CASITAS MUNICIPAL WATER DISTRICT

VENTURA STREET WATER MAIN REPLACEMENT

(Specification No. 18-404)

May 3, 2019

Bids will be received at the office of the

Casitas Municipal Water District,

1055 Ventura Avenue, Oak View, California 93022

until ***Monday June 3, 2019 @ 2:00 p.m.***

SPECIFICATION NO. 18-404

VENTURA STREET WATER MAIN REPLACEMENT

MAY 3, 2019

PREPARED BY:

1050 Southwood Drive

San Luis Obispo, CA 93401

(805) 544-7407

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PART A

CONTRACT DOCUMENTS

CASITAS MUNICIPAL WATER DISTRICT

NOTICE INVITING BIDS

VENTURA STREET WATER MAIN REPLACEMENT
SPECIFICATION NO. 18 – 404

Sealed bids for the above referenced project and specification will be received by the Casitas Municipal Water District up to 2:00 p.m. on Monday June 3, 2019 at the office of the District, 1055 Ventura Avenue, Oak View, California, 93022, at which time they will be opened and publicly read aloud. Each bid shall be made out on a form to be obtained from the Casitas Municipal Water District. Each bid must be accompanied by a certified check, a cashier's check, or by a bid bond executed by a corporate surety satisfactory to the Casitas Municipal Water District, in the sum of not less than ten (10) percent of the total amount of the bid for the initial contract items list, as a guarantee that the bidder will enter into the proposed contract, if it be awarded to them. The guarantee will be forfeited, should the bidder to whom the contract is awarded fail to enter into the contract.

The following contractors submitted their qualifications and were determined by the Board of Directors of the District as qualified to submit bids. Bids will not be accepted from any other contractors.

1. Sam Hill and Sons
2. Travis Agricultural Construction
3. Shaw Construction
4. J&H Construction
5. Tierra Construction
6. EJ Meyer Company
7. Granite Construction
8. WA Rasic Construction
9. Michels Construction

In accordance with the provisions of Section 1770-1784 of the California Labor Code, the Casitas Municipal Water District has ascertained the general prevailing rate of wages applicable to the work to be done. It shall be mandatory upon the Contractor to whom the contract is awarded, and upon the subcontractor under them, to pay not less than the specified rates to all laborers and mechanics employed by them in the execution of the contract. The wage scale can be obtained on the internet at www.dir.ca.gov/dlsr/statistics_research.html.

All bidders and their subcontractors shall be registered with the California Department of Industrial Relations (DIR). Failure of the bidder or subcontractors to be registered with the DIR shall render their bid as non-responsive and will be rejected except where State code provides for exceptions to the registration

requirements. All contractors and their subcontractors shall furnish electronic certified payroll records directly to the Labor Commissioner, also known as Division of Labor Standards Enforcement.

The District reserves the right to waive any formalities which, in the opinion of the Board of Directors, do not materially affect the relationship of the various proposals. The District reserves the right to retain all bids for a period of sixty (60) days and to reject any and all bids for any reason at the sole discretion of the District, with or without cause.

The contract documents shall consist of this Notice Inviting Bids, the Instructions to Bidders, Formal Proposal with Bidding Sheet and Bidder's Plan for Construction, Agreement, General Conditions, Special Conditions, Measurement and Payment, Technical Specifications and Drawings, and any changes made by issuance of a supplemental notice.

No pre-bid conference will be held for this project. Bidders may walk the project site, as it is located in public right of way. Bidders may contact Virgil Clary at (805) 649-2251 ext. 109 with any questions. A complete bid package (plans and specifications) may be examined and downloaded free of charge from our website at: http://www.casitaswater.org/lower.php?url=bidding-jobs.

The bid schedule is as follows:

Last Day to Submit Questions	May 22, 2019
Specifications Addendums	May 27, 2019
Final Day to Submit Bid	June 3, 2019
Tentative Bid Award	June 12, 2019

INSTRUCTIONS TO BIDDERS

Proposal. The proposal shall be submitted on the separate bid forms accompanying these specifications, designated "Proposal" and made a part of these specifications. The proposal shall be enclosed in a sealed envelope marked “Bid” addressed to Casitas Municipal Water District, 1055 Ventura Avenue, Oak View, California, 93022, and shall be endorsed with the name of the project as set forth in the Notice Inviting Bids.

The sealed proposals will be publicly opened and read at the time and place stated in the Notice Inviting Bids. Bidders, or their authorized agents, are invited to be present.

The proposal shall give the price, both in words and in figures, for which the bidder proposes to do the work required by the Specifications and the accompanying Drawings. In the event of disagreement between words and figures, the words will govern and the figures will be disregarded. In the event that the unit price and the total amount named by any bidder for any item are not in agreement, the unit price shall govern and the totals shall be corrected to conform thereto. The bidder shall fill out all blanks of the proposal forms as therein required.

Unauthorized conditions, limitations, or provisions attached to a proposal will render it informal, and may cause its rejection. The completed proposal forms shall be without interlineations, alterations, or erasures. Alternate proposals will not be considered unless asked for. No oral or telephonic proposals or modifications will be considered.

The District reserves the right to waive any informalities which, in the opinion of the Board of Directors, do not materially affect the relationship of the various proposals. The District reserves the right to reject any and all bids for any reason at the sole discretion of the District, with or without cause.

The proposal may be withdrawn upon request by the bidder without prejudice to themselves prior to, but not after, the time fixed for opening of bids, provided that the request is in writing, has been executed by the bidder or their duly authorized representative, and is filed with Casitas Municipal Water District.

Proposal Signature. If the proposal is made by an individual, it shall be signed and proposer’s full name and address shall be given; if it is made by a partnership, it shall be signed with the partnership name by a member of the firm, who shall sign their own name, and the name and address of each member shall be given; and if it is made by a corporation, the name of the corporation shall be signed by its duly authorized officer or officers, attested by the corporate seal, and the names and titles of all officers of the corporation shall be given.

Competency of Bidders. In selecting the bidder for award of the contract, consideration will be given not only to the total amount of the bid, but also to the general competency of the bidder for the performance of the work covered by the proposal. To this end, the District has selected qualified contractors through a prequalification process. The names of the qualified contractors are located on page 10 of these specifications.

Bidders' Plan for Construction. As part of the proposal, bidders must furnish a detailed statement of the plan or layout for performing the work. As preparation for the foregoing, each Bidder shall examine

carefully the site of the proposed work and the contract documents, therefore. It will be assumed that the bidder has investigated, and is satisfied as to, the conditions to be encountered; the characters, quality, and quantities of work to be performed; the quality and quantities of the materials to be furnished, and the requirements of the contract, specifications, and drawings.

Subcontracts. Subcontracts will be permitted, subject to the following provisions. No subcontract will be permitted which has the effect of avoiding the residence or wage requirements, or any other provision of the main contract. Individual subcontractors, or members of the contracting or subcontracting organizations personally engaged upon the work, shall be subject to all the requirements of these specifications applicable to employees working for wages, including but not limited to wages, hours of work, character of workmen and certified payrolls.

Reference is hereby made to the provisions of Chapter 2 of Division 5 of Title 1 of the Government Code of the State of California, commencing with Section 4100, also known as the "Subletting and Subcontracting Fair Practices Act", which is incorporated herein and made a part hereof by reference, and the Contractor is bound thereby and shall be made subject to the consequences named in sections 4110 and 4111 of said Act, in the event of his violation thereof. Each bidder shall, in their bid or offer, set forth: (1) the name and the location of the place of business of each subcontractor who will perform work or labor or render service to the Contractor in or about the construction of the work or improvement, in an amount in excess of one-half of one percent of the Contractor's total bid, or a subcontractor licensed by the State of California who, under subcontract to the prime Contractor, specifically fabricates and installs a portion of the work or improvement according to detailed drawings contained in the plans and specifications, in an amount in excess of one-half of one percent of the Prime Contractor's total bid; and (2) the portion of the work which will be done by each such subcontractor under said Act. The Contractor shall list only one subcontract for each such portion as defined by the Contractor in their bid. If the Contractor fails to specify a subcontractor, or if the Contractor specifies more than one subcontractor for the same portion of the work to be performed under this contract in excess of one-half of one percent of the Contractor's total bid, the Contractor agrees that they are fully qualified to perform that portion, and that they shall perform that portion themselves.

Subcontractors. Bidders must furnish as a part of the proposal, a complete listing of names, addresses, Department of Labor Relations Registration Number (DIR No.) and contractor license number of all subcontractors who will perform work in an amount in excess of one-half (1/2) of one percent (1%) of the total bid price, and a statement of the work which will be done by each subcontractor. The required statement shall be on the form of Bidder's Statement of Subcontractors, accompanying these specifications.

Prevailing Rate at Per Diem Wages. In accordance with the provisions of Section 1770-1784 of the California Labor Code, the District has ascertained the general prevailing rates of wages applicable to the work to be done. It shall be mandatory upon the Contractor to whom the contract is awarded, and upon any subcontractor under contractor, to pay not less than the specified rates to all laborers, surveyors and mechanics employed by Contractor in the execution of the contract. The wage can be viewed on the internet at www.dir.ca.gov/dlsr/statistics_research.html. **Final payment for services provided shall not be distributed until receipt of proof of prevailing wage payments.**

The Contractor and all subcontractors shall be subject to Executive Order 12549, "Debarment and Suspension" and Department of Commerce regulations published at 15 CFR Part 26, Subparts A through E, "Governmentwide Debarment and Suspension (Nonprocurement)" for a drugfree work place.

Disqualification of Bidders. More than one proposal from an individual, partnership, corporation, or association under the same or different names will not be considered. Reasonable grounds for believing that any bidder is interested in more than one proposal for the work contemplated will cause the rejection of all proposals in which said Bidder is interested. If there is reason for believing that collusion exists among Bidders, all bids will be rejected, and none of the participants in such collusion will be considered in future proposals.

Return of Proposal Guarantee. Proposal guarantees will be held until the contract has been executed. They will be returned to the respective Bidders whose proposals they accompany upon request.

Insurance and Bonds. The Bidder to whom award is made shall promptly secure Workmen's Compensation Insurance, in accordance with the provisions of the California Labor Code and all amendments thereto, and also shall furnish to the District certificate of insurance showing that they have taken out the insurance of the kinds and in the amounts required under the specifications. The successful Bidder shall also promptly secure, with a reasonable corporate surety or corporate sureties, satisfactory bonds conditioned upon faithful performance by the said Bidder of all requirements under the Contract and upon the payment of claims of materialmen and laborers there under. Refer to Summary of Insurance, Bond and Payment Requirements for Various Construction Contracts attached.

Permits. The Contractor, at their sole expense, shall be required to obtain all other permits and/or licenses as required. Casitas has applied for an Encroachment Permit from Ventura County for the project. The Contractor shall follow all permit requirements and pay all fees associated with any required additional permits.

Licensing of Contractors. All Contractors submitting bids shall be licensed in accordance with the provisions of Chapter 9, Division 3, of the Business and Professions Code of the State of California. Effective January 1, 1990, Contractors submitting bids must state, under penalty of perjury, the Contractor's license number and expiration date. Any bid not containing this information shall be considered non-responsive and shall be rejected by Casitas (Business & Professions Code 7028.15). The license required for this project is either a A-General Engineering Contractor or C-34 Pipeline Contractor.

Failure of the bidder to meet either of the criteria above shall deem the bid proposal non-responsive and the bid proposal will be rejected.

Supplemental Notices. Full consideration shall be given to all Supplemental Notices in the preparation of Bids, as Supplemental Notices form a part of the Contract Documents. Bidders shall verify the number of Supplemental Notices in the bid. Failure to so acknowledge may cause the Bid to be rejected.

Pre-bid Information Requests. All requests for information and questions regarding this bid proposal, the specifications, permits or the plans shall be submitted to the District. The request can be emailed to the

District at vclary@casitaswater.com. The District will make a reasonable attempt to respond to the request prior to the bid opening. All questions shall be submitted in writing by **3 p.m. on Wednesday, May 22, 2019**. If questions are received after that time they will not be answered.

Award of Contract. The award of the contract by the Board of Directors of the Casitas Municipal Water District, if it is awarded, will be to the lowest responsible bidder or bidders whose proposal complies with all requirements presented herein. Casitas maintains the right to reject any and all bids for any reason and to waive minor irregularities.

Execution of Contract. The Bidder to whom award is made shall execute a written contract with the Casitas Municipal Water District in the form of agreement provided, and shall furnish certificate of Workmen's Compensation Insurance and good and approved bonds as required in the preceding paragraphs, within seven (7) days from the date of the mailing of a notice from the Casitas Municipal Water District to the Bidder, to the address given by them, of the acceptance of their proposal. At this time Contractor shall also provide District with a completed IRS W-9 form (Request of Taxpayer Identification Number and Certification.)

Failure or refusal to enter into a contract as herein provided, or to conform to any of the stipulated requirements in connection therewith, shall be just cause for the annulment of the award and the forfeiture of the proposal guarantee. If the successful Bidder refuses or fails to execute the contract, the Casitas Municipal Water District may award the contract to the second lowest responsible Bidder.

