termination of paving operations.

Prior to paving any portion of a cul-de-sac bulb, enough material shall be in trucks at the site to complete the cul-de-sac bulb. Once the paving machine enters the bulb of the cul-de-sac, the paving machine shall not resume paving outside the bulb until the bulb is completely paved. One shoveling laborer and two raking laborers shall attend the paving machine at all times in cul-de-sac bulbs, rakers shall perform all necessary raking immediately behind the paving machine.

Transverse cold joints shall be provided such that longitudinal joints are not left exposed at the end of the work day.

302-9.4 Rolling.

Initial breakdown rolling shall be vibratory. Rolling in vibratory mode shall not be performed after ARHM material temperature falls below 240 degrees F, due to disturbance of the bonds beginning to set up in the binder at lower temperatures.

An intermediate roller of the same or greater width than the breakdown roller shall be rolling directly behind the breakdown roller at all times, and paving shall cease if intermediate rolling is terminated for any reason. Additional intermediate rollers may be necessary depending on production rates.

To ensure optimum quality control, the use of more than one paver must be approved in advance by the Engineer, and will generally require one foreman, one sweeper, and a full complement of rollers per Subsection 302-5 of the Standard Specifications and this Subsection 302-9.4 for each paving machine. An extra breakdown roller shall be on site at all times, free of defects.

Intermediate rolling shall be provided such that a total of six passes are performed before pavement temperature drops below 200 degrees Fahrenheit. Paving shall cease whenever the intermediate roller stops rolling. A finish roller shall be provided in addition to intermediate rolling to perform all finish rolling, such that the intermediate roller can stay immediately behind the breakdown roller at all times.

302-9.4.1 Density and Smoothness. Density and smoothness shall conform to Subsection 302-5.6.2 except the second and third paragraph of Subsection 302-5.6.2 shall not apply to ARHM.

The compaction after rolling shall be 95 percent of density obtained with the California Kneading Compactor, Calif. Test 304 and measured as specified in this Subsection 302-9.4.1.

In order to attain reliable correlation between nuclear and laboratory tests on gap-graded material, certain modifications of test procedures were determined to be necessary as specified herein. The most significant change is the method of determining density of a sample in the laboratory, and the outcome will yield a lower density for the maximum density sample, and a resultant lesser field compaction requirement to meet the specified minimum. The field density of compacted ARHM shall be determined by:

- 1) A nuclear asphalt testing device, calibrated in conformance with California Test 375 except as modified in this Subsection 302-9.4.1, in the field designed to measure the density of pavement of the thickness being constructed; or
- 2) Cores with density determined as follows:
 - a) Saw the ARHM lift of pavement from the top of the core approximately perpendicular to the axis of the core, just above any underlying pavement or as necessary to obtain a clean flat surface at the bottom of the sample.
 - b) Clean and dry the sample as described in ASTM 1188.
 - c) Perform California DOT Test 308 Method A by following steps 308A a., 308A b. and 308A c. and 308A d., but prior to proceeding to 308A e., place the core, top surface down, firmly into a flat pan of hot paraffin approximately 1/4 inches deep. Allow the sample and paraffin to cool to firm solid state and remove the sample from the pan by cutting around the perimeter. Trim the edges of paraffin parallel to the side of the sample cylinder, and weigh the cylinder to obtain:

G = Mass in grams of final paraffin- treated specimen in water.

- d) Complete the remainder of Test 308 Method A, except replace the formula in 308Ae. with the following: Bulk Specific

$$\text{Gravity} = \frac{A}{(D-E) - (A+G-2D)/F}$$

Maximum density samples shall be prepared in conformance with Calif. Test 304, except:

- A) Compaction shall be performed at 290 degrees Fahrenheit.
- B) The leveling load shall be applied while material is between 190 and 200 degrees Fahrenheit.

C) A Marshall base shall be used during leveling load procedure.

D) Sample shall be allowed to cool to less than 100 degrees Fahrenheit prior to removal from test sleeve and Marshall base assembly.

California Test 308 Method A as modified in 2c) and 2d) herein shall be used to determine density of the maximum compaction sample, except bottom surface shall be substituted for top surface in 2c).

In case of dispute, 1) shall be used, except Contractor may elect to use 2), but all costs for such procedures shall be borne by the Contractor to provide the full set of coring, tests and documentation in conformance with specifications and test methods set forth herein for these purposes. One core shall be taken per 200 tons within the area with disputed compaction, with test site location as specified in Cal DOT Test 375 Part 3. The mean average of all cores shall be used to determine the relative compaction. Also, Contractor shall notify the Engineer at least 3 days in advance of coring operations, and immediately after core testing is complete Contractor shall deliver cores to the Agency for verification.

Nuclear test procedures, including correlation with core densities, shall be in conformance with California Test 375, except as follows:

Core locations for correlation with cores shall be selected based on appearance of relatively tight surface texture, and the test strip shall be selected on this basis. If a test location is determined to have a significantly open texture relative to other areas within the test strip, the location shall not be used. This selection criteria is not to be considered significant to the outcome of, but only as a guideline towards obtaining samples that are relatively well compacted to yield results with minimum standard deviation. The locations shall be well clear of grade breaks and joints. One core centered on the gauge will be used instead of two at each location. Use method 2) in this Subsection 302-9.4.1 to determine density of cores. Surface voids shall not be filled with sand.

Contractor will be notified in writing at least 5 days in advance of such calibration testing and will be invited to have a nuclear gauge on site to correlate a second gauge. If not independently calibrating at that time, Contractor shall bear the full expense of performing calibration for his nuclear gauge under the specified procedures, but shall notify the City 5 days in advance of such calibration, such that the City can correlate with the Contractor's gauge, if Contractor disagrees with City's test results.

302-9.4.2 Compaction Payment Reductions. Based on laboratory tests on AC pavements revealing a highly significant loss of life span for each 1 percent reduction of compaction, and the well known catastrophic effect of oxidation and stripping of asphalt products due to interconnected voids that develop below 95 percent compaction, and the extreme expense of removing and replacing

pavement not compacted to the specified minimum, a nominal deduction of payment will be applied for under-compacted ARHM pavement. The bidder in submitting a bid fully accepts the provisions in this Subsection 302-9.4.2 and agrees that the nominal payment deduction is acceptable and reasonable for these purposes.

Payment reductions will be applied to ARHM compacted less than 95 percent, the specified minimum, and greater than 91.9 percent of the maximum density based on nuclear testing with Part 3 Test Site Selection of Calif. Test 375 modified as follows:

A lot will be one day's production or other lesser area of paving as determined by the Agency to be deficient in terms of compaction, and a pull will be the width between joints as the lot is placed.

Payment reductions will be applied to ARHM compacted less than 95 percent of maximum density, the specified minimum, and greater than 91.9 percent of the maximum density based on nuclear testing with Part 3 Test Site Selection of Calif. Test 375 modified as follows:

A lot will be one day's production or other lesser area of paving as determined by the Agency to be deficient in terms of compaction, and a pull will be the width between joints or edge of pavement as the lot is placed.

Test site selection will conform to California Test 375 Part 3, except the number of tests shall be the area of the lot in square feet divided by 400 and any test site within .5 m of a grade break or pavement joint shall be relocated laterally towards the center of the pull to .5 m from such joint or grade break.

The mathematical mean average of percent of maximum density represented by all these tests shall be calculated, except any test results outside of this mean plus two standard deviations based on all tests, shall be rejected. The mean average shall be calculated directly from the remaining values.

A compensation reduction will be applied to the contract unit price for ARHM for material within any lot determined to be below minimum relative compaction in conformance with Table 302-9.4.1A. Any lot with tests indicating compaction 91.9 percent or less shall be removed and replaced at Contractor's expense.

TABLE 302-9.4.1A REDUCED COMPENSATION FACTORS			
Relative Compaction (Percent)	Reduced Compensation Factor	Relative Compaction (Percent)	Reduced Compensation Factor
95.0	0.000	93.4	0.062
94.9	0.002	93.3	0.068
94.8	0.004	93.2	0.75

TABLE 302-9.4.1A REDUCED COMPENSATION FACTORS			
Relative Compaction (Percent)	Reduced Compensation Factor	Relative Compaction (Percent)	Reduced Compensation Factor
94.7	0.006	93.1	0.82
94.6	0.009	93.0	0.090
94.5	0.012	92.9	0.098
94.4	0.015	92.8	0.108
94.3	0.018	92.7	0.118
94.2	0.022	92.6	0.129
94.1	0.026	92.5	0.142
94.0	0.030	92.4	0.157
93.9	0.034	92.3	0.175
93.8	0.039	92.2	0.196
93.7	0.044	92.1	0.225
93.6	0.050	92.0	0.300
93.5	0.056		

302-9.7 Rock Dust Blotter. Lack of uniformity of application of rock dust shall be cause to terminate paving operations. The rock dust spreader apparatus shall have the capability to allow the carrier vehicle to back down the new ARHM mat on the rock dust as it is distributed ahead of the vehicle.

Contractor shall have sufficient power brooms on site during all periods of distribution and spreading to provide for cleanup of haul routes and work areas. Power broom shall provide miscellaneous cleanup of ARHM spoils as directed by the Engineer.

Power brooms used ahead of paving operations after acceptance of cold milling shall only sweep areas that are accepted as completed for cold milling. Power brooms shall not be operated more than 80 percent full of sweepings. Power brooms that have swept areas not accepted as completed for cold milling shall not enter onto areas that are accepted as completed for cold milling.

909-3 HIGH TENSILE FIBER

909-3.1 Submittals

- A. Submit copies of manufacturer's literature for fibers including:
 1. Product data
 2. Brochures
 3. Written instructions to suppliers
 4. Written instructions to installers
 5. Material Safety Data Sheets (MSDS)

- B. Submit copies of a certificate prepared by asphalt material supplier stating that the specified fibers were added to each batch of asphalt delivered to the project site. Each certificate should be accompanied by one copy of each batch delivery ticket indicating product name, manufacturer and quantity of fiber-reinforcement added to each asphalt load.

909-3.2 Delivery, Storage, and Handling

- A. Deliver fiber-reinforcement in sealed, undamaged containers with labels intact and legible, indicating material name and lot number.
- B. Deliver fiber-reinforcement to location where it will be added to each batch or loaded into the mixer.
- C. Store materials covered and off the ground. For ease of handling, do not allow boxes to become wet.

909-3.3 Manufacturer

- A. FORTA Corporation or approved equal

909-3.4 Materials

- A. FORTA-FI® (HMA) or approved equal fiber reinforcement with virgin polyolefins and virgin aramids.

909-3.5 Batching and Mixing

- A. To avoid the formation of fiber balls or not mixed fibers, add sealed plastic bags of fibers into the mixer.
- B. Add fiber-reinforcement at 1.0 pound per ton (10% allowable tolerance).
- C. Order product for Pug Mill Mixers for minimum batch size regarding tons per batch to pounds per bag of product.
- D. Order product for Drum Type Mixers and the anticipated production rate of tons per hour (typically seconds per ton, dosage timing) regarding 1-pound per bag of product.
- E. Order fiber reinforcement materials for 1 pound per ton of asphalt materials and allowing for overages, mock-ups, production, and occasional errors based on your experience.

909-3.6 Pug Mill Mixers and Mixing Operations

- A. Ensure adequate start, stop, and dosage change information is easily communicated between batch control operations and fiber addition activities.

- B. Add complete bags of fibers just before aggregate is discharged into the pug mill mixer.
- C. Immediately before or immediately after the dried aggregate is added to the pug mill, the bags of fibers should be added and discharged into the pug mill with the aggregate.
- D. Add complete bags of fibers at the general nominal batch size agreed to by operations and mixture design specifications.
- E. Do NOT open the bags and add or discharge into the pug mill.
- F. Dry mixing proceeds for the standard length of time as specified in the mixture design specifications.
- G. The proper quantity of bitumen (asphalt cement, liquid) is added to the pug mill and wet mixing proceeds for the standard length of time as specified in the design mixture specifications.
- H. The asphalt batch is accumulated and discharged normally.
- I. The asphalt batch is discharged to a haul vehicle or storage.

909-3.7 Drum Type Mixers and Mixing Operations

- A. Ensure adequate start, stop, and rate change information is easily communicated between drum control operations and fiber addition activities.
- B. Add complete bags of fiber at a point in the mixing process after fines collection and before the addition of liquid asphalt.
- C. Add fibers after the fines collection to ensure the fibers do not clog filters.
- D. Add fibers before the liquid asphalt addition.
- E. Add complete bags of fibers at the general nominal rate agreed to by operations and mixture design specifications.
- F. Do NOT open the bags at any point in the loading process.
- G. Mixing should proceed for the standard length of time as specified in the mixture design specifications.

- H. The proper quantity of bitumen (asphalt cement, liquid) is added to the drum and wet mixing proceeds for the standard length of time as specified in the mixture design specifications.
- I. The asphalt batch is accumulated and discharged normally.
- J. The asphalt batch is discharged to a haul vehicle or storage.

909-3.8 Placement

- A. Discharge fiber reinforced asphalt concrete into locations as directed and in accordance with the project plans.
- B. Place asphalt concrete in accordance with provision of other Sections and with additional instructions as follows.
- C. Avoid over-using long tine rakes or other tools that will align fibers or disrupt the homogeneous, uniform 3-dimensional, fiber dispersion when moving asphalt concrete.
- D. Using a lute, "come along", or a flat tined pitch-fork (potato-fork) may be useful for moving asphalt cement concrete.
- E. Remove any observed fiber balls from mixture if they occur.
- F. Adjust operations regarding any observed fiber balls.

909-4 MEASUREMENT AND PAYMENT

Measurement and Payment for ARHM Overlay shall be at the price bid per ton, and shall include, but not be limited to, full compensation for furnishing all labor, materials, tools, equipment, transportation, and other incidentals for doing all work involved in constructing asphalt-rubber hot mix overlay indicated in the contract documents, complete and in place, and no additional compensation will be allowed therefor.

Measurement and Payment for ARHM-GG-C Skin Patch shall be at the price bid per ton, and shall include, but not be limited to, full compensation for furnishing all labor, materials, tools, equipment, transportation, and other incidentals for doing all work involved in constructing 1.5" asphalt-rubber hot mix skin patch as indicated in the contract documents, complete and in place, and no additional compensation will be allowed therefor.

Measurement and Payment for High Tensile Fiber shall be at the price bid per pound, and shall include, but not be limited to, full compensation for furnishing all labor, materials, tools, equipment, transportation, and other incidentals for doing all work involved in adding high tensile fiber reinforcement to asphalt-rubber hot mix overlay material as indicated in the contract documents, complete, and in place, and no additional compensation will be allowed therefor.

Measurement and Payment for Asphalt Tack Coat shall be considered as included in the contract prices bid for items requiring its use and no additional compensation shall be allowed therefor.

END OF SECTION 909

910 CRACK TREATMENT

910-1 GENERAL

This work shall consist of all crack surface preparation/cleaning/clearing/vegetation removal and application of crack treatment to be performed prior to slurry seal operations.

910-2 PREPARATION

Crack Treatment:

Cracks must be clean and dry before treating. Before treating, blast cracks with oil-free compressed air at a pressure of at least 90 psi and remove any vegetation from within the crack. A singular crack shall be considered to be a crack on the perimeter of an otherwise uncracked asphalt pavement area exceeding 4 feet in minimum dimension. Such pavement area is defined by the cracks forming its perimeter. All cracks and joints 1/4 inch or greater in width shall be blown clear with high pressure air, with the street swept immediately thereafter; and all joints and cracks between 1/4 inch and 1.5 inches in width shall be filled with HPS No Track Tack or equal. Filler shall be poured into each crack such that the reservoir is completely filled to a level flush with, no more than 1/8 inch below, existing pavement surface and shall be thoroughly squeegeed. The foreman on the crackfill work shall fill out the following certificate, have the certificate at the site of the work, and present the certificate to the inspector on request.

910-3 MEASUREMENT AND PAYMENT

Measurement and Payment for Crack Treatment will be at the contract lump sum price and shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all the work involved in the furnishing and placing of the crack seal complete and in place, removing any vegetation from within the cracks, cleaning the surfaces, blasting with compressed air, crack filling, and protecting the crack seal until it has set, all as shown on the plans, as specified in these specifications and as directed by the Engineer.

CRACKFILL CREW CERTIFICATE OF PROCEDURES

*****No work shall begin without this signed certificate on site.*****

As the on-site supervisor of the crackfill crew, I hereby certify that I am aware of and will provide for proper placement of crackfill material as specified:

"Filler shall be poured into each crack such that the reservoir is completely filled to a level flush with, no more than 1/8 inch below, existing pavement surface and shall be thoroughly squeegeed."

I also certify that I have verified that the crackfill material is the same material shown on the Certification of Compliance, or is the precise product identified in the specifications:
HPS No Track Tack

Print Name: _____

Signed: _____ Date: _____

Contractor shall seal the largest singular cracks in the quantity specified below for each street listed herein respectively, within 15 percent above or below that amount. Quantities more than 15 percent above the amounts shown will not be paid without written authorization from the Engineer. Actual lineal footage sealed will be paid at the bid item price, subject to these provisions.

STREET (NAME)	LIMITS (FROM/TO)	TOTAL CRACK LENGTH (LF)
Lindero Canyon Road		1,000

END OF SECTION 910

913 ADJUST MANHOLE FRAMES/COVER

913-1 GENERAL

The Contractor will be required to lower (prior to grinding) and raise (after paving) storm drain and sewer manhole frames and covers to finished grade by the use of either grade rings, or in accordance with Section 302-9.6 and 401-4 of the Standard Specifications. The Contractor shall adjust manholes, covers, and Edison or sewer vault covers to provide a smooth riding surface when driving across the cover at the posted speed limit. The Contractor shall perform all work to clean frames and covers. Contractor shall use DGAC or ARHM to repair asphalt pavement.

The Contractor shall take care not to allow the emulsion to run onto the manhole frame and cover. Immediately prior to placing paving asphalt, the Contractor shall cover all

manhole covers and frames with roofing paper. Diesel fuel application to the manhole frames and covers will not be allowed.

913-2 MEASUREMENT AND PAYMENT

Measurement and Payment for Adjust Manhole Covers shall be at the price bid per each and shall include, but not limited to, full compensation for furnishing all labor, tools, materials, equipment, and incidentals necessary to perform the work in accordance with the Plans and Specifications, complete and in place, and no additional compensation will be allowed therefor.

END OF SECTION 913

914 ADJUST WATER VALVE COVER

914-1 GENERAL

All water valve stack covers are slip cans. The Contractor shall lower (prior to grinding) and raise (during paving) all water valve stack covers to finished grade in accordance with the Contract Drawings and shall take all necessary precautions to keep frames and covers clean and the interior free from construction materials. Contractor shall use DGAC or ARHM to repair asphalt pavement.

The Contractor shall take care not to allow the emulsion to run onto the valve stacks. Immediately prior to placement of asphalt overlay, the Contractor shall cover valve stack covers with roofing paper. Diesel fuel application to the valve stacks will not be allowed.

914-2 MEASUREMENT AND PAYMENT

Measurement and Payment for Adjusting Water Valve Covers – slipcans shall at the unit price bid per each and shall include, but not limited to, full compensation for furnishing all labor, tools, materials, equipment, and incidentals necessary to adjust and protect the water valve covers in accordance with the Specifications, complete and in place, and no additional compensation will be allowed therefor.

END OF SECTION 914

915 STRIPING, PAVEMENT MARKINGS, PAVEMENT MARKERS, & TRAFFIC SIGNS

915-1 GENERAL

This work shall consist of removal, relocation, and/or installation of traffic signs and posts, striping, pavement markings, limit lines, and reflective and non-reflective markers per plan and in accordance with the California Manual On Uniform Traffic Control Devices (CAMUTCD), State Standard Plans and State Standard Specifications.

Except as provided below or as otherwise directed, Contractor shall replace traffic striping, markers, pavement markings, signs and curb markings removed or damaged by the work in-kind and as shown on the Plans. It shall be the responsibility of the Contractor to document existing striping and pavement markings. Contractor shall submit an existing striping and markings inventory prior to commencement of grind, overlay, or other operations that may obliterate existing striping and/or markings. The inventory shall be of sufficient detail to enable Contractor to replace the striping and markings at the exact same locations.

On all streets for which crack fill work will be done, all striping and pavement markings (limit lines, crosswalks, legends, arrows, etc.) shall be reinstalled. Damaged and missing raised pavement markers shall be replaced.

Final striping and pavement markings shall be complete no later than ten days after constructing the final pavement course.

915-2 TEMPORARY LANE DELINEATION

Subsection 7-9 of the SSPWC shall be modified to add:

“The Contractor shall, upon completing the AC paving which covers or obliterates existing pavement striping, immediately place temporary striping or other delineation as approved by the Engineer along the lines of the existing striping to direct traffic until permanent striping or markers can be placed.”

915-3 REMOVAL OF EXISTING STRIPING, MARKINGS, AND MARKERS

All bike lane markings shall be removed. All other striping, pavement markings, and markers not intended to be maintained or replaced in kind in exactly the same place shall be removed.

915-4 STRIPING LAYOUT

Striping layout shall be approved by the Engineer before placing pavement markers and permanent striping.

Replacement lane lines between through lanes shall be Detail 12 per Caltrans Standard Plan A20A on Lindero Canyon Road north of Thousand Oaks Boulevard and Detail 9 at all other locations. Where the lane line stops at intersections, it shall consist of a solid 50-foot segment with a Type G raised pavement marker at each end; this pattern shall be placed upstream and downstream of the intersection.

Dual turn lanes shall be striped with Detail 40A (raised markers) through intersections.

Dashed bike lane line Detail 39A shall be 200 feet long per Caltrans Standard Plan A20D.

Standard bike lane markings consisting of a man-on-bike symbol and arrow as shown on Figure 9C-3B of the CAMUTCD shall be placed in bike lanes downstream of all intersections unless directed otherwise, whether or not such markings currently exist. Where there are R81(CA) "Bike Lane" signs, the markings shall be placed adjacent to the signs unless an alternate location is more appropriate. However, the markings shall be placed at least 25 feet downstream of the end of curb return (ECR) at intersections.

915-5 PAINT

Where painting is allowed as specified on the Plans, painting of pavement markings and striping shall be in accordance with Section 84-1 "General" and 84-3 "Painted Traffic Stripes and Pavement Markings" of SSS, except that all traffic markings and striping constructed with Rapid Dry Paint shall be made in two (2) applications, three (3) days minimum between each application. The thickness of each coat shall be as specified for a single coat application in SSS Section 84-3. The first application shall be applied within 48 hours after AC paving and the final application shall be applied after two calendar days but no later than ten calendar days after AC paving. **To prevent motorists from driving through and tracking wet paint, traffic control shall be installed and maintained until the paint is completely dry.**

Where the work entails replacement of a portion of a crosswalk, limit line, legend, or other markings, the entire marking (i.e. entire crosswalk) shall be replaced/repainted.

915-6 RAISED REFLECTIVE AND NON-REFLECTIVE PAVEMENT MARKERS

Raised reflective and non-reflective pavement markers shall meet the requirements of Section 85 of the State Standard Specifications and shall be installed within ten days after asphalt concrete construction. Non-reflective markers shall conform to Section 85-1.04B "Non-Reflective Pavement Markers (Plastic)" of the State Standard Specifications.

Damaged and missing markers shall be replaced. In addition to other requirements, a blue 2-way reflective raised pavement marker shall be placed four inches from the street centerline or lane line at each fire hydrant.

915-7 TRAFFIC SIGNS AND POSTS

Traffic signs shall have ASTM Type III, IV, or XI prismatic reflective sheeting and shall be constructed in accordance with Subsection 56-2 of the State Standard Specifications, and as shown on the plans, except that the Contractor shall furnish all sign panels and signs shall be installed on 2-inch square perforated steel tube with sleeve unless otherwise approved. The sleeve shall be driven at least 25" into the ground and, if in a sidewalk area, the sidewalk shall first be cored with a hole approximately 3-inches in diameter; sidewalk shall be patched following installation of the sleeve. Traffic signs shall include relocation of advance street name signs and other signs.

915-8 MEASUREMENT AND PAYMENT

Measurement and payment for Striping, Pavement Markings, Pavement Markers, and Traffic Signs shall be made at the lump sum price bid and shall include full compensation for furnishing all labor, materials, tools, equipment, transportation, and incidentals for doing all work involved in constructing traffic striping, pavement markings, raised pavement markers, and traffic signs, complete and in place, as shown on the plans. Any sidewalk removals and reconstructions required to install sign posts shall be included in the lump sum price bid, and no additional compensation will be allowed therefor.

END OF SECTION 915

916 TRAFFIC DETECTOR LOOPS

916-1 GENERAL

All traffic loops destroyed by milling process shall be replaced and additional loops shall be installed as directed by the Engineer. New loop detectors shall comply with the requirements of SSS Section 87-1.03V and SSP ES-5B.

The Contractor shall provide two (2) working days' written notice prior to any operation disabling detector loops. The Contractor shall schedule the work to minimize the time between destruction of existing loops and installation of replacement loops; the replacement loops shall be installed within seven (7) working days at most.

Unless otherwise shown or directed, new loops shall be installed one foot (1') behind limit line.

The Contractor shall test newly installed detectors and other detectors covered with new pavement overlay to determine if replacement is necessary. Testing shall involve a motor-driven cycle, as defined in the California Vehicle Code, which is licensed for street use by the Department of Motor Vehicles. The unladed weight of the vehicle shall not exceed 220 pounds, and the engine displacement shall not exceed 100 cubic centimeters. Special features, components of vehicles designed to activate the detector will not be permitted. The Contractor shall provide an operator who shall drive the motor-driven cycle through the response or detection area of the detector at not less than three (3) miles per hour or more than seven (7) miles per hours. The detector sensor unit shall provide the required output in response to this test.

Replacement loop detectors for this project shall be inductive loop type E (circular), except that limit line loops shall be Type D unless shown otherwise on the plans or directed by the Engineer. Sensor units shall be of the two or four channel type as required by the Type 170 controller specifications. The accompanying loop conductors shall be Type 2 per SSS Section 86-1.02F(2)(c)(iii). Unless otherwise approved, loop sealant shall be hot-melt rubberized asphalt per SSS Sections 86-1.02W and 87-1.03W. If necessary,

Contractor shall furnish and install loop lead in cable, which shall be Type B per SSS Section 86-1.02F(3)(d)(iii), used in parallel as a single conductor, i.e., one cable per set of loops. See SSS Sections 86-1.02H and 87-1.03H for splice reinforcement.

Replacement loop detectors shall be as follows:

Lindero Canyon Road at Hedgewall Dr (northbound)

Left Turn Lane: 1 Type D, 3 Type E

916-2 MEASUREMENT AND PAYMENT

Measurement and Payment for Traffic Signal Detector Loops shall be at the unit prices bid for each type and shall include full compensation for furnishing all labor, tools, equipment, materials and incidentals necessary to complete the work in accordance with the Plans and the Specifications.

END OF SECTION 916

Appendix A

Westlake Village Encroachment Permit

Permit Number

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PUBLIC WORKS PERMIT

DO NOT WRITE IN BOXES BELOW

APPLICATION FOR: CONSTRUCTION EXCAVATION ENCROACHMENT

LOCATION MAP ATTACHED <input type="checkbox"/> YES <input type="checkbox"/> NO
BOND REQUIRED <input type="checkbox"/> YES <input type="checkbox"/> NO
BOND AMOUNT \$
ISSUANCE FEE \$
INSPECTION FEE \$
TRAFFIC CONTROL REVIEW FEE \$
TOTAL FEE \$
DATE ISSUED
ISSUED BY
DATE WORK COMPLETED
TOTAL INSPECTION HOURS

APPLICANT			LOCATION	
COMPANY NAME			PURPOSE	
STREET ADDRESS			ESTIMATED START DATE	ESTIMATED COMPLETION DATE
CITY	STATE	ZIP CODE	LENGTH OF PIPE, CONDUIT, OR CABLE	
PHONE NUMBER			SIZE AND TYPE	
EMERGENCY CONTACT PERSON & PHONE NO.			LENGTH AND WIDTH OF EXCAVATION	TYPE OF SURFACE
SCOPE OF WORK				

THIS PERMIT EXPIRES SIX (6) MONTHS AFTER THE DATE OF ISSUANCE

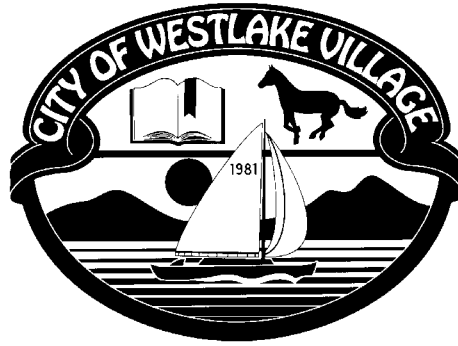
I, (Permittee) _____ of (Company) _____ hereby make application for permit to construct/excavate/encroach in the Public Right-of-way at the locations described above, subject to the provisions required by the Municipal Code of the City of Westlake Village, the latest edition of the "Greenbook" AND THE SPECIFIED CONDITIONS OF THE CITY'S PERMIT HEREON SPECIFIED AND ATTACHED. In consideration of the granting of this permit, it is agreed by the applicant that the City of Westlake Village, and any of their officers or employees thereof shall be saved harmless by the applicant from any liability or responsibility for any accident, loss, or damage to persons or property, happening or occurring as the proximate result of any of the work undertaken under the terms of this application and the permit or permits which may be granted in response thereto, and that all of said liabilities are hereby assumed by the applicant. It is further agreed that if any part of this installation interferes with the future use of the right-of-way by the general public, it must be removed or relocated, as designated by the City Engineer at the expense of the Permittee or his successor in interest.

NOTE
Inspections are available Monday through Friday, from 8:00 A.M. to 5:00 P.M. Inspection Request:
All work shall comply with the permit conditions attached and any field conditions that may occur during the permittee's work or directed by the City Inspector.

PRINT NAME

SIGNATURE

DATE



STANDARD CONDITIONS

- 1) Unless otherwise approved, all traffic control shall be designed and implemented by a subcontractor who holds a C31 contractor's license and whose primary business is traffic control.
- 2) All traffic control to be performed per City Traffic Engineer approval.
- 3) Only removable chalk based paint is allowed for construction/utility markings. Within 3 days of completion of the permittee's work, the permittee shall remove construction markings either applied by the permittee and/or utility marking company, to the inspector's satisfaction. Permittee will use means other than black spray paint, slurry seal, and high pressure water to remove markings.
- 4) The contractor is responsible for replacing all traffic striping that is partially or completely removed due to the permit work. All signs, striping, and channelizing devices shall be in like new condition or replaced at contractors expense.
- 5) All facilities installed by the contractor are subject to be moved at the expense of the facility owner, if the facility is found to obstruct future City improvements. This includes all existing facilities (cabinets, etc.) in the vicinity of the approved facilities.
- 6) Working hours are 8:00am to 4:00pm, unless otherwise noted on the approved traffic control plan; any deviation from these working hours shall be approved by the City Engineer prior to any work outside these hours.
- 7) No bore hole/trench will be allowed to be left open overnight within the public right-of-way.
- 8) If trench plates are to be used to cover bore holes/trenches; all trench plates will be traffic rated and set flush with the adjacent asphalt.
- 9) Contractor shall coordinate this work with all other contractors presently working in the area.
- 10) Insurance Certificate(s) shall show the City as additionally insured with an additional insured endorsement in a form approved by the City.
- 11) Entrance and exits to all business shall remain open to traffic at all times.

- 12) All installations shall maintain a minimum of 24" of cover from finish grade.
- 13) This work shall include contractor notifying and coordinating with all utilities to protect in place. Contractor shall contact DigAlert in advance to any excavation.
- 14) The Contractor shall maintain a clean work area at all times, specifically at the end of each work day. This may require the contractor to provide a street sweeper. All work area dust and debris shall be kept to a minimum in order to minimize inconvenience to the public and nearby residents.
- 15) The contractor is responsible for repairing/restoring and replacing all public and private improvements affected by his activities to a condition as good as or better than existed prior to his activities. This includes, but is not limited to, pavement sections, sidewalks landscaping and irrigation.
- 16) Pavement shall be cut with a rock saw to assure clean, neat lines.
- 17) Trenches and street cuts that are less than 12 inches wide shall receive a two sack concrete slurry backfill to ensure adequate compaction.
- 18) All trenches and other street cuts shall receive a "T" cap section per the attached "T" Cap Detail. "T" cap construction means that the contractor shall cold plane a wider section over the cut area for final lift paving at minimum 2" depth. The cold planing shall extend a minimum of 12-inches on each side of the cut.
- 19) If the "T" Cap edge is three feet or less from edge of pavement, then the "T" Cap shall extend to the edge of pavement.
- 20) Paving materials and installation shall conform applicable sections in the latest edition of the "Standard Specifications for Public Works Construction" ("Greenbook"). Asphalt concrete hot mix shall be a maximum 1/2-inch aggregate, dense medium grading ("Greenbook" Type C2 PG64-10 or -16) for the final cap. Base course may be 3/4" max aggregate (Type B PG64-10 or -16).
- 21) When a utility trench cut is performed within the paved portion of a street, the following procedure shall be followed upon completion of pipe bedding and trench backfill per utility requirements:
 - a) Place a two sack slurry backfill in cut up to bottom of new pavement structural section that is to be placed (refer to "T" Cap Detail attached).
 - b) Place steel plate over cut to provide for traffic while slurry cures. Plate shall be set flush with the adjacent asphalt.
 - c) Within five working days following installation of slurry backfill, install asphalt base course flush with finished roadway surface. Tack coat shall be applied on all AC to AC contact surfaces.
 - d) Cold plane 2" depth to "T" cap limits and place final asphalt cap paving. Final T-cap paving shall be placed the same day as T-cap cold planing.
- 22) Any sidewalk that is trenched, potholed, or otherwise excavated shall be removed and

replaced. Unless otherwise approved by the City, any sidewalk removed shall be to the nearest score mark or expansion joint. Sidewalk to be removed shall be removed in a full width section. All work shall be done in accordance with the Standard Specifications for Public Works Construction, latest edition. Subgrade shall be compacted to 90%. Subgrade shall be watered down the day before sidewalk is installed due to expansive soil conditions. Any portions of the work found to be deficient shall be removed and replaced at contractor's expense.

- 23) The contractor shall contact the City Public Works Project Manager at (818) 706-1613 and the City Public Works Inspector at (909) 918-7846 at least two working days in advance of the permit work. The contractor shall provide the City Public Works Project Manager with the construction start and completion dates.



PUBLIC WORKS DEPARTMENT ENCROACHMENT FEES SCHEDULE

	FEE DESCRIPTION	FEES
<u>ENCROACHMENT PERMIT ISSUANCE</u>	Permit Issuance Fee (Fee does not include traffic control plan review and inspection fees)	\$100.00
<u>INSPECTION FEES</u>	Vault Maintenance Streetlight Repair (that requires no excavation/potholing) Curb, Gutter, Sidewalk, and Curb Drains Installation of Above Ground Facilities (Each Location) Driveway: Residential (Each Opening) Non-Residential (Each Opening) Deposit of Material in Right-of-Way (Issuance fee does not apply) Street/Sidewalk Excavation Less than or equal to 100 SQ. FT. 101 To 1,000 SQ. FT. 1,001 To 3,000 SQ. FT. 3,001 To 5,000 SQ. FT. Over 5,000 SQ. FT. Boring Operations Less than or equal to 100 LF. 101 To 1,000 LF. 1,001 To 3,000 LF. 3,001 To 5,000 LF. Over 5,000 LF. Oversize Vehicle and/or Oversize Loads Per Vehicle, Per Trip Annual Permit Per Vehicle (Multiple trips/year) Inspectors overtime (To be charged at hourly rate) Roll off-bins and containers (Issuance fees do not apply) Annual permit (Hauler) Each Single Use (Without annual permit) <u>Note:</u> All traffic control plan review and approval fees will be based on actual cost.	\$95.00 \$95.00 \$95.00 \$95.00 ea \$95.00 ea \$190.00 ea \$95.00 ea \$95.00 \$570.00 \$760.00 \$1,520.00 + \$95/hour \$95.00 \$380.00 \$570.00 \$950.00 + \$95/hour \$35.00 \$125.00 +\$140/hour \$100.00 \$50.00

Appendix B

Thousand Oaks Encroachment Permit



CITY OF THOUSAND OAKS PUBLIC WORKS DEPARTMENT

File ID # _____

ENCROACHMENT PERMIT # _____

Entitlement # _____

Permittee _____ Phone _____

Address _____ City _____ Zip _____

Contractor _____ Phone _____

Address _____ City _____ Zip _____

State Contractor's License # _____ Classification _____ Exp. Date _____

Description of encroachment work _____

Address/location of work _____

Permit Fee \$ _____ Date Paid _____ Receipt # _____

Plan Check Fee \$ _____ Date Paid _____ Receipt # _____

Inspection Fee \$ _____ Date Paid _____ Receipt # _____

TOTAL FEES \$ _____

Security/Bond \$ _____ Date Paid _____ Receipt # _____

Bond # _____ Bonding Agency _____

City Grading Permit # _____ City Paving/On-site Improvement Permit # _____

City Drawing # _____ Conditions of Approval Resolution # _____

City Wastewater yes no Record Drawings Required yes no City Water yes no Caltrans Permit Required yes no VCWPA Permit Required yes no Certificate of Insurance: On File Attached

48 hours prior to starting work or scheduling an inspection

Please contact inspector _____ at (805) _____

Special Conditions Attached Yes No Pre-construction Meeting Required Yes No

All attached addenda are a part of this permit. If checked or listed, the following are conditions of this permit (in addition to those on the reverse):

- Notification to area businesses/residents
- Traffic control (Plate 8-15)
- Trench repair (Plate 8-14)
- Steel trench plates (Plate 8-18/19)
- Traffic control plan attached
- Erosion control plan
- Other _____

This permit authorizes only that work described above. All modifications to this permit must be approved in writing prior to construction. I/we hereby acknowledge that I/we have read both sides of this application and all addenda, and I/we agree to abide by all conditions and specifications of this permit.

Signature _____
 Authorized Agent for Permittee _____ Date _____ Print Name, Title _____

Permit Start Date _____ Issued by Public Works Dept. _____

Expiration Date _____ Date _____

Time Extension/Expiration Date _____ Issued By _____ R# _____ Date _____

***** All Conditions on Reverse Side SHALL apply *****

CONDITIONS OF THIS PERMIT

Encroachment Permit No.: _____

This permit is subject to Thousand Oaks Municipal Code (TOMC) Title 7, Chapter 2, including those that are checked and/or written on the front of this permit. Failure to comply with the conditions, as well as all applicable local, state and federal laws and regulations shall void this permit.

Hold Harmless The Permittee and/or Contractor shall indemnify and hold City, its elective and appointive boards, commissions, officers, agents, and employees harmless from any liability for damage or claims for personal injury, including death, as well as from claims for property damage which may arise from Subdivider The Permittee and/or Contractor, sub-contractors, agents or employees operating under this Agreement, whether such operations be by The Permittee and/or Contractor, sub-contractors, or by any one or more persons directly or indirectly employed by, or acting as an agent for The Permittee and/or Contractor or sub-contractors. The Permittee and/or Contractor agrees to and shall defend City and its elective and appointive boards, commissions, officers, agents and employees from any suits or actions at law or in equity for damage caused or alleged to have been caused, by reason of any of the work, acts and obligations of The Permittee and/or Contractor referred to in this Agreement. The duty to defend includes all payment of court costs, attorney's fees, expert witness fees, investigation costs, claims adjustment costs and any other costs related to the litigation.

The City does not, and shall not, waive any rights against The Permittee and/or Contractor which it may have by reason of the above defense indemnity/hold harmless provision because of the acceptance by City, or the deposit with City by The Permittee and/or Contractor, of any of the insurance policies described in Section 19. The above defense indemnity/hold harmless obligation by The Permittee and/or Contractor shall apply to all damages and claims for damages of every kind suffered, or alleged to have been suffered, by reason of any of the work, acts and obligations of the The Permittee and/or Contractor referred to in the paragraph, regardless of whether or not City has prepared, supplied or approved of plans and/or specifications for the subdivision, or regardless of whether or not such insurance policies shall have been determined to be applicable to any of such damages or claims for damages.

The Permittee and/or Contractor hereby indemnifies City and agrees to hold City harmless from all loss, damage, and expense incurred by City as a result of the absence of adequate easements to operate, maintain, repair, renew and replace the water, wastewater, and/or storm drain systems, as applicable.

Traffic Control The Permittee and/or Contractor shall, at their expense, furnish, install and maintain adequate traffic control devices in accordance with the most current California Manual of Traffic Control Devices (CA MUTCD), and as may be required by the City's representative. If checked on the reverse side of this permit, a traffic control plan reviewed by the Traffic Division is required prior to issuance of this permit.

Notification Permittee and/or Contractor may be required to notify businesses/residents within 300 feet of the construction zone (box on reverse side will be checked if this is required). Permittee and/or Contractor is/are hereby advised to notify Underground Service Alert and OSHA.

Obstructions and Access A minimum of one 12-foot wide traffic lane in each direction shall be provided at all times, unless modified by the City's representative. Construction activities shall be conducted in a way that minimizes inconvenience to the public and adjacent property owners. Vehicular access to businesses, buildings and driveways shall be maintained in good condition throughout the work area. Safe pedestrian access shall also be provided.

Stormwater Quality The storm drain system shall not be used to directly dispose of any wastewater or debris. The Permittee and/or Contractor shall, at their expense, implement appropriate Best Management Practices (BMP's) to reduce, to the maximum extent practicable, the discharge of pollutants to the storm drain system.

Working Hours The applicant is advised that City Hall is closed on alternating Fridays, and as such, inspection services are not available on those particular dates. The applicant shall schedule any and all City inspections accordingly. A schedule of City Hall hours may be obtained from City Hall or at the City's website www.toaks.org. Any work occurring after 3:30 p.m. weekdays, alternate Fridays or on Saturday will be subject to overtime inspection fees. No Sunday work will be permitted unless written permission is obtained from the Public Works Director.

Excavation Work All excavation and restoration work, including removal of underground facility location markings, shall be completed within 30 days of the initial excavation. The method used to remove the markings is subject to approval by the City.

Insurance Applicant shall provide an insurance certificate naming the City, its employees and officers as additional insured.



Public Works Department

2100 Thousand Oaks Boulevard • Thousand Oaks, CA 91362
Phone 805/449.2400 • Fax 805/449.2475 • www.roaks.org

Jay T. Spurgin
Public Works Director

IMPORTANT NOTICE

CERTIFICATE OF INSURANCE REQUIREMENTS FOR ALL PUBLIC WORKS PROJECTS

THE FOLLOWING INFORMATION IS REQUIRED ON ALL CERTIFICATES OF INSURANCE FOR ALL PERMITS, PROJECTS AND CONTRACTS.

1. The City of Thousand Oaks must be named as ADDITIONAL INSURED on GENERAL LIABILITY AND AUTO. (See Attachment 2 &3)
2. Please be advised, the City may require a copy of the current insurance policy.

If you need further assistance, please contact Genie Norman at (805) 449-2400.

H:\common\admin\insurance\importantnoticenew..

Revised 08/08/12

POLICY NUMBER: _____ COMMERCIAL GENERAL LIABILITY

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

ADDITIONAL INSURED – OWNERS, LESSEES OR CONTRACTORS (FORM B)

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE PART.

SCHEDULE

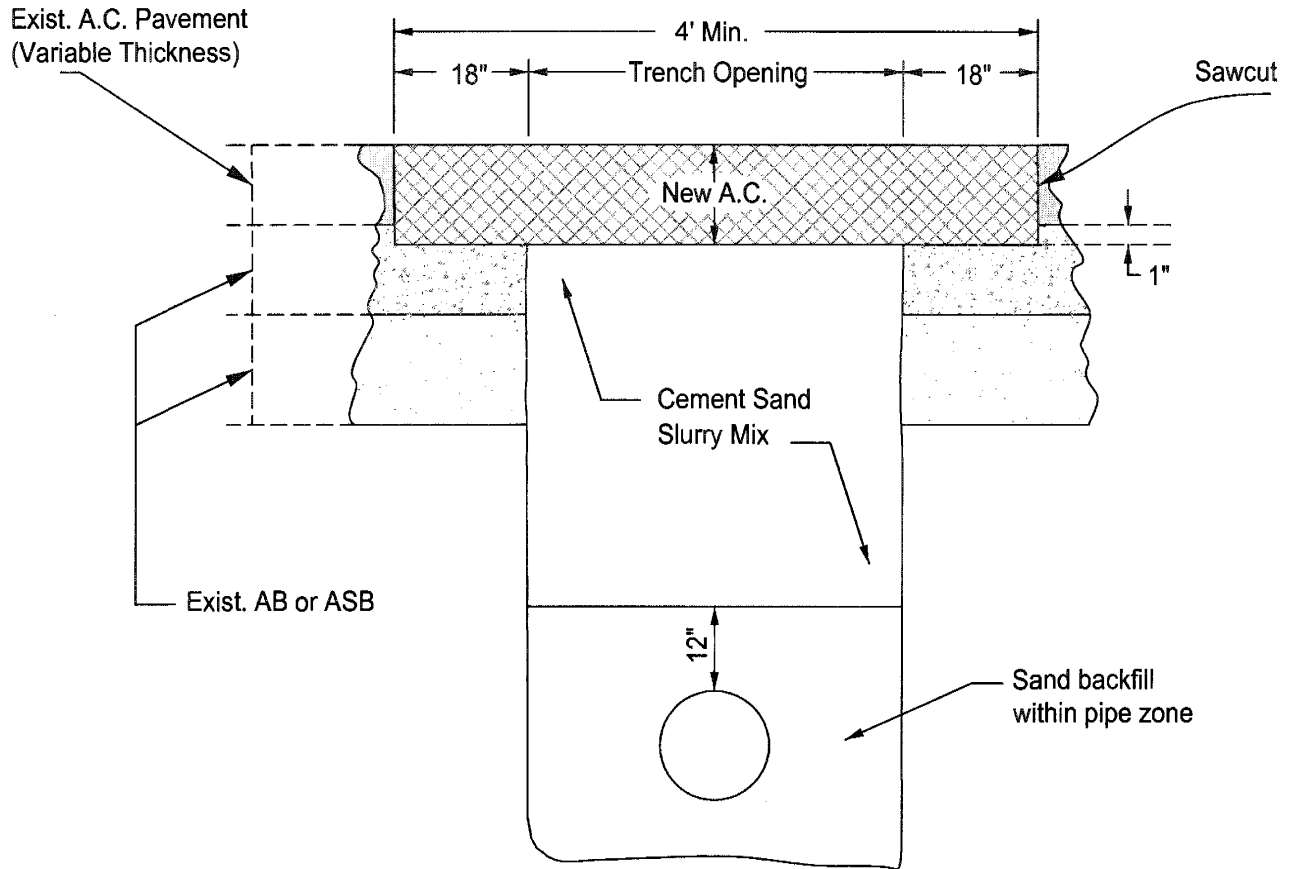
Name of Person or Organization:

**CITY OF THOUSAND OAKS, IT'S ELECTED OR APPOINTED OFFICIALS,
OFFICERS AND EMPLOYEES**

(If no entry appears above, information required to complete this endorsement will be shown in the Declarations as applicable to this endorsement.)

WHO IS AN INSURED (Section II) is amended to include as an insured the person or organization shown in the Schedule, but only with respect to liability arising out of "your work" for that insured by or for you.

CG 20 10 11 85 Copyright, Insurance Services Office, Inc., 1982



NOTES:

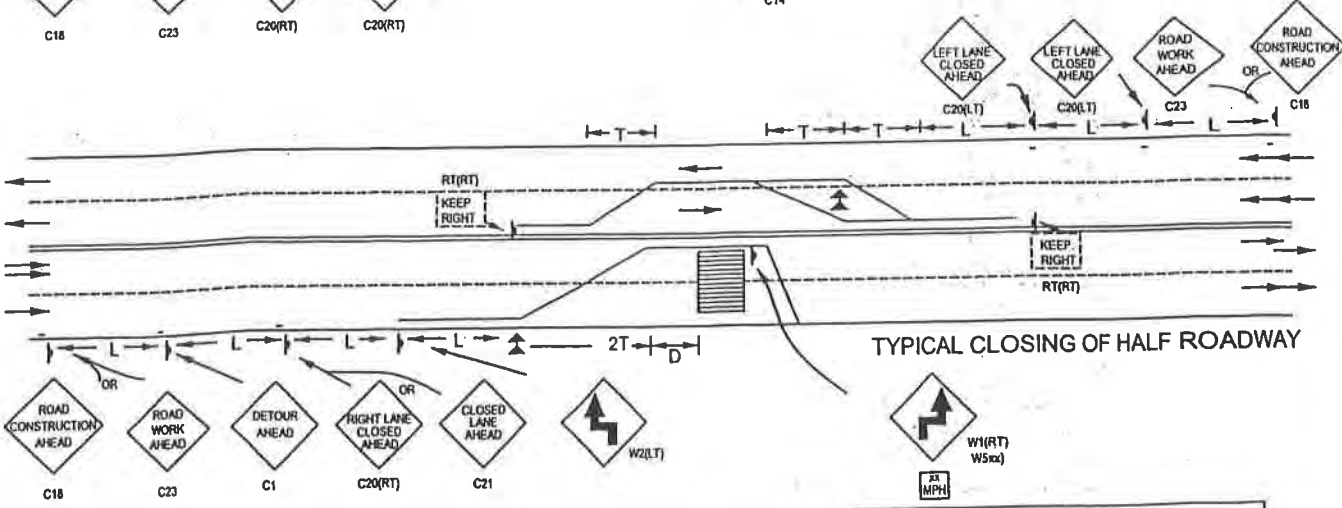
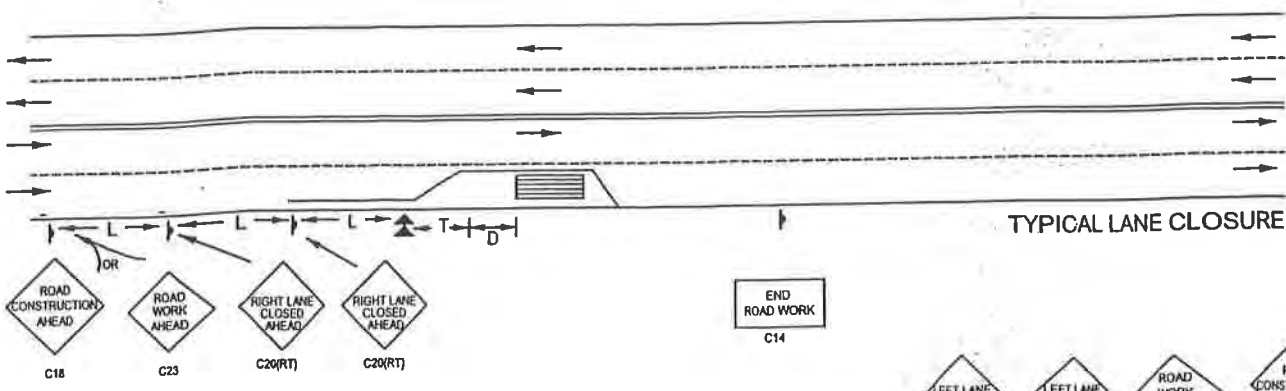
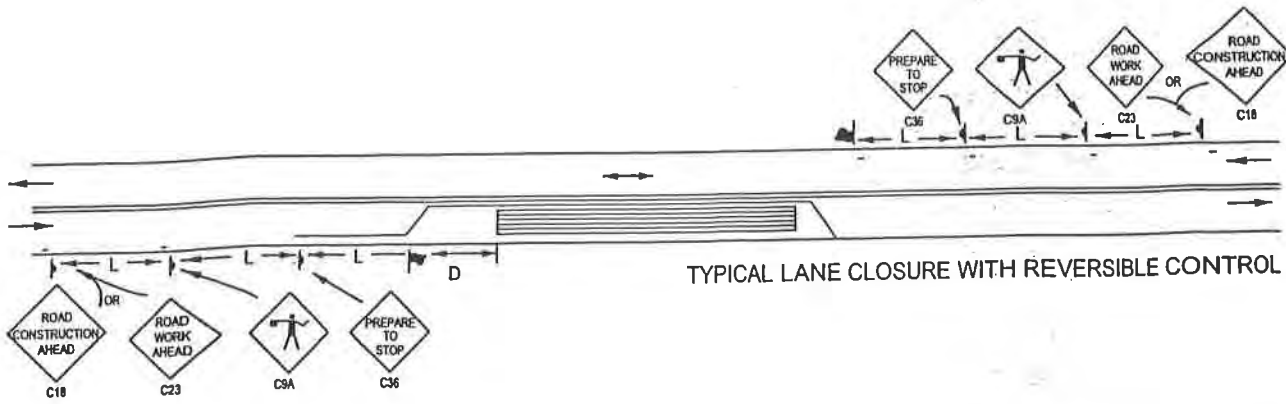
1. All trenches shall be backfilled with 100-E-100 cement/sand slurry mix.
2. These conditions shall be in addition to Plate No. 8-13.
3. Jagged and/or rough edges shall be kept at a minimum. Inspector will determine any additional saw cutting. Extreme care must be exercised on older roads where A/C has broken up or become brittle. Existing AC sections adjacent to concrete gutters, ramps, curbs, medians, catch basins, and driveways less than 18" wide shall be removed and replaced with new full depth AC section and as directed by the Public Works Inspector.
4. Asphalt for final lift shall be Type III-C2-PG 64-10 per SSPWC 400-4. Asphalt shall be 1" thicker than existing.
5. Surface of all trenches shall be maintained flush with adjacent existing pavement.
6. All work must be completed within 30 days of starting date unless otherwise authorized by the City Engineer.
7. For multiple trench repairs located adjacent to each other, distance between repairs shall be no less than 4' (floaters less than 4' are not allowed).

6	Remove Reinforcing Fabric Requirement	3-27-12	MAF
5	Revise Dimensions A.C. Specification	10-22-08	MAF
2	Clarify Overlay Width & Requirements	3-22-04	JTS
CHG	DESCRIPTION	DATE	INITIAL
APPROVED	<i>[Signature]</i> CITY ENGINEER	3.27.12	DATE

**CITY OF THOUSAND OAKS
PUBLIC WORKS DEPARTMENT**

STANDARD
TRENCH REPAIR WITHIN
PAVED RIGHT OF WAY

PLATE NO.
8-14



POSTED SPEED	T	L	MAXIMUM SPACINGS OF CHANNELIZATION DEVICES		D
	MINIMUM TAPER LENGTH	MINIMUM SIGN SPACING	CONES/BARRICADES	TUBES	MINIMUM BUFFER ZONE
25	125 (39)	125 (39)	25 (7.6)	10	150 (46)
30	180 (55)	180 (55)	30 (9.1)	15	150 (46)
35	250 (76)	250 (76)	35 (10.7)	15	150 (46)
40	325 (100)	325 (100)	40 (12.2)	20	150 (46)
45	550 (140)	550 (140)	45 (13.7)	20	150 (46)
50 +	750 (220)	750 (220)	50 (15.2)	25	150 (46)

LEGEND

- ▶ TRAFFIC SIGN WITH FLAGS
- CHANNELIZATION DEVICE
- ⬆ FLASHING ARROW SIGN
- 🚧 FLAGGER
- ▬ WORK ZONE
- (00) METERS

CHG	DESCRIPTION	DATE	INITIAL
APPROVED <i>[Signature]</i>		DATE <i>6/20/07</i>	
CITY ENGINEER			


CITY OF THOUSAND OAKS
PUBLIC WORKS DEPARTMENT

STANDARD
TRAFFIC CONTROL CHART

PLATE NO.
8-15

TRAFFIC CONTROL NOTES:

1. ACTUAL FIELD CONDITIONS MAY REQUIRE SOME DEVIATION FROM THESE PLANS & NOTES, HOWEVER, ANY SUCH DEVIATIONS SHALL BE APPROVED BY THE CITY TRAFFIC ENGINEER AT LEAST 72 HOURS PRIOR TO IMPLEMENTATION.
2. These plans & notes do not apply to EMERGENCY CONDITIONS on brief operations where PUBLIC & EMPLOYEE SAFETY ARE NOT JEOPARDIZED.
3. All advance warning signs shall be equipped with two orange flags.
4. All advance warning signs shall be a minimum of 36" x 36".
5. Daytime channelization devices may consist of either:
 - a. 28" minimum height cones, or
 - b. 37" minimum height tubes, or
 - c. Type one barricades.
6. All lane closures and detours that are scheduled to remain over one week shall be striped and all conflicting stripes shall be completely removed by blasting (black paint shall not be used).
7. The following are additional requirements for all night time lane closures and detours:
 - a. At least one person shall be assigned full-time to maintain traffic control devices, and
 - b. All traffic signs shall be reflectorized, and
 - c. Type A or B (flashing) yellow flashing beacon warning lights shall be used at all warning signs.
 - d. All channelization devices shall be either:
 1. Internally illuminated cones fitted with 7" reflective with sleeves, or
 2. Type 1 barricades with type C (steady burn) yellow barricade warning lights.
8. The following are additional requirements on all roads having a posted speed limit of 40 mph or greater:
 - a. All advance warning signs should be a minimum of 48" x 48", and
 - b. Type 1 or 2 flashing arrow signs (FAS) shall be used on all lane closures.
9. No trenches shall be left open overnight without the express written permission of the City Engineer. Trenches shall be either plated or back filled and resurfaced with temporary A.C.
10. Access shall be maintained at all times to all intersecting streets & driveways.
11. All provisions of the "Manual of Traffic Controls" published by the State Department of Transportation shall apply. Nothing in the City Road Standards is to be construed as to reduce the minimum State Standards.

CITY OF THOUSAND OAKS PUBLIC WORKS DEPARTMENT			
CHG	DESCRIPTION	DATE	INITIAL
APPROVED	 CITY ENGINEER	5/20/07 DATE	STANDARD TRAFFIC CONTROL NOTES
			PLATE NO. 8-16

Appendix C

CA Proposition 84 Labor Compliance Handout

LABOR COMPLIANCE PROGRAM HANDOUT

The **Las Virgenes Municipal Water District** is committed to enforcing State prevailing wage requirements for the Interconnection with Calleguas Municipal Water District project. The provisions of this law require all contractors to comply with the current prevailing wage rate requirements and all apprenticeship requirements.

The submission of complete and accurate certified payrolls records, including fringe benefit statements, DAS-140, DAS-142, CAC2 and similar forms are a prerequisite to receiving progress payments. Failure to comply with these rules and regulations can result in monies being withheld and penalties imposed. Contractors are advised to be familiar with Labor Code Section 1720 et. seq. For all projects advertised for bid after March 1st 2015 and all projects awarded after April 1, 2015 your payrolls must be also be submitted to the DIR using eCPR. Please be advised that eCPR do not meet certified payroll requirements and therefore cannot be accepted as certified payrolls submitted to the agency, general contractor or CCMI.

At the time the General Contractor submits any progress payment to the Agency, the following documents are to be submitted by the General Contractor **directly to the CCMI** for all work performed, including work by subcontractors:

- 1 copy of the progress payment request
- Certified payrolls (eCPR payrolls are not acceptable)
- PW26 or similar form listing fringe benefits being paid.
- CAC2 form or equivalent relating to monthly training contributions
- DAS-140 form for each craft employed on the project
- DAS-142 request to train apprentices
- Electrician Certification – Those employing electricians may need to submit additional data to verify the certification status of those employed

Subcontractors are to submit all documentation directly to the General Contractor in a timely (not less than monthly) basis. The General Contractor will then forward all information to CCMI. Failure to submit these documents to CCMI may result in the progress payment being delayed.

Should you have any questions or concerns, you are welcome to contact:
Contractor Compliance and Monitoring (CCMI) directly at:

CONTRACTOR COMPLIANCE AND MONITORING
Alisha Heagy
635 Mariners Island Blvd. Ste. 200, San Mateo, CA 94404
Phone (650) 522-4403; fax (650) 522-4402
ahagy@ccmilcp.com

CHECKLIST OF LABOR LAW REQUIREMENTS
FOR REVIEW AT JOB START MEETINGS

(In accordance with CCR Section 16430)

The state labor law requirements applicable to the contract are composed of, but not limited to, the following:

1. Payment of Prevailing Wage Rates

The award of a public works contract requires that all workers employed on the project be paid not less than the specified general prevailing wage rates by the contractor and its subcontractors. Prevailing wage determinations for this project can be obtained at: **www.dir.ca.gov**. This includes a total package including fringe benefits and training contributions which are paid to the employee or for the benefit of the employee to a bona fide ERISA approved or otherwise unconditionally paid for the benefit of the employee Trust Fund.

The contractor is responsible for obtaining and complying with all applicable general prevailing wage rates for trades workers and any rate changes, which may occur during the term of the contract. Prevailing wage rates and rate changes are to be posted at the job site for workers to view. Or the contractor may post a notice stating where the prevailing wage determinations are available on the jobsite and the contractor shall provide access to such information upon reasonable notice.

2. All individuals or companies performing prevailing wage work on this project must be registered as a public works contractor and pay an annual fee of \$400 to the Department of Industrial Relations (DIR). This includes all work covered by prevailing wage such as trucking, surveying, building inspection and so on.

3. Apprentices

It is the duty of the contractor and subcontractors to employ registered apprentices on public works projects per Labor Code Section 1777.5; Contractors and subcontractors must submit proof of Public Works Contract Award Information (DAS140) or other documentation for Division of Apprenticeship Standards approved apprenticeship programs. Apprentices are to be employed in all crafts and in all trades with approved training programs. Contractors are to employ apprentices on a ratio of 1 apprentice hour for every 5 journeymen hours or as otherwise approved by the DAS approved Apprenticeship Training Committee. Contractors and subcontractors who do not meet this ratio must submit documentation that apprentices were requested and were not provided and/or not available in sufficient number to meet this ratio. The submission of an accurate DAS142(s) meets this requirement. Additional documentation may be required to verify the apprenticeship status of employees.

4. Penalties

Penalties, including forfeitures and debarment, shall be imposed for contractor/subcontractor failure to pay prevailing wages, failure to maintain and submit accurate certified payroll records upon request, failure to employ apprentices, and for failure to pay employees for all hours worked at the correct prevailing wage rate, in accordance with Labor Code Sections 1775, 1776, 1777.7, and 1813. Monetary penalties of \$200 per day per worker shall be imposed for failure to pay correct prevailing wage; \$25 per day per worker shall be imposed for overtime violated; \$100 per day per worker for failure to provide certified payroll information; \$100-\$300 per calendar day for noncompliance of Apprenticeship issues.

5. Certified Payroll Records

Per Labor Code Section 1776, contractors and subcontractors are required to keep accurate payroll records which reflect the name, address, social security number, and work classification of each employee; the straight time and overtime hours worked each day and each week; the fringe benefits; and the actual per diem wages paid to each journeyman, apprentice, worker, or other employee hired in connection with a public works project. A listing of all current prevailing wage determinations can be

obtained from the Agency's main office or by accessing the Department of Industrial Relation's website at: www.dir.ca.gov

Employee payroll records shall be certified (signed under penalty of perjury by someone in authority at the company) and shall be made available for inspection at all reasonable hours at the principal office of the contractor/subcontractor, or shall be furnished to any employee, or to his or her authorized representative on request. Disclosure of certified payroll information to anyone other than the Awarding Body, its agent, or the Department of Industrial Relations requires that personal information about the employees (name, address and social security number) listed on the forms be redacted (omitted) to protect employee privacy.

Contractors and subcontractors shall maintain their certified payrolls on a weekly basis and shall submit said payrolls on a monthly basis in conjunction with contractor's requests progress or final payment. In the event that there has been no work performed during a given week, the Certified Payroll Record shall be annotated "No Work" for that week. The Agency or its authorized representative is also authorized to request and review all related payroll records such as time cards, cancelled checks, etc. For all projects awarded after April 1, 2015, certified payrolls must also be submitted to the DIR electronically through their eCPR system.

While the DIR accepts electronic versions of your certified payroll, the DIR and this agency may also request copies of the original certified payroll and supporting documentation at any time.

6. Nondiscrimination in Employment

Prohibitions against employment discrimination are contained in Labor Code Sections 1735 and 1777.6; the Government Code; the Public Contracts Code; and Title VII of the Civil Rights Act of 1964, as amended. All contractors and subcontractors are required to implement equal employment opportunities as delineated below:

a. Equal Employment Poster

The equal employment poster shall be posted at the job site in a conspicuous place visible to employees and employment applicants for the duration of the project. All other labor and employment related posters are also to be properly displayed on the jobsite.

7. Kickback Prohibited

Per Labor Code Section 1778, contractors and subcontractors are prohibited from accepting, taking wages illegally, or extracting "kickback" from employee wages;

8. Acceptance of Fees Prohibited

Contractors and subcontractors are prohibited from exacting any type of fee for registering individuals for public work (Labor Code Section 1779); or for filling work orders on public works contracts (Labor Code Section 1780);

9. Listing of Subcontractors

Contractors are required to list all subcontractors hired to perform work on a public works project when that work is equivalent to more than one-half of one percent of the total contract amount or \$10,000 whichever is greater. (Public Contract Code Section 4100, et seq.);

10. Proper Licensing

Contractors and subcontractors are required to be properly licensed. Penalties will be imposed for employing workers while unlicensed (Labor Code Section 1021 and Business and Professions Code Section 7000, et seq. under California Contractors License Law);

11. Unfair Competition Prohibited

Contractors and subcontractors are prohibited from engaging in unfair competition (Business and Professions Code Sections 17200-17208);

12. Workers' Compensation Insurance

All contractors and subcontractors are required to be insured against liability for workers' compensation, or to undertake self-insurance in accordance with the provisions of Labor Code Section 3700 (Labor Code Section 1861);

13. OSHA

Contractors and subcontractors are required to comply with the Occupational, Safety and Health laws and regulations applicable to the particular public works project.

14. Prompt Payment of Subcontractors and Suppliers

Contractors are required by law to promptly pay their subcontractors and suppliers within seven (7) days of receipt of any progress or final payment from the Public Agency. Likewise the subcontractor and supplier are required to pay their respective subcontractors and suppliers within seven (7) days of receipt of payment from the general contractor. When the payment to the contractor is a release of final retention on the project, those funds must be paid within seven (7) days of receipt.

15. IRCA

Pursuant to the Immigration Reform and Control Act of 1986, employers are required to verify that all employees working on public works contracts are legally able to work in the United States. Employers shall keep on file appropriate I-9 forms and documentation for all workers employed on the jobsite and make such forms available to inspection and review by the LCO upon request.

16. Jobsite Interviews

Jobsite interviews are required on a regular basis on this project, CCMI may conduct random jobsite interviews as necessary to meet labor compliance obligations.

17. Certification of Electricians

Those employing electricians must comply with employment testing and certification requirements for electricians. Additional information may be required to verify the certification status of those employed.

18. Employee Wage Statements - It is required to provide itemized wage statements (pay stubs) to Employees under Labor Code Section 226.

19. Posting of Labor Compliance – Notice of Labor Compliance Approval is required to be posted at the job site in accordance with section 16429, listing a telephone number to call for inquiries, questions, or assistance with regard to the Labor Compliance Program. (Sample attached in handout).

20. Confirmation of Payroll Records – Confirmation of payment to employees for each contractor and subcontractor shall be undertaken randomly for at least one worker for at least one weekly period within that month. This will entail a monthly request of the front and back of a canceled check and employee pay stub for each contractor/subcontractor. Per Title 8 of the California Code Regulations section 16432(c).

21. Public Works Contractor Registration – Only those businesses who have registered and paid the applicable fee to the Department of Industrial Relations as a Public Works Contractor will be allowed to work on the project.

In accordance with federal and state laws, and with the Public Agency's policy and contract documents, the undersigned contractor herein certifies that they will comply with the foregoing labor law requirements; and fully understands that failure to comply with these requirements will subject them to the penalties cited herein.

The contractor also herein certifies that it has been provided with a copy of the Labor Compliance Program Package for Contractors with includes:

1. Labor Law Requirements Checklist (included herein)
2. The Location of Applicable General Prevailing Wage Rate Determinations
3. Blank Certified Payroll Record form
4. Fringe Benefit Statements
5. State apprenticeship contribution form (CAC2)
6. State apprenticeship requirements and form to register apprentices (DAS-140)
7. Request for apprentices (DAS-142)
8. Copy of the Labor Code relating to Public Works and Public Agencies (Part 7, Chapter 1, Sections 1720-1816 can be found at www.dir.ca.gov).

IT IS THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE COPIES OF THE LABOR COMPLIANCE PROGRAM PACKAGE TO ALL LISTED SUBCONTRACTORS AND TO ANY SUBSTITUTED SUBCONTRACTORS.

Project Name and Number: _____

Public Agency: _____

Contractor: Name _____

Contractor Address: _____

Contractor Phone: _____ Fax: _____

License Number: _____ Date: _____

I acknowledge that I have been informed and am aware of the foregoing requirements and that I am authorized to make this certification on behalf of _____.
(Name of Contractor)

Signature/Name/Title of Contractor Authorized Representative

Additional Explanation And Instructions Relating To Required LCP Forms and Information

Certified payroll or non performance documentation - is required for each week from the beginning of the contractor's /subcontractor's work on the project until completion of that contractor's/subcontractor's work. These documents need to reflect a consistent 7-day work week for the entirety of the project. The certified payroll forms need to be complete, listing the employee's correct name, address, social security number, hours worked per day, total hours worked per week, wages, deductions and check number. It is critical that the employee's craft classification be listed correctly. Just listing "Journeyman" or "Laborer" is not sufficient. Many trades have sub-classifications and it is the contractor's obligation to correctly classify the employees. Employees must be classified and paid based on what type of work they are performing, not merely by title. It is acceptable for an employee to work in more than one trade category per day, but it is the employer's obligation to keep accurate records of the different type of work performed by the employee.

Please be aware non-performance statements must be submitted for weeks in which no work is performed. More information about trade classifications and wage rates can be found at www.dir.ca.gov.

Fringe Benefit Statement - In order to complete a payroll audit, we need a copy of the fringe benefit statement listing the fringes being paid to each employee or employees on each trade. You are not required to use the worksheet in the packet, however all the information on that worksheet needs to be included in the documentation we receive. This should show an hourly breakdown of the specific contributions (health, pension, etc.) for each trade and the addresses of the plans being paid into. For contractors who pay medical benefits directly to a medical plan, such as Kaiser or Blue Shield, the monthly payment for each employee must be amortized into an hourly rate. (For example: Joe's health premium is \$300 a month, that rate multiplied by 12 (months) divided by 2080 (hours) yields an hourly rate of \$1.72 per hour). Similar amortization is allowed for vacation and holiday time paid. Training contributions paid to an approved apprenticeship committee needs to be listed as a separate item on this form (i.e. not just training/other together).