Notice to Proceed. shall be issued by the District within fifteen (15) days of the receipt of the bonds, insurance and agreements documents satisfactory to the District and the execution of the Agreement by the District. Should there be reasons why the Notice to Proceed cannot be issued within such period, the time may be extended by mutual agreement between the District and the Bidder. If the Notice to Proceed has not been issued within the period stated herein, the Bidder may terminate the Agreement without further liability on the part of either party.

Time for Completion and Forfeiture Due to Delay

The work for this contract shall be completed within 120 consecutive calendar days from and after the date of Notice to Proceed. Pursuant to Government Code 53069.85, forfeiture for each day completion is delayed beyond the time allowed will be at a rate of $500 per day.

A. Project Milestones: Durations provided are consecutive calendar days from and after the date of the Notice to Proceed.
    a. Milestone 1: Submittal of initial project schedule and cost breakdown, 10 days. Submit items outlined in the General Conditions.
    b. Milestone 2: Completion of all contract required items, 120 consecutive calendar days after Notice to Proceed is delivered.

PROPOSAL
VENTURA STREET WATER MAIN REPLACEMENT

SPECIFICATION NO. 18 – 404

TO: Casitas Municipal Water District
1055 Ventura Avenue
Oak View, California 93022

The undersigned proposes to furnish all materials and labor, and provide all necessary tools and machinery for the completion of the above referenced project and specification, and to perform and complete all the work in the manner set forth, described, and shown in the specifications or on the drawings for the work and in the form of agreement.

The bidder agrees that, upon receipt of written notice of the acceptance of this proposal within seven (7) days after the opening of the bids, bidder will execute the contract in accordance with the proposal as accepted and furnish the required bonds and will secure the required insurance, all within seven (7) days from the date of mailing of said notice of acceptance to them at their address as given below; and that, upon failure to do so within said time, then the proposal guarantee accompanying this proposal shall become the property of the Casitas Municipal Water District as liquidated damages for such failure, and shall be deposited as monies belonging to the Casitas Municipal Water District. If said bidder shall execute the contract, furnish the required bonds, and secure the required insurance, the proposal guarantee check or bond shall be returned to them within five (5) days thereafter.

The bidder declares that they have read the Notice Inviting Bids and the Instructions to Bidders, and agrees to all the stipulations contained therein; that they have examined the site of the work, the form of agreement, the specifications and the drawings therein referred to; that they propose and agree, in the event their bid as submitted in the attached Bid Schedule be accepted, to enter into a contract to perform all the work mentioned in the agreement and the specifications, and to complete the same within the time stipulated therein; and that they will accept in full payment therefore the amount named in said Bid Schedule.

The bidder further declares that the surety or sureties named in the space provided below have agreed to furnish bonds in the form and amounts set forth in the Instructions to Bidders, in the event the contact is awarded on the basis of this proposal.

Dated: _____ _____

(Corporate Seal) By:_____

Title: _____

Telephone No. _____

Corporation organized under

the laws of the State of

_____ _____

_____

Contractor's License Number:

_____ Names and addresses of all members of the

Date of Expiration: _____ partnership, or names and titles of all officers of

Surety or Sureties agreeing to furnish bond: the corporation:

_____ _____

_____ _____

_____ _____

_____ _____

BID SCHEDULE

VENTURA STREET WATER MAIN REPLACEMENT
SPECIFICATION NO. 18 – 404

Schedule of prices for all work, materials and site cleanup for the above-mentioned project and specification in accordance with these specifications. Any item not specifically mentioned shall be considered incidental to the item to which it pertains. The bidder shall list prices for all bid items. Bids received which do not list prices in succession shall be rejected. Quantity and unit are listed for initial contract items list.

Bid Item #	Quantity & Unit	Description & Price in Words	Unit Price	Amount $
1	**1 LS**	**Mobilization of materials and equipment to and from the project work site for the lump sum price of_____ _____ _____Dollars.**	**$_____/LS**	**$**
2	**1 LS**	**Prepare and Implement Water Pollution Control Program for the project site for the duration of the project for the lump sum price of_____ _____ _____Dollars.**	**$_____/LS**	**$**
3	**1 LS**	**Implement Tree Protection plan for the duration of the project for the lump sum price of_____ _____ _____Dollars .**	**$_____/LS**	**$**
4	**1 LS**	**Traffic Control for all project work areas for the duration of the project for the lump sum price of _____ _____ _____Dollars.**	**$_____/LS**	**$**
5	**127 LF**	**Install 6-inch C900 PVC Pipe in open trench for the unit price of___ _____ _____Dollars per linear foot.**	**$_____/LF**	**$**
6	**2,450 LF**	**Install 8-inch C900 PVC Pipe in open trench for the unit price of___ _____ _____Dollars per linear foot.**	**$_____/LF**	**$**
7	**47 LF**	**Install 10-inch C900 PVC Pipe in open trench for the unit price of__ _____ _____Dollars per linear foot.**	**$_____/LF**	**$**
8	**22 EA**	**Install 8-inch Gate Valve for the unit price of_____ _____ _____Dollars for each valve.**	**$_____/LF**	**$**
9	**2 EA**	**Install 10-inch Gate Valve for the unit price of_____ _____ _____Dollars for each valve.**	**$_____/EA**	**$**
10	**3 EA**	**Install Fire Hydrant Assembly for the unit price of _____ _____ _____Dollars for each hydrant assembly.**	**$_____/EA**	**$**
11	**41 EA**	**Install 1" Water Service Lateral for from the water main to the meter box for the unit price of _____ _____ _____Dollars for each service lateral.**	**$_____/EA**	**$**

12	**2 EA**	**Install 2" Water Service Lateral for from the water main to the meter box for the unit price of _____ _____ _____Dollars for each service lateral.**	**$_____/EA**	**$**
13	**2 EA**	**Install Meter Box behind the curb and gutter for the unit price of _ _____ _____Dollars for each meter and box replaced.**	**$_____/EA**	**$**
14	**7 EA**	**Complete Intersection Tie-ins for all new water main connections to existing mains for the unit price of _____ _____ _____Dollars for each intersection.**	**$_____/EA**	**$**
15	**10,616 SF**	**AC Pavement Restoration for all trench repairs for the unit price of _____ _____Dollars per square foot of pavement.**	**$_____/SF**	**$**
16	**1 LS**	**Abandonment of Water Mains for the lump sum price of _____ _____ _____Dollars.**	**$_____/LS**	**$**

TOTAL BID AMOUNT (Item 1 - 16) $_____ (Figures)

_____

_____**(Words)**

The above quantities are based on a lump sum price, measurement and payment for each bid item per Part D of these General Specifications. The contract award will be based on **Bid Items 1-16**. **All dimensions shall be field verified with District Engineer prior to mobilization to confirm final panel replacement locations.** Bidder will not be released on account of errors. When a discrepancy occurs between the written price and the number listed, the written price shall govern. The Bidder understands that the District reserves the right to reject any or all bids, and to waive any informalities in the bidding. Pursuant to and in compliance with the Notice Inviting Bids and the other documents relating thereto, the undersigned bidder, being fully familiar with the terms of the Contract Documents, local conditions affecting the performance of the contract, the character, quality, quantities, and scope of the work, and the cost of the work at the place where the work is to be done, hereby proposes and agrees to perform within the time stipulated in the contract, including all of its component parts and everything required to be performed, and to furnish any and all of the labor, material, tools, equipment, transportation, services, permits, utilities, and all other items necessary to perform the contract and complete in a conformity with the plans and specifications and other contract documents, including **Addenda Nos. ____, ____, ____, and ____,** for the prices hereinafter set forth.

Date:_____ **BIDDER:** _____

By: _____

Title: _____

License No. _____ Expiration Date: _____

(**CORPORATE SEAL**) License Classifications: _____DIR No. _____

Telephone. No: _____ Cell No: _____

Fax No: _____ Email: _____

Address: _____

_____

BIDDER'S PLAN FOR CONSTRUCTION

1. The location for the proposed work was examined on _____
(Date)
by _____ on behalf of the bidder.
(Name and Title)

2. Explain briefly your plan and tentative schedule for performing the proposed work.

BIDDER'S STATEMENT OF SUBCONTRACTORS

The bidder is required to state the name and address of each subcontractor who will perform work in an amount in excess of one-half (2) of one percent (1%) of the total bid price and the portion of the work which each subcontractor will do.

The undersigned submits herewith a list of subcontractors whom he proposes to employ on the work, with the proper firm name and business address of each and a statement of the work or bid item which will be done by each subcontractor.

Subcontractor		Portion of Work
Location and Place of Business		DIR No.
License No.	Expiration Date: / /	Phone ( )
Subcontractor		Portion of Work
Location and Place of Business		DIR No.
License No.	Expiration Date: / /	Phone ( )
Subcontractor		Portion of Work
Location and Place of Business		DIR No.
License No.	Expiration Date: / /	Phone ( )
Subcontractor		Portion of Work
Location and Place of Business		DIR No.
License No.	Expiration Date: / /	Phone ( )
Subcontractor		Portion of Work
Location and Place of Business		DIR No.
License No.	Expiration Date: / /	Phone ( )
Subcontractor		Portion of Work
Location and Place of Business		DIR No.
License No.	Expiration Date: / /	Phone ( )

BIDDER'S BOND

KNOW ALL MEN BY THESE PRESENTS,

That we _____

_____

_____, as PRINCIPAL,

and _____

_____, as SURETY,

are held and firmly bound unto the Casitas Municipal Water District, hereinafter called the District, in the penal sum of TEN PERCENT (10%) OF THE TOTAL AMOUNT OF THE BID of the Principal above named, submitted by said Principal to the Casitas Municipal Water District, for the work described below, for the payment of which sum in lawful money of the United States, well and truly to be made, we bind ourselves, our heirs, executors, administrators and successors, jointly and severally, firmly by these presents.

In no case shall the liability of the surety hereunder exceed the sum of $ _____

_____

THE CONDITIONS OF THIS OBLIGATION ARE SUCH,

That whereas the Principal has submitted the above-mentioned bid to the Casitas Municipal Water District, for certain construction specifically described as **VENTURA STREET WATER MAIN REPLACEMENT Specification No. 18 – 404** which bids are to be opened at the office of Casitas Municipal Water District on **Monday June 3, 2019 at 2:00 pm.**

NOW, THEREFORE, if the aforesaid Principal is awarded the contract and, within the time and manner required under the heading Instructions to Bidders, after the prescribed forms are presented to him for signature, enters into a written contract, in the form set forth in said specifications, in accordance with the bid, and files the two bonds with the District, one to guarantee faithful performance and the other to guarantee payment for labor and materials, as required by Instructions to Bidders and Certificate of Insurance for Workmen's Compensation and Contractor's liability insurance, then this obligation shall be null and void; otherwise, it shall be and remain in full force and virtue.

In the event suit is brought upon this bond by the Obligee and judgement is recovered, the surety shall pay all costs incurred by the Obligee in such suit, including a reasonable attorney's fee to be fixed by the court.

IN WITNESS WHEREOF, we have hereunto set our hands and seals this _____ day of _____, 2019.

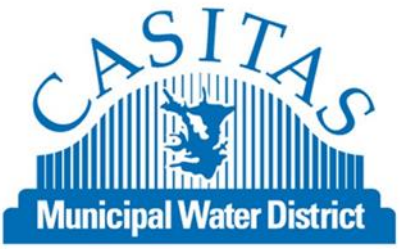
_____

Principal

By _____

(SEAL)

NOTE: Signatures of those executing for the surety must be properly acknowledged.



AGREEMENT

THIS AGREEMENT, made and entered into this _____ day of _____ in the year 2019 by and between the Casitas Municipal Water District, hereinafter designated as the District, and hereinafter designated as the Contractor.

WITNESSETH: The parties hereto do mutually agree as follows with respect to the project known as **VENTURA STREET WATER MAIN REPLACEMENT Specification No. 18 – 404**.

ARTICLE I. For and in consideration of the payment of _____Dollars ($_____) in conformance with the specifications hereinafter mentioned, the Contractor agrees with the District to construct the aforementioned project and to perform and complete in a good and workmanlike manner all the work pertaining thereto shown on the Drawings and described in the Specifications therefor, to furnish at its own cost and expense all tools, equipment, labor, and materials necessary therefor, except such materials as in the said specifications are stipulated to be furnished by the District, and to do everything required by this Agreement and the said Specifications and Drawings.

ARTICLE II. For the same consideration set forth in Article I above, Contractor agrees to furnish all said materials and labor, furnishing and removing all plants, temporary work or structures, tools and equipment, and doing all the work contemplated and embraced in this Agreement, also to be responsible at its own expense for all loss and damage arising out of the nature of the work aforesaid, or from the action of the elements, or from any unforeseen difficulties which may arise or be encountered in the prosecution of the work until its acceptance by the District, and for all risks of every description connected with the works, and also for all expenses incurred by or in consequence of the suspension or discontinuance of works, except such as in the said Specifications are expressly stipulated to be borne by the District, and for well and faithfully completing the work and the whole thereof, in the manner shown and described in the said Drawings and Specifications and in accordance with the requirements of the Engineer under them, the District will pay and the Contractor shall receive in full compensation thereof the prices for the several items named in the Bidding Sheet of the Proposal.

ARTICLE III. The District hereby promises and agrees with the said Contractor to employ, and does hereby employ the said Contractor to provide the materials and to do the work according to the terms and conditions herein contained and referred to for the price aforesaid, and hereby contracts to pay the same at the time, in the manner and upon the conditions set forth in the Specifications; and the said parties for

themselves, their heirs, executors, administrators, successors and assignees do hereby agree to the full performance of the covenants herein contained.