Apprenticeship

Submit contract award information- DAS-140

Submit the contract award information in writing to each of the apprenticeship program sponsors in the area of your public works project within 10 days of the prime execution of the contract or subcontract, but in no event later than the first day in which the contractor has workers employed on the public work. This is simply a notification of award, it is not automatically a request for dispatch of a registered apprentice.

If you are not already approved to train apprentices with an approved apprenticeship committee and you are not willing to abide by the terms of and conditions of an apprenticeship program for this project, then (check Box 3) you must send a copy of the DAS-140 form to ALL approved apprenticeship Training Committee for that craft in the County in which the work is being performed.

Request to employ registered apprentices- DAS-142

A contractor on a public works project must employ one (1) hour of apprentice work for every five

(5) hours performed by a journeyman.

All contractors must request for dispatch of an apprentice from an apprenticeship program (for each apprenticeable craft or trade) by giving the program actual notice of the request at least 72 hours (business days only) before the date on which apprentices are required. Contractors who do not receive sufficient number of apprentices from their initial request must continue to request apprentices from all other approved apprenticeship committees in the county, if more than one exists, until the proper ratio of apprentices is reached or until all apprenticeship committees (for that trade) have been contacted at least once.

When an apprentice is dispatched, the employer is required to employ the apprentice for at least one full day of work (8 hours) or 20% of the total apprenticeship hours calculated for the project- unless the total number of journeyman hours total under 40 hours for that craft.

Make training fund contributions – CAC 2

Contractors who are awarded public works jobs must make training fund contributions in the amount established in the prevailing wage rate publication for journeymen and apprentices. This nominal fee contributes to the assurance that new apprentices coming into the craft will be guaranteed the highest level of training and as those skilled craftsmen retire, the trade will survive.

Contractors who contribute to an apprenticeship program are entitled to a full credit in the amount of those contributions for each apprentice working on the project and to not more than the specified training contribution amount for journeyman. Contractors who do not contribute to an apprenticeship program must submit their contributions to the California Apprenticeship Council, PO Box 511283, Los Angeles, CA 90051-7838.

Training fund contributions to the Council are due and payable on the 15th day of the month for work performed during the preceding month. The contribution should be paid by check and be accompanied by a computer generated training fund contribution form (CAC – 2) or a letter containing the following information:

1. The name, address and telephone number of the contractor making the contribution.
2. The contractor's license number.
3. The name and address of the public agency that awarded the contract.
4. The jobsite location, including the county where the work was performed.
5. The contract or project number.
6. The time period covered by the enclosed contributions.
7. The contribution rate and total hours worked by apprenticeable occupation.
8. The name of the program(s) that provide apprentices if any.
9. The number if apprentice hours worked, by apprenticeable occupations and by program.

Comments, suggestions and questions welcome. Email to daspublicworks@dir.ca.gov or call your local district office.

* * * * *

* DAS-140 and DAS-142 forms are not required when the general contract is less than \$30,000 or when the company performing the work is a sole proprietor and is the only worker employed by that company on the project.

PUBLIC WORKS CONTRACT AWARD INFORMATION

Contract award information must be sent to your Apprenticeship Committee if you are approved to train. If you are not approved to train, you must send the information (which may be this form) to ALL applicable Apprenticeship Committees in your craft or trade in the area of the site of the public work. Go to: <http://www.dir.ca.gov/das/PublicWorksForms.htm> for information about programs in your area and trade. You may also consult your local Division of Apprenticeship Standards (DAS) office whose telephone number may be found in your local directory under California, State of, Industrial Relations, Division of Apprenticeship Standards.

Do not send this form to the Division of Apprenticeship Standards.

NAME OF YOUR COMPANY	CONTRACTOR'S STATE LICENSE NO
MAILING ADDRESS- NUMBER & STREET, CITY, ZIP CODE	AREA CODE & TELEPHONE NO.
NAME & ADDRESS OF PUBLIC WORKS PROJECT	DATE YOUR CONTRACT EXECUTED
	DATE OF EXPECTED OR ACTUAL START OF PROJECT
NAME & ADDRESS OF PUBLIC AGENCY AWARDED CONTRACT	ESTIMATED NUMBER OF JOURNEYMEN HOURS
	OCCUPATION OF APPRENTICE
THIS FORM IS BEING SENT TO: (NAME & ADDRESS OF APPRENTICESHIP PROGRAM(S))	ESTIMATED NUMBER OF APPRENTICE HOURS
	APPROXIMATE DATES TO BE EMPLOYED

This is not a request for dispatch of apprentices.

Contractors must make a separate request for actual dispatch, in accordance with Section 230.1(a) California Code of Regulations

Check One Of The Boxes Below

1. We are already approved to train apprentices by the _____
Apprenticeship Committee. We will employ and train under their Standards. Enter name of the Committee

2. We will comply with the standards of _____
Apprenticeship Committee for the duration of this job only. Enter name of the Committee

3. We will employ and train apprentices in accordance with the California Apprenticeship Council regulations, including § 230.1 (c) which requires that apprentices employed on public projects can only be assigned to perform work of the craft or trade to which the apprentice is registered and that the apprentices must at all times work with or under the direct supervision of journeyman/men.

Signature _____ Date _____

Typed Name _____

Title _____

**State of California - Department of Industrial Relations DIVISION
OF APPRENTICESHIP STANDARDS**

REQUEST FOR DISPATCH OF AN APPRENTICE – DAS 142 FORM

DO NOT SEND THIS FORM TO DAS

You may use this form to request dispatch of an apprentice from the Apprenticeship Committee in the craft or trade in the area of the public work. Go to: <http://www.dir.ca.gov/DAS/PublicWorksForms.htm> for information about programs in your area and trade. You may also consult your local Division Apprenticeship Standards (DAS) office whose telephone number may be found in your local directory under California, State of, Industrial Relations, Division of Apprenticeship Standards. **Except for projects with less than 40 hours of journeyman work, you must request and employ apprentices in no less than 8 hour increments.**

Date: _____	Contractor Requesting Dispatch:
To Applicable Apprenticeship Committee:	
Name: _____	Name: _____
Address: _____ _____	Address: _____ _____
Tel. No. _____ Fax No. _____	License No. _____
	Tel. No. _____ Fax No. _____

Project Information:

Contract No. _____

Name of the Project: _____

Address: _____

Dispatch Request Information:

Number of Apprentice(s) Needed: _____ **Craft or Trade:** _____

Date Apprentice(s) to Report: _____ (72 hrs. notice required) **Time to Report:** _____

Name of Person to Report to: _____

Address to Report to: _____

*You may use this form to make your written request for the dispatch of an apprentice. Requests for dispatch must be in writing and submitted at least 72 hours in advance (excluding weekends and holidays) via either first class mail, fax or email. **Proof of submission may be required.** Please take note of California Code of Regulations, Title 8, § 230.1 (a) for all applicable requirements regarding apprenticeship requests and/or visit*

<http://www.dir.ca.gov/DAS/DASApprenticesOnPublicWorksSummaryOfRequirements.htm>

DAS 142 (Revised 12/11)

GENERAL PREVAILING WAGE DETERMINATION MADE BY THE DIRECTOR OF INDUSTRIAL RELATIONS
PURSUANT TO CALIFORNIA LABOR CODE PART 7, CHAPTER 1, ARTICLE 2, SECTIONS 1770, 1773 AND 1773.1

FOR COMMERCIAL BUILDING, HIGHWAY, HEAVY CONSTRUCTION AND DREDGING PROJECTS

CRAFT: # CEMENT MASON

DETERMINATION: NC-23-203-1-2014-2

ISSUE DATE: August 22, 2014

EXPIRATION DATE OF DETERMINATION: June 28, 2015** The rate to be paid for work performed after this date has been determined. If work will extend past this date, the new rate must be paid and should be incorporated in contracts entered into now. Contact the Office of the Director – Research Unit for specific rates at (415) 703-4774.

LOCALITY: All localities within Alameda, Alpine, Amador, Butte, Calaveras, Colusa, Contra Costa, Del Norte, El Dorado, Fresno, Glenn, Humboldt, Kings, Lake, Lassen, Madera, Marin, Mariposa, Mendocino, Merced, Modoc, Monterey, Napa, Nevada, Placer, Plumas, Sacramento, San Benito, San Francisco, San Joaquin, San Mateo, Santa Clara, Santa Cruz, Shasta, Sierra, Siskiyou, Solano, Sonoma, Stanislaus, Sutter, Tehama, Trinity, Tulare, Tuolumne, Yolo, and Yuba counties.

CLASSIFICATION (JOURNEYPERSON)	Employer Payments					Straight-Time		Overtime Hourly Rate		
	Basic Hourly Rate	Health and Welfare	Pension	Vacation and Holiday	Training	Hours ^d Total	Hourly Rate	Daily 1 1/2X	Saturday ^a 1 1/2X	Sunday and Holiday
Cement Mason	\$30.00	8.15	9.80	5.24 ^b	0.47	8	53.66	68.660	68.660 ^c	83.66
Mastic Magnesite Gypsum, Epoxy, Polyester, Resin and all composition masons, swing or slip form scaffolds	\$30.75	8.15	9.80	5.24 ^b	0.47	8	54.41	69.785	69.785 ^c	85.16

Indicates an apprenticeable craft. The current apprentice wage rates are available on the Internet @ <http://www.dir.ca.gov/OPRL/PWAppWage/PWAppWageStart.asp>. To obtain any apprentice wage rates as of July 1, 2008 and prior to September 27, 2012, please contact the Division of Apprenticeship Standards or refer to the Division of Apprenticeship Standards' website at <http://www.dir.ca.gov/das/das.html>.

^a Saturdays in the same work week may be worked at straight time if a job is shut down during the normal work week due to inclement weather or major mechanical breakdown (limited to curb and gutter machine, concrete pump, and concrete plant).

^b Includes an amount for supplemental dues.

^c Rate applies to the first 8 hours of work on Saturday. All other hours worked on Saturday are paid at the Sunday/Holiday rate.

^d Where multiple shifts are worked, the day shift shall work eight (8) hours and for such work they shall be paid the regular straight time rate for eight (8) hours; the second (2nd) shift shall work seven and one-half (7 ½) hours, and for such work they shall be paid the regular straight time rate for eight (8) hours; if a third (3rd) shift is worked, they shall work seven (7) hours and for such work they shall be paid eight (8) hours regular straight time pay. No multiple shift shall be started for less than five (5) consecutive days.

RECOGNIZED HOLIDAYS: Holidays upon which the general prevailing hourly wage rate for Holiday work shall be paid, shall be all holidays in the collective bargaining agreement, applicable to the particular craft, classification, or type of worker employed on the project, which is on file with the Director of Industrial Relations. If the prevailing rate is not based on a collectively bargained rate, the holidays upon which the prevailing rate shall be paid shall be as provided in Section 6700 of the Government Code. You may obtain the holiday provisions for the current determinations on the Internet at <http://www.dir.ca.gov/OPRL/PWD>. Holiday provisions for current or superseded determinations may be obtained by contacting the Office of the Director – Research Unit at (415) 703-4774.

TRAVEL AND/OR SUBSISTENCE PAYMENT: In accordance with Labor Code Sections 1773.1 and 1773.9, contractors shall make travel and/or subsistence payments to each worker to execute the work. You may obtain the travel and/or subsistence provisions for the current determinations on the Internet at <http://www.dir.ca.gov/OPRL/PWD>. Travel and/or subsistence requirements for current or superseded determinations may be obtained by contacting the Office of the Director – Research Unit at (415) 703-4774.

SAMPLE ⁵³

California Apprenticeship Council - Training Fund Contributions

1. Go to this web link: <https://www.dir.ca.gov/DAS/tf/cac2.asp> and add it to your favorites.
2. Fill out the New Easy Web App with the necessary information.
3. Please use your Contractor's License Number without the alpha digit. This number can also be used to look up your contributions on the website at:
<http://www.dir.ca.gov/CA/trainingfund/Tfsearch.html>
4. Select the County and Occupation, then fill in the hours and rate and when you hit "tab" the amount is calculated for you.
5. Once you are done filling out the form and verified your information, print out your invoice.
6. **VERY IMPORTANT:** Mail **both** the **invoice** and your **check** payable to:
California Apprenticeship Council to:

***Remit to: CALIFORNIA APPRENTICESHIP COUNCIL
PO BOX 511283
Los Angeles, CA 90051-7838***

CONTRACTOR FRINGE BENEFIT STATEMENT

Contract Number / Name:	Contract Location:	Today's Date:
Contractor / Subcontractor Name:		Business Address:

In order that the proper Fringe Benefit rates can be verified when checking payrolls on the above contract, the hourly rates for fringe benefits, subsistence and/or travel allowance payment made for employees on the various classes of work are tabulated below.

Classification:	Effective Date:	Subsistence or Travel Pay: \$ _____
FRINGE BENEFITS	Health & Welfare \$ _____	PAID TO: Name: _____ Address: _____
	Pension \$ _____	PAID TO: Name: _____ Address: _____
	Vacation/ Holiday \$ _____	PAID TO: Name: _____ Address: _____
	Training Other \$ _____	PAID TO: Name: _____ Address: _____

Classification:	Effective Date:	Subsistence or Travel Pay: \$ _____
FRINGE BENEFITS	Health & Welfare \$ _____	PAID TO: Name: _____ Address: _____
	Pension \$ _____	PAID TO: Name: _____ Address: _____
	Vacation/ Holiday \$ _____	PAID TO: Name: _____ Address: _____
	Training Other \$ _____	PAID TO: Name: _____ Address: _____

Classification:	Effective Date:	Subsistence or Travel Pay: \$ _____
FRINGE BENEFITS	Health & Welfare \$ _____	PAID TO: Name: _____ Address: _____
	Pension \$ _____	PAID TO: Name: _____ Address: _____
	Vacation/ Holiday \$ _____	PAID TO: Name: _____ Address: _____
	Training Other \$ _____	PAID TO: Name: _____ Address: _____

Submitted: Contractor / Subcontractor	By: Name / Title
---------------------------------------	------------------

Supplemental statements must be submitted during the progress of work should a change in rate of any of the classifications be made.

Title 8 of the California Code and Regulations Section 16429, please be advised that this project falls under Labor Compliance Regulations. The Labor Compliance Program contact information for this project is:

Alisha Heagy
635 Mariners Island Blvd. Ste. 200
San Mateo, CA
PH 650-522-4403 – 650-522-4402 (fax)
aheagy@ccmilcp.com

This project is subject to the payment of prevailing wage. The prevailing wage rates for this project fall under determination 2016-2. To obtain information regarding the wages due for the project, please go to www.dir.ca.gov.

In accordance with federal and state laws, and with the Public Agency's policy and contract documents, the undersigned contractor herein certifies that they will comply with the foregoing labor law requirements; and fully understands that failure to comply with these requirements will subject them to the penalties cited herein.

The contractor also herein certifies that it has been provided with a copy of the Labor Compliance Program Package for Contractors with includes:

1. Labor Law Requirements Checklist (included herein)
2. The Location of Applicable General Prevailing Wage Rate Determinations
3. Blank Certified Payroll Record form
4. Fringe Benefit Statements
5. State apprenticeship contribution form (CAC2)
6. State apprenticeship requirements and form to register apprentices (DAS-140)
7. Request for apprentices (DAS-142)
8. Copy of the Labor Code relating to Public Works and Public Agencies (Part 7, Chapter 1, Sections 1720-1816 can be found at www.dir.ca.gov).

IT IS THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE COPIES OF THE LABOR COMPLIANCE PROGRAM PACKAGE TO ALL LISTED SUBCONTRACTORS AND TO ANY SUBSTITUTED SUBCONTRACTORS.

Project Name and Number: _____

Public Agency: _____

Contractor: Name _____

Contractor Address: _____

Contractor Phone: _____ Fax: _____

License Number: _____ Date: _____

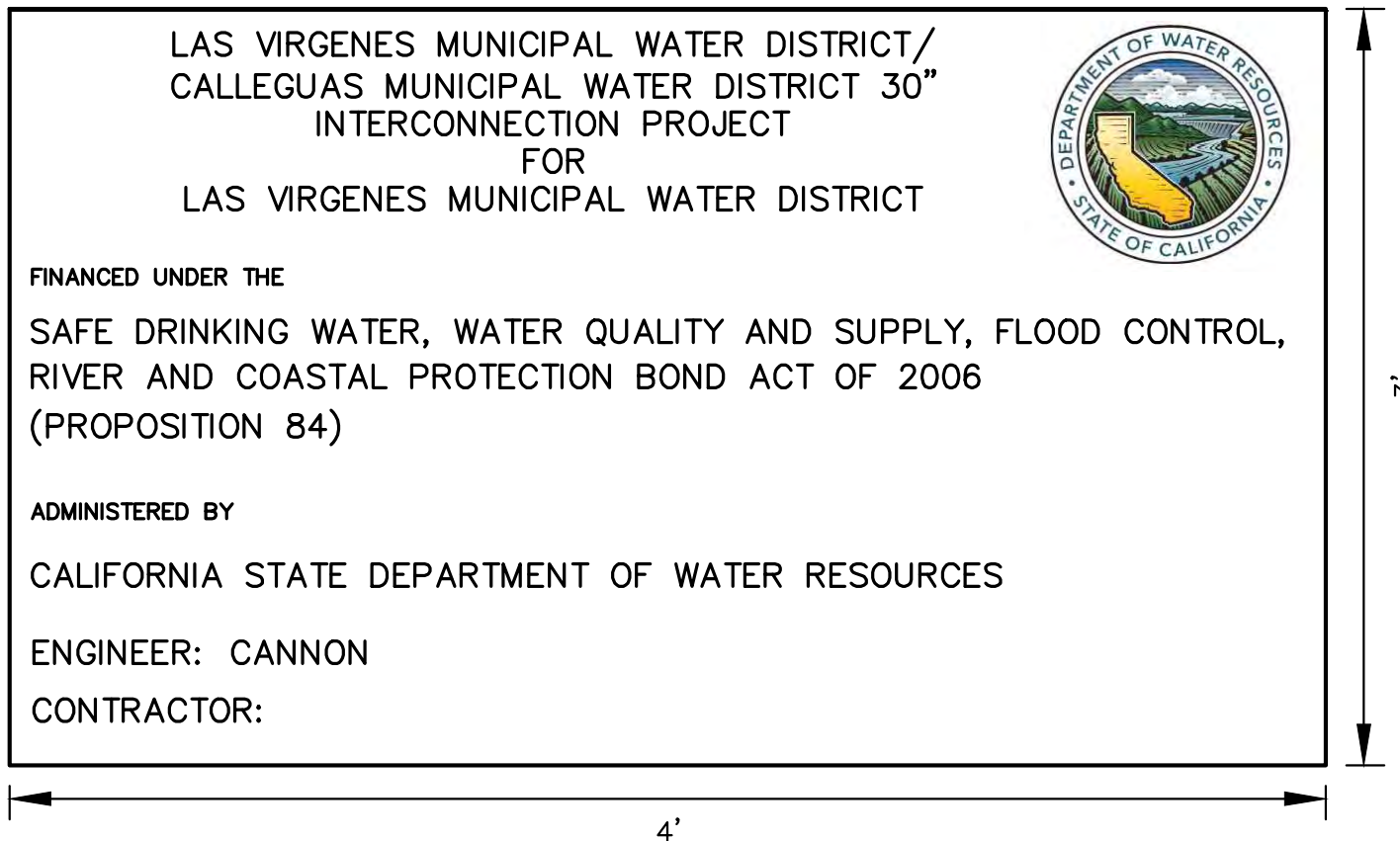
I acknowledge that I have been informed and am aware of the foregoing requirements and that I am authorized to make this certification on behalf of _____.
(Name of Contractor)

Signature/Name/Title of Contractor Authorized Representative

Appendix D

DWR Sign

PROPOSITION 84 – ROUND 2015 GRANT
SIGN GUIDELINES



- THIS IS A CONCEPTUAL DESIGN SKETCH THAT IS NOT TO SCALE.
- PROVIDE ADEQUATE STRUCTURAL SUPPORTS FOR SIGN AS SITE CONDITIONS MAY REQUIRE.
- KEEP SIGN A PROPER DISTANCE ABOVE PREVAILING GRADE TO PERMIT PUBLIC VIEWING.
- SIZE DWR LOGO TO PERMIT PUBLIC VIEWING. DWR LOGO (A FEW TO CHOSE FROM, CHOSE WHICHEVER IS MOST APPROPRIATE) AT: [HTTP://WWW.WATER.CA.GOV/IRWM/GRANTS/RESOURCES_DWRLOGO.CFM](http://www.water.ca.gov/irwm/grants/resources/dwrlogo.cfm)
- PAINT LETTERS BLUE (BLUE NO. 15102 IN FEDERAL COLOR STANDARD NO. 595).

Appendix E

Los Angeles County Flood Control Permit

Appendix F

Geotechnical Report

GEOTECHNICAL ENGINEERING REPORT
FOR PROPOSED INTERCONNECTION OF
WATER MAINS BETWEEN
CALLEGUAS AND LAS VIRGENES
MUNICIPAL WATER DISTRICTS,
WESTLAKE VILLAGE, CALIFORNIA

PROJECT NO.: VT-25364-01
OCTOBER 10, 2017

PREPARED FOR
CANNON CORPORATION

BY
EARTH SYSTEMS SOUTHERN CALIFORNIA
1731-A WALTER STREET
VENTURA, CALIFORNIA



October 10, 2017

Project No.: VT-25364-01
Report No.: 17-10-27

Attention: Gary Roepke
Cannon Corporation
11900 West Olympic Boulevard, Suite 530
Los Angeles, CA 90064

Project: Calleguas-Las Virgenes Municipal Water District Interconnection
Lindero Canyon Road
Westlake Village, California

As authorized, we have performed a geotechnical study for a proposed interconnection of water mains operated by Calleguas and Las Virgenes Municipal Water Districts below one of the southbound lanes of Lindero Canyon Road in the City of Westlake Village, California. The accompanying Geotechnical Engineering Report presents the results of our subsurface exploration and laboratory testing programs, as well as our conclusions and recommendations pertaining to geotechnical aspects of project design. This report completes the scope of services described within our Proposal No. VP17-078 (Revised) dated July 24, 2017, and authorized by Cannon Corporation via your Standard Task Order.

We have appreciated the opportunity to be of service to you on this project. Please call if you have any questions, or if we can be of further service.

Respectfully submitted,

EARTH SYSTEMS SOUTHERN CALIFORNIA

Patrick V. Boales
Engineering Geologist



10-10-17

Anthony P. Mazzei
Geotechnical Engineer



10/10/17

Copies: 3 - Cannon Corporation (2 via US mail, 1 via email)
1 - Project File

TABLE OF CONTENTS

INTRODUCTION.....	1
PROJECT DESCRIPTION.....	1
PURPOSE AND SCOPE OF WORK.....	1
EXISTING STRUCTURAL PAVING SECTIONS.....	2
SUBSURFACE CONDITIONS	2
AREA NEAR BORING B-1 (STN. NO. 45+60)	2
AREA NEAR BORING B-2 (STN. NO. 39+25)	3
AREA NEAR BORING B-3 (STN. NO. 31+20)	3
AREA NEAR BORING B-4 (STN. NO. 19+50)	4
AREA NEAR BORING B-5 (STN. NO. 9+85).....	4
GROUNDWATER.....	4
LABORATORY TESTING	5
UNDERGROUND UTILITY INSTALLATION	6
EXCAVATIONS	6
UTILITY TRENCH BACKFILL	7
THRUST BLOCKS	7
ADDITIONAL SERVICES	8
LIMITATIONS AND UNIFORMITY OF CONDITIONS	8
GENERAL BIBLIOGRAPHY	23
APPENDIX A	
Vicinity Map	
Regional Geologic Map	
Seismic Hazard Zones Map	
Historically Shallow Groundwater Depth Map	
Site Plans	
Field Study	
Logs of Borings	
Boring Lot Symbols	
Unified Soil Classification System	
APPENDIX B	
Laboratory Testing	
Laboratory Test Results	

INTRODUCTION

Project Description

This report presents results of a Geotechnical Engineering study performed for a proposed interconnection of water mains operated by Calleguas and Las Virgenes Municipal Water Districts. The new 30-inch diameter potable water line would run for approximately 5,000 lineal feet below one of the southbound lanes of Lindero Canyon Road from the Las Virgenes MWD line near Thousand Oaks Boulevard to the Calleguas MWD line at Blackbird Avenue.

Current plans indicate that the connecting potable water line will be constructed within a 4-foot wide trench. Backfill will be accomplished with Controlled Low Strength Material (i.e. CLSM, or cement slurry). The minimum required depth of cover for both the potable and reclaimed water lines is 3.5 feet. As a result, it is anticipated that the majority of the potable water line will have a depth of about 6 feet below finished subgrade elevation within the street, although it may need to be deeper if an adjacent AT&T cluster of utilities is deeper than 5 feet. Depths may be greater where they will be required to cross below existing storm drains. Current plans indicate that the potable water line will encounter six storm drain crossings, including a 60-inch diameter line.

Purpose and Scope of Work

The purpose of the geotechnical study that led to this report was to analyze the soil conditions along the alignment of the proposed water line. These conditions include existing pavement sections, subsurface soil types, strengths of soils expected to be encountered to aid in shoring design (if necessary), and the potential for groundwater to be encountered. The scope of work included:

1. Reviewing appropriate geotechnical and geologic maps and reports, including the LVMWD/CMWD Interconnect Project Preliminary Design Report prepared by M6 Consulting in November 2016.
2. Drilling, sampling, and logging five exploratory test borings to study soil and groundwater conditions.
3. Laboratory testing soil samples obtained from the subsurface exploration to determine their physical and engineering properties.
4. Consulting with owner representatives and design professionals.
5. Analyzing the geotechnical data obtained.
6. Preparing this report.

Contained in this report are:

1. Descriptions and results of field and laboratory tests that were performed.
2. Conclusions and recommendations pertaining to pavement rehabilitations and utility replacements.

EXISTING STRUCTURAL PAVEMENT SECTIONS

The various components of the existing pavement sections were measured in each of the test borings drilled within Las Virgenes Road. The existing pavement sections consisted of asphaltic concrete (AC) overlying aggregate base course material (AB). No concrete was encountered in any of the borings. The following table summarizes the thicknesses of the pavement components encountered in the test borings.

Boring No.	Approximate Station Number	Ex. Pavement Section	
		AC (in.)	AB (in.)
B-1	45+60	8.0	14.0
B-2	39+25	8.0	20.0
B-3	31+20	8.5	16.5
B-4	19+50	17.0	11.0
B-5	9+85	8.0	16.0

SUBSURFACE CONDITIONS

Generalized geotechnical conditions were documented in the referenced "Geotechnical Constraints Report" by Geolabs-Westlake Village (2015) that was included in the "LVMWD/CMWD Interconnect Project Preliminary Design Report" prepared by M6 Consulting (2016). The subsurface investigation recently performed by Earth Systems provides more detailed information. (Refer to the Site Plan in Appendix A of this report for the boring locations.) The following descriptions generalize the soil conditions encountered in each of the five exploratory borings. More detailed descriptions of the subsurface soil conditions encountered are included in the boring logs located in Appendix A.

Area Near Boring B-1 (Station Number 45+60)

Approximately one foot of artificial fill material was encountered between the bottom of the 22-inch thick structural paving section and claystones and siltstones of the Upper Topanga Formation. The artificial fill consisted of moist, highly plastic clayey sand. The bedrock units were bedded, and included some minor thin interbeds of sandstone at depths below about

9 feet. Regional mapping indicates bedrock strikes northeasterly, and dips at about 30° to the northwest. As such, bedding may be adversely oriented along the east wall of the trench when the trench is deeper than about 3 feet near Boring B-1. Although the bedrock is relatively dense, it is expected that it can be excavated using an excavator when pipeline installation occurs.

Groundwater was not encountered within the maximum depth explored of 11.5 feet below the existing ground surface.

Area Near Boring B-2 (Station Number 39+25)

Approximately one foot of artificial fill material was encountered between the bottom of the 28-inch thick structural paving section and clayey sandstones and siltstones of the Monterey Formation. The artificial fill consisted of moist, highly plastic clayey sand. The bedrock units were weathered within the upper few feet, and bedded at depths below about 10 feet. Regional mapping indicates bedrock strikes northeasterly, and dips at about 30° to the northwest. As such, bedding may be adversely oriented along the east wall of the trench when the trench is deeper than about 10 feet near Boring B-2. It is expected that bedrock can be readily excavated using an excavator when pipeline installation occurs.

Groundwater was not encountered within the maximum depth explored of 16.5 feet below the existing ground surface.

Area Near Boring B-3 (Near Station Number 31+20)

Approximately four feet of artificial fill material was encountered between the bottom of the 25-inch thick structural paving section and siltstones of the Monterey Formation. The artificial fill consisted of moist, moderately to highly plastic clayey sand. The bedrock units were bedded. Regional mapping indicates bedrock strikes northeasterly, and dips at about 30° to the northwest. As such, bedding may be adversely oriented along the east wall of the trench when the trench is deeper than about 6 feet near Boring B-3. Although the bedrock is relatively dense, it is expected that it can be excavated using an excavator when pipeline installation occurs.

Groundwater was not encountered within the maximum depth explored of 16.5 feet below the existing ground surface.

Area Near Boring B-4 (Near Station Number 19+50)

Approximately 11 feet of artificial fill material was encountered between the bottom of the 28-inch thick structural paving section and a 3-foot thick stratum of colluvium. Siltstones of the Monterey Formation were encountered immediately below the colluvium at a depth of 16 feet. The artificial fill consisted of moist, moderately plastic clayey sand. Colluvium consisted of silty clay. The bedrock units were weathered within the upper few feet, and bedded at depths below about 18 feet. Regional mapping indicates bedrock strikes northeasterly, and dips at about 30° to the northwest. As such, bedding may be adversely oriented along the east wall of the trench when the trench is deeper than 18 feet. It is expected that bedrock can be readily excavated using an excavator when pipeline installation occurs, but it is unknown whether the excavation will need to be deeper than 16 feet.

Groundwater was encountered at a depth of 20 feet below the existing ground surface.

Area Near Boring B-5 (Near Station Number 9+85)

Approximately four feet of artificial fill material was encountered between the bottom of the 24-inch thick structural paving section and siltstones of the Monterey Formation. The artificial fill consisted of moist, moderately plastic clayey sand. The bedrock units were bedded. Regional mapping indicates bedrock strikes northeasterly, and dips at about 30° to the northwest. As such, bedding may be adversely oriented along the east wall of the trench when the trench is deeper than about 6 feet near Boring B-5. It is expected that bedrock can be readily excavated using an excavator when pipeline installation occurs.

Groundwater was not encountered within the maximum depth explored of 11.5 feet below the existing ground surface.

GROUNDWATER

As mentioned above, groundwater was encountered at a depth of 20 feet below the ground surface in Boring B-4, but was not encountered in any of the other borings advanced to depths of 11.5 feet and 16.5 feet. Regional mapping of “historically shallow groundwater depths” by the California Division of Mines and Geology in 2000 indicates groundwater may have been as shallow as 10 feet (or less) at times throughout the entire length of the proposed water line. (The appropriate portion of the Historically Shallow Groundwater Depths map is included in Appendix A of this report.)

LABORATORY TESTING

Samples of soils that may come into contact with the new water line were tested for pH, resistivity, soluble sulfates, and soluble chlorides. Tests also included measurements of in-place moisture and density, direct shear testing of soils expected to be encountered during trenching for the water line, grain size analysis by hydrometer, and plasticity index. (More detailed descriptions of the test methods and a full listing of test results are included in Appendix B of this report.

The following table summarizes the sulfate contents measured on the samples tested.

Boring No.	Sample Depth (ft.)	Approximate Station Number	Sulfate Concentration (ppm)	Exposure Class
B-1	3-7	45+60	380	S0
B-2	3-7	39+25	1,000	S0/S1
B-3	3-7	31+20	450	S0
B-4	3-7	19+50	200	S0
B-5	3-7	9+85	160	S0

Sulfate contents generally fall within the "S0" exposure class range of Table 19.3.1.1 of ACI 318-14, although soils encountered in Boring B-2 in the anticipated pipe zone fall on the boundary between the "S0" and "S1" exposure classes. Given these data, it appears unlikely that special concrete designs will be necessary for the measured sulfate contents, with the possible exception of the areas near Boring B-2. If the "S1" exposure class is assumed for that area, it will be necessary to use concrete with a minimum unconfined compressive strength of 4,000 psi and a maximum water to cement ratio of 0.50.

The following table summarizes the resistivity measurements for the samples tested.

Boring No.	Sample Depth (ft.)	Approximate Station Number	Resistivity (Ohms-cm)	Corrosivity Category
B-1	3-7	45+60	2,500	Moderately Corrosive
B-2	3-7	39+25	1,200	Corrosive
B-3	3-7	31+20	2,200	Moderately Corrosive
B-4	3-7	19+50	3,000	Moderately Corrosive
B-5	3-7	9+85	4,000	Moderately Corrosive

Based on criteria established by the County of Los Angeles, measurements of resistivity on the samples tested indicate that they are “moderately corrosive” to “corrosive” to ferrous metal (i.e. cast iron, etc.) pipes.

UNDERGROUND UTILITY INSTALLATION

Excavations

Standard construction techniques will be sufficient for temporary trench excavations in the subject streets. All excavations should be made in accordance with applicable regulations (including CAL/OSHA). Project safety is the responsibility of the contractor and the owner. Earth Systems will not be responsible for project safety.

Unshored, unsurcharged, open excavations above the groundwater level may be cut vertically to a maximum height of no more than four feet. Soil types encountered in the anticipated pipe zones within the test borings are cohesive in nature, but because they include potentially adversely oriented bedding within the bedrock units, are considered “Type C” according to OSHA guidelines. Excavations deeper than 4 feet in these materials should be either shored or sloped at a gradient of 1.5H:1V (horizontal to vertical) or flatter prior to allowing workers in the trench. If excavations dry out, it is not expected that sloughing would occur.

A temporary internally braced shoring system (i.e., trench shields) is expected to be used in lieu of sloping the sidewalls of the trench excavations. An internally braced shoring system retaining a level ground surface should be designed to resist a maximum active earth pressure of $45H$ pounds per square foot (psf), where H = Height of the shoring (in feet) measured below the top of the retained ground surface behind the shoring. This earth pressure should be distributed to the bracing utilizing a trapezoidal distribution with a triangular top and bottom (i.e., $0.25H$ from the top and $0.25H$ up from the bottom).

During the time excavations are open, no heavy grading equipment or other surcharge loads (i.e. excavation spoils) should be allowed within a horizontal distance from the top of any slope equal to the depth of the excavation (both distances measured from the top of the excavation slope). If space limitations prevent this, the lateral earth pressure to be resisted by the temporary shoring system should be increased to allow for surcharge loads. Surcharge pressures should be added to this earth pressure for surcharges within a distance at least equal to the shoring height. A lateral earth pressure coefficient of 0.4 (40%) of uniform vertical surcharges should be added as a horizontal shoring pressure for braced shoring.

Surcharge loads from vehicular traffic should also be accounted for, if necessary. The temporary shoring should be designed to resist a uniform lateral pressure of 100 psf. This uniform lateral pressure is based on a 300 psf surcharge behind the shoring due to normal vehicular traffic. If the traffic is maintained at least 10 feet from the shoring, the surcharge from vehicular traffic may be neglected

Adequate measures should be taken to protect any structural foundations, pavements, or utilities adjacent to any excavations.

Utility Trench Backfill

Backfill of the water line within the Lindero Canyon Road right-of-way should be placed in strict conformance with the requirements of the City of Westlake Village Public Works Department. Current plans are to backfill the majority of the depth of the water line trench with slurry, then with a structural paving section at least as thick as the existing section.

Thrust Blocks

Based on a trench depth of 6 to 7 feet below finished subgrade elevation within the street, Earth Systems anticipates that bedrock should be encountered at the bottom of the trench over the majority of the pipeline alignment. Thrust blocks embedded at least 12 inches into bedrock may be designed based on an allowable vertical bearing value of 3,000 psf. At the location of Boring B-4, bedrock was encountered at a depth of 16 feet below the existing street elevation. Thrust blocks embedded at least 12 inches into artificial fill or native soils may be designed based on an allowable vertical bearing value of 1,250 psf.

Resistance to lateral loading may be provided by friction acting on the base of thrust blocks. For thrust blocks embedded in bedrock, an allowable coefficient of friction of 0.50 may be applied to dead load forces. This value includes a 1.5 factor of safety. For thrust blocks embedded in artificial fill or native soils, an allowable coefficient of friction of 0.30 may be used.

Passive resistance acting on the sides of thrust blocks embedded in bedrock equal to 450 pcf of equivalent fluid weight may be included for resistance to lateral load. For thrust blocks embedded in artificial fill or native soils, an equivalent fluid weight of 250 pcf may be included for resistance to lateral load. These values do not include a 1.5 factor of safety. When passive resistance is used in conjunction with friction, the coefficient of friction should be reduced by one-third in determining the total lateral resistance. The total passive resistance should not exceed 4,500 psf in zones where bedrock is present, and 2,500 psf in zones where artificial fill or native soils are present.

A one-third increase in the quoted passive value may be used when considering transient loads, such as seismicity.

ADDITIONAL SERVICES

Current plans are to use shoring during installation of the water line, and to backfill the trench report with slurry before installing the final structural paving section. As such, no monitoring and testing are expected to be performed by Earth Systems Southern California during construction. However, additional services such as plan reviews, observation and testing during pipeline installation, or consultation could be provided as required during construction.

LIMITATIONS AND UNIFORMITY OF CONDITIONS

The analysis and recommendations submitted in this report are based in part upon the data obtained from the borings drilled along the alignment of the proposed water line. The nature and extent of variations between and beyond the exploratory borings may not become evident until construction. If variations then appear evident, it will be necessary to reevaluate the recommendations of this report.

The scope of services did not include any environmental assessment or investigation for the presence or absence of wetlands, hazardous or toxic materials in the soil, surface water, groundwater or air, on, below, or around this site. Any statements in this report or on the soil boring logs regarding odors noted, unusual or suspicious items or conditions observed, are strictly for the information of the client.

Findings of this report are valid as of this date; however, changes in conditions of a property can occur with passage of time whether they are due to natural processes or works of man on this or adjacent properties. In addition, changes in applicable or appropriate standards may occur whether they result from legislation or broadening of knowledge. Accordingly, findings of this report may be invalidated wholly or partially by changes outside our control. Therefore, this report is subject to review and should not be relied upon after a period of one year.

In the event that any changes in the nature, design, or location of the proposed underground utilities and other improvements are planned, the conclusions and recommendations contained in this report shall not be considered valid unless the changes are reviewed and conclusions of this report modified or verified in writing.

This report is issued with the understanding that it is the responsibility of the Owner, or of his representative to ensure that the information and recommendations contained herein are called to the attention of the Architect and Engineers for the project and incorporated into the plan and that the necessary steps are taken to see that the Contractor and Subcontractors carry out such recommendations in the field.

As the Geotechnical Engineers for this project, Earth Systems Southern California has striven to provide services in accordance with generally accepted geotechnical engineering practices in this community at this time. No warranty or guarantee is expressed or implied. This report was prepared for the exclusive use of the Client and their authorized agents.

It is recommended that Earth Systems Southern California be provided the opportunity for a general review of final design and specifications in order that earthwork and foundation recommendations may be properly interpreted and implemented in the design and specifications. If Earth Systems Southern California is not accorded the privilege of making this recommended review, it can assume no responsibility for misinterpretation of the recommendations contained herein.

GENERAL BIBLIOGRAPHY

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Dibblee, Jr., Thomas W., and Helmut E. Ehrenspeck, 1993, Geologic Map of the Thousand Oaks Quadrangle, Ventura and Los Angeles Counties, California, Dibblee Foundation Map No. DF-49.

Geolabs-Westlake Village, August 19, 2015, Geotechnical Constraints Report, Proposed 24-Inch Diameter Waterline in Lindero Canyon Road, From Thousand Oaks Boulevard North to Ventura County Line, City of Westlake Village, California (W.O. 9344).

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APPENDIX A

Vicinity Map

Regional Geology Map

Seismic Hazard Zones Map

Historically Shallow Groundwater Depth Map

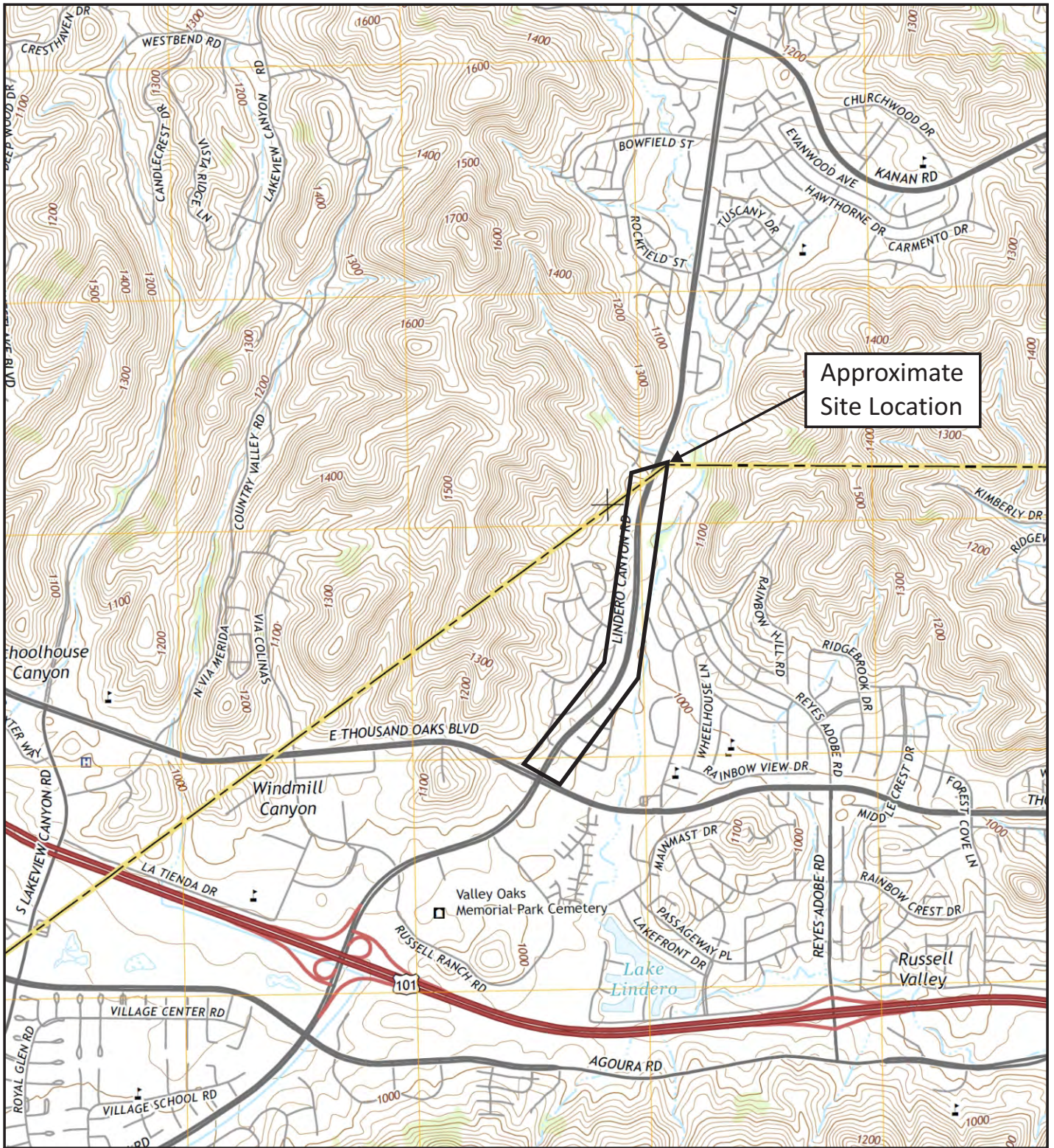
Site Plans

Field Study

Logs of Borings

Boring Log Symbols

Unified Soil Classification System



*Taken from USGS Topo Map, Thousand Oaks Quadrangle, Ventura and Los Angeles Counties, California, 2015.

Approximate Scale: 1" = 2,000'



VICINITY MAP

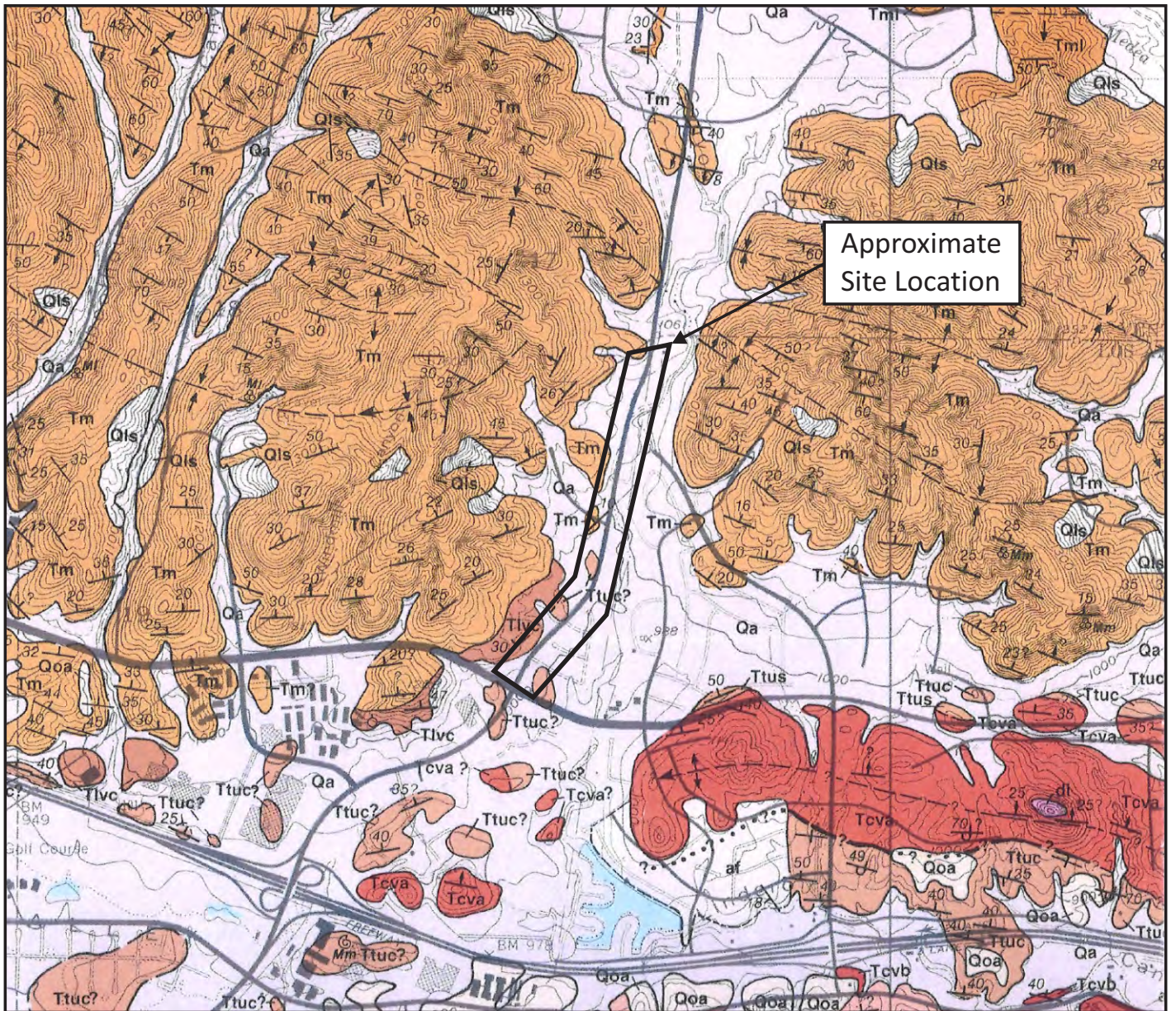
Calleguas-Las Virgenes MWD
Westlake Village, California



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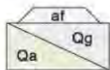
October 2017

VT-25364-01



Approximate Site Location

*Taken from Dibblee, Jr., Geologic Map of The Thousand Oaks Quadrangle, Ventura and Los Angeles Counties, California, 1993, DF-49.



SURFICIAL SEDIMENTS

Unconsolidated detrital sediments, undisturbed to partly dissected

- af Artificial cut and fill
- Qg Gravel and sand of major stream channels
- Qa Alluvial gravel, sand and clay of valley areas



MONTEREY FORMATION

(Modelo Formation and in part upper Topanga Formation of Weber 1984; Yerkes and Showalter 1991; Monterey Formation of Truex and Hall 1969; same lithologic unit as Monterey Shale of Ventura basin of Dibblee 1989)

Marine biogenic; middle and late Miocene age, Lusatian and Mohnian Stages, (Yerkes and Showalter 1991)

- Tm White weathering, thin bedded, platy, locally brittle siliceous shale to soft, punky shale; devoid of sandstone in this quadrangle; mostly late Miocene age (Mohnian Stage)
- Tml Lower part, similar to Tm, but soft, fissile to punky; includes scattered thin, hard calcareous layers and concretions; middle Miocene age (Lusatian Stage)



UPPER TOPANGA FORMATION

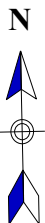
(Of Durrell 1954; Topanga Formation of Truex and Hall 1969; Truex 1976; Calabasas Formation of Yerkes and Showalter 1991)

Marine clastic; middle Miocene age, exposed only in Agoura area

- Ttuc Clay shale and siltstone, gray, thin-bedded, soft, crumbly, weakly resistant to erosion; locally contains calcareous concretions or lenses, includes few thin sandstone strata
- Ttus Sandstone, light gray to tan, friable, massive to vaguely bedded; interbedded with clay shale

Approximate Scale: 1" = 2,000'

0 2,000' 4,000'



REGIONAL GEOLOGY MAP

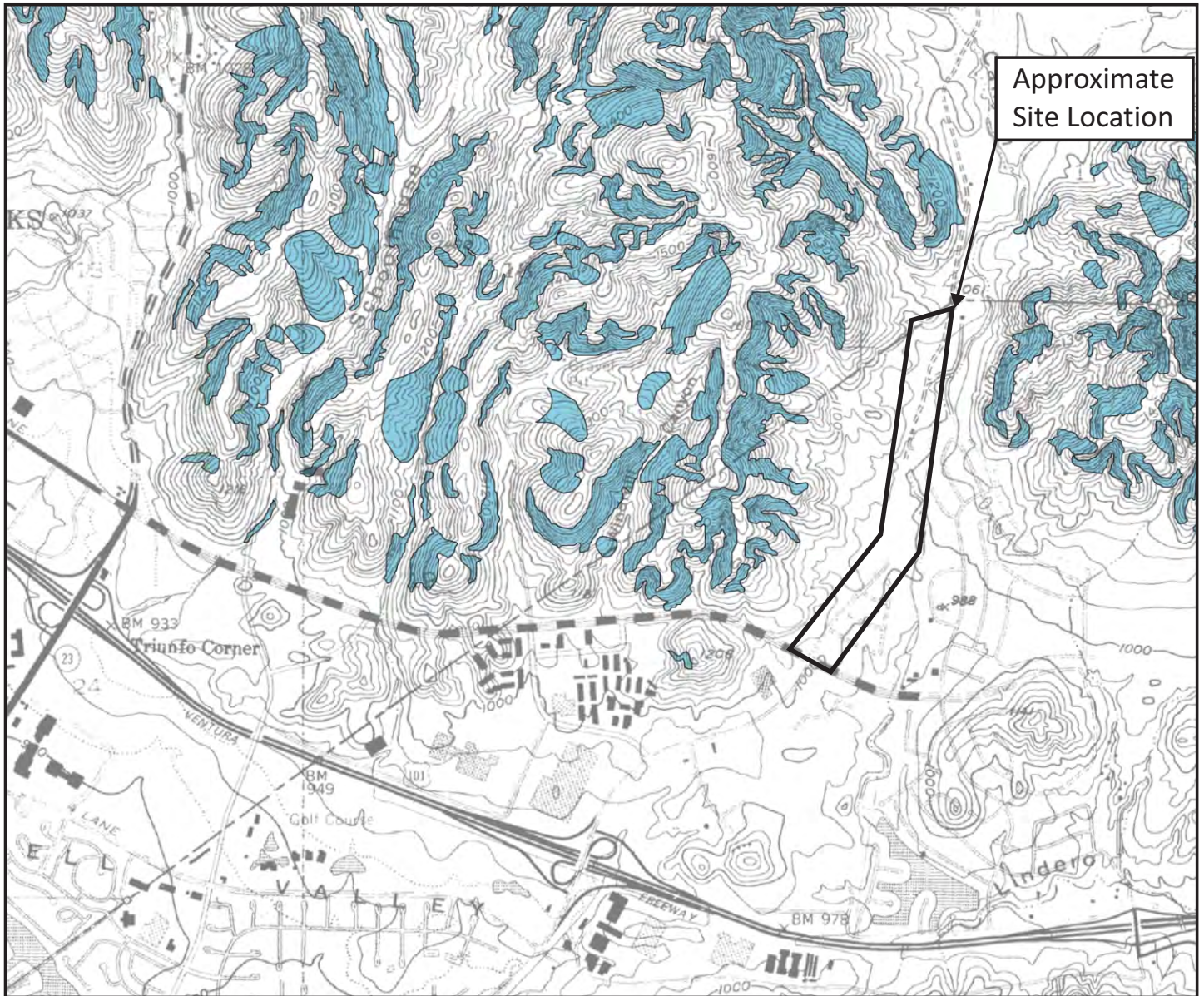
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October 2017

VT-25364-01



*Taken From Department of Conservation Seismic Hazard Evaluation of The Thousand Oaks Quadrangle, Ventura and Los Angeles Counties, California, 2000.

MAP EXPLANATION

Zones of Required Investigation:

Liquefaction

Areas where historical occurrence of liquefaction, or local geological, geotechnical and ground-water conditions indicate a potential for permanent ground displacements such that mitigation as defined in Public Resources Code Section 2693(c) would be required.

Earthquake-Induced Landslides

Areas where previous occurrence of landslide movement, or local topographic, geological, geotechnical and subsurface water conditions indicate a potential for permanent ground displacements such that mitigation as defined in Public Resources Code Section 2693(c) would be required.

NOTE: Seismic Hazard Zones identified on this map may include developed land where delineated hazards have already been mitigated to city or county standards. Check with your local building/planning department for information regarding the location of such mitigated areas.

Approximate Scale: 1" = 2,000'



SEISMIC HAZARD ZONES MAP

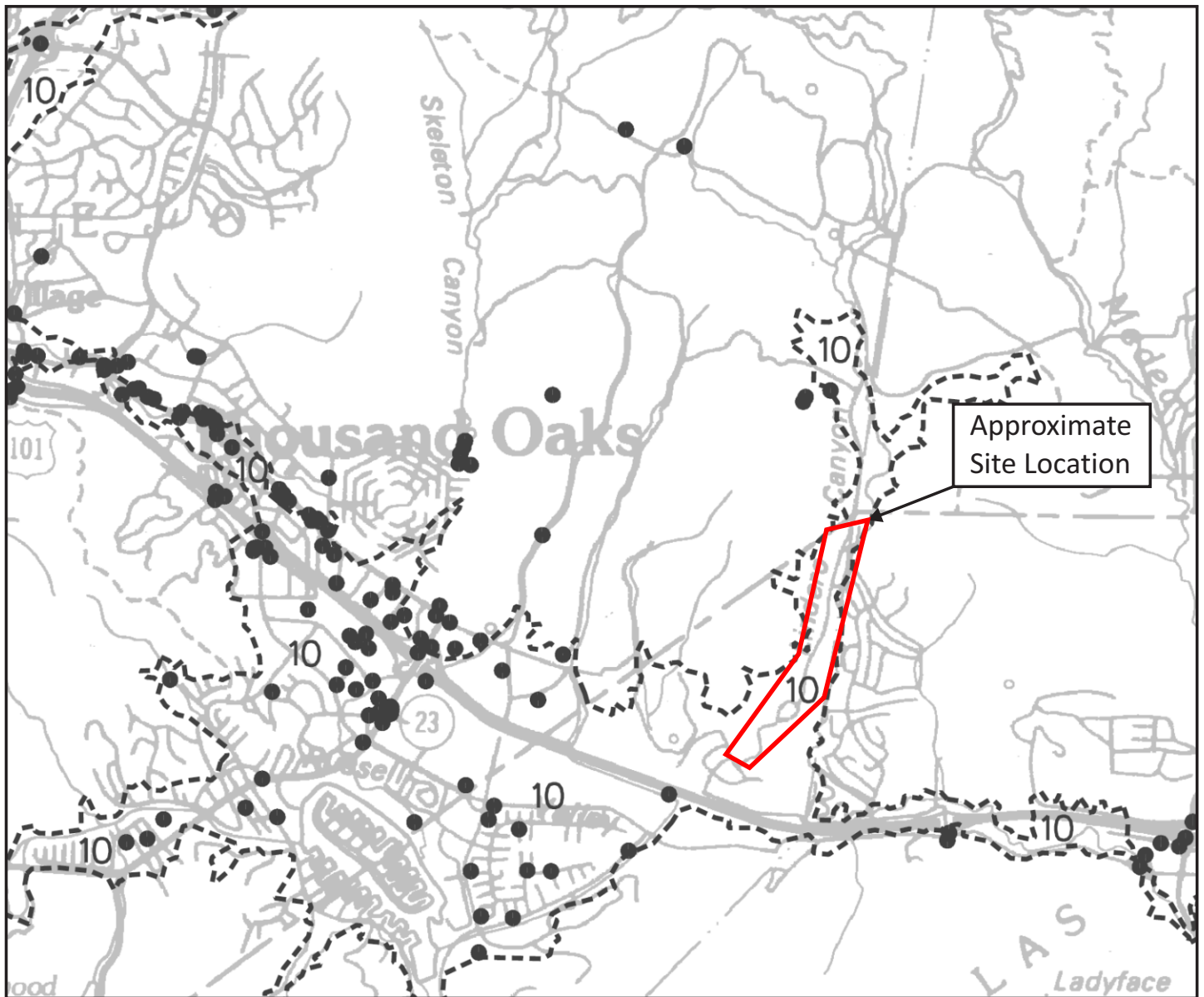
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October 2017

VT-25364-01




*Taken From Department of Conservation Seismic Hazard Evaluation of The Thousand Oaks Quadrangle, Ventura and Los Angeles Counties, California, 2000.

Legend

 Alluviated Valley

 Borehole Site

10 Historically shallow ground-water depth where same value occurs over a broad area (in feet)

Approximate Scale: 1" = 2,000'

 0 2,000' 4,000'



HISTORICALLY SHALLOW GROUNDWATER DEPTH MAP

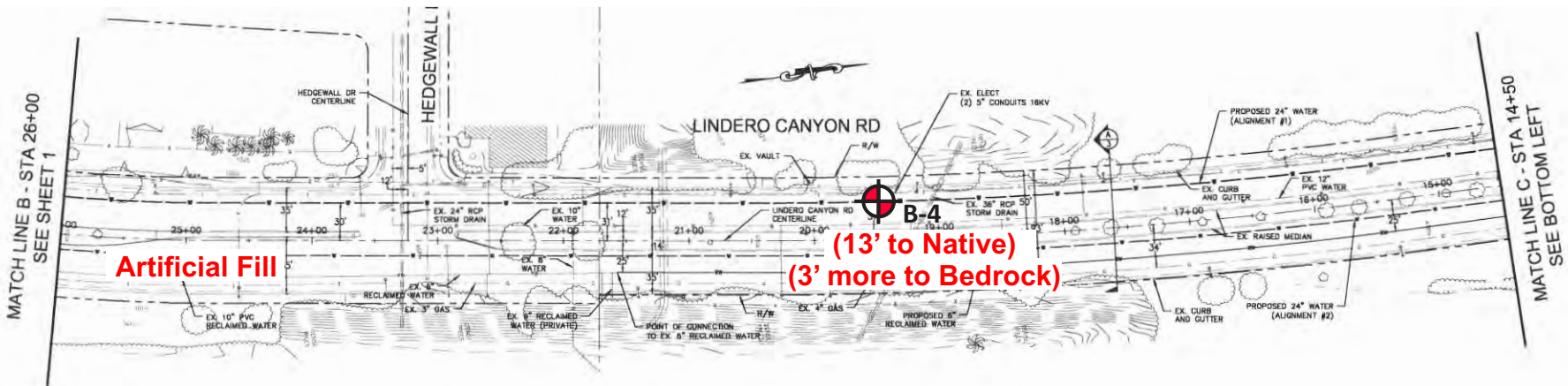
Calleguas-Las Virgenes MWD
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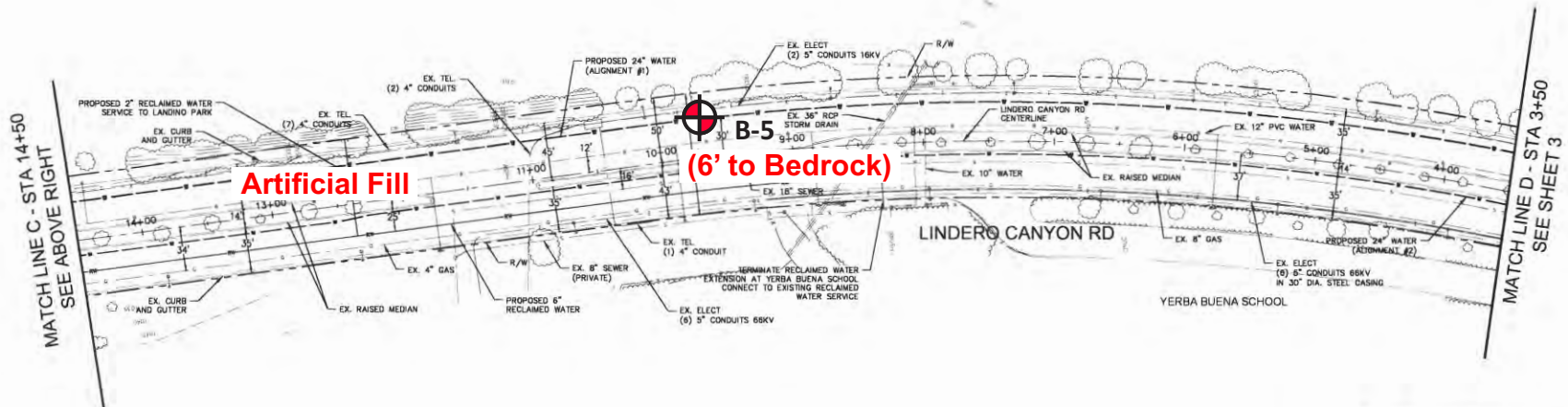
October 2017

VT-25364-01



Artificial Fill

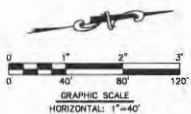
B-4
 (13' to Native)
 (3' more to Bedrock)



Artificial Fill

B-5
 (6' to Bedrock)

UNDERGROUND SERVICE ALERT
 CALL 800-4-A-SHIELD
 CALL TOLL FREE
 1-800-227-2830
 THREE WORKING DAYS BEFORE YOU DIG



DESIGN:		ENGINEER'S SEAL																										
DRAWN:																												
CHECKED:																												
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LAS VIRGENES MUNICIPAL WATER DISTRICT LMVWD/CMWD 24" INTERCONNECT PRELIMINARY WATER ALIGNMENT STA 26+00 TO STA 3+50		PREPARED BY: H&B CONSULTING, INC. 4180 E. THOUSAND OAKS BLVD SUITE 350 WESTLAKE VILLAGE, CA 91383 SCALE: HORIZONTAL: VERTICAL:																										
APPROVED FOR LAS VIRGENES MUNICIPAL WATER DISTRICT BY: R.E.C. DATE:		SHEET 2 OF 3																										

Approximate Boring Location

SITE PLAN #2

Calleguas-Las Virgenes MWD
 Westlake Village, California

Earth Systems
 Southern California

October 2017 VT-25364-01

FIELD STUDY

- A. Five (5) exploratory borings were drilled to a maximum depth of 21.5 feet below the existing ground surface to observe the soil profile and to obtain samples for laboratory analysis. The borings were drilled on August 22, 2017, using a hollow stem 6-inch diameter continuous flight auger powered by a Mobile Drill B-61 truck mounted drilling rig. The approximate locations of the test borings were determined in the field by pacing and sighting, and are shown on the Site Plan in this Appendix.
- B. Samples were obtained within the test borings with a Modified California (M.C.) ring sampler (ASTM D 3550 with shoe similar to ASTM D 1586), and with a Standard Penetration Test (SPT) sampler (ASTM D 1586). The M.C. sampler has a 3-inch outside diameter, and a 2.42-inch inside diameter when used with brass ring liners (as it was during this study). The SPT sampler has a 2.00-inch outside diameter and a 1.37-inch inside diameter, but when used without liners, as was done for this project, the inside diameter is 1.63 inches. The samples were obtained by driving the sampler with a 140-pound automatic trip hammer dropping 30 inches in accordance with ASTM D 1586.
- C. Bulk samples of the soils encountered were gathered from the cuttings.
- D. The final logs of the borings represent interpretations of the contents of the field logs and the results of laboratory testing performed on the samples obtained during the subsurface study. The final logs are included in this Appendix.



BORING NO: B-1	DRILLING DATE: August 22, 2017
PROJECT NAME: Calleguas-Las Virgenes MWD	DRILL RIG: Mobile B-61
PROJECT NUMBER: VT-25364-01	DRILLING METHOD: 6.0" Hollow Stem Auger
BORING LOCATION: Per Plan	LOGGED BY: SC

Vertical Depth	Sample Type			PENETRATION RESISTANCE (BLOWS/6"	SYMBOL	USCS CLASS	UNIT DRY WT. (pcf)	MOISTURE CONTENT (%)	DESCRIPTION OF UNITS
	Bulk	SPT	Mod. Calif.						
0									Asphalt: 8.0"; Base Material: 14.0"
					SC				ARTIFICIAL FILL: Mottled olive brown clayey sand; medium dense; moist; highly plastic.
5	X			9/19/27	Ttuc		88.0	32.2	UPPER TOPANGA FORMATION: Mottled olive brown siltstone; bedded; massive; moist.
				19/40	Ttuc		83.9	25.6	As above; blockier.
10				26/42	Ttuc		95.8	22.4	UPPER TOPANGA FORMATION: Mottled olive brown siltstone; bedded; some sandstone beds; very dense; moist.
15									Total Depth: 11.5 feet. No Groundwater Encountered.
20									
25									
30									
35									

Note: The stratification lines shown represent the approximate boundaries between soil and/or rock types and the transitions may be gradual.



BORING NO: B-2	DRILLING DATE: August 22, 2017
PROJECT NAME: Calleguas-Las Virgenes MWD	DRILL RIG: Mobile B-61
PROJECT NUMBER: VT-25364-01	DRILLING METHOD: 6.0" Hollow Stem Auger
BORING LOCATION: Per Plan	LOGGED BY: SC

Vertical Depth	Sample Type			PENETRATION RESISTANCE (BLOWS/6"	SYMBOL	USCS CLASS	UNIT DRY WT. (pcf)	MOISTURE CONTENT (%)	DESCRIPTION OF UNITS
	Bulk	SPT	Mod. Calif.						
0									Asphalt: 8.0"; Base Material: 20.0"
					SC				ARTIFICIAL FILL: Mottled olive brown clayey sand; medium dense; moist, highly plastic.
5	X			5/9/12	Tml		87.6	33.4	MONTEREY FORMATION: Mottled olive brown and gray weathered clayey sandstone; some roots; friable; moist.
				5/11/14	Tml		90.0	30.1	Same as above
10				6/12/18	Tml		89.0	31.5	MONTEREY FORMATION: Mottled dark brown; gray and olive brown siltstone, bedded; moist.
15				10/31/50-5"	Tml				MONTEREY FORMATION: Blackish gray siltstone-shale; massive; damp.
20									Total Depth: 16.5 feet. No Groundwater Encountered.
25									
30									
35									

Note: The stratification lines shown represent the approximate boundaries between soil and/or rock types and the transitions may be gradual.



BORING NO: B-3	DRILLING DATE: August 22, 2017
PROJECT NAME: Calleguas-Las Virgenes MWD	DRILL RIG: Mobile B-61
PROJECT NUMBER: VT-25364-01	DRILLING METHOD: 6.0" Hollow Stem Auger
BORING LOCATION: Per Plan	LOGGED BY: SC

Vertical Depth	Sample Type			PENETRATION RESISTANCE (BLOWS/6")	SYMBOL	USCS CLASS	UNIT DRY WT. (pcf)	MOISTURE CONTENT (%)	DESCRIPTION OF UNITS
	Bulk	SPT	Mod. Calif.						
0									Asphalt: 8.5"; Base Material: 16.5"
5				6/9/11		SC	101.1	23.1	ARTIFICIAL FILL: Mottled olive brown and brown clayey sand; some gravels; medium dense; moist; moderately to highly plastic.
10				8/17/30		Tml	96.0	24.7	MONTEREY FORMATION: Mottled olive brown and gray siltstone, bedded; massive; damp.
15				10/18/35		Tml	94.6	27.5	Same as above; with iron staining.
16.5				9/18/20		Tml			MONTEREY FORMATION: Olive brown and gray siltstone, bedded; massive; damp.
20									Total Depth: 16.5 feet. No Groundwater Encountered.
25									
30									
35									

Note: The stratification lines shown represent the approximate boundaries between soil and/or rock types and the transitions may be gradual.



BORING NO: B-4	DRILLING DATE: August 22, 2017
PROJECT NAME: Calleguas-Las Virgenes MWD	DRILL RIG: Mobile B-61
PROJECT NUMBER: VT-25364-01	DRILLING METHOD: 6.0" Hollow Stem Auger
BORING LOCATION: Per Plan	LOGGED BY: SC

Vertical Depth	Sample Type			PENETRATION RESISTANCE (BLOWS/6")	SYMBOL	USCS CLASS	UNIT DRY WT. (pcf)	MOISTURE CONTENT (%)	DESCRIPTION OF UNITS
	Bulk	SPT	Mod. Calif.						
0									Asphalt: 17.0"; Base Material: 11.0"
5				4/7/11		SC	96.4	23.0	ARTIFICIAL FILL: Dark grayish brown clayey sand; some gravels; medium dense; moist; moderately plastic.
10				7/9/16		SC	96.9	27.5	ARTIFICIAL FILL: Mottled grayish brown and gray silty clay to clayey sand; some gravels; some bedrock fragments; medium dense; damp to moist; highly plastic.
15				6/8/8		SC	81.1	35.0	Same as above.
20				3/4/6		CL			COLLUVIUM: Olive gray silty clay; firm; moist.
25				4/5/6		Tml			MONTEREY FORMATION: Reddish brown and gray siltstone, weathered; bedded; wet.
30									Total Depth: 21.5 feet. Groundwater Depth: 20.0 feet.
35									

Note: The stratification lines shown represent the approximate boundaries between soil and/or rock types and the transitions may be gradual.