ARTICLE IV. The Notice Inviting Bids, the Instructions to Bidders, the Proposal, the Specifications and the Drawings mentioned therein, and all addenda issued by the District with respect to the foregoing prior to the opening of bids, are hereby incorporated in and made part of this Agreement.

IN WITNESS WHEREOF: the parties hereto have caused this contract to be executed the day and year first above written.

CASITAS MUNICIPAL WATER DISTRICT

By: _____
President of the Board of Directors

ATTEST:

_____
Secretary

Approved as to form:

_____
Attorney

CONTRACTOR

Dated: _____ , 2019

By_____

_____
Title

BOND FOR FAITHFUL PERFORMANCE

KNOW ALL MEN BY THESE PRESENTS,

We _____

_____

hereinafter referred to as Contractor, as principal, and _____

_____ , as surety,

are held and firmly bound unto the Casitas Municipal Water District, OAK VIEW, California, in

the sum ONE HUNDRED PERCENT (100%) OF THE TOTAL AMOUNT OF THE BID of the Principal above named, submitted by said Principal to the Casitas Municipal Water District, for the work described below, for the payment of which sum in lawful money of the United States, 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 presents.

The condition of the foregoing obligation is such:

whereas, said Contractor has been awarded and is about to enter into a contract with the Casitas Municipal Water District, for construction of the project known as **VENTURA STREET WATER MAIN REPLACEMENT CONTRACT – SPECIFICATION NO. 18 – 404**, and is required by said District to give this bond in connection with the execution of the contract. The total bond shall be equal to the funds budgeted for the total of this contract work.

NOW, THEREFORE, if the said Contractor shall well and truly do and perform all the covenants and obligations of said contract on his part to be done and performed at the times and in the manner specified herein, then this obligation shall be null and void; otherwise, it shall be and remain in full force and effect;

PROVIDED, any alterations in the work to be done, or the material to be furnished, which may be made pursuant to the terms of said contract shall not in any way release the Contractor or the surety thereunder, nor shall any extensions of time granted under the provisions of said contract release either the Contractor or the surety, and notice of such alterations or extensions of the contract is hereby waived by the surety.

WITNESS our hands this _____ day of _____, 2019.

_____

Contractor

By:_____

_____

Surety

By:_____

Approved as to form and execution:

_____

Attorney

PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS,

We _____

_____

hereinafter referred to as Contractor, as principal, and _____

_____, as surety,

are held and firmly bound unto the Casitas Municipal Water District, OAK VIEW, California, in

the sum ONE HUNDRED PERCENT (100%) OF THE TOTAL AMOUNT OF THE BID of the Principal above named, submitted by said Principal to the Casitas Municipal Water District, for the work described below, for the payment of which sum in lawful money of the United States, 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 presents.

The condition of the above obligation is such:

Whereas, said principal has been awarded and is about to enter into a contract with the Casitas Municipal Water District, for construction of the project known as **VENTURA STREET WATER MAIN REPLACEMENT CONTRACT – SPECIFICATION NO. 18 – 404,** and is required by said District to give this bond in connection with the execution of the contract.

NOW, THEREFORE, if said principal as Contractor in said contract, or subcontractors, fails to pay for any 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 any work or labor thereon of any kind, or for amounts due under the Unemployment Insurance Act with respect to such work or labor, said surety will pay for the same, in an amount not exceeding the sum specified above, and also, in case suit is brought upon this bond, a reasonable attorney's fee, to be fixed by the court. This bond shall insure to the benefit of any and all persons entitled to file claims under Section 11929 of the Code of Civil Procedure of the State of California.

PROVIDED, any alterations in the work to be done, or the material to be furnished, which may be made pursuant to the terms of said contract shall not in any way release either the Contractor or the surety thereunder, nor shall any extensions of time granted under the provisions of said contract release either the Contractor or the surety, and notice of such alterations or extensions of the contract is hereby waived by the surety.

WITNESS our hands this _____ day of _____, 2019.

_____

Contractor

By _____

_____

Surety

By _____

Approved as to form and execution:

_____

Attorney

CASITAS MUNICIPAL WATER DISTRICT

SUMMARY OF INSURANCE, BOND & PAYMENT REQUIREMENTS FOR VARIOUS CONSTRUCTION CONTRACTS

	Informal Under $35,000	Formal $35,000 &Over
Certificates of Insurance (CG 2010 Endorsement required)		
1. Workmen's Compensation	Yes	Yes
2. Commercial, General & Auto Liability	Yes	Yes
a. For one person per accident	$1,000,000	$1,000,000
b. More than one person per accident	$1,000,000	$1,000,000
3. Property damage per accident	$1,000,000	$1,000,000
4. Thirty days written notice prior to cancellation	Yes	Yes
Bonds		
Bidder's Bonds	None	10%
Payment Bonds (Material and Labor)* (Projects bid by CMWD only)	None	100%
Performance Bonds* (Projects bid by CMWD only)	None	100%
Maintenance and Guarantee Provisions	Yes	Yes
Contracts		
Period for Final payment upon acceptance	15 Days	35 Days
Amount of Retention	-0-	5%
Progress Payment (if required, retain 5%)**	None	If Required
Final Cost Statement	None	Yes
Notice of Completion	None	Yes
Labor and Material Releases	Yes	Yes

* At the option of the District and depending upon the type of construction activity, payment bonds and/or performance bonds may be placed as a requirement on the job.

** If progress payments are required for a Purchase Order Contract, provisions therefor must be added.

NOTE: The above listed are the minimum requirements for all construction contracts. Provisions are included within the Terms and Conditions for Purchase Order Contracts which will be issued for all jobs under $35.000. Provisions should be included within the Specifications for all contracts $35,000 and over. **The United States (Bureau of Reclamation), Casitas Municipal Water District, their directors, officers, employees or authorized volunteers,** shall be named as additional insured as respects to all coverages listed above when the named insured is Lessee or Licensee of the Casitas Municipal Water District or when work is performed by the named insured for the Casitas Municipal Water District, and in both instances this coverage shall be primary. Casitas, in addition to Certificates of Insurance, shall be provided with the ISO CG 2510 Endorsement or insurer's equivalent.

In accordance with the provisions of Section 1770 of the California Labor Code, the District has ascertained the general prevailing rates of wages applicable to the work to be done. If shall be mandatory upon the Contractor to whom the contract is awarded, and upon any subcontractor under him, to pay not less than the specified rates to all laborers and mechanics employed by him in the execution of the contract. The wage scale is on the internet at www.dir.ca.gov/dlsr/statistics_research.html.

CERTIFICATE OF INSURANCE

3497674

ACORD™ CERTIFICATE OF LIABILITY INSURANCE — Date (mm/dd/yy)

Producer

NAME OF INSURANCE BROKER
ADDRESS
TELEPHONE #

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW.

INSURERS AFFORDING COVERAGE

INSURER A	National Union Fire Insurance Company of Pittsburgh, PA
INSURER B	SeaBright Insurance Company
INSURER C	
INSURER D	
INSURER E	

Insured

NAME OF INSURED
ADDRESS
TELEPHONE #

COVERAGES

THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. AGGREGATE LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE MM/DD/YY	POLICY EXPIRATION DATE MM/DD/YY	LIMITS	
A	GENERAL LIABILITY ☐ COMMERCIAL GENERAL LIAB ☐ CLAIMS MADE ☐ OCCUR GEN'L AGG LIMIT APPLIES PER ☐ POLICY ☐ PROJECT ☐ LOC				EACH OCCURRENCE	$
					FIRE DAMAGE (Any one fire)	$
					MED EXP (Any one person)	$
					PERSONAL & ADV INJURY	$
					GENERAL AGGREGATE	$
					PRODUCTS-COMP/OP AGG	$
						$
A	AUTOMOBILE LIABILITY ☐ ANY AUTO ☐ ALL OWNED AUTOS ☐ SCHEDULED AUTOS ☐ HIRED AUTOS ☐ NON-OWNED AUTOS				COMBINED SINGLE LIMIT	$
					BODILY INJURY (Per person)	$
					BODILY INJURY (Per accident)	$
					PROPERTY DAMAGE (Per accident)	$
	GARAGE LIABILITY ☐ ANY AUTO				AUTO ONLY - EA ACCIDENT	$
					OTHER THAN AUTO ONLY: EA ACC	$
					AGG	$
	EXCESS LIABILITY ☐ OCCUR ☐ CLAIMS MADE ☐ DEDUCTIBLE ☐ RETENTION $				EACH OCCURRENCE	$
					AGGREGATE	$
						$
						$
						$
B	WORKERS' COMPENSATION & EMPLOYERS' LIABILITY				☐ STATUTORY LIMIT ☐ OTHER	
					EL EACH ACCIDENT	$
					EL DISEASE - EA EMPLOYEE	$
					EL DISEASE - POLICY LIMIT	$

DESCRIPTION OF OPERATIONS/LOCATIONS/VEHICLES/EXCLUSIONS ADDED BY ENDORSEMENT/SPECIAL PROVISIONS

Additonal Insureds: Insurance coverage is primary as respects the United States of America (USBR), Casitas Municipal Water District, its directors, officers, employees, agents and volunteers.

EXPLANATORY

CERTIFICATE HOLDER

Casitas Municipal Water District

The United States of America (USBR)
1055 N Ventura Avenue
Oak View, CA 93022

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, THE ISSUING COMPANY WILL ENDEAVOR TO MAIL 30 * DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT, BUT FAILURE TO MAIL SUCH NOTICE SHALL IMPOSE NO OBLIGATION OR LIABILITY OF ANY KIND UPON THE COMPANY, ITS AGENTS OR REPRESENTATIVES.

* 10 Days for Non-Payment of Premium

AUTHORIZED REPRESENTATIVE

ACORD 25-S (7/97) — ©ACORD CORPORATION 1988

PROGRESS PAYMENT FORM

CASITAS MUNICIPAL WATER DISTRICT	Payment Document No. Progress ( ) Final ( )	OFFICE USE ONLY - Contractor/Vault/Engineer
PROJECT:		Reviewed By:
CONTRACTOR:		Approved for Payment:
Date:		

Spec. No. Project No. , General Manager Date

Bid Item No.	Description	Unit	Quantity	Per Bid Schedule		This Estimate		Actual to Date	
				Unit Price	Amount	Quantity	Amount	Quantity	Amount
1							$0.00		$0.00
2							$0.00		$0.00
3							$0.00		$0.00
				TOTAL	$0.00		$0.00		$0.00

I certify the above bill is correct & just; that payment therefor has not been received; that all statutory requirements as to American Production and Labor Standards and that all conditions of purchase applicable to the transactions have been complied with.

CONTRACTOR:

By:

Date:

Actual to Date:	$0.00
Less 5% Retained:	$0.00
Total Allowed to Date:	$0.00
Less Previous Payment	$0.00
*Less Deductions:	$0.00
Net Amount Due this Payment	$0.00

PREV. PAYMENT RECORD		
PP No.	Date	Amount

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NONCOLLUSION DECLARATION
(MUST BE SUBMITTED WITH BID)

The undersigned declares:

I am the _____ of _____,
(Title) (Company)
the party making the foregoing bid. The bid is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization, or corporation. The bid is genuine and not collusive or sham. The bidder has not directly or indirectly induced or solicited any other bidder to put in a false or sham bid. The bidder has not directly or indirectly colluded, conspired, connived, or agreed with any bidder or anyone else to put in a sham bid, or to refrain from bidding. 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. All statements contained in the bid are true. The bidder has not, directly or indirectly, submitted his or her bid price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, to any corporation, partnership, company, association, organization, bid depository, or to any member or agent thereof, to effectuate a collusive or sham bid, and has not paid, and will not pay, any person or entity for such purpose.

Any person executing this declaration on behalf of a bidder that is a corporation, partnership, joint venture, limited liability company, limited liability partnership, or any other entity, hereby represents that he or she has full power to execute, and does execute, this declaration on behalf of the bidder.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct and that this declaration is executed on _____,
(Date)

at _____, _____.
(City) (State)

_____

NOTICE TO PROCEED

To: _____ Date: _____

_____

_____

Project: **VENTURA STREET WATER MAIN REPLACEMENT Specification No. 18 – 404**

In accordance with Section 4 of the Special Conditions of the Contract Specifications, you are hereby notified to commence work on or before _____ and to complete all work within _____working days (including materials procurement) of the work start date, excluding the dates outlined therein.

CASITAS MUNICIPAL WATER DISTRICT

By : _____

Title: Julia Aranda P.E., Engineering Manager

ACCEPTANCE OF NOTICE

Receipt of above Notice to Proceed is hereby acknowledged by _____

on _____, 2019.

CONTRACTOR

By: _____

Title: _____

PART B

GENERAL CONDITIONS

1. Definitions.

1.1 Whenever the words defined in this article occur in these Specifications, or in any other contract document, they shall have the meaning here defined:

1.2 The word "specifications" shall include these General Conditions, the Special Conditions and the applicable portions of the Standard Specifications. The form of these Specifications is intended to provide for all of the work performed for Casitas Municipal Water District.