BORING NO: B-5 PROJECT NAME: Calleguas-Las Virgenes MWD PROJECT NUMBER: VT-25364-01 BORING LOCATION: Per Plan	DRILLING DATE: August 22, 2017 DRILL RIG: Mobile B-61 DRILLING METHOD: 6.0" Hollow Stem Auger LOGGED BY: SC
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Vertical Depth	Sample Type			PENETRATION RESISTANCE (BLOWS/6"	SYMBOL	USCS CLASS	UNIT DRY WT. (pcf)	MOISTURE CONTENT (%)	DESCRIPTION OF UNITS
	Bulk	SPT	Mod. Calif.						
0									Asphalt: 8.0"; Base Material: 16.0"
5	X		■	6/7/10	▨	SC	92.5	20.9	ARTIFICIAL FILL: Mottled olive brown clayey sand; gravels; medium dense; moist; moderately plastic.
10			■	12/40	■	Tml	92.1	21.9	MONTEREY FORMATION: Dark olive brown siltstone, bedded; damp.
15			■	18/40/50-3"	■	Tml	99.0	23.3	MONTEREY FORMATION: Dark olive brown and gray siltstone, bedded; massive; damp.
15									Total Depth: 11.5 feet. No Groundwater Encountered.
20									
25									
30									
35									

Note: The stratification lines shown represent the approximate boundaries between soil and/or rock types and the transitions may be gradual.

SYMBOLS COMMONLY USED ON BORING LOGS



Modified California Split Barrel Sampler



Modified California Split Barrel Sampler - No Recovery



Standard Penetration Test (SPT) Sampler



Standard Penetration Test (SPT) Sampler - No Recovery



Perched Water Level



Water Level First Encountered



Water Level After Drilling




Pocket Penetrometer (tsf)



Vane Shear (ksf)

1. The location of borings were approximately determined by pacing and/or siting from visible features. Elevations of borings are approximately determined by interpolating between plan contours. The location and elevation of the borings should be considered
2. The stratification lines represent the approximate boundary between soil types and the transition may be gradual.
3. Water level readings have been made in the drill holes at times and under conditions stated on the boring logs. This data has been reviewed and interpretations made in the text of this report. However, it must be noted that fluctuations in the level of the groundwater may occur due to variations in rainfall, tides, temperature, and other factors at the time measurements were made.

BORING LOG SYMBOLS	
	Earth Systems Southern California

MAJOR DIVISIONS			GRAPH SYMBOL	LETTER SYMBOL	TYPICAL DESCRIPTIONS	
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY SOILS	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES	
				GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES	
	MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES	
				GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES	
	SAND AND SANDY SOILS	CLEAN SAND (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES	
				SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES	
		MORE THAN 50% OF COARSE FRACTION PASSING NO. 4 SIEVE	SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND-SILT MIXTURES
					SC	CLAYEY SANDS, SAND-CLAY MIXTURES
FINE GRAINED SOILS	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY	
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS	
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY	
	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS	
				CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS	
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS	
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENT	

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

UNIFIED SOIL CLASSIFICATION SYSTEM	
	Earth Systems Southern California

APPENDIX B

Laboratory Testing
Tabulated Laboratory Test Results
Individual Laboratory Test Results

LABORATORY TESTING

- A. Samples were reviewed along with field logs to determine which would be analyzed further. Those chosen for laboratory analysis were considered representative of soils that would be exposed and/or used during grading, and those deemed to be within the influence of proposed structures. Test results are presented in graphic and tabular form in this Appendix.
- B. In-situ moisture content and unit dry weight for the ring samples were determined in general accordance with ASTM D 2937.
- C. The relative strength characteristics of soils were determined from the results of direct shear tests on relatively undisturbed samples. Specimens were placed in contact with water at least 24 hours before testing, and were then sheared under normal loads ranging from 1 to 3 ksf in general accordance with ASTM D 3080.
- D. The gradation characteristics of selected samples were evaluated by hydrometer (in accordance with ASTM D 422) and sieve analysis procedures. The samples were soaked in water until individual soil particles were separated, then washed on the No. 200 mesh sieve, oven dried, weighed to calculate the percent passing the No. 200 sieve, and mechanically sieved. Additionally, hydrometer analyses were performed to assess the distribution of the particles that passed the No. 200 screen. The hydrometer portions of the tests were run using sodium hexametaphosphate as a dispersing agent.
- E. The Plasticity Indices of selected samples were evaluated in accordance with ASTM D 4318.
- F. Portions of the bulk samples were sent to another laboratory for analyses of soil pH, resistivity, chloride contents, and sulfate contents. Soluble chloride and sulfate contents were determined on a dry weight basis. Resistivity testing was performed in accordance with California Test Method 424, wherein the ratio of soil to water was 1:3.

TABULATED LABORATORY TEST RESULTS

REMOLDED SAMPLES

BORING AND DEPTH	B-1 @ 3-7'	B-2 @ 3-7'	B-3 @ 3-7'
USCS	SC	CH	SC
LIQUID LIMIT	56	60	48
PLASTIC LIMIT	25	21	18
PLASTICITY INDEX	31	39	30
pH	8.1	7.9	7.9
SOLUBLE CHLORIDES (mg/Kg)	6.5	15	18
RESISTIVITY (ohms-cm)	2,500	1,200	2,200
SOLUBLE SULFATES (mg/Kg)	380	1,000	450
GRAIN SIZE DISTRIBUTION (%)			
GRAVEL	15.9	22.7	25.5
SAND	47.1	25.9	53.2
SILT	13.8	18.8	6.1
CLAY (2µm to 5µm)	4.5	6.7	1.7
CLAY (≤2µm)	18.7	25.9	13.5

BORING AND DEPTH	B-4 @ 3-7'	B-5 @ 3-7'
USCS	SC	SC
LIQUID LIMIT	42	41
PLASTIC LIMIT	22	22
PLASTICITY INDEX	20	19
pH	8.0	8.3
SOLUBLE CHLORIDES (mg/Kg)	33	15
RESISTIVITY (ohms-cm)	3,000	4,000
SOLUBLE SULFATES (mg/Kg)	200	160
GRAIN SIZE DISTRIBUTION (%)		
GRAVEL	11.5	23.3
SAND	59.5	47.6
SILT	5.2	5.6
CLAY (2µm to 5µm)	4.8	3.6
CLAY (≤2µm)	19.0	19.9

TABULATED LABORATORY TEST RESULTS (Continued)

RELATIVELY UNDISTURBED SAMPLES

BORING AND DEPTH	B-1 @ 3'	B-1 @ 7'
IDENTIFICATION	Siltstone	Siltstone
IN-PLACE DENSITY (pcf)	88.0	83.9
IN-PLACE MOISTURE (%)	32.2	25.6
COHESION (psf)	0* 0**	0* 0*
ANGLE OF INTERNAL FRICTION	60°* 55°**	52°* 48°**

BORING AND DEPTH	B-2 @ 3'	B-2 @ 7'
IDENTIFICATION	Clayey Sandstone	Clayey Sandstone
IN-PLACE DENSITY (pcf)	87.6	90.0
IN-PLACE MOISTURE (%)	33.4	30.1
COHESION (psf)	440* 200**	110* 0**
ANGLE OF INTERNAL FRICTION	28°* 25°**	30°* 26°**

BORING AND DEPTH	B-3 @ 3'	B-3 @ 7'
IDENTIFICATION	Clayey Sand (Fill)	Siltstone
IN-PLACE DENSITY (pcf)	101.1	96.0
IN-PLACE MOISTURE (%)	23.1	24.7
COHESION (psf)	280* 90**	360* 40**
ANGLE OF INTERNAL FRICTION	30°* 33°**	40°* 38°**

BORING AND DEPTH	B-4 @ 3'	B-4 @ 7'
IDENTIFICATION	Clayey Sand (Fill)	Clayey Sand (Fill)
IN-PLACE DENSITY (pcf)	96.4	96.9
IN-PLACE MOISTURE (%)	23.0	27.5
COHESION (psf)	350* 0**	270* 40**
ANGLE OF INTERNAL FRICTION	36°* 36°**	38°* 38°**

BORING AND DEPTH	B-5 @ 3'	B-5 @ 7'
IDENTIFICATION	Clayey Sand (Fill)	Siltstone
IN-PLACE DENSITY (pcf)	92.5	92.1
IN-PLACE MOISTURE (%)	20.9	21.9
COHESION (psf)	120* 0**	300* 60**
ANGLE OF INTERNAL FRICTION	36°* 37°**	43°* 45°**

* = Peak Strength Parameters; ** = Ultimate Strength Parameters

PLASTICITY INDEX

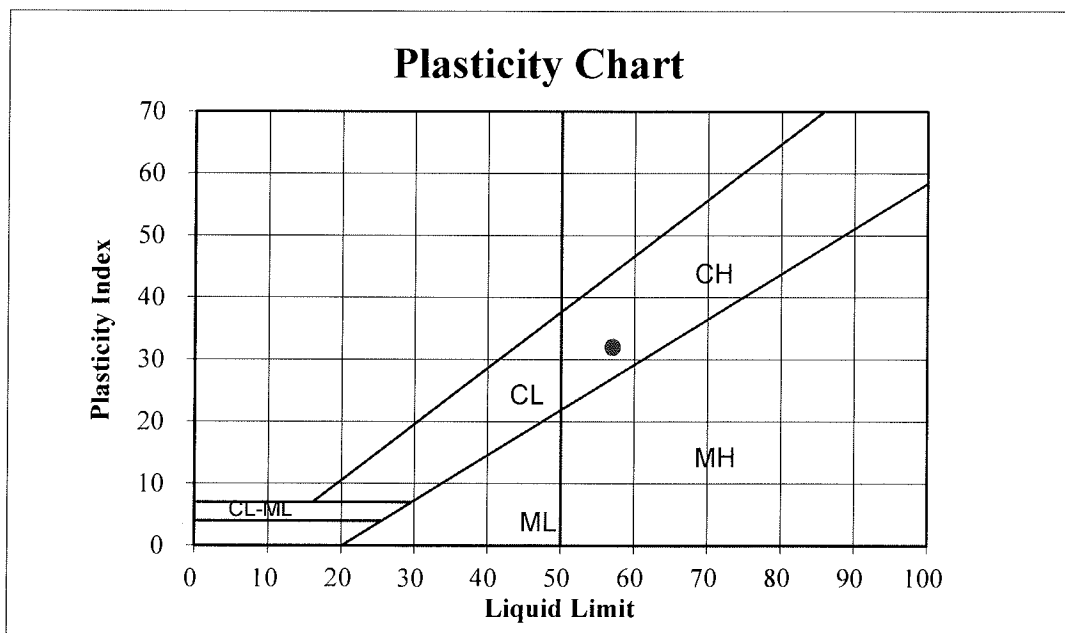
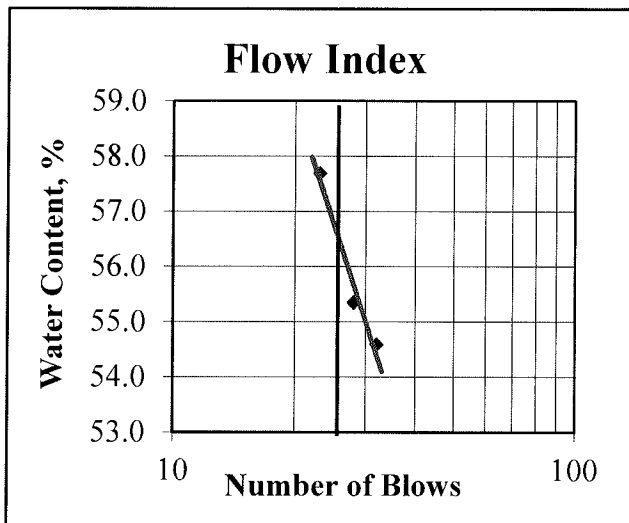
ASTM D-4318

Job Name: Calleguas-Las Virgenes MWD
 Sample ID: B 1 @ 3'-7'
 Soil Description: SC

DATA SUMMARY

TEST RESULTS

Number of Blows:	23	28	32	LIQUID LIMIT	56
Water Content, %	57.7	55.3	54.6	PLASTIC LIMIT	25
Plastic Limit:	24.6	24.8		PLASTICITY INDEX	31



PLASTICITY INDEX

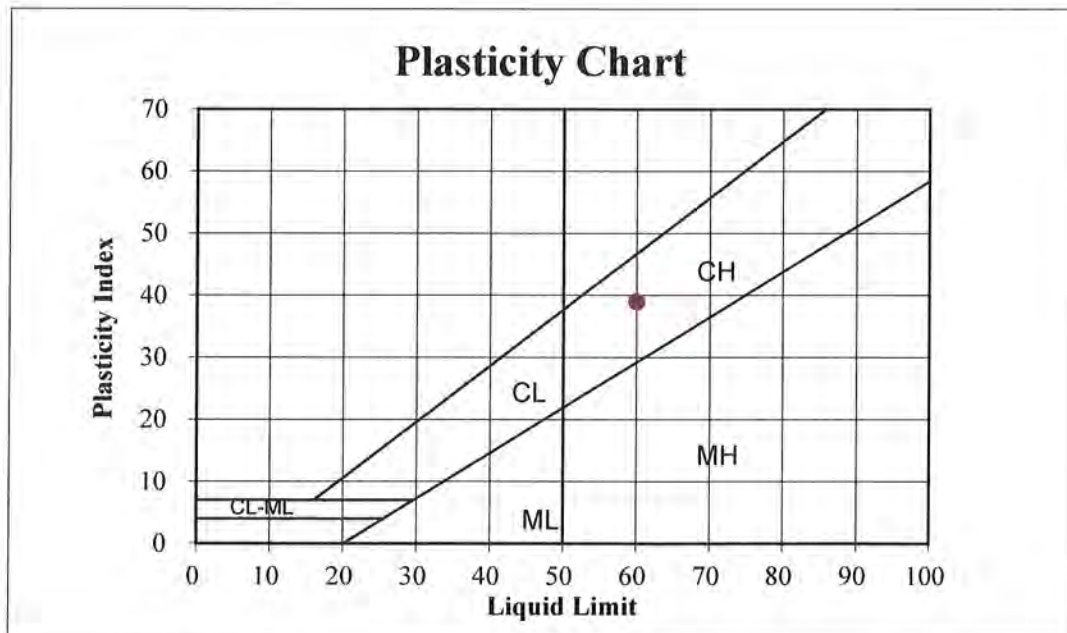
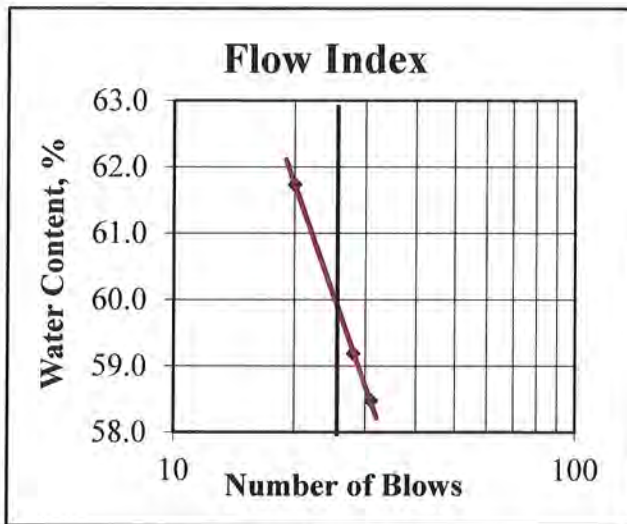
ASTM D-4318

Job Name: Calleguas-Las Virgenes MWD
 Sample ID: B 2 @ 3'-7'
 Soil Description: CH

DATA SUMMARY

TEST RESULTS

Number of Blows:	20	28	31	LIQUID LIMIT	60
Water Content, %	61.7	59.2	58.5	PLASTIC LIMIT	21
Plastic Limit:	20.7	20.8		PLASTICITY INDEX	39



PLASTICITY INDEX

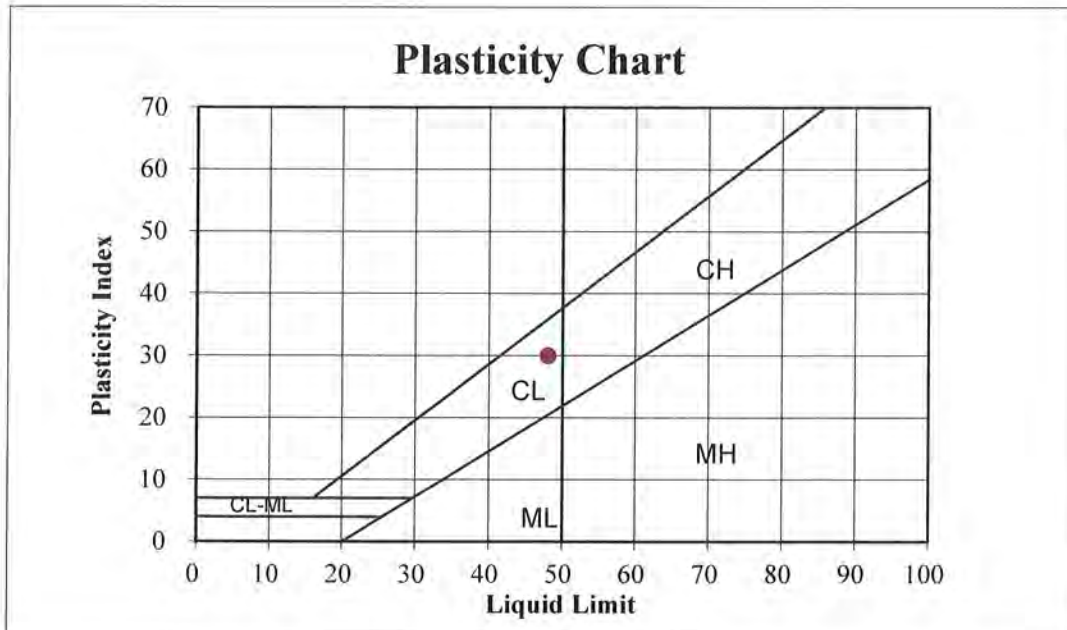
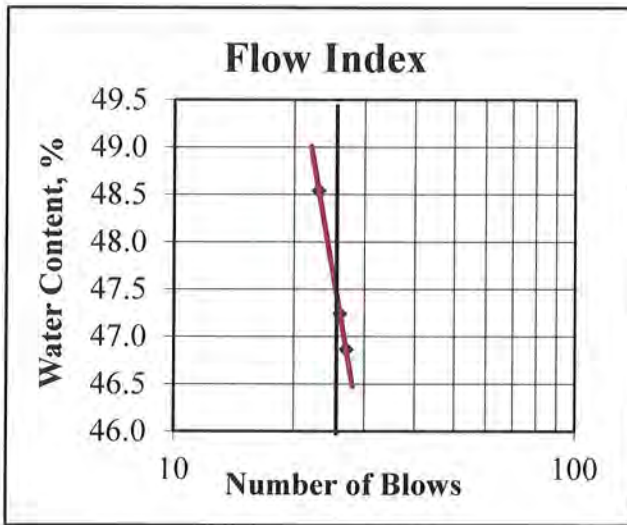
ASTM D-4318

Job Name: Calleguas-Las Virgenes MWD
 Sample ID: B 3 @ 3'-7'
 Soil Description: SC

DATA SUMMARY

TEST RESULTS

Number of Blows:	23	26	27	LIQUID LIMIT	48
Water Content, %	48.5	47.2	46.9	PLASTIC LIMIT	18
Plastic Limit:	18.1	18.3		PLASTICITY INDEX	30



PLASTICITY INDEX

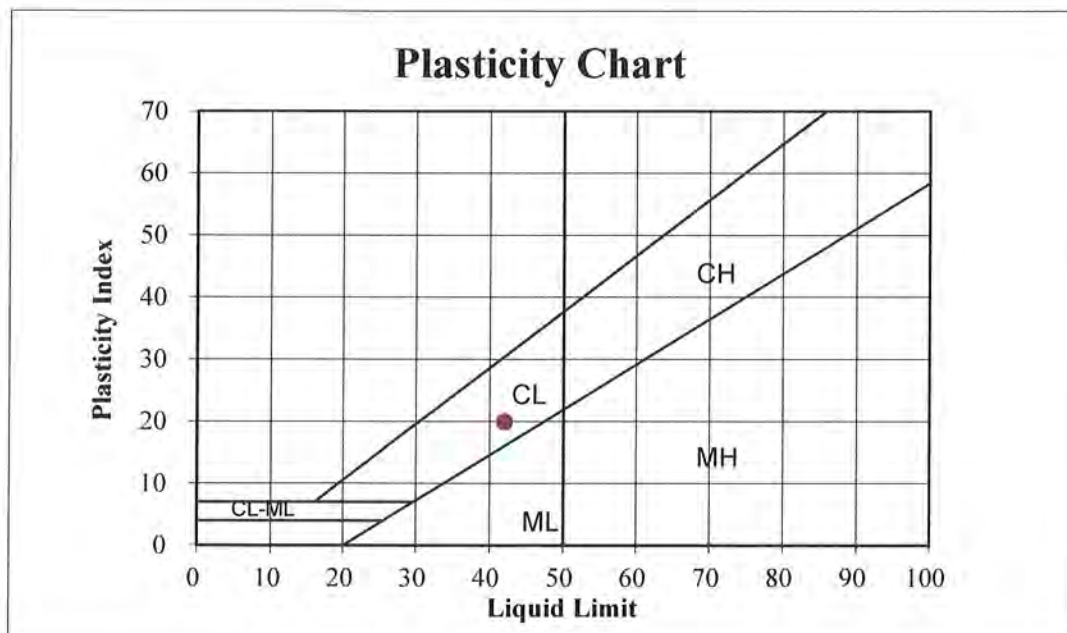
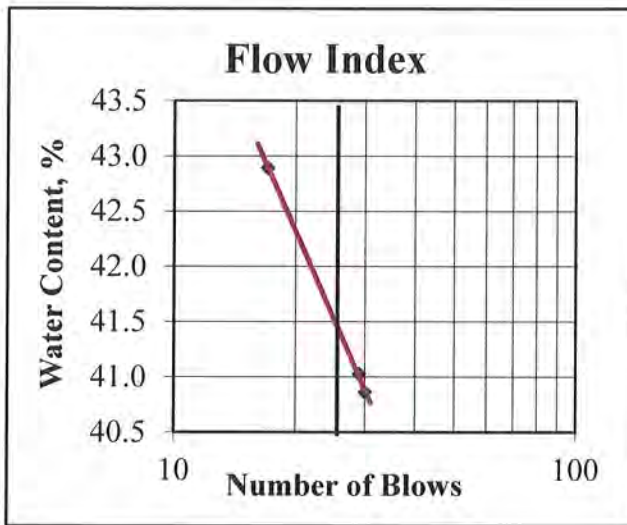
ASTM D-4318

Job Name: Calleguas-Las Virgenes MWD
 Sample ID: B 4 @ 3'-7'
 Soil Description: SC

DATA SUMMARY

TEST RESULTS

Number of Blows:	17	29	30	LIQUID LIMIT	42
Water Content, %	42.9	41.0	40.9	PLASTIC LIMIT	22
Plastic Limit:	21.8	21.9		PLASTICITY INDEX	20



PLASTICITY INDEX

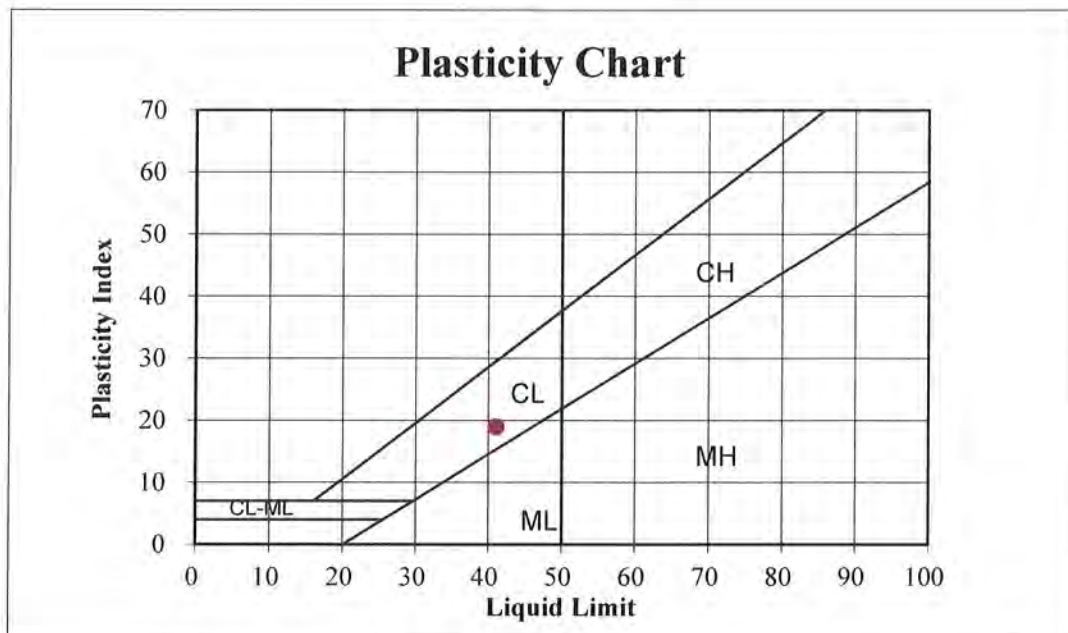
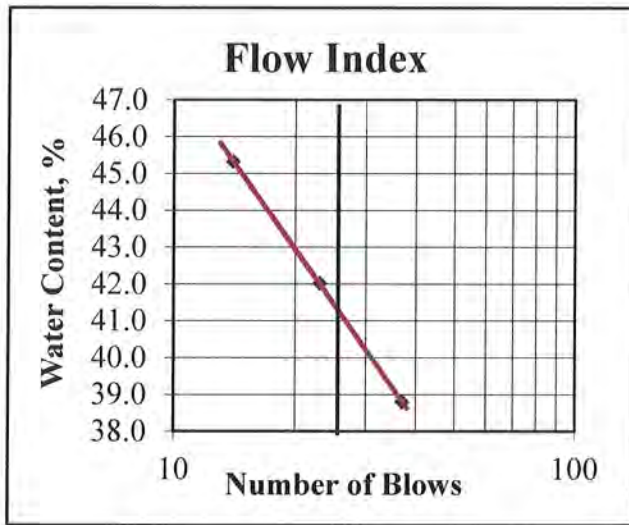
ASTM D-4318

Job Name: Calleguas-Las Virgenes MWD
 Sample ID: B 5 @ 3'-7'
 Soil Description: SC

DATA SUMMARY

TEST RESULTS

Number of Blows:	14	23	37	LIQUID LIMIT	41
Water Content, %	45.3	42.0	38.8	PLASTIC LIMIT	22
Plastic Limit:	21.3	21.9		PLASTICITY INDEX	19



MECHANICAL ANALYSIS

CTM 203-08

Job Name: Calleguas-Las Virgenes MWD
Job No.: VT-25364-01
Sample ID: **B 1 @ 3'-7'**
Soil Description: **SC**

Hydroscopic Moisture

Air Dry Wt, g:	100.0
Oven Dry Wt, g	100.0
% Moisture:	0.0
Air Dry Sample Wt., g:	796.1
Corrected Wt., g:	796.1

Sieve Analysis for + #10 Material

Sieve Size	Wt Ret	% Ret	% Passing
1/2 inch	18.2	2.29	97.71
3/8 inch	40.9	5.14	94.86
#4	126.2	15.85	84.15
#8	240.1	30.16	69.84
#10	344.4	43.26	56.74

Air Dry Hydro Sample Wt., g:	69.7
Corrected Wt., g:	69.7
Calculation Factor	1.2284

Hydrometer Analysis for < #10 Material

Start time:	10:05:00 AM				
Short Hydro	Time of Reading	Hydro Reading	Temp. at Reading, °C	Correction Factor	Corrected Hydro Reading
20 sec	10:05:20 AM	49	25	3.5	45.5
1 hour	11:05:00 AM	32	25	3.5	28.5
6 hour	4:05:00 PM	26	25	3.0	23.0

% Gravel:	15.9
% Sand(2mm - 74µm):	47.1
% Silt(74µm- 5µm):	13.8
% Clay(5µm - 2µm):	4.5
% Clay(≤2µm):	18.7

MECHANICAL ANALYSIS

CTM 203-08

Job Name: Calleguas-Las Virgenes MWD

Job No.: VT-25364-01

Sample ID: B 2 @ 3'-7'

Soil Description: CH

Hydroscopic Moisture

Air Dry Wt, g: 100.0

Oven Dry Wt, g: 100.0

% Moisture: 0.0

Air Dry Sample Wt., g: 856.1

Corrected Wt., g: 856.1

Sieve Analysis for +#10 Material

Sieve Size	Wt Ret	% Ret	% Passing
1/2 inch	23.0	2.69	97.31
3/8 inch	66.6	7.78	92.22
#4	194.7	22.74	77.26
#8	262.7	30.69	69.31
#10	300.9	35.15	64.85

Air Dry Hydro Sample Wt., g: 72.6

Corrected Wt., g: 72.6

Calculation Factor: 1.1195

Hydrometer Analysis for <#10 Material

Start time: 10:29:00 AM

Short Hydro	Time of Reading	Hydro Reading	Temp. at Reading, °C	Correction Factor	Corrected Hydro Reading
20 sec	10:29:20 AM	61	25	3.5	57.5
1 hour	11:29:00 AM	40	25	3.5	36.5
6 hour	4:29:00 PM	32	25	3.0	29.0

% Gravel:	22.7
% Sand(2mm - 74µm):	25.9
% Silt(74µm- 5µm):	18.8
% Clay(5µm - 2µm):	6.7
% Clay(≤2µm):	25.9

MECHANICAL ANALYSIS

CTM 203-08

Job Name: Calleguas-Las Virgenes MWD
Job No.: VT-25364-01
Sample ID: **B 3 @ 3'-7'**
Soil Description: **SC**

Hydroscopic Moisture

Air Dry Wt, g:	100.0
Oven Dry Wt, g	100.0
% Moisture:	0.0
Air Dry Sample Wt., g:	755.2
Corrected Wt., g:	755.2

Sieve Analysis for + #10 Material

Sieve Size	Wt Ret	% Ret	% Passing
1/2 inch	23.2	3.07	96.93
3/8 inch	23.2	3.07	96.93
#4	192.9	25.54	74.46
#8	443.2	58.69	41.31
#10	448.2	59.35	40.65

Air Dry Hydro Sample Wt., g:	60.1
Corrected Wt., g:	60.1
Calculation Factor	1.4785

Hydrometer Analysis for < #10 Material

Start time:	10:11:00 AM				
Short Hydro	Time of Reading	Hydro Reading	Temp. at Reading, °C	Correction Factor	Corrected Hydro Reading
20 sec	10:11:20 AM	35	25	3.5	31.5
1 hour	11:11:00 AM	26	25	3.5	22.5
6 hour	4:11:00 PM	23	25	3.0	20.0

% Gravel:	25.5
% Sand(2mm - 74µm):	53.2
% Silt(74µm- 5µm):	6.1
% Clay(5µm - 2µm):	1.7
% Clay(≤2µm):	13.5

MECHANICAL ANALYSIS

CTM 203-08

Job Name: Calleguas-Las Virgenes MWD
Job No.: VT-25364-01
Sample ID: **B 4 @ 3'-7'**
Soil Description: **SC**

Hydroscopic Moisture

Air Dry Wt, g:	100.0
Oven Dry Wt, g	100.0
% Moisture:	0.0
Air Dry Sample Wt., g:	660.8
Corrected Wt., g:	660.8

Sieve Analysis for + #10 Material

Sieve Size	Wt Ret	% Ret	% Passing
1/2 inch	8.9	1.35	98.65
3/8 inch	12.8	1.94	98.06
#4	76.0	11.50	88.50
#8	180.2	27.27	72.73
#10	253.5	38.36	61.64

Air Dry Hydro Sample Wt., g:	71.3
Corrected Wt., g:	71.3
Calculation Factor	1.1567

Hydrometer Analysis for < #10 Material

Start time: 10:17:00 AM

Short Hydro	Time of Reading	Hydro Reading	Temp. at Reading, °C	Correction Factor	Corrected Hydro Reading
20 sec	10:17:20 AM	37	25	3.5	33.5
1 hour	11:17:00 AM	31	25	3.5	27.5
6 hour	4:17:00 PM	25	25	3.0	22.0

% Gravel:	11.5
% Sand(2mm - 74µm):	59.5
% Silt(74µm- 5µm):	5.2
% Clay(5µm - 2µm):	4.8
% Clay(≤2µm):	19.0

MECHANICAL ANALYSIS

CTM 203-08

Job Name: Calleguas-Las Virgenes MWD
Job No.: VT-25364-01
Sample ID: **B 5 @ 3'-7'**
Soil Description: **SC**

Hydroscopic Moisture

Air Dry Wt, g:	100.0
Oven Dry Wt, g	100.0
% Moisture:	0.0
Air Dry Sample Wt., g:	1193.9
Corrected Wt., g:	1193.9

Sieve Analysis for + #10 Material

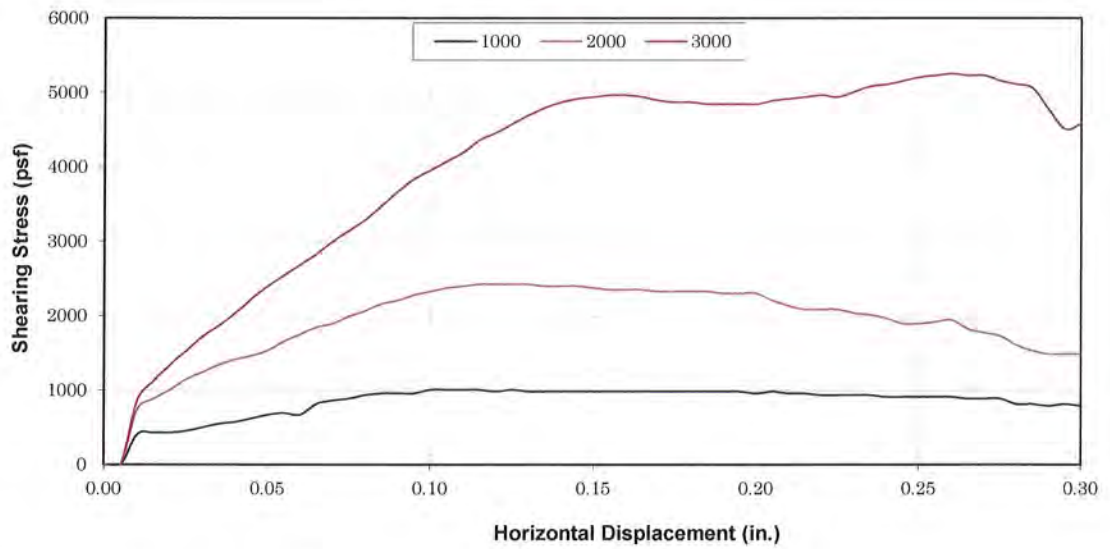
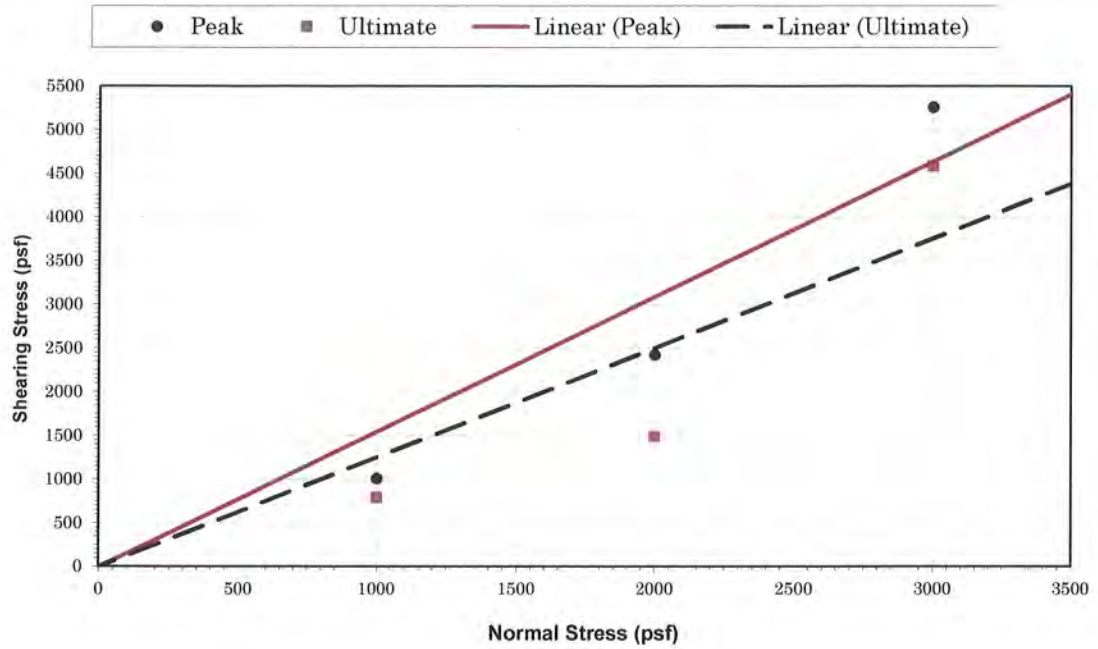
Sieve Size	Wt Ret	% Ret	% Passing
1/2 inch	42.4	3.55	96.45
3/8 inch	66.3	5.55	94.45
#4	278.1	23.29	76.71
#8	462.8	38.76	61.24
#10	479.7	40.18	59.82

Air Dry Hydro Sample Wt., g:	75
Corrected Wt., g:	75.0
Calculation Factor	1.2538

Hydrometer Analysis for < #10 Material

Start time:	10:23:00 AM				
Short Hydro	Time of Reading	Hydro Reading	Temp. at Reading, °C	Correction Factor	Corrected Hydro Reading
20 sec	10:23:20 AM	40	25	3.5	36.5
1 hour	11:23:00 AM	33	25	3.5	29.5
6 hour	4:23:00 PM	28	25	3.0	25.0

% Gravel:	23.3
% Sand(2mm - 74µm):	47.6
% Silt(74µm- 5µm):	5.6
% Clay(5µm - 2µm):	3.6
% Clay(≤2µm):	19.9




DIRECT SHEAR DATA*

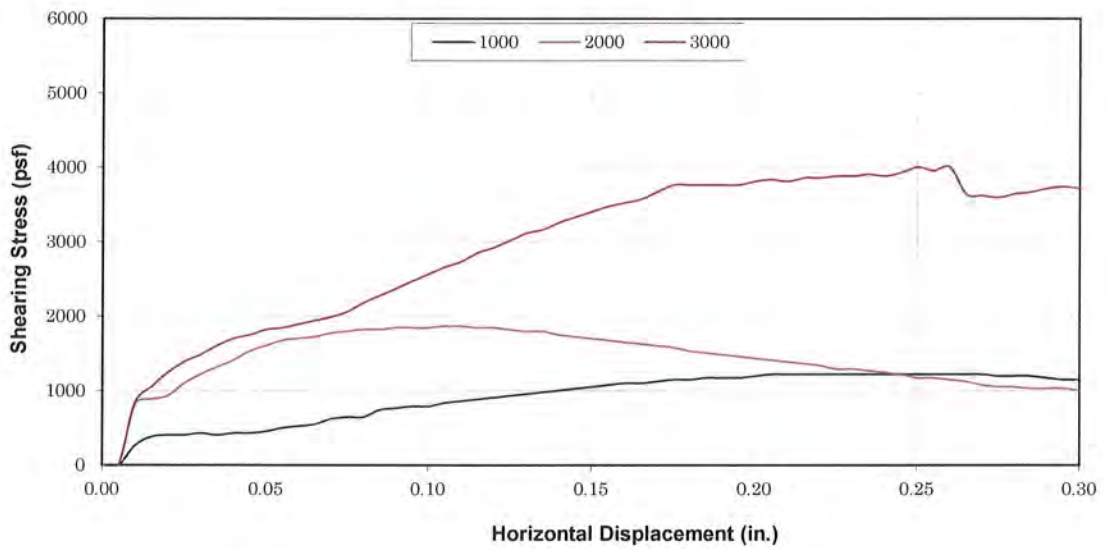
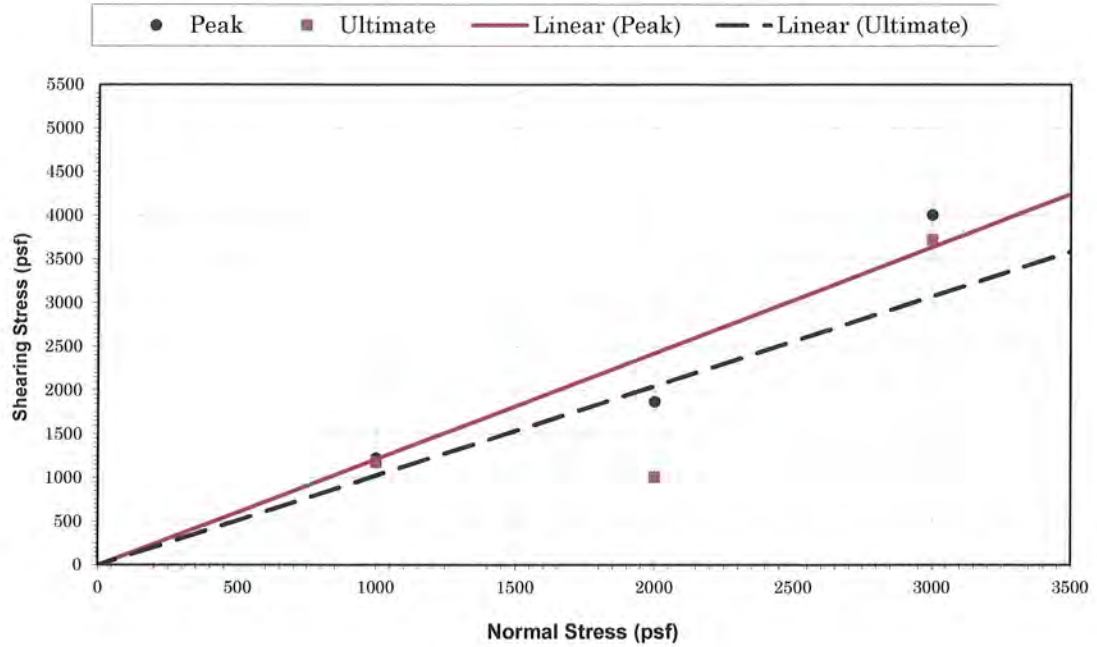
Sample Location: B 1 @ 3'
 Sample Description: Siltstone
 Dry Density (pcf): 88.0
 Initial % Moisture: 32.2
 Average Degree of Saturation: 100.0
 Shear Rate (in/min): 0.0092 in/min

Normal stress (psf)	1000	2000	3000
Peak stress (psf)	1008	2424	5256
Ultimate stress (psf)	792	1488	4584

	Peak	Ultimate
ϕ Angle of Friction (degrees):	60	55
c Cohesive Strength (psf):	0	0
Test Type: Peak & Ultimate		

* Test Method: ASTM D-3080

DIRECT SHEAR TEST	
Callegaus-Las Virgenes MWD	
	Earth Systems Southern California
10/5/2017	VT-25364-01




DIRECT SHEAR DATA*

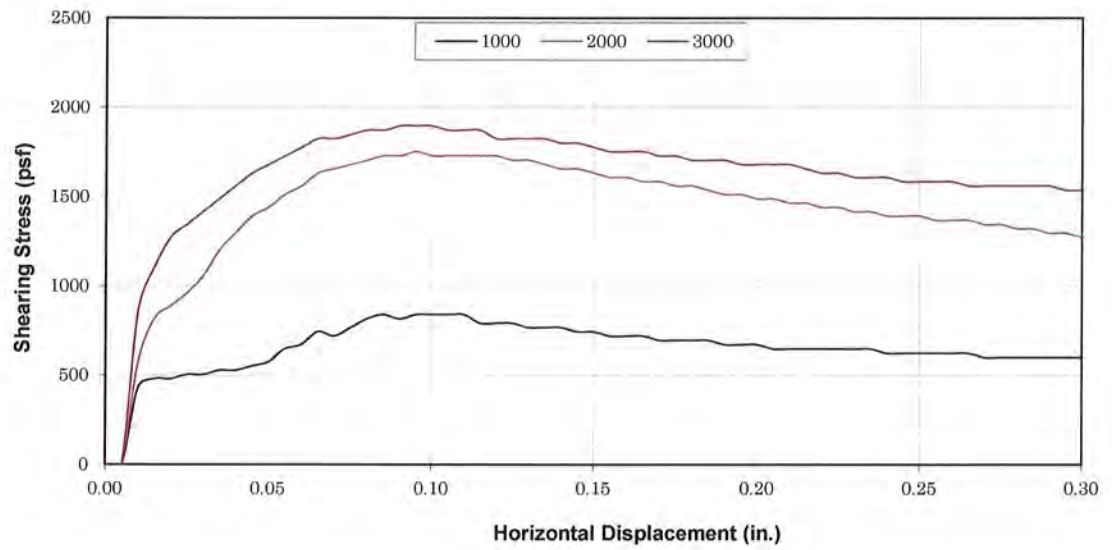
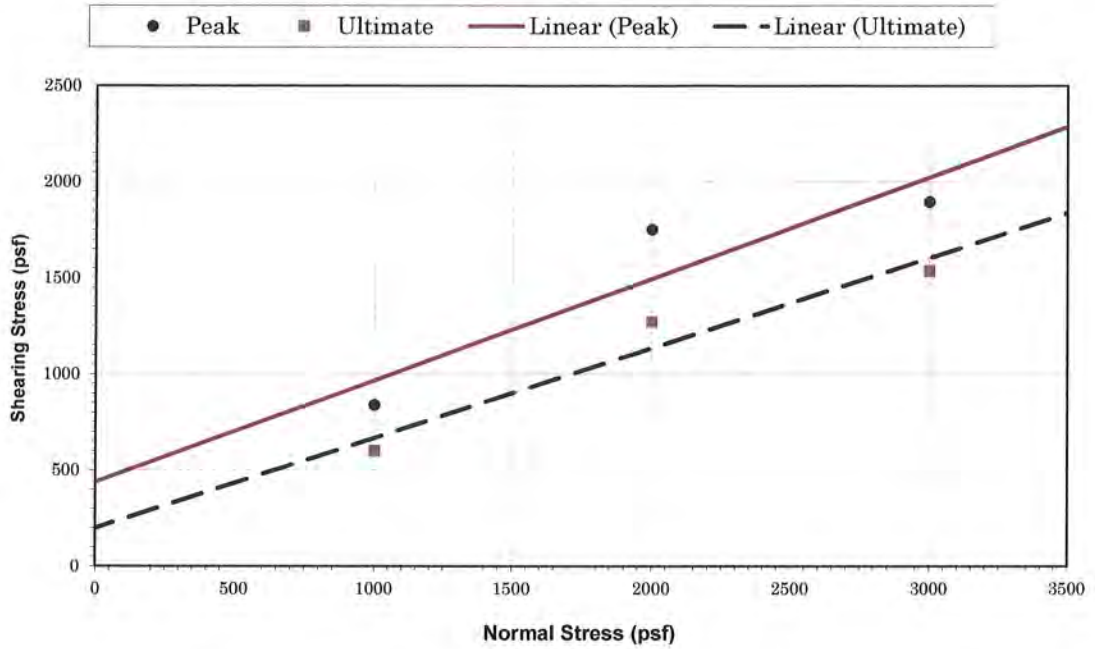
Sample Location: B 1 @ 7'
 Sample Description: Siltstone
 Dry Density (pcf): 83.9
 Initial % Moisture: 25.6
 Average Degree of Saturation: 100.0
 Shear Rate (in/min): 0.01 in/min

Normal stress (psf)	1000	2000	3000
Peak stress (psf)	1224	1872	4008
Ultimate stress (psf)	1176	1008	3720

	Peak	Ultimate
ϕ Angle of Friction (degrees):	52	48
c Cohesive Strength (psf):	0	0
Test Type: Peak & Ultimate		

* Test Method: ASTM D-3080

DIRECT SHEAR TEST	
Callegaus-Las Virgenes MWD	
	Earth Systems Southern California
10/5/2017	VT-25364-01



DIRECT SHEAR DATA*


Sample Location: B 2 @ 3'
 Sample Description: Clayey Sandstone
 Dry Density (pcf): 87.6
 Initial % Moisture: 33.4
 Average Degree of Saturation: 100.0
 Shear Rate (in/min): 0.0052 in/min

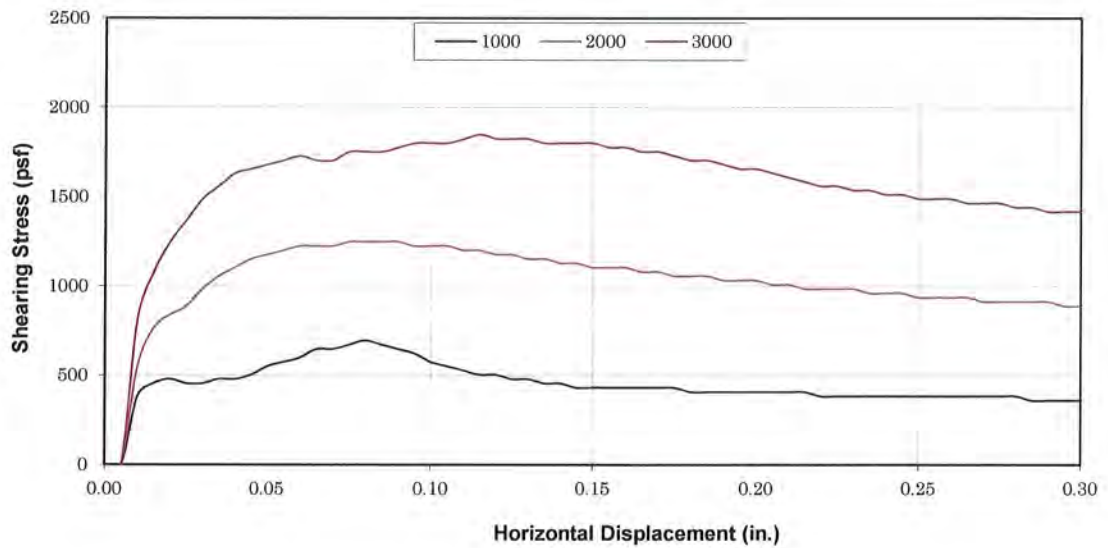
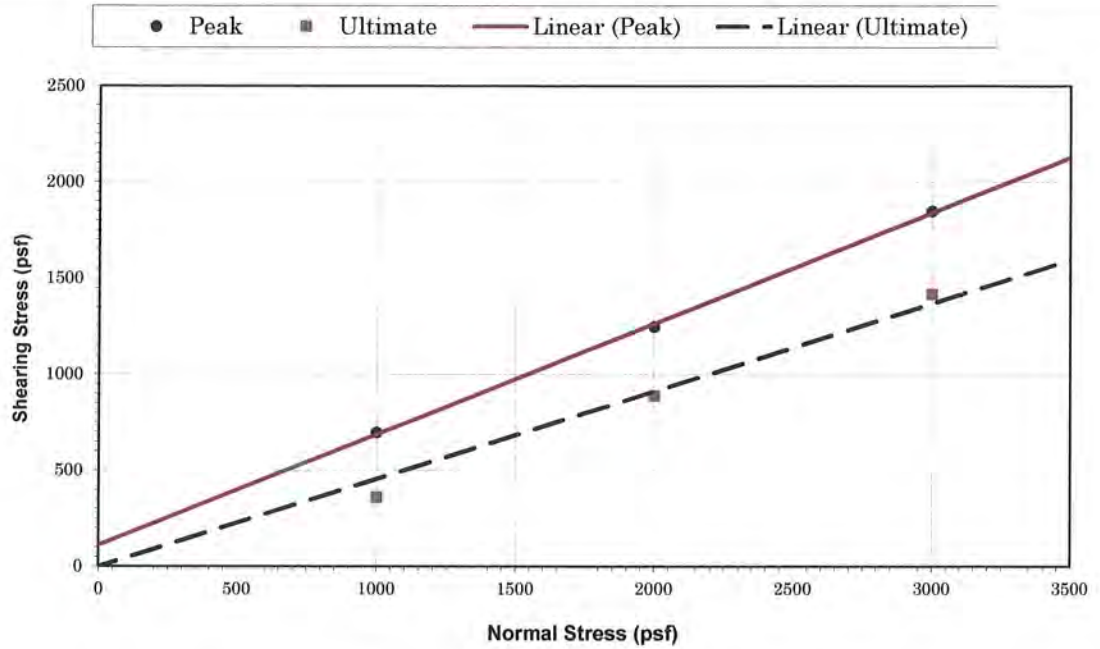
Normal stress (psf)	1000	2000	3000
Peak stress (psf)	840	1752	1896
Ultimate stress (psf)	600	1272	1536

	Peak	Ultimate
ϕ Angle of Friction (degrees):	28	25
c Cohesive Strength (psf):	440	200

Test Type: Peak & Ultimate

* Test Method: ASTM D-3080

DIRECT SHEAR TEST	
Callegaus-Las Virgenes MWD	
 Earth Systems Southern California	
10/10/2017	VT-25364-01




DIRECT SHEAR DATA*

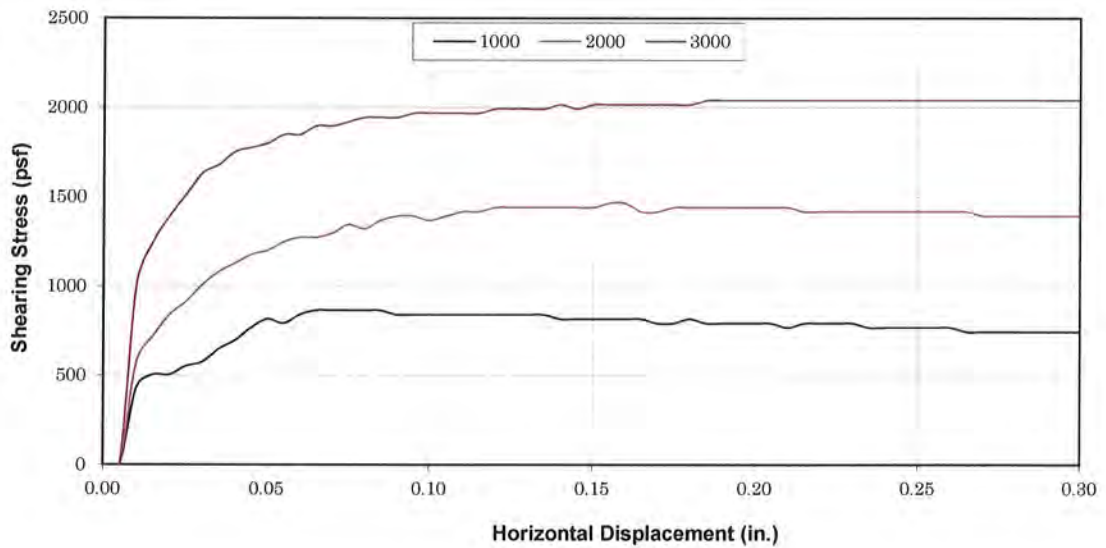
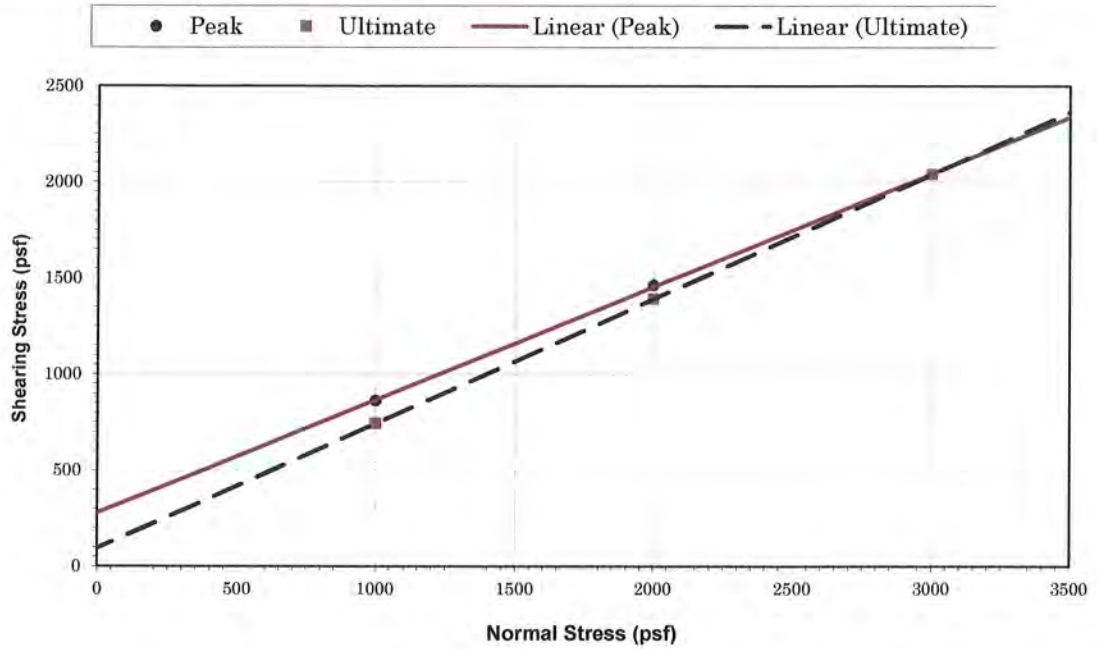
Sample Location: B 2 @ 7'
 Sample Description: Clayey Sandstone
 Dry Density (pcf): 90.0
 Initial % Moisture: 30.1
 Average Degree of Saturation: 100.0
 Shear Rate (in/min): 0.0062 in/min

Normal stress (psf)	1000	2000	3000
Peak stress (psf)	696	1248	1848
Ultimate stress (psf)	360	888	1416

	Peak	Ultimate
ϕ Angle of Friction (degrees):	30	26
c Cohesive Strength (psf):	110	0
Test Type: Peak & Ultimate		

* Test Method: ASTM D-3080

DIRECT SHEAR TEST	
Callegaus-Las Virgenes MWD	
 Earth Systems Southern California	
10/10/2017	VT-25364-01




DIRECT SHEAR DATA*

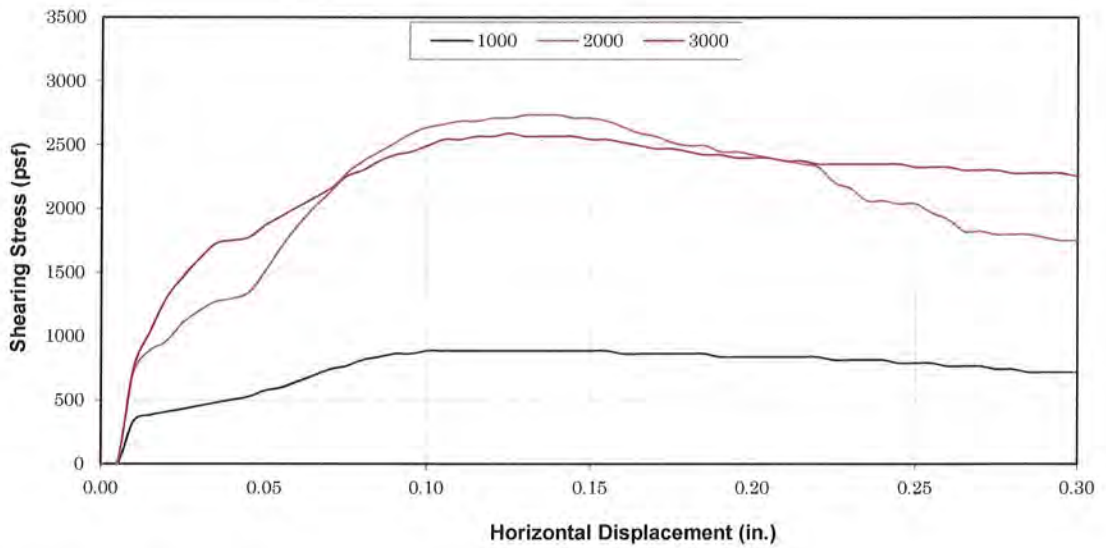
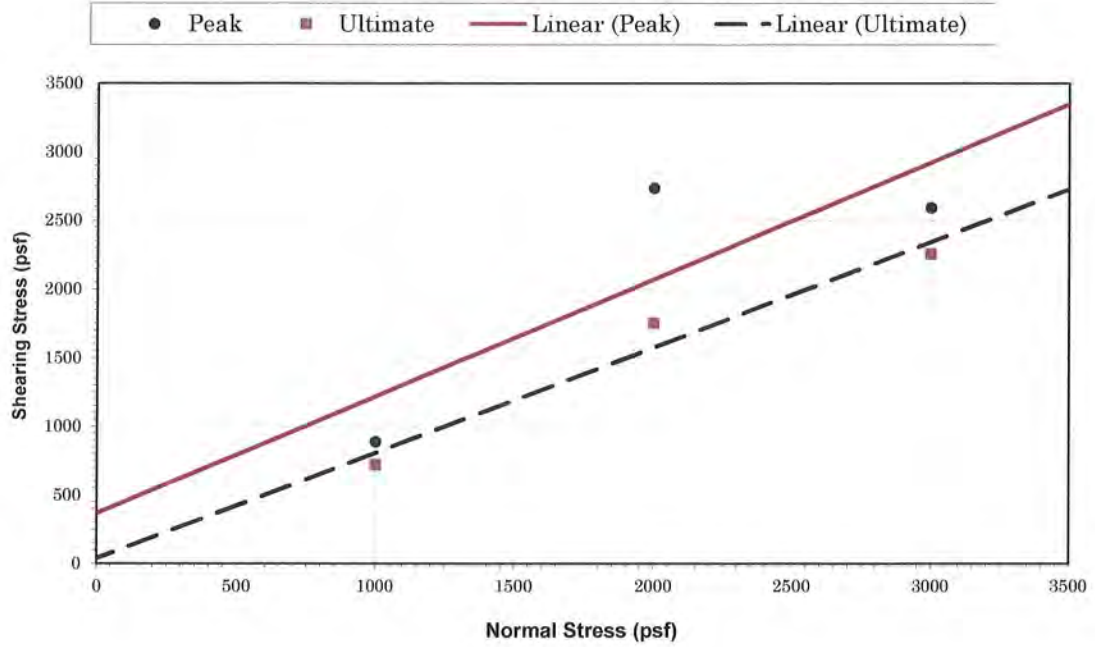
Sample Location: B 3 @ 3'
 Sample Description: Clayey Sand
 Dry Density (pcf): 101.1
 Initial % Moisture: 23.1
 Average Degree of Saturation: 100.0
 Shear Rate (in/min): 0.0163 in/min

Normal stress (psf)	1000	2000	3000
Peak stress (psf)	864	1464	2040
Ultimate stress (psf)	744	1392	2040

	Peak	Ultimate
ϕ Angle of Friction (degrees):	30	33
c Cohesive Strength (psf):	280	90
Test Type: Peak & Ultimate		

* Test Method: ASTM D-3080

DIRECT SHEAR TEST	
Callegaus-Las Virgenes MWD	
 Earth Systems Southern California	
10/10/2017	VT-25364-01



DIRECT SHEAR DATA*

Sample Location: B 3 @ 7'
 Sample Description: Siltstone
 Dry Density (pcf): 96.0
 Initial % Moisture: 24.7
 Average Degree of Saturation: 100.0
 Shear Rate (in/min): 0.0066 in/min

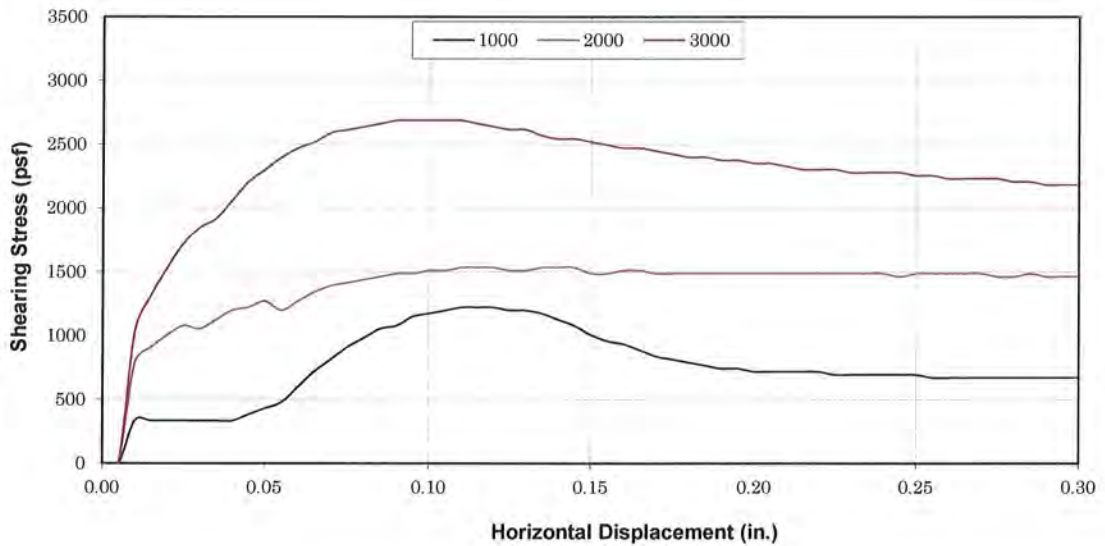
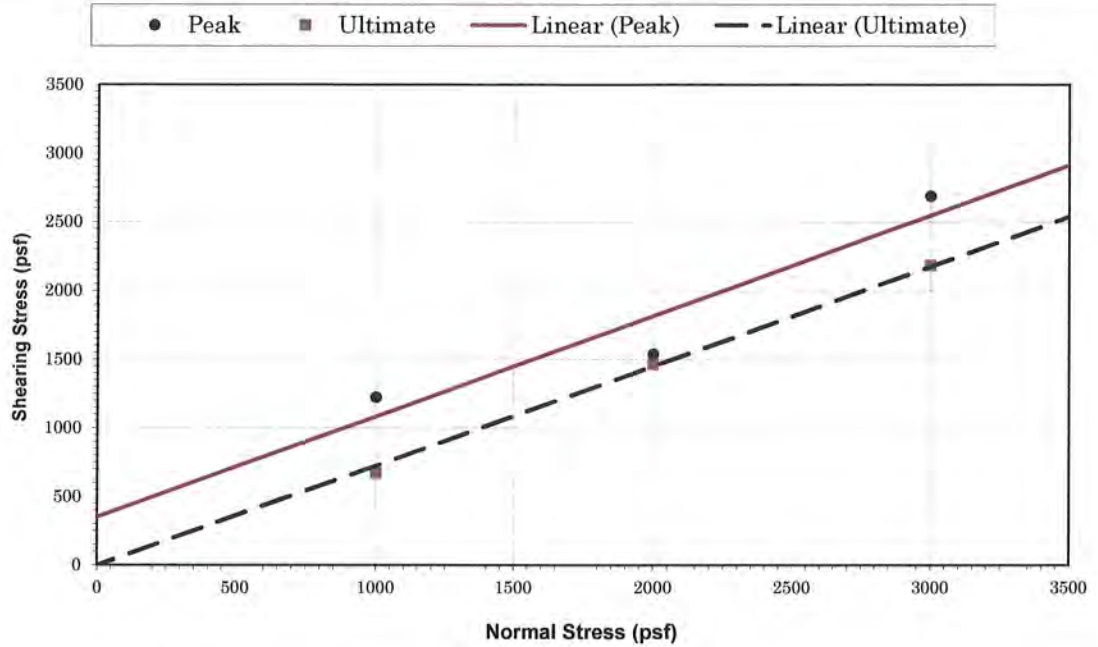
Normal stress (psf)	1000	2000	3000
Peak stress (psf)	888	2736	2592
Ultimate stress (psf)	720	1752	2256

	Peak	Ultimate
ϕ Angle of Friction (degrees):	40	38
c Cohesive Strength (psf):	360	40

Test Type: Peak & Ultimate

* Test Method: ASTM D-3080

DIRECT SHEAR TEST	
Callegaus-Las Virgenes MWD	
	Earth Systems Southern California
10/5/2017	VT-25364-01