1.3 The word "District" shall mean the Casitas Municipal Water District.

1.4 The word "Board" shall mean the Board of Directors of the Casitas Municipal Water District.

1.5 The words "General Manager" shall mean the person holding the position or acting in the capacity of General Manager of the Casitas Municipal Water District.

1.6 The word "Engineer" shall mean the General Manager, or his duly authorized representative.

1.7 The word "Contractor" shall mean the Contractor in the agreement for the construction of the work and/or the furnishing of materials and/or equipment herein specified, the legal representative, or the agent of said party.

1.8 The word "Subcontractor" shall mean one who, as a subcontractor, performs at the site of the work some part of the Contractor's obligation, the legal representative, or the agent therefor.

1.9 The words "Standard Specifications" shall mean the provisions of the latest edition of the Standard Specifications for Public Works Construction (SSPWC) with all supplements, prepared and promulgated by the Southern California Chapters of the American Public Works Associated and Associated General Contractors of America. Part one of the SSPWC is hereby deleted.

1.10 The term “R & R” shall mean remove and replace.

2. Contract Documents.

2.1 The Notice Inviting Bids, Instructions to Bidders, Proposal Bonds, General Conditions, Special Conditions, Measurement and Payment Technical Specifications and Drawings, with the Agreement, supplemental notices, Notice to Proceed, permits and change orders shall be considered as incorporated in the contract. The contract documents are complementary, and what is called for in one shall be as binding as if called for by all. The intent of the contract documents is to provide for the execution and completion of a finished piece of work. The Contractor shall provide all labor and services and furnish all materials and equipment as necessary, except those items definitely stipulated in the Specifications or

Drawings to be furnished by the District. Anything shown in the Drawings and not the Specifications, or in the Specifications and not the Drawings, shall be performed by the Contractor as though shown in both the Drawings and the Specifications.

2.2 The Drawings and the Specifications show conditions as they exist, to the best knowledge and belief of the District. The Contractor shall not be relieved of any liability or responsibility under this contract, and the district or any of its officers shall not be liable for any loss sustained by the Contractor because of any variation between conditions as shown on the Drawings and the actual conditions revealed during the progress of the work, except as provided in Section 4215 of the Government Code.

3. Precedence of Contract Documents.

3.1 Should conflicts occur between Contract Documents, the document highest in precedence shall control. The precedence shall be:

3.1.1 Permits from other agencies as may be required by law.
3.1.2 Proposal.
3.1.3 Special Conditions and Measurement and Payment.
3.1.4 Technical Conditions.
3.1.5 General Conditions
3.1.6 Contract Drawings.
3.1.7 Standard Plans.
3.1.8 Standard Specifications.
3.1.9 Reference Specifications.

3.2 Change orders, supplemental agreements and approved revisions to plans and specifications will take precedence over documents listed above. Detailed plans shall have precedence over general plans.

4. Indemnification of District.

Contractor shall indemnify and hold harmless and defend the United States Bureau of Reclamation, the District, their directors, employees, agents or volunteers, and each of them from and against:

4.1 Any and all claims, demands, causes of action, damages, costs, expenses, losses or liabilities, in law or in equity, of every kind and nature whatsoever for, but not limited to, injury to or death of any person including District and/or Contractor, or any directors, officers, employees, agents or volunteers of District or Contractor, and damages to or destruction of property of any person, including but not limited to, District and/or Contractor and their directors, officers, employees, agents or volunteers, arising out of or in any manner directly or indirectly connected with the work to be performed under this agreement, however caused, regardless of any negligence of District or its directors, officers, employees, agents or volunteers, except the sole negligence or willful misconduct or active negligence of District or its directors, officers, employees, agents or volunteers.

4.2 Any and all actions, proceedings, damages, costs expenses, penalties or liabilities, in law or equity, of every kind or nature whatsoever, arising out of resulting from, or on account of the violation of any governmental law or regulation, compliance with which is the responsibility of Contractor.

Contractor shall defend, at Contractor's own cost, expense and risk, any and all such aforesaid suits, actions or other legal proceedings of every kind that may be brought or instituted against District or District's directors, officers, employees, agents or volunteers.

Contractor shall pay and satisfy any judgment, award or decree that may be rendered against District or its directors, officers, employees, agents or volunteers, in any such suit, action or other legal proceeding.

Contractor shall reimburse District and its directors, officers, employees, agents and/or volunteers, for any and all legal expenses and costs incurred by each of them in connection therewith or in enforcing the indemnity herein provided.

Contractor agrees to carry insurance for this purpose as set out in the specifications.

5. Insurance.

5.1 Contractor shall provide and maintain the following commercial general liability and automobile liability insurance:

5.1.1 Coverage for commercial general liability and automobile liability insurance shall be at least as broad as the following:

5.1.1.1 Insurance Services Office Commercial General Liability coverage (Occurrence Form CG 0001).

5.1.1.2 Insurance Services Office Form Number CA 0001 (ed. 1/87) covering Automobile Liability, Code 1 (any auto).

5.1.2 The Contractor shall maintain limits no less than the following:

5.1.2.1 General Liability. One million dollars ($1,000,000) per occurrence for bodily injury, personal injury and property damage. If Commercial General Liability Insurance or other form with a general aggregate limit is used, either the general aggregate limit shall apply separately to the project/location (with the ISO CG 2501 or insurers equivalent endorsement provided to the district) or the general aggregate limit shall be twice the required occurrence limit.

5.1.2.2 Automobile Liability. One million dollars ($1,000,000 per accident for bodily injury and property damage combine single limit.

5.1.3 The general liability and automobile liability policies are to contain, or be endorsed to contain the following provisions:

5.1.3.1 The United States Bureau of Reclamation, Casitas Municipal Water District, their directors, officers, employees, agents and volunteers are to be covered as insureds as respects: liability arising out of activities performed by or on behalf of the Contractors, products and completed operations of the Contractor; premises owned, occupied or used by the Contractor; or automobiles owned, leased, hired or borrowed by the Contractor. The coverage shall contain no special limitations on the scope of protection afforded to the United States Bureau of Reclamation, Casitas Municipal Water District, its directors, officers, employees, agents and volunteers.

5.1.3.2 For any claims related to this project, the Contractor's insurance shall be primary insurance as respects the United States Bureau of Reclamation, Casitas Municipal Water District, their directors, officers, employees, agents and volunteers. Any insurance or self-insurance maintained by the United States Bureau of Reclamation, Casitas Municipal Water District, their directors, officers, employees, agents and volunteers shall be excess of the Contractor's insurance and shall not contribute with it.

5.1.3.3 Any failure to comply with reporting or other provisions of the policies including breaches of warrantees shall not affect coverage provided to the Unites States Bureau of Reclamation, Casitas Municipal Water District, their directors, officers, employees, agents and volunteers.

5.1.3.4 The Contractor's insurance shall apply separately to each insured against whom claim is made or suit is brought, except with respect to the limits of the insurer's liability.

5.1.3.5 Each insurance policy required by this clause shall be endorsed to state that coverage shall not be suspended, voided, canceled by either party, reduced in coverage or in limits except after thirty (30) days prior to written notice by certified mail, return receipt requested, has been given to Casitas Municipal Water District.

5.1.3.6 Such liability insurance shall indemnify the Contractor and his subcontractors against loss from liability imposed by law upon, or assumed under contract by, the Contractor or his subcontractors for damages on account of such bodily injury (including death), property damage, personal injury and completed operations and products liability. Such insurance shall be provided on a policy written by underwriters through an agency satisfactory to the District (see Section 4-08.05), which includes a cross-liability clause, and covers bodily injury and property damage liability, owned and non-owned vehicles and equipment, blanket contractual liability and completed operations liability. Such liability insurance shall include explosion, collapse, underground excavation and removal of lateral support. The United States Bureau of Reclamation, Casitas Municipal Water District, their directors, officers, employees' agents and volunteers shall be named as additional primary insured on any such policies. An additional insured endorsement (ISO CG 2010 or equivalent) (modified

to include provisions 2-5 above) and a certificate of insurance (Accord Form 25-S or equivalent), shall be provided to the District.

5.1.4 Any deductible or self-insured retention must be declared to and approved by the District. At the option of the District, either the insurer shall reduce or eliminate such deductibles or self-insured retentions as respects the United States Bureau of Reclamation, Casitas Municipal Water District, their directors, officers, employees, agents and volunteers; or the Contractor shall procure a bond guaranteeing payment of losses and related investigations, claim administration and defense expenses.

5.1.5 Insurance is to be placed with insurers having a current A.M. Best's rating of no less than A:VII or equivalent.

5.1.6 The Contractor shall not commence work under this contract, nor allow any subcontractor to commence work on this subcontract, until he has secured all insurance required under the section and has filed with the District, certificates of insurance in the amounts specified. Such certificates shall contain a provision that they may not be called without at least thirty (30) days' written notice to the District.

5.2 **Worker's Compensation Insurance**.

5.2.1 By his signature hereunder, Contractor certifies that he is aware of the provisions of Section 3700 of the Labor Code which require every employer to be insured against liability for worker's compensation or to undertake self-insurance in accordance with the provisions of that code, and he will comply with such provisions before commencing the performance of the work of this contract.

5.2.2 The Contractor shall maintain, and shall cause all subcontractors he may employ to maintain adequate workers compensation insurance under the laws of the State of California for all labor employed by them, directly or indirectly, in the execution of the work. The Contractor and all subcontractors shall file with the District certification of such workers compensation insurance prior to beginning construction.

5.3 **Evidences and Cancellation of Insurance**.

5.3.1 Prior to execution of the contract, the Contractor shall file with the District evidence of insurance from an insurer or insurers certifying to the coverage of all insurance required herein. Such evidence shall include the ISO CG 2010 (or insurer's equivalent) signed by the insurer's representative and certificate of insurance (Accord Form 25-S or equivalent). All evidence of insurance shall be certified by a properly authorized officer, agent or qualified representative of the insurer and shall certify the names of the insured, any additional primary insurers, where appropriate, the type and amount of the insurance, the location and operations to which the insurance applies, the expiration date, and that the insurer will give by certified mail, written notice to the District at least thirty (30) days prior to the effective date of any cancellation, lapse or material change in the policy.

5.3.2 The Contractor shall, upon demand of the District, deliver to the District all such policy or policies of insurance and the receipts for payment or premiums thereon; and should the Contractor neglect to obtain and maintain in force any such insurance or deliver such policy or policies and receipts to the

District, then is shall be lawful for the District to obtain and maintain such insurance, and the Contractor hereby appoints the District his true and lawful attorney-in-fact to do all things necessary for this purpose. All money paid by the District for insurance premiums under the provisions of this article shall be charged to the Contractor.

6. Bonds.

6.1 Payment Bond. The successful bidder shall file with the District a surety bond to be approved by the District in a sum of not less than one hundred percent (100%) of the total amount payable by the terms of the contract, conditional as provided by Section 3247 of the Civil Code.

6.2 Performance Bond.

6.2.1 The successful bidder shall also file with the District a surety bond, to be approved by the District in a sum of not less than one hundred percent (100%) of the total amount payable by the terms and conditions of the Contract. Pursuant to Public Contract Code Section 22300, at the request and expense of the Contractor, securities equivalent to the amounts withheld by the District to ensure performance under this contract, shall be deposited with the District. The District shall pay such monies to the Contractor upon satisfactory completion of the contract. Securities eligible for investment under this section shall include those listed in Government Code Section 16430, or bank or savings and loan certificates of deposit. The Contractor shall be the beneficial owner of any securities substituted for monies withheld and shall receive any interest thereon. If the securities to be deposited by the Contractor pursuant to this provision are in registered form, the registration shall be transferred to the District.

6.2.2 Maintenance and Guarantee. The Contractor hereby guarantees that the entire work constructed by him under the Contract will meet fully all requirements thereof as to quality of workmanship and of materials furnished by him. The Contractor hereby agrees to make, at his own expense, any repairs or replacement made necessary by defects in material or workmanship supplied by him that becomes evident within one year after the date of final payment, and to restore to full compliance with the requirements of these Specifications, any part of the work which, during said one year period, is found to be deficient with respect to any provision of the Specifications. The Contractor shall make all repairs and replacement promptly upon receipt of written orders from the Engineer to do so. If the Contractor fails to make the repairs and replacements promptly, the District may do the work and the Contractor and his Surety shall be liable to the District for the cost thereof.

6.3 Each of said bonds shall be executed by the Contractor and a corporate surety licensed in the State of California. If the amount payable under terms of the Contract exceeds the original bid because of additional quantities and/or the issuance or change orders, said surety shall be required to cover the additional amount.

7. Additional Surety.

If, during the continuance of the Contract, any of the sureties upon the faithful performance bond, in the opinion of the Engineer, are or become insufficient, he may require additional sufficient sureties, which the Contractor shall furnish to the satisfaction of the Engineer within 15 days after notice, and in default thereof, the contract may be suspended and the work completed as provided in Section 21 hereof.

8. Assignment Forbidden.

The Contractor shall not assign, transfer, convey or otherwise dispose of this Contract, nor of his right, title or interest in any part thereof, nor any of the monies to become due and payable under the Contract, in any manner without the previous consent in writing of the Engineer. If the Contractor shall, without such written consent, assign, transfer, convey or otherwise dispose of any part of this Contract, or of any of the monies to become due and payable under the Contract, the District may, at its option, terminate the Contract according to Section 21 of these General Conditions. The District shall thereupon be relieved from all liability to the Contractor, and to his assignee or transferee.