DIRECT SHEAR DATA*

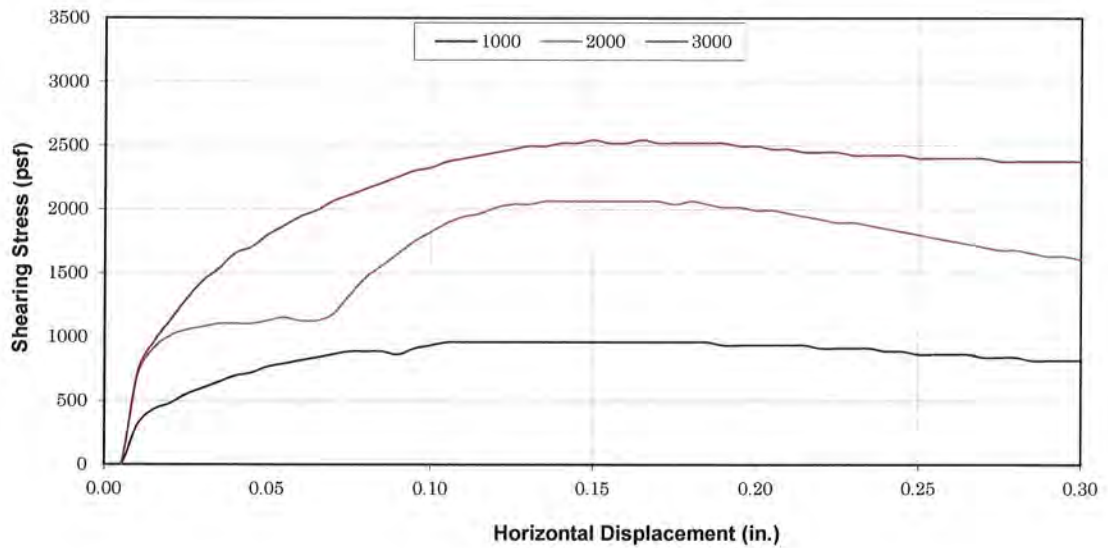
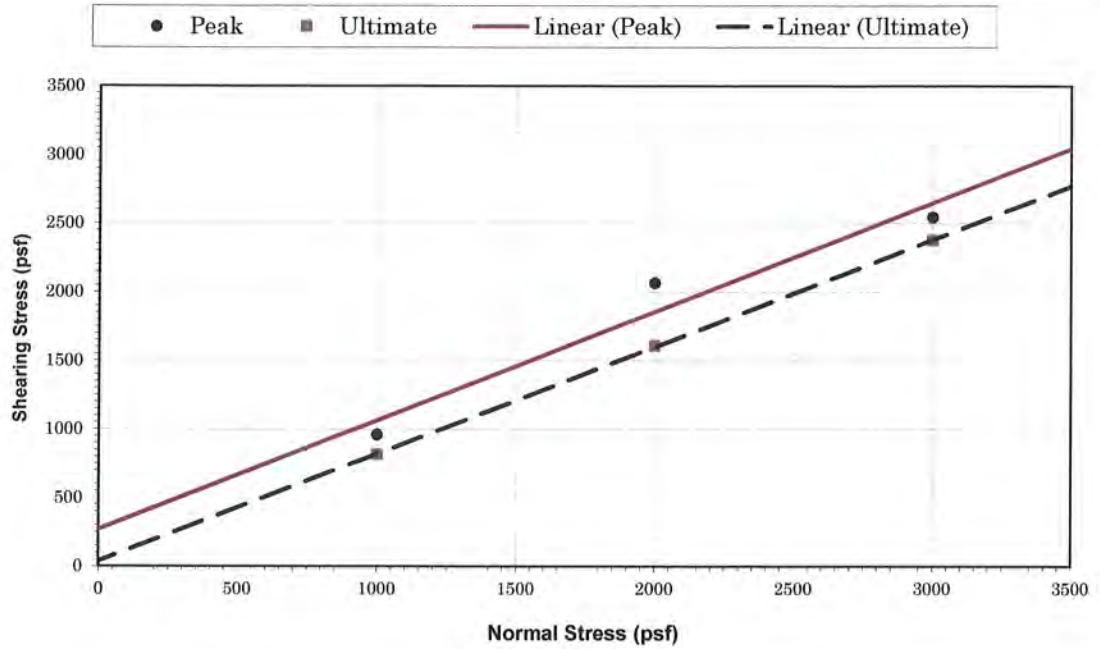
Sample Location: B 4 @ 3'
 Sample Description: Clayey Sand
 Dry Density (pcf): 96.4
 Initial % Moisture: 23
 Average Degree of Saturation: 99.7
 Shear Rate (in/min): 0.012 in/min

Normal stress (psf)	1000	2000	3000
Peak stress (psf)	1224	1536	2688
Ultimate stress (psf)	672	1464	2184

	Peak	Ultimate
ϕ Angle of Friction (degrees):	36	36
c Cohesive Strength (psf):	350	0
Test Type: Peak & Ultimate		

* Test Method: ASTM D-3080

DIRECT SHEAR TEST	
Callegaus-Las Virgenes MWD	
 Earth Systems Southern California	
10/10/2017	VT-25364-01




DIRECT SHEAR DATA*

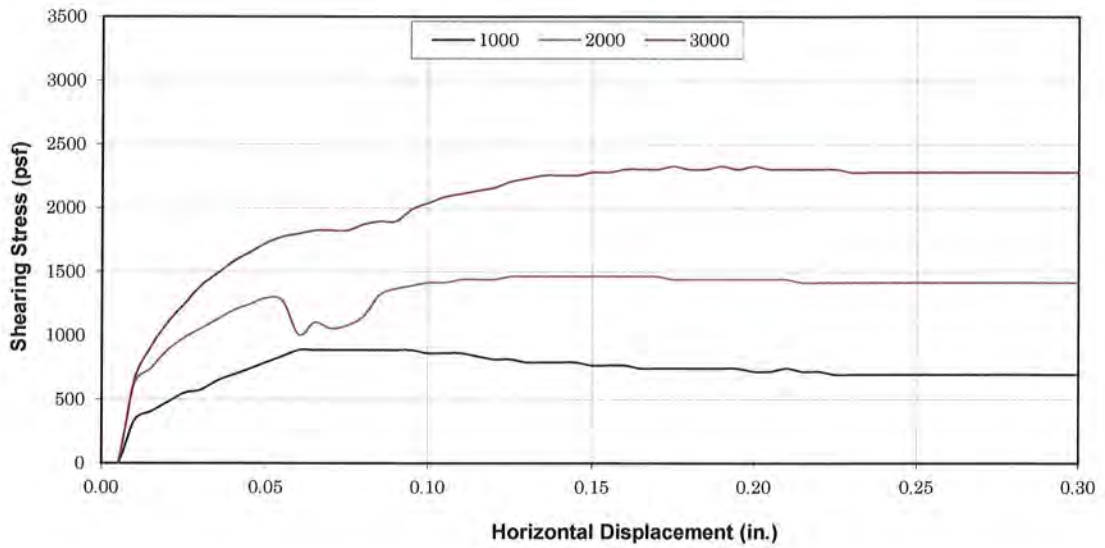
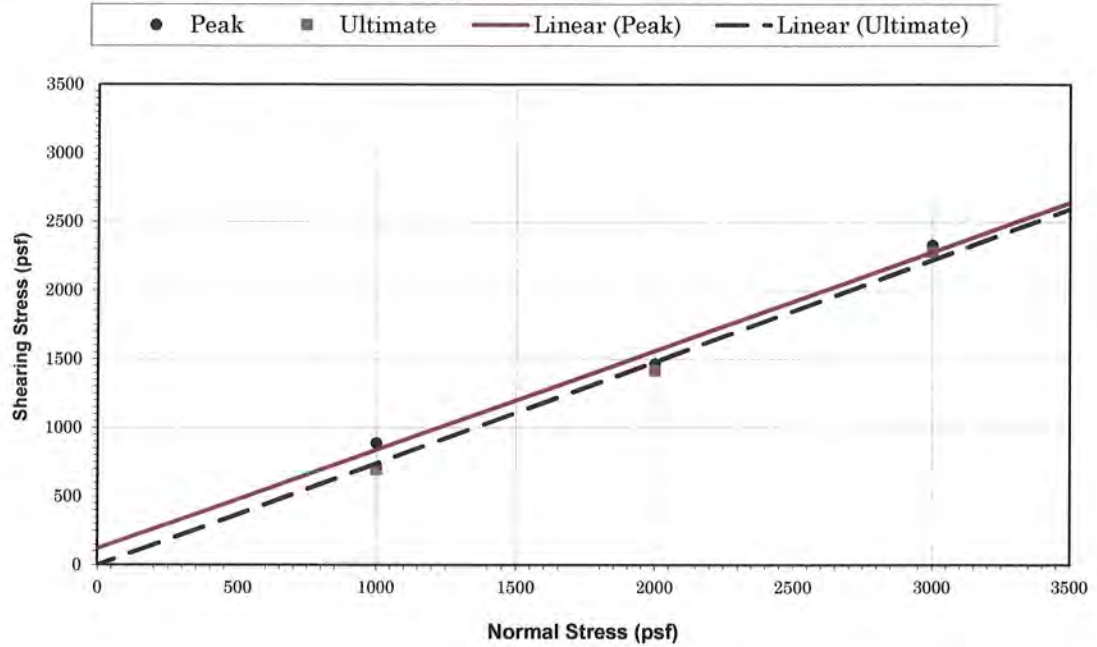
Sample Location: B 4 @ 7'
 Sample Description: Clayey Sand
 Dry Density (pcf): 96.9
 Initial % Moisture: 27.5
 Average Degree of Saturation: 100.0
 Shear Rate (in/min): 0.0144 in/min

Normal stress (psf)	1000	2000	3000
Peak stress (psf)	960	2064	2544
Ultimate stress (psf)	816	1608	2376

	Peak	Ultimate
ϕ Angle of Friction (degrees):	38	38
c Cohesive Strength (psf):	270	40
Test Type: Peak & Ultimate		

* Test Method: ASTM D-3080

DIRECT SHEAR TEST	
Callegaus-Las Virgenes MWD	
 Earth Systems Southern California	
10/10/2017	VT-25364-01




DIRECT SHEAR DATA*

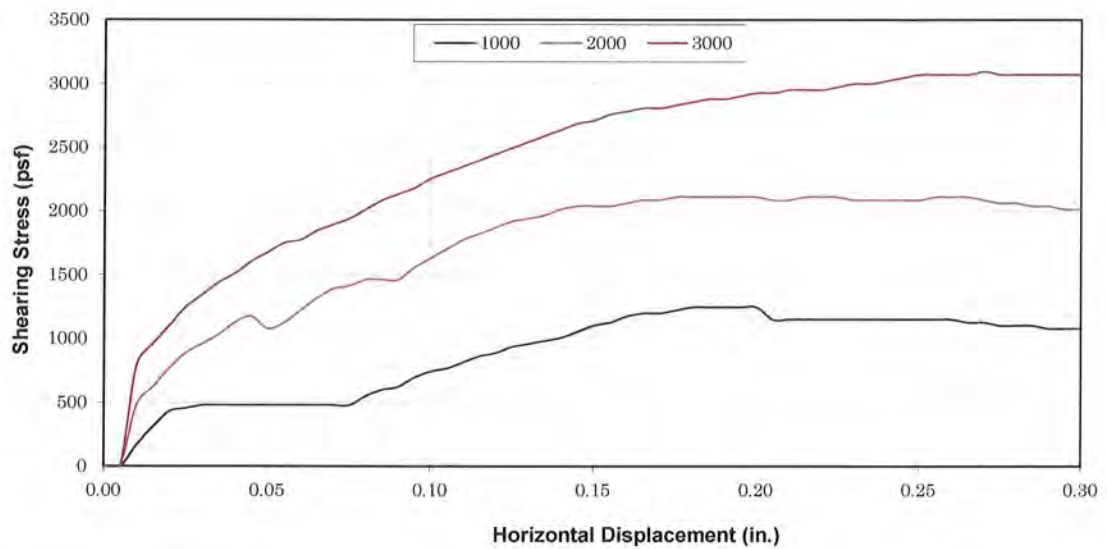
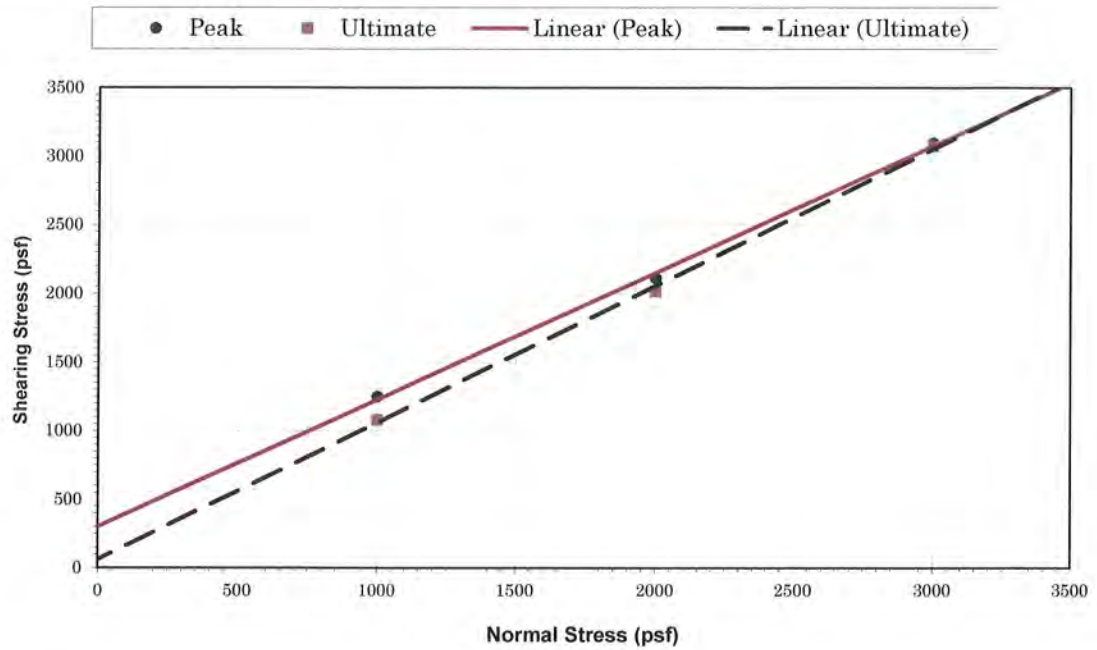
Sample Location: B 5 @ 3'
 Sample Description: Clayey Sand
 Dry Density (pcf): 92.5
 Initial % Moisture: 20.9
 Average Degree of Saturation: 100.0
 Shear Rate (in/min): 0.008 in/min

Normal stress (psf)	1000	2000	3000
Peak stress (psf)	888	1464	2328
Ultimate stress (psf)	696	1416	2280

	Peak	Ultimate
ϕ Angle of Friction (degrees):	36	37
c Cohesive Strength (psf):	120	0
Test Type: Peak & Ultimate		

* Test Method: ASTM D-3080

DIRECT SHEAR TEST	
Callegaus-Las Virgenes MWD	
 Earth Systems Southern California	
10/10/2017	VT-25364-01



DIRECT SHEAR DATA*


Sample Location: B 5 @ 7'
 Sample Description: Siltstone
 Dry Density (pcf): 92.1
 Initial % Moisture: 21.9
 Average Degree of Saturation: 100.0
 Shear Rate (in/min): 0.0081 in/min

Normal stress (psf)	1000	2000	3000
Peak stress (psf)	1248	2112	3096
Ultimate stress (psf)	1080	2016	3072

	Peak	Ultimate
ϕ Angle of Friction (degrees):	43	45
c Cohesive Strength (psf):	300	60

Test Type: Peak & Ultimate

* Test Method: ASTM D-3080

DIRECT SHEAR TEST	
Callegaus-Las Virgenes MWD	
	Earth Systems Southern California
10/5/2017	VT-25364-01



Environmental and Analytical Services-Since 1994
California State Accredited Laboratory in Accordance with ELAP Certificate # 2332

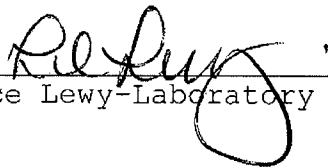
Prepared for: Earth Systems Southern California
1731 A Walter Street
Ventura, CA 93003
Attn: Pat Boales

Report Date: September 12, 2017
Laboratory Number: 171674
Project Name: Calleguas-Las Virgenes MWD
Project No: VT-25364-01
Sampled by: Client

Enclosed are the analysis results for samples received September 5, 2017 with the Chain of Custody document. The samples were received in good condition, at 25.0°C, and they were identified and assigned the laboratory ID numbers listed below:

<u>SAMPLE DESCRIPTION</u>	<u>CAS LAB NUMBER ID</u>
B1@3'-7'	171674-01
B2@3'-7'	171674-02
B3@3'-7'	171674-03
B4@3'-7'	171674-04
B5@3'-7'	171674-05

By my signature below, I certify that the results contained in this laboratory report comply with applicable standards for certification by the California Department of Public Health's Environmental Laboratories Accreditation Program (ELAP), both technically and for completeness, and that, based on my inquiry of the person or persons directly responsible for performing the analyses, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.



Lance Lewy-Laboratory Director

If you have any further questions or concerns, please contact me at your convenience. This report consists of 7 pages excluding the cover letter and the Chain of Custody.

This report shall not be reproduced except in full without the written approval of CAS. The test results reported represent only the item being tested and may not represent the entire material from which the sample was taken.



CERTIFICATE OF ANALYSIS

Client: Earth Systems Southern California Date Sampled: 08/31/17
CAS LAB NO: 171674-01 Date Received: 09/05/17
Sample ID: B1@3'-7' Sample Matrix: Soil
Analyst: GP

WET CHEMISTRY ANALYSIS SUMMARY

COMPOUND	RESULTS	UNITS	DF	PQL	METHOD	ANALYZED
pH (Corrosivity)	8.1	S.U.	1	---	9045	09/08/17
Resistivity*	2500	Ohms-cm	1	---	SM 120.1M	09/08/17
Chloride	6.5	mg/Kg	1	0.6	300.0M	09/08/17
Sulfate	380	mg/Kg	1	0.6	300.0M	09/08/17

*Sample was extracted using a 1:3 ratio of soil and DI water.

DF: Dilution Factor
PQL: Practical Quantitation Limit
BQL: Below Quantitation Limit
mg/Kg: Milligrams/Kilograms (ppm)



CERTIFICATE OF ANALYSIS

Client: Earth Systems Southern California Date Sampled: 08/31/17
CAS LAB NO: 171674-02 Date Received: 09/05/17
Sample ID: B2@3'-7' Sample Matrix: Soil
Analyst: GP

WET CHEMISTRY ANALYSIS SUMMARY

COMPOUND	RESULTS	UNITS	DF	PQL	METHOD	ANALYZED
pH (Corrosivity)	7.9	S.U.	1	---	9045	09/08/17
Resistivity*	1200	Ohms-cm	1	---	SM 120.1M	09/08/17
Chloride	15	mg/Kg	1	0.6	300.0M	09/08/17
Sulfate	1000	mg/Kg	2	1.2	300.0M	09/09/17

*Sample was extracted using a 1:3 ratio of soil and DI water.

DF: Dilution Factor
PQL: Practical Quantitation Limit
BQL: Below Quantitation Limit
mg/Kg: Milligrams/Kilograms (ppm)



CERTIFICATE OF ANALYSIS

Client: Earth Systems Southern California Date Sampled: 08/31/17
CAS LAB NO: 171674-03 Date Received: 09/05/17
Sample ID: B3@3'-7' Sample Matrix: Soil
Analyst: GP

WET CHEMISTRY ANALYSIS SUMMARY

COMPOUND	RESULTS	UNITS	DF	PQL	METHOD	ANALYZED
pH (Corrosivity)	7.9	S.U.	1	---	9045	09/08/17
Resistivity*	2200	Ohms-cm	1	---	SM 120.1M	09/08/17
Chloride	18	mg/Kg	1	0.6	300.0M	09/08/17
Sulfate	450	mg/Kg	1	0.6	300.0M	09/08/17

*Sample was extracted using a 1:3 ratio of soil and DI water.

DF: Dilution Factor
PQL: Practical Quantitation Limit
BQL: Below Quantitation Limit
mg/Kg: Milligrams/Kilograms (ppm)



CERTIFICATE OF ANALYSIS

Client: Earth Systems Southern California Date Sampled: 08/31/17
CAS LAB NO: 171674-04 Date Received: 09/05/17
Sample ID: B4@3'-7' Sample Matrix: Soil
Analyst: GP

WET CHEMISTRY ANALYSIS SUMMARY

COMPOUND	RESULTS	UNITS	DF	PQL	METHOD	ANALYZED
pH (Corrosivity)	8.0	S.U.	1	---	9045	09/08/17
Resistivity*	3000	Ohms-cm	1	---	SM 120.1M	09/08/17
Chloride	33	mg/Kg	1	0.6	300.0M	09/08/17
Sulfate	200	mg/Kg	1	0.6	300.0M	09/08/17

*Sample was extracted using a 1:3 ratio of soil and DI water.

DF: Dilution Factor
PQL: Practical Quantitation Limit
BQL: Below Quantitation Limit
mg/Kg: Milligrams/Kilograms (ppm)



CERTIFICATE OF ANALYSIS

Client: Earth Systems Southern California Date Sampled: 08/31/17
CAS LAB NO: 171674-05 Date Received: 09/05/17
Sample ID: B5@3'-7' Sample Matrix: Soil
Analyst: GP

WET CHEMISTRY ANALYSIS SUMMARY

COMPOUND	RESULTS	UNITS	DF	PQL	METHOD	ANALYZED
pH (Corrosivity)	8.3	S.U.	1	---	9045	09/08/17
Resistivity*	4000	Ohms-cm	1	---	SM 120.1M	09/08/17
Chloride	15	mg/Kg	1	0.6	300.0M	09/08/17
Sulfate	160	mg/Kg	1	0.6	300.0M	09/08/17

*Sample was extracted using a 1:3 ratio of soil and DI water.

DF: Dilution Factor
PQL: Practical Quantitation Limit
BQL: Below Quantitation Limit
mg/Kg: Milligrams/Kilograms (ppm)

Appendix G

Pothole Report

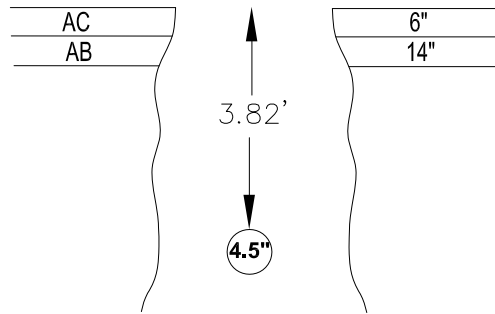
TEST HOLE DATA FORM

SUE CREW	SA/JV	 5622 Research Drive, Suite A Huntington Beach, CA 92649 TEL: 714.487.5780 FAX: 714.893.1369	TEST HOLE NUMBER	TH-1
TRUCK NO.	550603		DATE EXCAVATED	8/22/17
CLIENT PROJECT NO.			LOCATION:	LINDERO CANYON ROAD & REYES ADOBE RD.
CARDNO PROJECT NO.	CA08400400		PROJECT:	LVMWD/CMWD 30" INTERCONNECTION
CITY	WESTLAKE VILLAGE			
COUNTY	LOS ANGELES			

LOCATION PLAN



SECTION VIEW



AERIAL FLIGHT YEAR: -

NOT TO SCALE

COORDINATES:

N: - _____
 E: - _____
 ELE: - _____

DISCLAIMER: ADDITIONAL MATERIAL AND/OR UTILITIES MAY EXIST BELOW APPARENT BOTTOM

ENGLISH	-	SWING TIES FROM STRUCTURE		APPROX. DIST.
SURFACE TYPE	AC / AB	A	BELL SYSTEMS MH	8.6'
THICKNESS	6" / 14"	B	FACE OF CURB	10.8'
SOIL CONDITIONS	CLAY	C	FACE OF ISLAND	24.2'
UTILITY TYPE	TELE	UTILITY OWNER: -		DATA ENTERED BY: SHAWN CLARK
UTILITY SIZE	4.5" PIPE	DETERMINED BY: -		
UTILITY MATERIAL	PVC	DESIGNATED: -		
MARKER SET	N/D			REVIEWED BY: RICHARD HERNANDEZ

REMARKS:

HOOKED UP TO BELL SYSTEMS MH (AT&T) DUG ON DESIGNATION MARKS. UTILITY FOUND.

NOTE: MATERIAL INDICATED IS BASED ON VISUAL OBSERVATION OF EXPOSED PORTION OF UTILITY. ACTUAL MATERIAL MAY DIFFER

Before



Utility



Rod



After



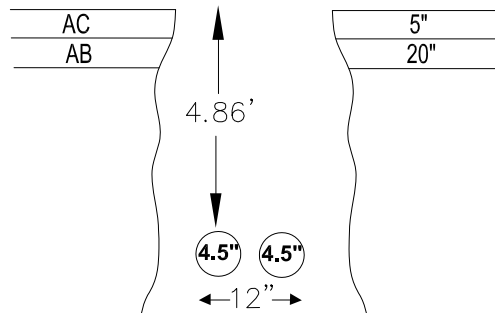
TEST HOLE DATA FORM

SUE CREW	SA/JV	 5622 Research Drive, Suite A Huntington Beach, CA 92649 TEL: 714.487.5780 FAX: 714.893.1369	TEST HOLE NUMBER	TH-2
TRUCK NO.	550603		DATE EXCAVATED	8/22/17
CLIENT PROJECT NO.			LOCATION:	LINDERO CANYON ROAD & REYES ADOBE RD.
CARDNO PROJECT NO.	CA08400400		PROJECT:	LVMWD/CMWD 30" INTERCONNECTION
CITY	WESTLAKE VILLAGE			
COUNTY	LOS ANGELES			

LOCATION PLAN



SECTION VIEW



AERIAL FLIGHT YEAR: -

NOT TO SCALE

COORDINATES:

N: - _____
 E: - _____
 ELE: - _____

DISCLAIMER: ADDITIONAL MATERIAL AND/OR UTILITIES MAY EXIST BELOW APPARENT BOTTOM

ENGLISH	-	SWING TIES FROM STRUCTURE		APPROX. DIST.
SURFACE TYPE	AC / AB	A	FACE OF CURB	14.5'
THICKNESS	5" / 20"	B	FACE OF ISLAND	30.4'
SOIL CONDITIONS	CLAY	C	BELL SYSTEMS MH	52.7'
UTILITY TYPE	TELE	UTILITY OWNER: - _____		DATA ENTERED BY: SHAWN CLARK _____
UTILITY SIZE	TWO 4.5" PIPE - 12" WIDE	DETERMINED BY: - _____		
UTILITY MATERIAL	PVC	DESIGNATED: - _____		
MARKER SET	N/D			REVIEWED BY: RICHARD HERNANDEZ _____

REMARKS:

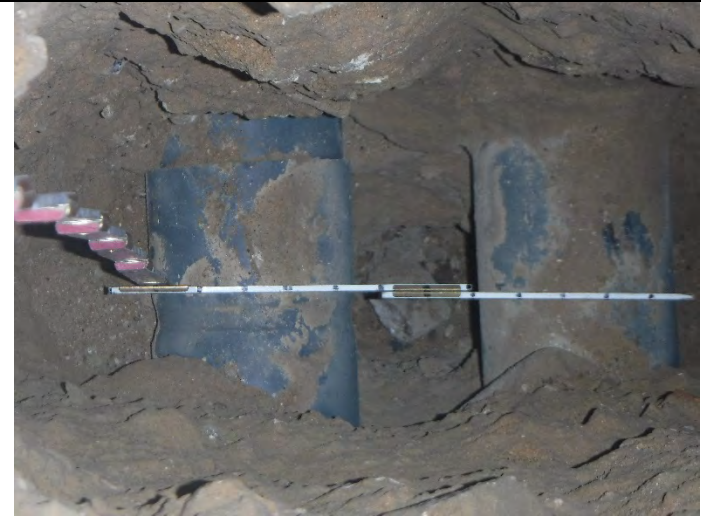
HOOKE UP TO BELL SYSTEMS (AT&T) MANHOLE, DID NOT GET A STRONG SIGNAL. DUG ON MARKS AND FOUND UTILITY. USA MARKS SHOW VAULT TO BE AT&T.

NOTE: MATERIAL INDICATED IS BASED ON VISUAL OBSERVATION OF EXPOSED PORTION OF UTILITY. ACTUAL MATERIAL MAY DIFFER

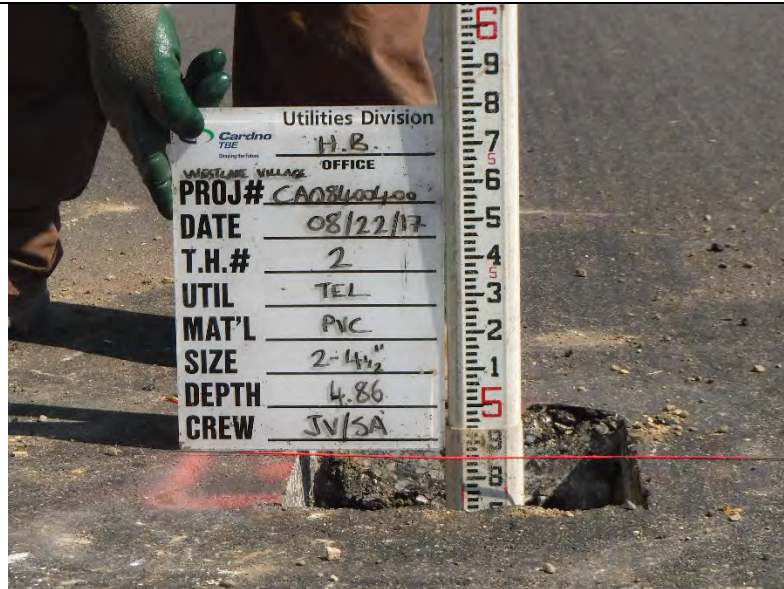
Before



Utility



Rod



After



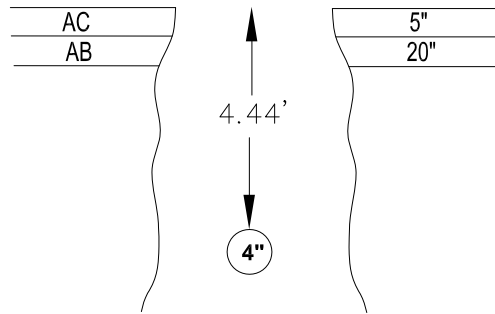
TEST HOLE DATA FORM

SUE CREW	SA/JV	 5622 Research Drive, Suite A Huntington Beach, CA 92649 TEL: 714.487.5780 FAX: 714.893.1369	TEST HOLE NUMBER	TH-3
TRUCK NO.	550603		DATE EXCAVATED	8/22/17
CLIENT PROJECT NO.			LOCATION:	LINDERO CANYON ROAD & REYES ADOBE RD.
CARDNO PROJECT NO.	CA08400400		PROJECT:	LVMWD/CMWD 30" INTERCONNECTION
CITY	WESTLAKE VILLAGE			
COUNTY	LOS ANGELES			

LOCATION PLAN



SECTION VIEW



COORDINATES:

N: _____
 E: _____
 ELE: _____

AERIAL FLIGHT YEAR: -

NOT TO SCALE

DISCLAIMER: ADDITIONAL MATERIAL AND/OR UTILITIES MAY EXIST BELOW APPARENT BOTTOM

ENGLISH	-	SWING TIES FROM STRUCTURE		APPROX. DIST.
SURFACE TYPE	AC / AB	A	FACE OF CURB	13.9'
THICKNESS	5" / 20"	B	TIP OF ISLAND	34.9'
SOIL CONDITIONS	CLAY	C	STREET LIGHT	48.1'
UTILITY TYPE	COMM	UTILITY OWNER: -		DATA ENTERED BY: SHAWN CLARK
UTILITY SIZE	4" PIPE	DETERMINED BY: -		REVIEWED BY: RICHARD HERNANDEZ
UTILITY MATERIAL	PVC	DESIGNATED: -		
MARKER SET	N/D			

REMARKS:

HOOKED UP TO TIME WARNER PULL BOX, DUG ON DESIGNATION MARKS. UTILITY FOUND. THERE WERE NO USA MARKINGS FOR THIS UTILITY.

NOTE: MATERIAL INDICATED IS BASED ON VISUAL OBSERVATION OF EXPOSED PORTION OF UTILITY. ACTUAL MATERIAL MAY DIFFER

Before



Utility



Rod



After



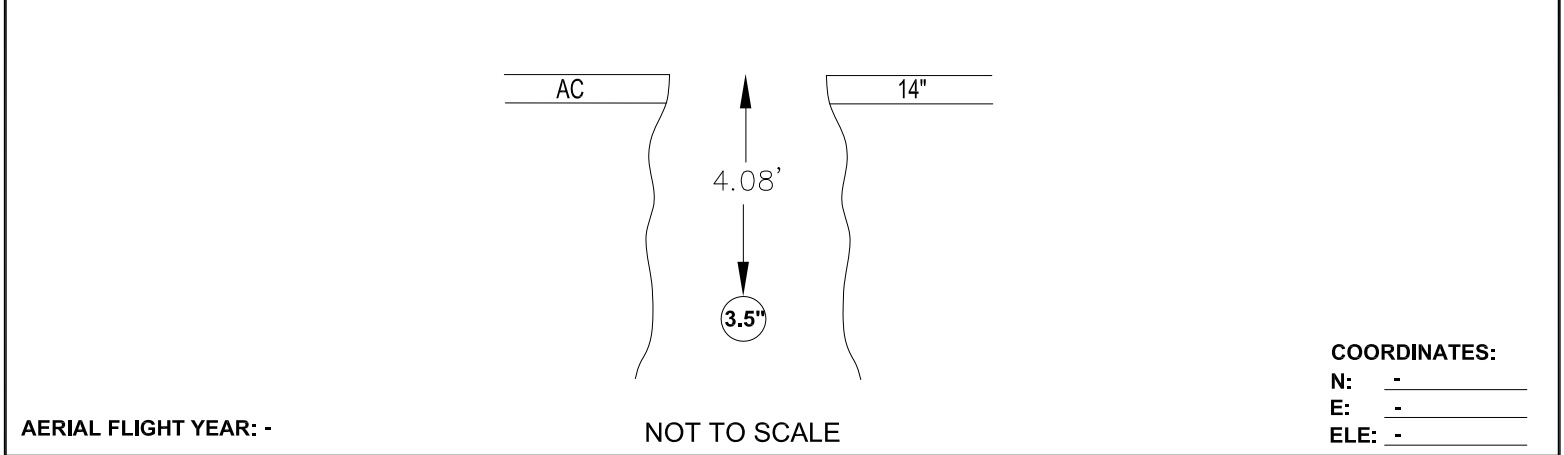
TEST HOLE DATA FORM

SUE CREW	SA/JV	 5622 Research Drive, Suite A Huntington Beach, CA 92649 TEL: 714.487.5780 FAX: 714.893.1369	TEST HOLE NUMBER	TH-4
TRUCK NO.	550603		DATE EXCAVATED	8/22/17
CLIENT PROJECT NO.			LOCATION:	
CARDNO PROJECT NO.	CA08400400		LINDERO CANYON ROAD & HEDGEWALL DR.	
CITY	WESTLAKE VILLAGE		PROJECT:	LVMWD/CMWD 30" INTERCONNECTION
COUNTY	LOS ANGELES			

LOCATION PLAN



SECTION VIEW



COORDINATES:
 N: - _____
 E: - _____
 ELE: - _____

AERIAL FLIGHT YEAR: -

DISCLAIMER: ADDITIONAL MATERIAL AND/OR UTILITIES MAY EXIST BELOW APPARENT BOTTOM

ENGLISH	-	SWING TIES FROM STRUCTURE		APPROX. DIST.
SURFACE TYPE	AC	A	TRAFFIC SIGNAL POLE SL	40.0'
THICKNESS	14"	B	TIP OF ISLAND	36.0'
SOIL CONDITIONS	THICK CLAY	C	TRAFFIC SIGNAL POLE WV	43.0'
UTILITY TYPE	GAS	UTILITY OWNER: -		DATA ENTERED BY: SHAWN CLARK REVIEWED BY: RICHARD HERNANDEZ
UTILITY SIZE	3.5" PIPE	DETERMINED BY: -		
UTILITY MATERIAL	PL	DESIGNATED: -		
MARKER SET	N/D			

REMARKS:

NO CONNECTION POINT. USA MARKS SHOW PLASTIC LINE, DUG ON USA MARKS.