9. Time and Order of Work.

The Contractor shall at all times employ such personnel, and provide such services, materials and equipment as will be sufficient, in the opinion of the Engineer, to complete the work or any separable portions thereof according to a progress schedule, and within the time limit fixed by the Contract. If the Contractor should fail to maintain adequate progress, he may be required to employ additional personnel, and provide additional services, materials and equipment, and to modify his plans and procedure in such manner as to ensure completion of the work within the time limit fixed by the Contract. This provision shall not be the exclusive remedy of the District.

10. Protests.

If the Contractor considers any of the work demanded of him to be outside the requirements of the Contract, or if he considers any order or ruling of the Engineer or any duly authorized representative to be unfair, he shall immediately ask for written instructions or divisions, whereupon he shall proceed without delay to perform the work or conform to the order or ruling; but unless the Contractor finds such instructions or divisions satisfactory, he shall, within ten (10) days after receipt of same, file a written protest with the Engineer, stating clearly and in detail his objections and the reasons therefor. Except for such grounds for protest or objections as are made of record in the manner specified and within the time stated herein, the Contractor hereby waives all grounds for protests or objections to the order, rulings, instructions, or decisions of the Engineer, and hereby agrees that as to all matters not included in such protest, the order, instructions and decisions of the Engineer shall be final and conclusive.

11. Authority of the Engineer.

The work shall be observed by the Engineer to determine that the work is being completed according to the plan, specifications and design and planning concepts. The Contractor shall be responsible for the supervision of construction processes, site condition, operation, equipment, personnel and the maintenance of a safe place to work or any safety in, on or about the work site until such time as the District files a Notice of Completion. The Engineer, however, reserves the right to determine the adequacy of the

Contractor's method, plant, and appurtenance to determine in all cases the amount, quality, acceptability and fitness of the work and material to be provided under the Contract, to determine all questions in relation to said work and construction thereof, and to decide in all cases any question which may arise concerning the fulfillment of this Contract by the Contractor. Should any discrepancy appear or any misunderstanding arising as the import of anything contained in the Specifications or Drawings, the matter shall be referred to other Engineer and his decision shall be binding on the Contractor. Any differences or conflicts which may arise between the Contractor and other contractors performing work for the District shall be adjusted to the satisfaction of the Engineer.

12. Right of Way and Encroachment.

12.1 Except as otherwise stated in the Special Conditions, the right of way for the work to be constructed under these Specifications will be provided by the District. This shall not be interpreted as giving the Contractor exclusive occupancy of the right of way provided. When the work to be performed is located within State Highway, County or Southern Pacific Railroad rights of way, or within a water course which is under the jurisdiction of the Ventura County Flood Control District, the Contractor will be required to obtain construction permits from those agencies in his own name.

12.2 Right of way to be furnished by the District for construction operations and other purposes will be specifically shown on the Drawings or provided for in the Detailed Specifications. Should the Contractor find it necessary to use any additional lands during the construction of the work, he shall provide for the use of such lands at his own expense.

13. Errors or Discrepancies Noted by Contractor.

13.1 If the Contractor, either before commencing work or during the work, finds any discrepancy between these Specifications and Drawings, or between either of them and the physical conditions at the site of the work, or finds any error or omission in any of the Drawings or in any survey, he shall promptly notify the Engineer in writing of such discrepancy, error, or omission. If the Contractor observes that any drawings or specifications are at variance with any applicable law, ordinance, regulations, order or degree, he shall promptly notify the Engineer, in writing, of such conflict.

13.2 The Engineer, upon receipt of any such notice, shall promptly investigate the circumstances and give appropriate instructions to the Contractor. Until such instructions are given, any work done by the Contractor, either directly or indirectly after his discovery of such error, discrepancy or conflict, will be at his own risk and he shall bear all costs arising therefrom.

14. Extra Work.

14.1 If, during the performance of the Contract, it shall, in the opinion of the Engineer, become necessary or desirable, for the proper completion of the contract, to order work done or materials or equipment furnished which, in the opinion of the Engineer, are not susceptible of classification under the bid items, the Contractor shall do and perform such work and furnish such materials and equipment as extra work, as hereinafter provided. All extra work shall be ordered in writing before it is started. No extra work shall be paid for unless ordered in writing.

14.2 Extra work will ordinarily be paid for at a lump sum or unit price agreed upon in writing by the Engineer and the Contractor before the extra work shall be ordered.

14.3 When the price of the extra work cannot be agreed upon, the District will pay for the extra work based on the accumulation of costs as provided in sections 4.4 through 4.11. The failure of the Contractor to comply with the requirements of this section shall deem the Engineer to establish costs as the Engineer deems reasonable.

14.4 At the close of each working day, the Contractor shall submit a daily report to the Engineer, on forms approved by the District, together with applicable delivery tickets, listing all labor, materials, and equipment involved for that day, and for other services and expenditures when authorized. An attempt shall be made to reconcile the report daily, and it shall be signed by the Engineer and the Contractor. In case of disagreement, pertinent notes shall be entered by each party to explain points which cannot be resolved immediately. Each party shall retain a signed copy of the report. Reports by subcontractors or others shall be submitted through the prime contractor. Said reports shall contain the following information:

14.4.1 The names of workers, classification and hours worked;

14.4.2 A description and the amount of materials used;

14.4.3 The type of equipment, size, identification number and hours of operation, including loading and transportation if available;

14.4.4 Other services and expenditures shall be described in such detail as the District may require.

14.5 The costs of labor will be the actual cost for wages prevailing locally for each craft or type of worker at the time the extra work is done, plus employer payments of payroll taxes and insurance, health and welfare, pension, vacation, apprenticeship funds, and other direct costs resulting from Federal, State or local laws, as well as assessment or benefits required by lawful collective bargaining agreements. The use of a labor classification which would increase the extra work costs will not be permitted unless the Contractor establishes the necessity for such additional costs. Labor costs for equipment operators and helpers shall be reported only when such costs are not included in the invoice for equipment rental.

14.6 The cost of materials reported shall be at invoice or lowest current price at which such materials are locally available and delivered to the job site in the entities involved, plus sales tax, freight and delivery. The District reserves the right to approve material sources of supply, or to supply materials to the Contractor if necessary for the progress of the work. No markup shall be applied to any material provided by the District.

14.7 No payment will be made for the use of tools which have a replacement value of $100 or less. Regardless of ownership, the rates to be used in determining equipment rental costs shall not exceed listed rates prevailing locally at equipment rental agencies or distributors, at the time the work is performed. If local rental costs are unavailable, the Contractor shall submit his costs to operate the equipment compiled

and signed by a Certified Public Accountant. The rental rates paid shall include the cost of fuel, oil, lubrication, supplies, small tools, necessary attachments, repairs and maintenance of any kind, depreciation, storage, insurance and all incidentals. Necessary loading and transportation costs for equipment used on the extra work shall be included. If equipment is used intermittently and, when not in use, could be returned to its rental source at less expense to the District than holding it at the work site, it shall be returned, unless the Contractor elects to keep it at the work site at no expense to the District. All equipment shall be acceptable to the Engineer, in good working condition, and suitable for the purpose for which it is to be used. Manufacturer's ratings and manufacturer's approved modifications shall be used to classify equipment, and it shall be powered by a unit of at least the minimum rating recommended by the manufacturer. The reported rental time of the equipment already at the job site shall be the duration of its use on the extra work, plus the time required to move it from its previous site and back or to a closer site.

14.8 The District may authorize other items which may be required on the extra work. Such items include labor, services, material, and equipment which are different in their nature form those required for the work specified in the Contract which are of a type not ordinarily available from the Contractor or any of the subcontractors. Invoices covering all such items in detail shall be submitted with the request for payment.

14.9 Vendors' invoices for material, equipment rental, and other expenditures, shall be submitted with the request for payment. If the request for payment is not substantiated by invoices or other documentation, the District may establish the cost of the item involved at the lowest price which was current at the time of the report.

14.10 The following percentage shall be added to the Contractor's costs and shall constitute the markup for all overhead and profits:

Labor	10%
Materials	10%
Equipment Rental	10%
Other Items and Expenditures	10%

To the sum of the costs and markups provided for in this subsection, one percent (1%) shall be added as compensation for bond and liability insurance.

14.11 When all or any part of the extra work is performed by any of the Contractor's subcontractors, the markups established in Subsection 14.10 shall be applied to the subcontractor's actual cost of such work, to which a markup of five percent (5%) on the subcontracted portion of the extra work may be added by the prime contractor.

14.11.1Any extra work performed hereunder shall be subject to all of the provisions of the Contract and the Contractor's sureties shall be bound with reference thereto as under the original Contract.

15. Changed Conditions.

15.1 The Contractor shall notify the Engineer in writing of the following work site conditions, hereinafter called changed conditions, promptly upon their discovery and before they are disturbed:

15.1.1 Subsurface or latent physical conditions differing materially from those represented in the Contract; and

15.1.2 Unknown physical conditions of an unusual nature differing materially from those ordinarily encountered and generally recognized as inherent in the character of the work being performed.

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

15.2 The Engineer will promptly investigate conditions when notified of any conditions which appear to be changed conditions. If the Engineer determines that the conditions are changed conditions and that they will materially increase or decrease the costs of any portion of the work, a change order will be issued adjusting the compensation for such portion of the work. If the Engineer determines that conditions of which he/she has been notified by the Contractor do not justify an adjustment in compensation, the Contractor will be so advised in writing. Should the Contractor disagree with such determination, he may submit a protest to the Engineer, as provided in Section 10 of these General Conditions.

15.3 If the Engineer determines that the conditions are changed conditions and that they will materially affect the performance time, the Contractor, upon submitting a written request, may be granted an extension of time subject to the provisions of Section 22.

15.4 The Contractor's failure to give notice of changed conditions promptly upon their discovery and before they are distributed shall constitute a waiver of all claims in connection therewith.

16. Disputed Work.

16.1 If unable to reach agreement under any of the foregoing procedures, the District may direct the Contractor to proceed with the work. Payment shall be as later determined by arbitration, if District and Contractor agree thereto, or as fixed in a court of law.

16.2 Although not to be construed as proceeding under extra work provisions, the Contractor shall keep and furnish records of disputed work according to Section 14.

17. Legal Action by Contractor.

17.1 No legal action shall be commenced against the District concerning the Contract until any dispute or decision of the Engineer has been appealed and denied by the District's Board of Directors. The Board's refusal to consider or failure to consider a written appeal within thirty (30) calendar days after receipt shall be deemed denial of such appeal.

17.2 Prior to submitting any appeal to the Board, the Contractor shall exhaust his administrative remedies by attempting to resolve his dispute with the District's staff in the following sequence:

Construction Inspector
District Engineering
General Manager
Board of Directors

17.3 Should any of the listed persons fail to consider a request by the Contractor for reconsideration of a decision within three (3) working days after receiving written request to do so, the Contractor may proceed directly to the next person in the list. At the option of the District, the person to whom the request for reconsideration is directed may elect to take such request to a higher level and the Contractor's request shall be deemed to be properly submitted to such higher level.

17.4 Nothing in this subsection shall be considered as relieving the Contractor from his duties required by the Contract documents.

18. Changes.

18.1 If either the Engineer or the Contractor, because of conditions which develop during the progress of the work, finds it impracticable to comply strictly with these Specifications, the Engineer may prescribe a modification of requirements or methods of work. For such proposes, the Engineer may, any time during the life of the Contract, by written order, make such changes, as he shall find necessary, in the design, engineer, grade, form, location, dimensions, plan, or material of any part of the work or equipment to be furnished. If such changes increase or diminish the quantity of work to be done, they shall not constitute the basis for a claim for damages or anticipated profits in the work that may be dispensed with; provided that if such changes or alterations render useless any work already done or materials already furnished or used in the work, the Engineer shall make reasonable allowance therefore, which action shall be binding upon both parties.

18.2 In case of increasing or decreasing of work, the total amount of work actually done or materials or equipment furnished shall be paid for according to the unit price established for such work under the contract, wherever such unit price has been established. In the event no prices are named in the Contract but cover such changes or alterations, the cost of such changes shall be determined as provided in Section 14.

19. Discovery of an Unknown Utility.

19.1 The Contractor's attention is directed to Section 4215 of the Government Code which provides that the district assumes the responsibility for the removal, relocation or protection of the existing utilities located on the site of any construction project if such utilities are not identified by the District in the plans and specifications made a part hereof.

19.2 If the Contractor, while performing the Contract, discovers utility facilities not identified by the District in the Contract plans and specifications, the Contractor shall immediately notify the District.

The Contractor shall not be assessed liquidated damages for delay in completion of the project, which such delay is caused by the failure of the District or the owner of the utility to provide for removal or relocation of the exiting utility facilities.

19.3 In the event that the discovery of said utility facilities may cause extra work, the Contractor is required to obtain written authorization to change or modify the work according to Sections 14 and 18 of these General Conditions, entitled "Extra Work" and "Changes," respectively.

19.4 The Contractor's failure to give said notice promptly upon discovery of an unknown utility or the Contractor's failure to obtain written approval for any work concerning the relocation, protection and/or removal of the said unknown utility or for any work relative to the modification of any portion of the work prior to the beginning of any of said work, shall constitute a waiver of any rights to any claim in connection therewith.

20. Termination of Contract.

20.1 General.

If, at any time before completion of work under the contract, it shall be found by the District that reasons beyond the control of the parties hereto render it impossible, or against the best interest of the District, to complete the work contracted to be done; or if the work shall have been prevented or suspended by injunction issued by a court of competent jurisdiction nor by any other order of constituted authority for a period in excess of 30 consecutive days; the District, by written thirty (30) day notice to the Contractor, may discontinue the work and terminate the contract; or, in the event the entire work shall have been suspended by the District, through no fault of the Contractor, in writing, the Contract shall be discontinued. Upon the service of notice of termination, the Contractor shall discontinue the work in such manner, sequence, and at such times as the Engineer may direct, continuing and doing, after said notice, only such work and only until such time or times as the Engineer may direct. Such work shall be paid for as extra work according to Section 14 of these General Conditions. The Contractor shall have no claim for damages for such discontinuance or termination of the Contract, nor shall the Contractor have any claim for anticipated profits on the work thus dispensed with, nor any other claim; except: (1) for the work actually performed between the date of the notice of termination and the time of complete discontinuance; and (2) for any liquidated damages accruing up to the date of said notice of termination according to the provisions of the Special Conditions.

20.2 Consumable Supplies.

In the event of discontinuance and termination of the contract, the District may, and at the request of the Contractor shall, purchase from the Contractor all consumable supplies of the Contractor on hand, or in transit, or on definite commitment which, in the opinion of the Engineer, are suitable and required, except for such discontinuance and termination, to complete the work, and the District shall pay the Contractor for such consumable supplies the prices paid therefor by the Contractor.

20.3 Completion of Contract.

In the event that the work shall be discontinued and the Contract terminated, the satisfactory completion of such work, as the Engineer may thereafter direct, and satisfactory compliance with the terms of said order shall be deemed the completion of the work specified in the Contract; and the final estimate shall be the amount of work completed to the time of such discontinuance and termination, with such other sums as may be due the Contractor according to the provisions of this section.

21. Suspension of Contract.

21.1 If the work to be done under the Contract shall be abandoned by the Contractor, or if the Contractor shall make a general assignment for the benefit of his creditors or be adjudicated as bankrupt, or if a receiver of his property or business be appointed by a court of competent jurisdiction, or if this Contract shall be assigned by him otherwise than hereinbefore specified, or if at any time the Engineer shall be of the opinion that the performance of the contract is unnecessarily or unreasonably delayed, or that the Contractor is willfully violating any of the conditions of the Contract, or is executing the same in bad faith or not according to the terms thereof, or if the work be not fully completed within the time named in the Contract for its completion or within the time to which the completion of the Contract may have been extended as hereinafter provided, the Board may, by written notice, instruct the Contractor to discontinue all work, or any part thereof, under this Contract.

21.2 When such written notice is served upon the Contractor, he shall immediately discontinue the work or such part thereof as covered by the notice, and shall not resume the same by written notice from the Board, in which case work shall be resumed in ten (10) days. In any such case, the District may take charge of the work and complete it by a new contract or by force account and charge the expense of completion by either method to the Contractor. In so doing, the District may take possession of and use any of the materials, plans, tools, equipment, supplies and property of every kind provided by the Contractor for the purpose of his work. Any such charges shall be deducted from such monies as may be due or may at any time hereafter become due the Contractor under this contract or at any part thereof. In case such expense shall exceed the amount which would have been due the contractor under the Contract if the same had been completed by him, he shall pay the amount of such excess to the District; and in case such expense shall be less than the amount which would have been payable under this contract if the same had been completed by the Contractor, he shall have no claim to the difference except to such extent as may be necessary, in the opinion of the Engineer, to reimburse the Contractor or the Contractor's sureties for any expense properly incurred for plans, equipment, materials, supplies and labor devoted to the prosecution of the work, of which the District shall have received the benefit which shall not have been otherwise paid for by the District. In computing such expense the salvage value of such plans and equipment, at completion of the work, shall be deducted from the depreciated value thereof at the time taken over by the District and the difference shall be considered the expense. All necessary estimate and appraisals shall be made by the Engineer.

21.3 When any particular part of the work is being carried on by the District, by Contract or otherwise, under the provisions of this section, the Contractor shall continue the remainder of the work in conformity with the terms of the Contract, and in such a manner as to nowise hinder or interfere with the

persons or workers employed, as provided above, by the District, to do any part of the work, or to complete the same under the provisions of this section.

22. Extension of Time of Completion.

22.1 If the work shall be delayed in consequence of suspension by the District except as provided in Section 21 or of failure by the District to provide right of way, or of any other act or omission of the District, or by strikes, acts of God, delay of delivery or properly ordered materials for which a delivery time has not been stated in the Proposal, or other unforeseeable causes beyond the control and without the fault or negligence of the Contractor or his subcontractors, the Contractor shall be entitled to so much additional time wherein to perform and complete the contract on his part as the Engineer shall certify in writing to be just.

22.2 Application for extension of time must be made to the Engineer, in writing, stating cause, within the ten (10) days immediately following the end of such delay.

22.3 Permitting the Contractor to continue and finish the work, or any part of it, after the date to which the time fixed for its completion may have been extended, shall in no way operate as a waiver on the part of the District of any of its rights under this Contract.

22.4 The Contractor shall receive no compensation on account of any suspension of the work either in whole or in part or for any delay or hindrance herein mentioned except as provided in the Special Conditions.

22.5 No extension of time shall be made for ordinary delays and accidents and the occurrence of such shall not relieve the Contractor from the necessity of maintaining the required progress. In the case of an extension of time by the Engineer for completion of the contract as provided for in these Specifications, a revised schedule of progress may be prescribed according to such extension of time.

23. Failure to Complete on Time.

23.1 The Contractor shall pay for each and every calendar day that he shall be in default in completing the whole work to be done under this contract, the sum named in these conditions, which sum is by the execution of this agreement mutually agreed upon as liquidated damages which the District shall suffer by reason of such default. The District shall have the right to deduct the amount of such damages from any monies due or to become due the Contractor under this Contract.

23.2 The Contractor shall not be assessed liquidated damages for failure to complete the work on time due to any of the causes stated in Section 22.1.

24. Liquidated Damages.

24.1 Pursuant to Section 23 of these General Conditions, failure of the Contractor to complete the work within the time allowed will result in damages being sustained by the District. Such damages are, and will continue to be, impractical and extremely difficult to determine. For each consecutive calendar day in excess of the time specified for completion of the work (as adjusted by change order), the Contractor shall

pay the District, or have withheld from monies due it, the sum of $1,000, except as otherwise specified in Part C or the Agreement.

24.2 Execution of the Contract under these Specifications shall constitute agreement by the District and Contractor that $1,000 per day, except as otherwise specified in Part C or the Agreement, is the minimum value of the costs and actual damage caused by failure of the Contractor to complete the work within the allotted time, that such sum is liquidated damages and shall not be construed as a penalty, and that such sum may be deducted from payments due the Contractor if such delay occurs.

25. Contractor's Responsibility.

25.1 The Contractor shall be responsible for safe and efficient execution of the work to secure the safety of the workers, the quality of the work and the stipulated rate of progress.

25.2 The Contractor shall bear all losses resulting to him no account of the amount or character of the work, or from any unforeseen obstruction or difficulties which may be encountered, or because of weather, floods, or other causes, except as follows:

25.2.1 The Contractor shall not be responsible for the cost of repairing or restoring damage to the work which damage was caused by an act of God, as defined in Public Contract Code Section 7105, and shall be the basis for determining the extent of the District's liability, if any.

25.2.2 It shall be the responsibility of the Contractor to take all reasonable and adequate measures to protect the work from damage and/or to minimize any damage to the work.

25.2.3 The District reserves the right to make changes in the plans and Specifications applicable to the portion of the work to be restored. The District reserves the right to terminate the Contract and relieve the Contractor of further obligations to perform the work. In the event that the work damaged is to be repaired or restored either, in kind or changed by the engineer, a contract change order will be provided according to Sections 14 and 18 of the General Conditions of this Specification. The change order may provide for the Contractor to perform any work deemed by the Engineer as necessary to put the project in satisfactory condition for the termination of all work.

25.2.4 The District may require the Contractor to submit as a separate bid item the insurance premium covering the cost of work destroyed in whole or in part by an "Act of God," as defined in Public Contract Code 7105 and provide such insurance to indemnify the District for any damage to the work caused by an "Act of God," and to rebuild said work with the proceeds of said insurance. If the District elects to do so, said insurance shall be in lieu of the provision of the Public Contract Code 7105.

25.3 The Contractor shall be responsible for all material, except defective material, furnished by the District, and for the care of all work until its completion and final acceptance, and he shall at his own

expense replace damaged, lost or stolen material and repair damaged parts of the work, or the same may be done at his expense by the District.

25.4 During the progress of the work, the Contractor shall keep the premises occupied by him in a neat and clean condition. When the work is completed he will be required to remove all debris caused by him in his operations, repair all damage to existing improvements done by him or his employees and leave the site of the work in a neat condition. In the event of his failure to do so, the same may be done at his expense by the District.

25.5 The Contractor shall be responsible for all damage or injury which may be caused on any property by trespass of the Contractor's employees during their employment, whether the said trespass was committed with or without the consent or knowledge of the Contractor.

25.6 The Contractor shall provide at his own expense, all necessary water, telephone, and power required for his operations under the Contract, except as provided for in the Special Conditions.

25.7 The Contractor shall so conduct his operations as not to close or obstruct any portion of any highway, road, or street, or prevent in any way free access to fire hydrants until permission to do so has been obtained from the proper authorities.

25.8 The Contractor shall be responsible for determining the nature and extent of any simultaneous, collateral, and essential work by others. The Contractor shall coordinate his operation and cooperate with others to minimize interferences, conflicts, and/or any other related conduct during the construction of the work.

26. Shop Drawings.

26.1 Drawings and prints of articles, machinery, or fabricated materials entering into permanent construction which are required to be furnished by the Contractor and for which detailed drawings are not furnished by the District, the Contractor shall submit five (5) copies for approval, three (3) of which will be returned to the Contractor for his distribution, the two (2) other copies shall become the property of the District. The District shall approve such drawings or return them to the Contractor with requirements for approval within ten (10) days after the date of submission. Submittal of an electronic version in pdf format is acceptable in lieu of hard copies.

26.2 Approval by the District on items called for under these Specifications does not relieve the Contractor from the responsibility for errors, omissions or deviations from the Contract documents unless such deviations were specifically called to the attention of the Engineer in the letter of transmittal submitted with the material for approval.

26.3 If the Contractor objects to any conditions imposed by the District in granting said approvals, he shall immediately give the District written notification.

27. Trench Shoring Plans.

27.1 In compliance with Section 6705 of the Labor Code, the Contractor, at his sole expense, shall be required to submit detailed shoring plans for review by the District's Engineer for all construction projects and/or any related modifications, revision or changes thereto, which are in excess of $25,000, for the excavation of any trench, trenches, or other excavation five (5) feet or more in depth.

27.2 Shoring plans shall show the details of the shoring, bracing, sloping and all other provisions to be made for the workers' protection from the hazard of caving ground during the excavation of any trench, trenches, or other excavation.

27.3 Such shoring plans shall be prepared by a qualified civil or structural engineer registered in the State of California in the event that such plans vary or deviate, in any manner, from the shoring system standards as outlined in the State Construction Safety Orders issued by the Division of Industrial Safety, State of California.

27.4 The Contractor shall submit the shoring plans to the Division of Industrial Safety, State of California, for its approval.

27.5 The Contractor shall be required to submit the shoring plans within fifteen (15) days after notification of an award of a contract has been sent.

28. Safety Permit.

28.1 In compliance with Section 6424 of the Labor Code, the Contractor, at his sole expense, shall be required to obtain a permit from the Division of Industrial Safety for the excavation of any trench, trenches, or other excavation five (5) feet or more in depth, prior to beginning any excavation work that is not covered by Section 6422 of the Labor Code.

28.2 A copy of all permits issued and the related construction safety orders approved by the Division of Industrial Safety shall be filed with the District within fifteen (15) days after notification of the award of a contract, or within three (3) days after issuance of the permit, and prior to the beginning of the excavation of any trench, trenches, or other excavation five (5) feet or more in depth.

28.3 Additional permits may be required for each modification, revision or change in the work.

28.4 Safety permits required by Section 6424 of the Labor Code shall be in addition to all other permits required.

29. Personal Attention.

The Contractor shall give his personal attention constantly to the faithful prosecution of the work, and shall be present, either in person or by a duly authorized and competent representative, on the site of the work continually during its progress, to receive directions or instructions from the Engineer. Whenever the Contractor is not present on any part of the work where it may be desired to give directions, orders may be given by the Engineer, and shall be received and obeyed by the superintendent or foreman who may have charge of the particular part of the work in reference to which orders are given.

30. Laws, Regulations and Permits.

30.1 The contractor shall give all notices required by law and comply with all laws, ordinances, rules and regulations pertaining to the conduct of the work. The contractor shall be liable for all violations of the law in connection with the work furnished by the contractor. If the contractor observes that the drawings or specifications are at variance with any law or ordinance, rule or regulation, he shall promptly notify the engineer in writing and any necessary changes shall be made by written instruction or change order. If the contractor performs any work knowing it to be contrary to such laws, ordinances, rules and regulations and without giving notice to the engineer, the contractor shall bear all costs arising therefrom.