NOTE: MATERIAL INDICATED IS BASED ON VISUAL OBSERVATION OF EXPOSED PORTION OF UTILITY. ACTUAL MATERIAL MAY DIFFER

Before



Utility



Rod



After



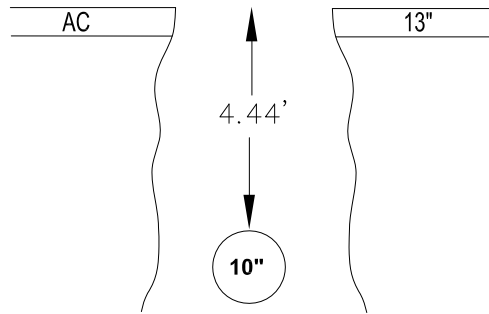
TEST HOLE DATA FORM

SUE CREW	SA/JV	 5622 Research Drive, Suite A Huntington Beach, CA 92649 TEL: 714.487.5780 FAX: 714.893.1369	TEST HOLE NUMBER	TH-5
TRUCK NO.	550603		DATE EXCAVATED	8/22/17
CLIENT PROJECT NO.			LOCATION:	
CARDNO PROJECT NO.	CA08400400		LINDERO CANYON ROAD & HEDGEWALL DR.	
CITY	WESTLAKE VILLAGE		PROJECT:	LVMWD/CMWD 30" INTERCONNECTION
COUNTY	LOS ANGELES			

LOCATION PLAN



SECTION VIEW



AERIAL FLIGHT YEAR: -

NOT TO SCALE

COORDINATES:

N: - _____
 E: - _____
 ELE: - _____

DISCLAIMER: ADDITIONAL MATERIAL AND/OR UTILITIES MAY EXIST BELOW APPARENT BOTTOM

ENGLISH	-	SWING TIES FROM STRUCTURE		APPROX. DIST.
SURFACE TYPE	AC	A	WATER VALVE	35.4'
THICKNESS	13"	B	TRAFFIC SIGNAL POLE	33.4'
SOIL CONDITIONS	THICK CLAY	C	TIP OF ISLAND	55.0'
UTILITY TYPE	WATER	UTILITY OWNER: -		DATA ENTERED BY: SHAWN CLARK
UTILITY SIZE	10" PIPE	DETERMINED BY: -		
UTILITY MATERIAL	AC	DESIGNATED: -		REVIEWED BY: RICHARD HERNANDEZ
MARKER SET	N/D			

REMARKS:

HOOKED UP TO FIRE HYDRANT AND GOT SIGNAL THAT ALIGNED WITH USA MARKS. PLANS SHOW 10" UTILITY.

NOTE: MATERIAL INDICATED IS BASED ON VISUAL OBSERVATION OF EXPOSED PORTION OF UTILITY. ACTUAL MATERIAL MAY DIFFER

Before



Utility



Rod




After



TEST HOLE DATA FORM

SUE CREW	SA/JV	 5622 Research Drive, Suite A Huntington Beach, CA 92649 TEL: 714.487.5780 FAX: 714.893.1369	TEST HOLE NUMBER	TH-6
TRUCK NO.	550603		DATE EXCAVATED	8/22/17
CLIENT PROJECT NO.			LOCATION:	
CARDNO PROJECT NO.	CA08400400		LINDERO CANYON ROAD	
CITY	WESTLAKE VILLAGE		PROJECT:	
COUNTY	LOS ANGELES		LVMWD/CMWD 30" INTERCONNECTION	

LOCATION PLAN


 NOT TO SCALE

NOT TO SCALE

SECTION VIEW

AERIAL FLIGHT YEAR: -

NOT TO SCALE

COORDINATES:
 N: - _____
 E: - _____
 ELE: - _____

DISCLAIMER: ADDITIONAL MATERIAL AND/OR UTILITIES MAY EXIST BELOW APPARENT BOTTOM

ENGLISH	-	SWING TIES FROM STRUCTURE	APPROX. DIST.
SURFACE TYPE		A	
THICKNESS		B	
SOIL CONDITIONS		C	
UTILITY TYPE		UTILITY OWNER: - _____	
UTILITY SIZE		DATA ENTERED BY: SHAWN CLARK _____	
UTILITY MATERIAL		DETERMINED BY: - _____	
MARKER SET		DESIGNATED: - _____	
		REVIEWED BY: RICHARD HERNANDEZ _____	

REMARKS:

TRIED TO DESIGNATE UTILITY. OPENED UP PULL BOX AND WIRES ARE CUT. DIRECT CONNECTED, NO SIGNAL CROSSING THE ROAD. GOT SIGNAL GOING SOUTH ON EAST SIDE OF ROAD. NO SIGNAL ON POWER. TEST HOLE CANCELLED.

NOTE: MATERIAL INDICATED IS BASED ON VISUAL OBSERVATION OF EXPOSED PORTION OF UTILITY. ACTUAL MATERIAL MAY DIFFER

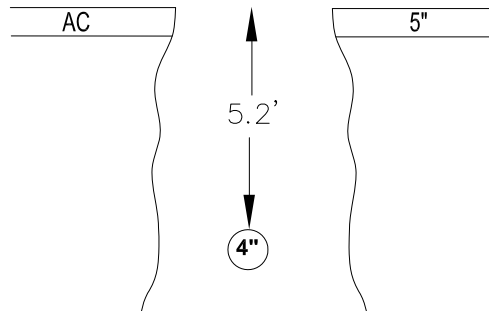
TEST HOLE DATA FORM

SUE CREW	SA/JV	 5622 Research Drive, Suite A Huntington Beach, CA 92649 TEL: 714.487.5780 FAX: 714.893.1369	TEST HOLE NUMBER	TH-7
TRUCK NO.	550603		DATE EXCAVATED	8/22/17
CLIENT PROJECT NO.			LOCATION:	LINDERO CANYON ROAD & SOUTH OF HEDGEWALL DR.
CARDNO PROJECT NO.	CA08400400		PROJECT:	
CITY	WESTLAKE VILLAGE			
COUNTY	LOS ANGELES			

LOCATION PLAN



SECTION VIEW



COORDINATES:
 N: - _____
 E: - _____
 ELE: - _____

AERIAL FLIGHT YEAR: -

NOT TO SCALE

DISCLAIMER: ADDITIONAL MATERIAL AND/OR UTILITIES MAY EXIST BELOW APPARENT BOTTOM

ENGLISH	-	SWING TIES FROM STRUCTURE		APPROX. DIST.
SURFACE TYPE	AC	A	FACE OF CURB	13.8'
THICKNESS	5"	B	FACE OF ISLAND	21.1'
SOIL CONDITIONS	WET CLAY	C	ELECTRIC VAULT	18.4'
UTILITY TYPE	ELECTRIC	UTILITY OWNER: -		DATA ENTERED BY: SHAWN CLARK
UTILITY SIZE	4" PIPE	DETERMINED BY: -		
UTILITY MATERIAL	PL	DESIGNATED: -		
MARKER SET	N/D			REVIEWED BY: RICHARD HERNANDEZ

REMARKS:

HOOKE UP TO UTILITY AND INDUCTIVE SWEEP. WEAK SIGNAL OF EAST SIDE OF STREET. UTILITY FOUND. WATER STARTED TO FILL BOTTOM OF HOLE.

NOTE: MATERIAL INDICATED IS BASED ON VISUAL OBSERVATION OF EXPOSED PORTION OF UTILITY. ACTUAL MATERIAL MAY DIFFER

Before



Utility



Rod



After



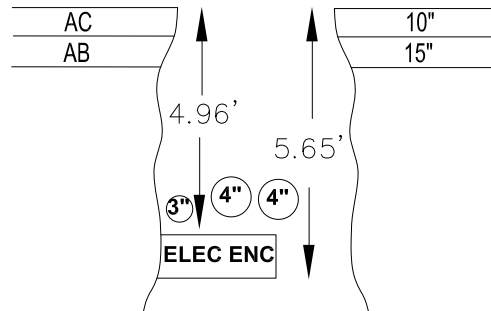
TEST HOLE DATA FORM

SUE CREW	DW/RH	 5622 Research Drive, Suite A Huntington Beach, CA 92649 TEL: 714.487.5780 FAX: 714.893.1369	TEST HOLE NUMBER	TH-8		
TRUCK NO.	550620		DATE EXCAVATED	8/22/17		
CLIENT PROJECT NO.			LOCATION:	LINDERO CANYON ROAD & CARDOZA DR.		
CARDNO PROJECT NO.	CA08400400		PROJECT:			LVMWD/CMWD 30" INTERCONNECTION
CITY	WESTLAKE VILLAGE					
COUNTY	LOS ANGELES					

LOCATION PLAN



SECTION VIEW



AERIAL FLIGHT YEAR: -

NOT TO SCALE

COORDINATES:

N: - _____
 E: - _____
 ELE: - _____

DISCLAIMER: ADDITIONAL MATERIAL AND/OR UTILITIES MAY EXIST BELOW APPARENT BOTTOM

ENGLISH	-	SWING TIES FROM STRUCTURE		APPROX. DIST.
SURFACE TYPE	AC / AB	A	CENTER LINE OF CARDOZA DR.	23.65'
THICKNESS	10" / 15"	B	WATER VALVE	38.3'
SOIL CONDITIONS	TYPE 2	C	ELECTRIC VAULT	37.7'
UTILITY TYPE	ELECTRIC	UTILITY OWNER: -		DATA ENTERED BY: SHAWN CLARK
UTILITY SIZE	UNK ENCASEMENT	DETERMINED BY: -		
UTILITY MATERIAL	CC	DESIGNATED: -		REVIEWED BY: RICHARD HERNANDEZ
MARKER SET	N/D			

REMARKS:

FOUND MULTIPLE UTILITIES IN SAME HOLE. HAD TO ELONGATE HOLE TO GET BOTTOM OF ELECTRIC ENCASEMENT. P.K. ON NORTH EDGE.

NOTE: MATERIAL INDICATED IS BASED ON VISUAL OBSERVATION OF EXPOSED PORTION OF UTILITY. ACTUAL MATERIAL MAY DIFFER

Before



Utility



Rod



After



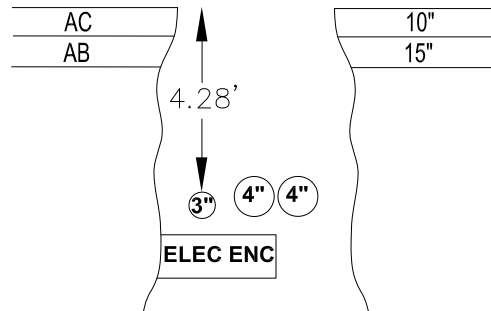
TEST HOLE DATA FORM

SUE CREW	DW/RH	 5622 Research Drive, Suite A Huntington Beach, CA 92649 TEL: 714.487.5780 FAX: 714.893.1369	TEST HOLE NUMBER	TH-8.1	
TRUCK NO.	550620		DATE EXCAVATED	8/22/17	
CLIENT PROJECT NO.			LOCATION:	LINDERO CANYON ROAD & CARDOZA DR.	
CARDNO PROJECT NO.	CA08400400		PROJECT:		LVMWD/CMWD 30" INTERCONNECTION
CITY	WESTLAKE VILLAGE				
COUNTY	LOS ANGELES				

LOCATION PLAN



SECTION VIEW



COORDINATES:
 N: _____
 E: _____
 ELE: _____

AERIAL FLIGHT YEAR: -

NOT TO SCALE

DISCLAIMER: ADDITIONAL MATERIAL AND/OR UTILITIES MAY EXIST BELOW APPARENT BOTTOM

ENGLISH	-	SWING TIES FROM STRUCTURE		APPROX. DIST.
SURFACE TYPE	AC / AB	A	CENTER LINE OF CARDOZA DR.	23.4'
THICKNESS	10" / 15"	B	WATER VALVE	37.95'
SOIL CONDITIONS	TYPE 2	C	ELECTRIC VAULT	37.9'
UTILITY TYPE	TELE	UTILITY OWNER: -		DATA ENTERED BY: SHAWN CLARK
UTILITY SIZE	3" PIPE	DETERMINED BY: -		REVIEWED BY: RICHARD HERNANDEZ
UTILITY MATERIAL	PVC	DESIGNATED: -		
MARKER SET	N/D			

REMARKS:

CALLING THIS A SEPERATE TELEPHONE AS PER USA MARKINGS. COULD NOT MAKE OUT OWNER.

NOTE: MATERIAL INDICATED IS BASED ON VISUAL OBSERVATION OF EXPOSED PORTION OF UTILITY. ACTUAL MATERIAL MAY DIFFER

Before



Utility



Rod



After



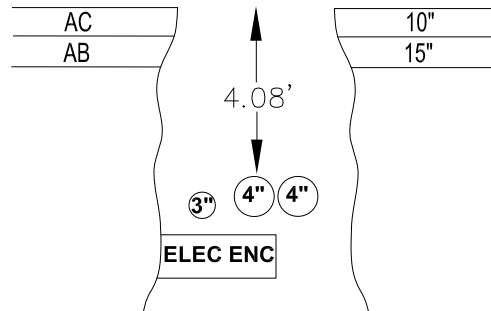
TEST HOLE DATA FORM

SUE CREW	DW/RH	 5622 Research Drive, Suite A Huntington Beach, CA 92649 TEL: 714.487.5780 FAX: 714.893.1369	TEST HOLE NUMBER	TH-8.2
TRUCK NO.	550620		DATE EXCAVATED	8/22/17
CLIENT PROJECT NO.			LOCATION:	LINDERO CANYON ROAD & CARDOZA DR.
CARDNO PROJECT NO.	CA08400400		PROJECT:	
CITY	WESTLAKE VILLAGE			
COUNTY	LOS ANGELES			

LOCATION PLAN



SECTION VIEW



AERIAL FLIGHT YEAR: -

NOT TO SCALE

COORDINATES:

N: - _____
 E: - _____
 ELE: - _____

DISCLAIMER: ADDITIONAL MATERIAL AND/OR UTILITIES MAY EXIST BELOW APPARENT BOTTOM

ENGLISH	-	SWING TIES FROM STRUCTURE		APPROX. DIST.
SURFACE TYPE	AC / AB	A	CENTER LINE OF CARDOZA DR.	22.95'
THICKNESS	10" / 15"	B	WATER VALVE	37.4'
SOIL CONDITIONS	TYPE 2	C	ELECTRIC VAULT	38.3'
UTILITY TYPE	TELE	UTILITY OWNER: -		DATA ENTERED BY: SHAWN CLARK
UTILITY SIZE	TWO 4" DUCTS	DETERMINED BY: -		REVIEWED BY: RICHARD HERNANDEZ
UTILITY MATERIAL	PVC	DESIGNATED: -		
MARKER SET	N/D			

REMARKS:

CALLING THIS A SEPERATE TELEPHONE AS PER USA MARKINGS. COULD NOT MAKE OUT OWNER.

NOTE: MATERIAL INDICATED IS BASED ON VISUAL OBSERVATION OF EXPOSED PORTION OF UTILITY. ACTUAL MATERIAL MAY DIFFER

Before



Utility



Rod



After



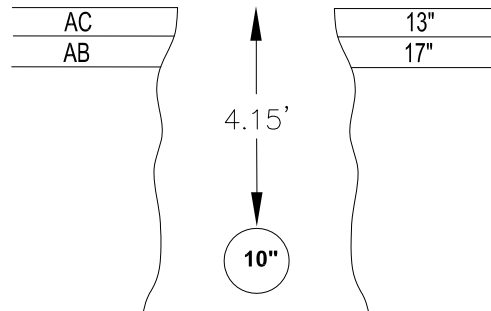
TEST HOLE DATA FORM

SUE CREW	DW/RH	 5622 Research Drive, Suite A Huntington Beach, CA 92649 TEL: 714.487.5780 FAX: 714.893.1369	TEST HOLE NUMBER	TH-9		
TRUCK NO.	550620		DATE EXCAVATED	8/22/17		
CLIENT PROJECT NO.			LOCATION:	LINDERO CANYON ROAD & CARDOZA DR.		
CARDNO PROJECT NO.	CA08400400		PROJECT:			LVMWD/CMWD 30" INTERCONNECTION
CITY	WESTLAKE VILLAGE					
COUNTY	LOS ANGELES					

LOCATION PLAN



SECTION VIEW



AERIAL FLIGHT YEAR: -

NOT TO SCALE

COORDINATES:

N: - _____
 E: - _____
 ELE: - _____

DISCLAIMER: ADDITIONAL MATERIAL AND/OR UTILITIES MAY EXIST BELOW APPARENT BOTTOM

ENGLISH	-	SWING TIES FROM STRUCTURE		APPROX. DIST.
SURFACE TYPE	AC / AB	A	WATER VALVE	6.5'
THICKNESS	13" / 17"	B	LIGHT POST	36.0'
SOIL CONDITIONS	TYPE 2	C	CENTER LINE OF CARDOZA DR.	14.1'
UTILITY TYPE	WATER	UTILITY OWNER: -		DATA ENTERED BY: SHAWN CLARK
UTILITY SIZE	10" PIPE	DETERMINED BY: -		
UTILITY MATERIAL	ACP	DESIGNATED: -		REVIEWED BY: RICHARD HERNANDEZ
MARKER SET	N/D			

REMARKS:

FOUND THIS WATER LINE AT CONNECTION POINT.

NOTE: MATERIAL INDICATED IS BASED ON VISUAL OBSERVATION OF EXPOSED PORTION OF UTILITY. ACTUAL MATERIAL MAY DIFFER

Before



Utility



Rod



After



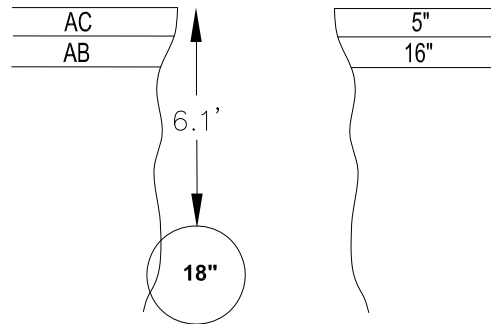
TEST HOLE DATA FORM

SUE CREW	DW/RH	 5622 Research Drive, Suite A Huntington Beach, CA 92649 TEL: 714.487.5780 FAX: 714.893.1369	TEST HOLE NUMBER	TH-10	
TRUCK NO.	550620		DATE EXCAVATED	8/22/17	
CLIENT PROJECT NO.			LOCATION:	LINDERO CANYON ROAD & THOUSAND OAKS BLVD.	
CARDNO PROJECT NO.	CA08400400				
CITY	WESTLAKE VILLAGE				
COUNTY	LOS ANGELES		PROJECT:	LVMWD/CMWD 30" INTERCONNECTION	

LOCATION PLAN



SECTION VIEW



COORDINATES:
 N: - _____
 E: - _____
 ELE: - _____

AERIAL FLIGHT YEAR: -

NOT TO SCALE

DISCLAIMER: ADDITIONAL MATERIAL AND/OR UTILITIES MAY EXIST BELOW APPARENT BOTTOM

ENGLISH	-	SWING TIES FROM STRUCTURE		APPROX. DIST.
SURFACE TYPE	AC / AB	A	TRAFFIC SIGNAL	42.2'
THICKNESS	5" / 16"	B	SS MH	15.7'
SOIL CONDITIONS	TYPE 2	C	WATER VALVE	14.4'
UTILITY TYPE	WATER	UTILITY OWNER: - _____		DATA ENTERED BY: SHAWN CLARK
UTILITY SIZE	18" PIPE	DETERMINED BY: - _____		
UTILITY MATERIAL	METAL	DESIGNATED: - _____		
MARKER SET	N/D			REVIEWED BY: RICHARD HERNANDEZ

REMARKS:

NOTE: MATERIAL INDICATED IS BASED ON VISUAL OBSERVATION OF EXPOSED PORTION OF UTILITY. ACTUAL MATERIAL MAY DIFFER

Before



Utility



Rod



After



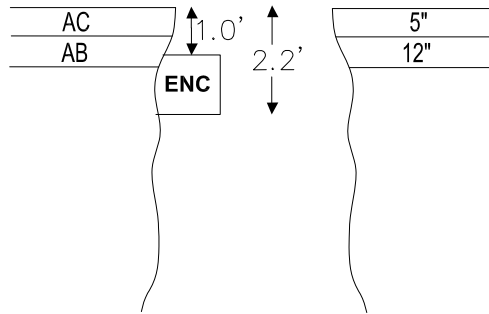
TEST HOLE DATA FORM

SUE CREW	DW/RH	 5622 Research Drive, Suite A Huntington Beach, CA 92649 TEL: 714.487.5780 FAX: 714.893.1369	TEST HOLE NUMBER	TH-11
TRUCK NO.	550620		DATE EXCAVATED	8/22/17
CLIENT PROJECT NO.			LOCATION:	LINDERO CANYON ROAD & THOUSAND OAKS BLVD.
CARDNO PROJECT NO.	CA08400400		PROJECT:	LVMWD/CMWD 30" INTERCONNECTION
CITY	WESTLAKE VILLAGE			
COUNTY	LOS ANGELES			

LOCATION PLAN



SECTION VIEW



COORDINATES:
 N: - _____
 E: - _____
 ELE: - _____

AERIAL FLIGHT YEAR: -

NOT TO SCALE

DISCLAIMER: ADDITIONAL MATERIAL AND/OR UTILITIES MAY EXIST BELOW APPARENT BOTTOM

ENGLISH	-	SWING TIES FROM STRUCTURE		APPROX. DIST.
SURFACE TYPE	AC / AB	A	TRAFFIC SIGNAL	40.2'
THICKNESS	5" / 12"	B	SS MH	12.5'
SOIL CONDITIONS	TYPE 2	C	WATER VALVE	16.9'
UTILITY TYPE	ELEC / TELE	UTILITY OWNER: -		DATA ENTERED BY: SHAWN CLARK
UTILITY SIZE	UNK ENCASEMENT	DETERMINED BY: -		
UTILITY MATERIAL	CC	DESIGNATED: -		REVIEWED BY: RICHARD HERNANDEZ
MARKER SET	N/D			

REMARKS:

OPENED TEST ON USA MARKS THAT SHOWED ELECTRIC AND TELEPHONE. PERFORMED PASSIVE SWEEP AND COULD ONLY OBTAIN ON POWER SIGNAL. UPON OPENING WE ONLY FOUND ONE ENCASEMENT. WE WENT UNDERNEATH ENCASEMENT AND FURTHER SOUTH. UNABLE TO FIND ANOTHER UTILITY. PLACED P.K. ON SOUTH EDGE OF ENCASEMENT.

NOTE: MATERIAL INDICATED IS BASED ON VISUAL OBSERVATION OF EXPOSED PORTION OF UTILITY. ACTUAL MATERIAL MAY DIFFER

Before



Utility



Rod



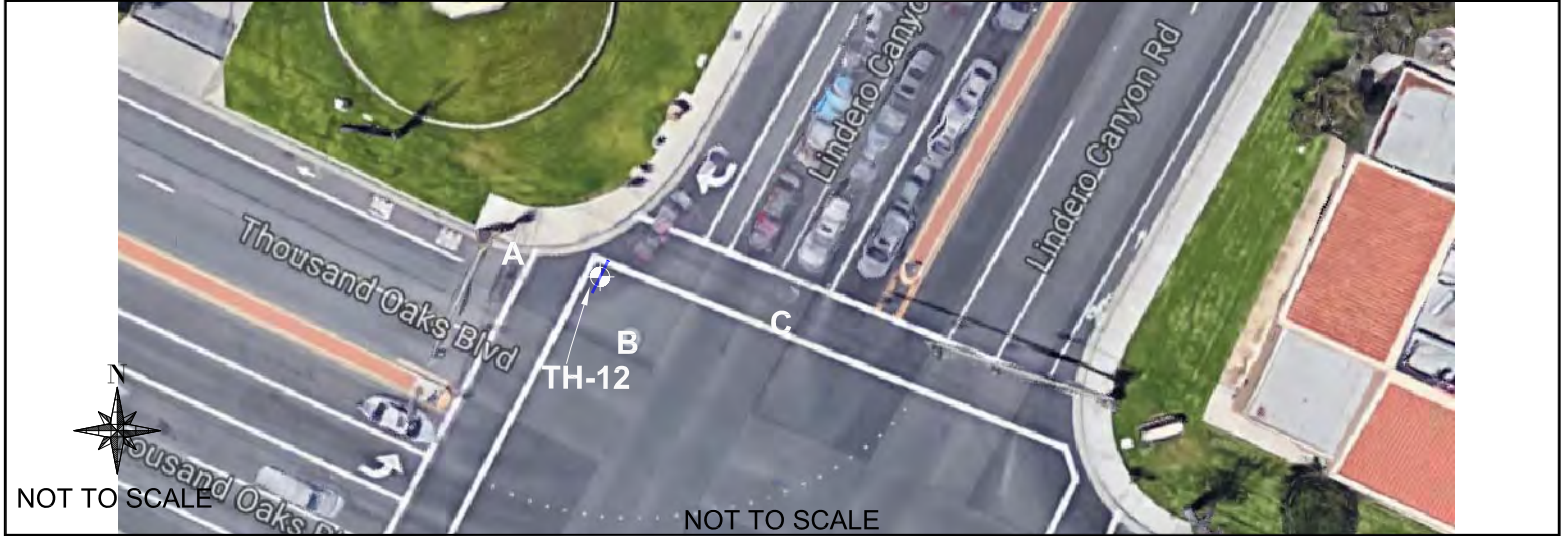
After



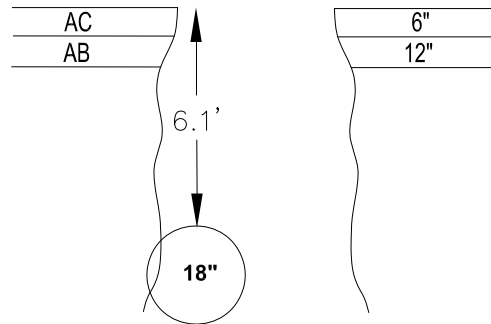
TEST HOLE DATA FORM

SUE CREW	DW/RH	 5622 Research Drive, Suite A Huntington Beach, CA 92649 TEL: 714.487.5780 FAX: 714.893.1369	TEST HOLE NUMBER	TH-12
TRUCK NO.	550620		DATE EXCAVATED	8/22/17
CLIENT PROJECT NO.			LOCATION:	LINDERO CANYON ROAD & THOUSAND OAKS BLVD.
CARDNO PROJECT NO.	CA08400400		PROJECT:	
CITY	WESTLAKE VILLAGE			
COUNTY	LOS ANGELES			

LOCATION PLAN



SECTION VIEW



AERIAL FLIGHT YEAR: -

NOT TO SCALE

COORDINATES:

N: - _____
 E: - _____
 ELE: - _____

DISCLAIMER: ADDITIONAL MATERIAL AND/OR UTILITIES MAY EXIST BELOW APPARENT BOTTOM

ENGLISH	-	SWING TIES FROM STRUCTURE		APPROX. DIST.
SURFACE TYPE	AC / AB	A	TRAFFIC SIGNAL	19.6'
THICKNESS	6" / 12"	B	SS MH	15.3'
SOIL CONDITIONS	TYPE 3	C	WATER VALVE	37.1'
UTILITY TYPE	WATER	UTILITY OWNER: -		DATA ENTERED BY: SHAWN CLARK
UTILITY SIZE	18" PIPE	DETERMINED BY: -		REVIEWED BY: RICHARD HERNANDEZ
UTILITY MATERIAL	METAL	DESIGNATED: -		
MARKER SET	N/D			

REMARKS:

CLIENT WANTED THIS 18" AT ANGLE POINT. UPON OPENING WE COULD ONLY GET WATER GOING SOUTH. TH-10 AND TH-13.1 SHOWS WATER GOING WEST. DID NOT HAVE TIME TO OPEN ANOTHER HOLE TO GET VISUAL OF ANGLE POINT. CLAY CONDITIONS DID NOT ALLOW US TO EXPAND HOLE.

NOTE: MATERIAL INDICATED IS BASED ON VISUAL OBSERVATION OF EXPOSED PORTION OF UTILITY. ACTUAL MATERIAL MAY DIFFER

Before



Utility



Rod



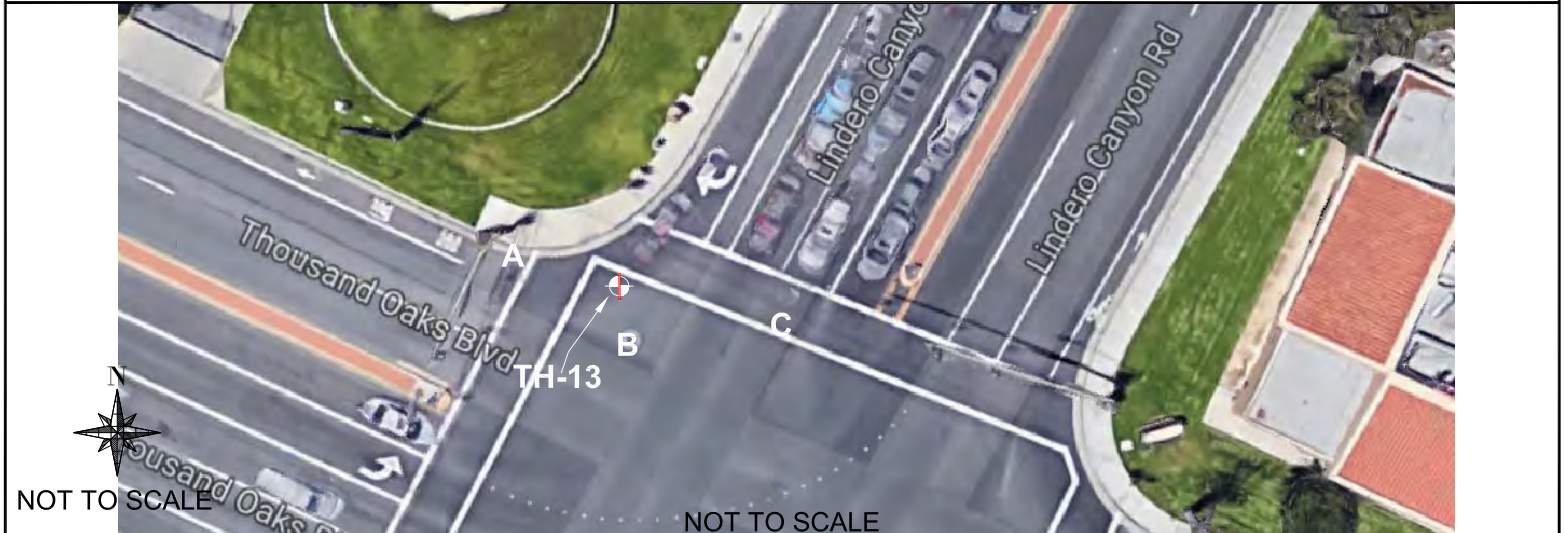
After



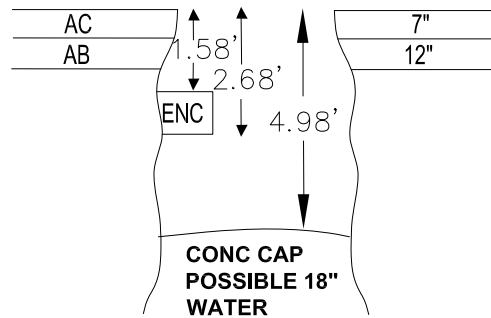
TEST HOLE DATA FORM

SUE CREW	DW/RH	 5622 Research Drive, Suite A Huntington Beach, CA 92649 TEL: 714.487.5780 FAX: 714.893.1369	TEST HOLE NUMBER	TH-13	
TRUCK NO.	550620		DATE EXCAVATED	8/22/17	
CLIENT PROJECT NO.			LOCATION:	LINDERO CANYON ROAD & THOUSAND OAKS BLVD.	
CARDNO PROJECT NO.	CA08400400				
CITY	WESTLAKE VILLAGE				
COUNTY	LOS ANGELES		PROJECT:	LVMWD/CMWD 30" INTERCONNECTION	

LOCATION PLAN



SECTION VIEW



COORDINATES:
 N: _____
 E: _____
 ELE: _____

AERIAL FLIGHT YEAR: -

NOT TO SCALE

DISCLAIMER: ADDITIONAL MATERIAL AND/OR UTILITIES MAY EXIST BELOW APPARENT BOTTOM

ENGLISH	-	SWING TIES FROM STRUCTURE		APPROX. DIST.
SURFACE TYPE	AC / AB	A	TRAFFIC SIGNAL	24.6'
THICKNESS	7" / 12"	B	SS MH	11.8'
SOIL CONDITIONS	TYPE 3	C	WATER VALVE	32.8'
UTILITY TYPE	ELECTRIC	UTILITY OWNER: -		DATA ENTERED BY: SHAWN CLARK
UTILITY SIZE	UNK ENCASEMENT	DETERMINED BY: -		
UTILITY MATERIAL	CC	DESIGNATED: -		REVIEWED BY: RICHARD HERNANDEZ
MARKER SET	N/D			

REMARKS:

OPENED TEST HOLE TO LOCATED ELECTRIC ENCASEMENT. MARKED WEST EDGE. FOUND UNKNOWN CC STRUCTURE WHERE USA MARKS SHOW 18" WATER. THIS COULD BE A CONCRETE CAP.

NOTE: MATERIAL INDICATED IS BASED ON VISUAL OBSERVATION OF EXPOSED PORTION OF UTILITY. ACTUAL MATERIAL MAY DIFFER

Before



Utility



Rod



After



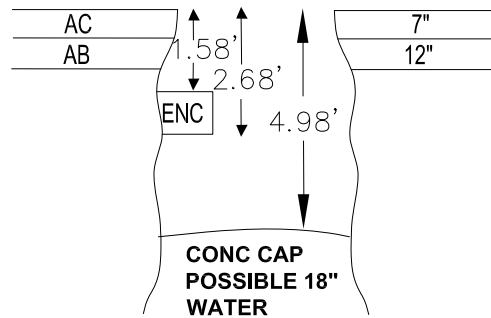
TEST HOLE DATA FORM

SUE CREW	DW/RH	 5622 Research Drive, Suite A Huntington Beach, CA 92649 TEL: 714.487.5780 FAX: 714.893.1369	TEST HOLE NUMBER	TH-13.1
TRUCK NO.	550620		DATE EXCAVATED	8/22/17
CLIENT PROJECT NO.			LOCATION:	LINDERO CANYON ROAD & THOUSAND OAKS BLVD.
CARDNO PROJECT NO.	CA08400400		PROJECT:	
CITY	WESTLAKE VILLAGE			
COUNTY	LOS ANGELES			

LOCATION PLAN



SECTION VIEW



COORDINATES:
 N: - _____
 E: - _____
 ELE: - _____

AERIAL FLIGHT YEAR: -

NOT TO SCALE

DISCLAIMER: ADDITIONAL MATERIAL AND/OR UTILITIES MAY EXIST BELOW APPARENT BOTTOM

ENGLISH	-	SWING TIES FROM STRUCTURE		APPROX. DIST.
SURFACE TYPE	AC / AB	A	TRAFFIC SIGNAL	22.9'
THICKNESS	7" / 12"	B	SS MH	13.6'
SOIL CONDITIONS	TYPE 3	C	WATER VALVE	34.1'
UTILITY TYPE	WATER	UTILITY OWNER: -		DATA ENTERED BY: SHAWN CLARK
UTILITY SIZE	UNKNOWN	DETERMINED BY: -		
UTILITY MATERIAL	CC	DESIGNATED: -		REVIEWED BY: RICHARD HERNANDEZ
MARKER SET	N/D			

REMARKS:

WHILE UNCOVERING ELECTRIC ENCASEMENT, WE ALSO UNCOVERED WHAT LOOKS TO BE THE 18" WATER CAP. FOUND WATER AT TWO OTHER LOCATIONS AT 6.1'. COULD NOT GET EDGES DUE TO TIME CONSTRAINTS.

NOTE: MATERIAL INDICATED IS BASED ON VISUAL OBSERVATION OF EXPOSED PORTION OF UTILITY. ACTUAL MATERIAL MAY DIFFER

Before



Utility



Rod



After