30.2 The Contractor shall submit a certification that they are in compliance with the Civil Rights Act of 1964 as amended by the Equal Employment Opportunity Act of 1972, the California Fair Employment Practice Act of 1959, as amended, California Labor Code Section 1777.5 and Section 1735 and any other applicable Federal and State laws and regulations hereinafter enacted. Certification of Compliance with Executive Order 11246, as amended, will be required when applicable. Such certification shall be on forms satisfactory to the District.

30.3 The following are exempted from the above provisions in relation to affirmative action efforts:

30.3.1 Contractors, subcontractors and suppliers who have a paid work force of less than fifteen (15) persons.

30.3.2 Contracts and subcontracts which do not exceed $10,000.00.

30.3.3 Contracts and subcontracts which are deemed by the Board to be an "Emergency" nature or an apparent "Sole Source" purchase.

30.3.4 Exemptions may be denied by the Board pursuant to a finding by the District that the exemption is having an adverse effect on the purpose of these Specifications. Additional exemptions may be granted by the Board for reasons of a similar finding.

30.4 The Contractor shall only use equipment that complies with California air quality regulations and the Ventura Air Pollution Control District regulations.

31. Sales and/or Use Taxes.

Except as may be otherwise specifically provided herein, all sales and/or use taxes assessed by Federal, State or local authorities on materials used or furnished by the Contractor in performing the work hereunder shall be paid by the Contractor.

32. Construction Schedule.

Prior to commencing the work, the Contractor shall submit a detailed construction schedule. At the beginning of each month as may be required by the Engineer, the Contractor shall submit an updated construction schedule. Said construction schedule shall show the order in which the Contractor proposes to complete the work, the dates when the various parts of the work are to begin and the estimated dates of

completion. The detailed schedule shall be a modified bar type and shall show each principal item of work or activity.

33. Inspection.

33.1 All materials furnished and all work done under these Specifications shall be subject to rigid inspection. The Contractor shall furnish the Engineer every reasonable facility for ascertaining whether the work is in accordance with the requirements and intent of these Specifications.

33.2 Work done in the absence of prescribed inspection may be required to be removed and replaced under the proper inspection. The entire cost of removal and replacement, including the cost of all materials which may be furnished by the District and used in the work removed, shall be borne by the Contractor, irrespective of whether the work removed is found to be defective.

33.3 Work covered up without the authority of the Engineer shall, upon order of the Engineer, be uncovered to the extent required, and the Contractor shall bear the entire cost of performing all the work and furnishing all the materials necessary for the removal of the covering and its subsequent replacement, as directed and approved by the Engineer.

33.4 Nothing in these Specifications shall be construed to mean that the District will provide continuous inspection. The Contractor shall cooperate and coordinate his activities in order that he work can be inspected to the satisfaction of the Engineer.

33.5 The Contractor shall keep the Engineer informed, a reasonable time in advance, of the times and places at which he intends to do work, so that the inspection and the necessary measurements may be made with a minimum of inconvenience to the Engineer, or delay to the Contractor.

34. Construction Staking.

34.1 The Engineer may provide minimal construction staking, the extent of which will be described in the Special Conditions herein. The Contractor shall be required to provide all other additional staking and/or measurements necessary for the proper execution of the work.

34.2 The Contractor shall notify the Engineer in writing at least five (5) working days before the time the Contractor will require the construction staking.

34.3 The Contractor shall be required to preserve all bench marks, monuments, survey marks and construction stakes, and in case of their removal or destruction caused by the Contractor's activities, the Contractor shall be liable of the cost of their replacement.

35. Construction Interferences.

35.1 Insofar as practicable during the progress of the work, the Contractor shall not disturb, but shall support and protect against injury, and maintain in good operating condition at his own expense, all subsurface, surface and overhead utilities, structures and other facilities as are encountered in the prosecution of the work.

35.2 In the event that subsurface, surface, or overhead utilities, structures or other facilities are required to be disturbed or removed out permit the construction of the work, the Contractor shall not do any work that would affect such utilities, structures or facilities, or enter upon the right of way or other lands appurtenant thereto until notified by the Engineer that authority has been obtained to do so. The Engineer will make all necessary arrangements with the owner or other utilities for their relocation and reconnection, without cost to the Contractor, including the reconnection of services and the resurfacing of trenches required for said location; provided such arrangements shall not relieve the Contractor of his responsibilities as outlined in Section 2(b) of these General Conditions, nor the responsibility of proper care and protection of any utilities, structures or facilities encountered because of such varying conditions. The Contractor shall coordinate his operations with those of the owner or owners concerned with the disturbance or removal of facilities to minimize the inconvenience imposed on all affected parties.

35.3 Except as provided in Section 4215 of the Government Code and in the event the Contractor disturbs, disconnects or damages any subsurface, surface, or overhead utility, structure or other facility prior to the making of necessary arrangements by the Engineer with the owner thereof, he shall immediately give to the owner notice of said disturbance, disconnection, or damage, and the Contractor shall assume all responsibility connected therewith, event in the even such damage occurs after backfilling or is not discovered until after completion of backfilling, and the provisions of this subsection shall continue in force until the termination of the guarantee period provided.

35.4 All facilities removed shall be reconstructed as promptly as is possible in its original or other authorized location, and in a condition at least as good as when removed and subject to the inspection of the owner or of the governing body having jurisdiction.

35.5 During the performance of the work under these Specifications, the owners or agencies in control of any of the facilities affected by the work shall have the right to enter, when necessary, upon the project right of way, or upon any street or other public way affected by the Contractor's operations, or any portion thereof, for the purpose of maintaining service and of making changes in or repairs to said facilities.

35.6 The District reserves the right during the progress of the work and upon determination of the actual position of the existing utilities, structures, and other facilities, to make changes in the grade or alignment, or both, of the District's facilities wherever by so doing the necessity for relocation as provided herein of such utility, structures, or other facility will be avoided; provided that such changes shall not entitle the Contractor to additional compensation other than according to the prices named in the Bidding Sheet for the respective contract items.

35.7 In the event the Contractor discovers a substructure as defined in Section 4215 of the Government Code and not identified by the District on the contract plans and Specifications, the Contractor shall be required to notify the District in writing. In the event that such discovery may cause extra work, the Contractor shall be required to obtain written authorization to change or modify the work according to Sections 14 and 18 of these General Conditions of the Specifications.

35.8 Whether the Contractor is entitled to any additional compensation for any work hereinbefore described in Section 36 of these General Conditions shall be governed by the applicable portions of Section 4215 of the Government Code or amendments thereto.

35.9 The Contractor shall make every effort to protect and preserve all trees encountered in the work. Any trees which unreasonably interfere with the work shall, with the approval of the Engineer, be removed by the Contractor. The cost of the removal shall be borne by the Contractor.

36. Materials, Workmanship, and Tests.

The Contractor shall submit samples, specimens, or test pieces of such materials to be furnished or used in the work as the Engineer shall require. All materials must be new and must be of the specified quality and equal to approved samples. The Contractor shall furnish, without cost to the District, such quantities of construction materials as may be required for test purposes, and shall place at the Engineer's disposal all available facilities for and cooperate with him in the sampling and testing of all materials and workmanship. All work shall be done and completed in a thorough workmanlike manner, notwithstanding any omission from these Specifications or the Drawings.

37. Certification of Materials and Equipment

37.1 All materials and equipment furnished by the Contractor shall be according to these Specifications. Any time when requested by the Engineer, the Contractor shall furnish written certification from the manufacturer of the various materials and equipment that such materials and equipment do meet all of the requirements of these Specifications. When requested by the Engineer, such certification shall be furnished to the District before payment to the Contractor, for the material and/or equipment in question, will be made.

37.2 Where reference is made in these Specifications to a specification or test designation of the American Water Works Association, the American Society for Testing and Materials, the American Association of State Highway Officials, Federal Specifications, or any other recognized national organization, and the number or other identification accompanying the test designation representing the year of adoption of latest revision of the test is omitted, it shall mean the test method in effect on the date of the Notice Inviting Bids for the work.

38. Defective Work or Materials.

38.1 The inspection of the work shall not relieve the Contractor of any of his obligations to fulfill his contract as herein prescribed, and defective work shall be made good, and unsuitable materials may be rejected, notwithstanding that such work and materials have been previously inspected by the Engineer and accepted or estimated for payment. If the work, or any part thereof, shall be found defective at any time before the final acceptance of the whole work, the Contractor shall forthwith make good such defect without compensation in a manner satisfactory to the Engineer and shall be charged for any excess material furnished by the District.

38.2 If any materials furnished and brought upon the ground by the Contractor for use in the work, or selected for the same by him, shall be condemned by the Engineer as unsuitable or not in conformity with

the Specifications, the Contractor shall forthwith discard such materials and remove them to a satisfactory distance from the vicinity of the work.

38.3 If the Contractor shall fail or neglect to make ordered repairs of defective work or to remove condemned materials from the work within ten (10) days after the service by the Engineer of an order to do so, the Engineer acting on behalf of the District may make the ordered repairs or remove the condemned materials and deduct the cost thereof from any monies due the Contractor.

39. Use of "Or Equal."

39.1 Any material or article of equipment designated by manufacturer's name, trade name, catalog reference or brand and qualified by "or equal" shall be understood to be a standard of quality and performance. Articles of other make will be acceptable provided they are, in the opinion of the Engineer, of equal quality and/or capable of equal performance. Names, brands and characteristics of proposed substitute materials shall be submitted to the Engineer for approval and no such substitute materials shall be purchased or delivered to the project until the Engineer's approval, in writing, has been obtained.

39.2 The Contractor may be required to obtain certification from a qualified testing laboratory approved by the Engineer that such proposed substitute materials meet the minimum requirements in the Specifications, and/or that such proposed substitute materials are of equal quality and performance of the material or article designated in the Specifications. Such certification shall be required prior to obtaining the Engineer's approval, and shall be at the sole expense of the Contractor.

40. Property Rights in Materials.

40.1 Nothing in this contract shall be construed as vesting in the Contractor any right of property in the materials used after they have been attached or affixed to the work or the soil, or after payment has been made for the value of unused material delivered to the site of the work as provided for in Sections 45, 58 through 65 inclusive hereof. All such materials attached or affixed or unused shall become the property of the District.

40.2 The District reserves the right to use any or all of the completed facilities either after said facilities are connected to the existing facilities or otherwise completed by the Contractor as set forth in Section 45 hereof and prior to acceptance of the work by the Board.

41. Title to Materials Found on the Work.

Except as may otherwise be provided in these Specifications, the right to the use of all soil, stone, gravel, sand and all other materials and equipment developed or obtained in the excavation or other operations by the Contractor or any subcontractor or any of their employees, and the right to use and/or dispose of the same, are hereby expressly reserved by the District and neither the Contractor nor any subcontractor, nor any of their employees shall have any right, title or interest in or to any part thereof nor shall they, nor any of them, assert or make any claim thereto. The Contractor shall be permitted to use in the work without charge any such materials which meet the requirements of these Specifications.

42. Patents and Copyrights.

The Contractor shall hold and save the District, its officers, agents and employees, harmless from liability of any nature and kind, including costs and expense, for or because of any copyrighted or uncopyrighted composition, secret process, patented or unpatented invention, article, or appliances, manufactured, furnished, or used by him in the performance of this contract, including their use by the District, unless otherwise specifically stipulated in this contract.

43. Responsibility for Safe Storage.

The Contractor shall be responsible for the safe storage of the material furnished by or to him and accepted by him and intended for the work until it has been incorporated in the completed project. The interior of all pipe, fittings and other accessories shall be kept free from dirt and foreign matter at all times.

44. Completion.

When in the opinion of the Contractor, the work under this contract has been fully completed according to the plans and Specifications, he shall notify the Engineer. Upon such notification, the Engineer shall, within a reasonable time, make a field inspection of the work and shall satisfy himself by examination and such tests as may be necessary that the work has been fully and properly completed according to the plans and Specifications. If any deficiencies are found, the Engineer shall notify the Contractor of the measures to be taken to correct them. When all deficiencies, if any, are corrected to the satisfaction of the Engineer, the work shall be deemed completed and the date of such completion shall be used in computing the Liquidated Damages, if any, as set forth in Section 24.

45. Final Cleanup.

Upon completion of the work and before the final inspection and estimate is prepared, the Contractor shall, at his own expense, dispose of and remove from the vicinity of the work, all rubbish, unused materials and other items used under his direction during construction and perform cleanup to the satisfaction of the Engineer.

46. Responsibility for a Safe Place to Work.

46.1 The Contractor's attention is directed to Section 4 of these General Conditions entitled, "Indemnification of District."

46.2 The Contractor shall be responsible for the maintenance of a safe place to work and any safety in or about the work site. The Contractor shall be required to conform to all of the applicable Construction Safety Orders issued by the Division of Industrial Safety of the State of California.

46.3 The contractor shall execute and maintain his work so as to avoid injury or damage to any person or property. The contractor shall comply with the requirement s of the specifications relating to safety measures applicable in particular operations or kinds of work.

46.4 In carrying out his work, the contractor shall at all times, exercise all necessary precautions for the safety of employees appropriate to the nature of the work and the conditions under which the work is to be performed, and be in compliance with all federal, state and local statutory and regulatory requirements

including State of California, Division of Industrial Safety (Cal/OSHA) regulations. Safety precautions as applicable shall include, but not be limited to, adequate life protection, and life-saving equipment; adequate illumination for underground and night operations; instructions in accident prevention for all employees such as machinery guards, safe walkways, scaffolds, ladders, bridges, gang planks, confined space procedures, trenching and shoring, and other safety devices, equipment and wearing apparel as are necessary or lawfully required to prevent accidents or injuries; and adequate facilities for the proper inspection and maintenance of all safety measures.

46.5 The names and telephone numbers of at least two medical doctors practicing in the vicinity and the telephone number of the local emergency response services shall be prominently displayed adjacent to telephones at the project site.

47. Public Convenience and Safety.

47.1 The Contractor shall provide for the protection of the traveling public. The Contractor shall be required to furnish and maintain safety devices and other measures required for the public safety, which devices and measures shall conform to the requirements of Section 21406 of the Vehicle Code, any sign manual and current standard specifications of the Division of Highways. The Contractor shall conduct his operation to avoid unnecessary interference with the flow of traffic along highways, streets, roads, etc., used for vehicular traffic. Where any highway, street, road, etc., used for vehicular traffic is required to be kept open, the Contractor shall be required to furnish and maintain warning signs, lights, barricades, flagmen and other safety devices and measures necessary to provide adequate protection of the traveling public. Such protection shall be at the sole expense of the Contractor. Any highway, street maintenance or repair work required by local authorities concerning necessary operation under this contract shall be performed by the Contractor at his sole expense.

47.2 Vehicular access to any driveway shall be maintained to the property line unless necessary construction precludes such access for reasonable periods of time.

47.3 Vehicular and pedestrian access to any fire hydrant shall be maintained at all times during the construction of the work.

48. Safety, Sanitary and Medical Requirements.

48.1 The Contractor, his employees and the subcontractors, if any, and their employees shall promptly and fully carry out the existing safety, sanitary and medical requirements as may from time to time be prescribed by the District to the end that proper work shall be conserved and safeguarded. In case such regulations and orders are not observed by the Contractor, they may be enforced by the Engineer at the Contractor's expense.

48.2 Contractor shall notify District in writing within twenty-four (24) hours should an employee, officer or agent of Contractor or subcontractor incur personal injury while present on District properties or employed by District. District shall be furnished copies of all medical reports or accident reports filed or required by any local state or federal agency or regulatory body.

49. Character of Workers.

49.1 None but skilled workers shall be employed on work requiring special qualifications. All equipment operators, pipelayers and jointers shall be well qualified and experienced in their work. All welding, however minor, shall be done by competent, certified welders, who have been qualified under Section IX of the ASME Boiler and Pressure Vessel Code, API Publication 1104 or such other standard as may be satisfactory to the Engineer. The Engineer shall have the right any time to call for and witness the making of test specimens by any welding operator according to these standards, and the expense of such tests shall be borne by the Contractor. When required in writing by the Engineer, the Contractor, or any subcontractor shall discharge any person who is, in the opinion of the Engineer, incompetent, unfaithful, disorderly or otherwise unsatisfactory, and shall not again employ such discharged person on the work except with the consent of the Engineer. Such discharge shall not be the basis of any claim for compensation or damages against the District or any of its officers.

49.2 Enforcement of Order. The Contractor shall be responsible for maintaining good order at the site where work is performed under this contract and to that end shall employ such watchmen or other persons as may be required. Unauthorized persons shall be excluded from the site of the work. The Contractor shall not sell, nor shall he permit or suffer the introduction or use of, intoxicating liquors or narcotics upon the work embraced in these Specifications or upon any of the grounds occupied or controlled by him in connection with such works.

50. Subcontracts.

50.1 Subcontracts will be permitted subject to the following provisions. No subcontract will be permitted which has the effect of avoiding the residence or wage requirements or any other provisions of the main contract. Individual subcontractors or members of contracting or subcontracting organizations personally engaged upon the work shall be subject to all the requirements of these specifications applicable to employees working for wages, including but not limited to, wages, hours of work, character of workers and certified payrolls.

50.2 Reference is hereby made to the provisions of the Subletting and Subcontracting Fair Practices Act, Public Contract Code Section 4100, commencing with Section 4100, also known as the "Subletting and Subcontracting Fair Practices Act," which is incorporated herein and made a part hereof by reference, and the Contractor is bound thereby and shall be subject to the consequences named in Sections 4110 and 4111 of said Act in event of his violation thereof. Each bidder shall, in his bid or offer, set forth: (1) The name and the location of the place of business of each subcontractor who will perform work or labor or render service to the Contractor in or about the construction of the work or improvement in an amount in excess of one-half of one percent of the Contractor's total bid or a subcontractor licensed by the State of California who, under subcontract to the prime contractor, specially fabricates and installs a portion of the work or improvement according to detailed drawings contained in the plans and specifications, in an amount in excess of one-half of one percent of the prime contractor's total bid; and (2) The portion of the work which will be done by each such subcontractor under said Act. The Contractor shall list only one subcontractor for each such portion as defined by the Contractor in his bid. If the Contractor fails to specify a subcontractor or if the Contractor specifies more than one subcontractor for the same one-half of one

percent of the Contractor's total bid, the Contractor agrees that he is fully qualified to perform that portion himself, and that he shall perform that portion himself.

51. Access to the Site and Haul Routes.

51.1 The Contractor shall make his own investigation of the condition of available public or private roads or other access, and of clearances, restrictions, bridge load limits, bond requirements, and other limitations that affect or may affect transportation and ingress and egress at the job site. The unavailability of transportation facilities or limitations thereon shall not become a basis for claims for damages or extension of time for completion of work. It shall be the Contractor's own responsibility to construct and maintain, at his own expense and at his own risk, any haul roads, access roads, bridges, or drainage structures required for construction operations.

51.2 The use of existing roads (public or private) shall be at the Contractor's own expense and risk. It shall be the Contractor's responsibility to anticipate and meet all conditions properly imposed upon the use of existing roads by those having jurisdiction thereover, including (without limitation of the generality of the foregoing) seasonal or other limitations or restrictions, the payment of excess size and weight fees, and the posting of bonds conditioned upon repair of road damage caused by contract-generated traffic.

51.3 The hauling of sand, gravel, asphalt or other intra job hauling, over public highways, roads or bridges, shall be in compliance with the applicable regulations and shall be such as to minimize interference with or congestion of local traffic.

51.4 The cost of all work described in this paragraph shall be included in the prices bid in the schedule for other items of work.

52. Irregular Hours.

52.1 When any work is to be performed at a time other than regular working hours Monday through Friday, the Engineer shall be given advance notice. In the event of Saturday and/or Sunday work, the approval of the Engineer shall be required before such work will be allowed. All costs for inspection attributed to irregular working hours shall be borne by the Contractor and shall be deducted from the contract amount. Irregular working hours shall be defined as follows, except for certain specialized jobs and circumstances:

52.1.1 Before 8:00 a.m. Monday through Friday.

52.1.2 After 4:30 p.m. Monday through Friday.

52.1.3 Anytime Saturday, Sunday, or District's Holidays.

52.2 The Contractor will be exempt from this provision only for such work as required by the Specifications to be completed at other than working hours.

53. Eight-hour Law.

In accordance with the provisions of Articles 1 and 3 of Chapter 1, Part 7, Division 2 of the Labor Code of the State of California eight (8) hours constitute a legal day's work. The Contractor shall forfeit, as a penalty to the District, $25.00 for each worker employed in the execution of the contract by the Contractor or any subcontractor under him: for each calendar day during which such worker is required or permitted to work more than eight (8) hours in any one calendar day and forty (40) hours in any one calendar week in violation of the provisions of the Labor Code, and in particular, Sections 1810 to 1815 thereof, inclusive, except that work performed by employees of Contractor in excess of eight (8) hours per day and forty (40) hours during any one week shall be permitted upon compensation for all hours worked in excess of eight (8) hours per day at not less than one and one-half (1-1/2) times the basic rate of pay as provided in said Section 1815. The Contractor and each subcontractor shall keep accurate records showing the name of and schedule of hours worked by each worker employed by him concerning the contract. The records shall be kept open at all reasonable hours to inspection by the District and the Division of Labor Law Enforcement.

54. Payment of Wages.

The issuance as payment for wages of any evidence of indebtedness is prohibited unless the same is negotiable and payable on demand without discount. Wages must be paid at least semi-monthly on regular pay days established in advance, and shall include all amounts for labor or services performed by employees of every description as required under the provisions of the California Labor Code.

55. Prevailing Rate of Per Diem Wages.

Pursuant to the provisions of Articles 1 and 2 of Chapter 1, Part 7, Division 2 of the Labor Code of the State of California, not less than the general prevailing rate of per diem wages and not less than the general prevailing rate of per diem wages for legal holiday and overtime work for each craft or type of worker needed to execute the work contemplated under this contract, as determined by the District and as set forth in the schedule of such wages currently on file in the District office, shall be paid to all workers employed on such work by the Contractor or by any subcontractor doing or contracting to do any part of said work. The Contractor shall comply with Labor Code Section 1775. According to said Section 1775, the Contractor shall forfeit, as a penalty to the District, $25 for each calendar day, or portion thereof, for each worker paid less than the stipulated prevailing rates for such work or craft in which such worker is employed for any work done under the contract by him or by any subcontractor under him in violation of the provisions of the Labor Code and in particular, Labor Code Sections 1770 to 1780, inclusive. In addition to said penalty and pursuant to said Section 1775, the difference between such stipulated prevailing wage rates and the amount paid to each worker for each calendar day or portion thereof for which each worker was paid less than the stipulated prevailing wage rate shall be paid to each worker by the Contractor. The Contractor and each subcontractor shall keep accurate records showing the name of and schedule of hours worked by each worker employed by him in connection with the contract. The records shall be kept open at all reasonable hours to inspection of the District and the Division of Labor Law Enforcement.

56. Unpaid Claims.

If, upon or before the completion of the work herein agreed to be performed or at any time prior to the expiration of the period within which claims may be filed as prescribed by Section 3184 of the Civil

Code, any person or persons shall bring against the District or against any agent or agents thereof any action to enforce such claim, the District shall, until the discharge thereof, withhold from the moneys under its control so much of said moneys due or to become due the Contractor under this contract as shall be sufficient to satisfy and discharge the amount in such notice or under such action claimed to be due, together with the costs thereof; provided, that if the District shall in its discretion permit the Contractor to file such additional bond as is authorized by Section 3196 of the Civil Code, in a penal sum equal to one and one-fourth times the amount of said claim, said moneys shall not thereafter be withheld due to such claim.

57. Monthly Cost Estimates - Progress and Final Progress Payment.

57.1 The Contractor shall submit, by the third calendar day of each month on a form acceptable to the District, his estimate of the amount and value of all acceptable work and any extra work or changes approved by the District, up to the last day of the preceding calendar month, for the District's approval; and the Contractor will request a progress payment for the work completed thereof.

57.2 A deduction of five (5) percent shall be made from the total thus computed, and from the remainder there shall be further deducted any amounts due the District from the Contractor for supplies or materials furnished or services rendered and any other amounts that may be due the District under the terms of the contract. From the balance thus determined shall be deducted the amount of all previous payments and the remainder shall constitute the progress payment for that month. Such progress estimates shall not be required to be made by strict measurement, but they may be made by measurement or by estimation, or partly by one method and partly by the other, and it shall be sufficient if they are approximate only.

57.3 Pursuant to Public Contract Code Section 22300, at the request and expense of the Contractor, securities equivalent to the amounts, if any, withheld by the District to ensure performance under this contract shall be deposited with the District. The District shall pay such moneys to the Contractor upon satisfactory completion of the contract. Securities eligible for investment under this section shall include those listed in Government Code Section 16430 or bank or savings and loan certificates of deposit. The Contractor shall be the beneficial owner of any securities substituted for moneys withheld and shall receive any interest thereon.

If the securities to be deposited by the Contractor pursuant to this provision are in registered form, the registration shall be transferred to the District.

57.4 The Engineer shall approve the amount and value of all acceptable work and any extra work or changes approved by the District. Upon mutual agreement thereto, the Engineer will forward the approved estimate to the Administrative Services Manager for payment of the progress or final progress payment within ten (10) days thereafter.

57.5 In the event that the Contractor and the District cannot mutually agree as to the amount and value of any item of work in the progress payment, the District will authorize payment of that portion of the progress and final progress payment to which the Contractor and the District have mutually agreed.

57.6 The Contractor shall file with the District, within five (5) calendar days after the Engineer has issued written notice of the disputed items to the Contractor, a written statement setting forth in complete detail the basis for his disagreement, including, but not limited to, any amount or value in disagreement or dispute.

57.7 Upon receipt of the Contractor's written statement, the General Manager shall investigate and consider the items of disagreement or dispute and render a decision thereon within a reasonable time, which decision shall be conclusive.

57.8 In the event that the Contractor disagrees with the General Manager's decision, the Contractor's cost to the Contract for the delay in receiving the disputed balance of any progress or final progress payment, may be an item for arbitration according to Section 65 of the General Conditions.

57.9 In the event the contract or any part thereof shall be suspended as provided in Section 21, the retained percentage as provided in Section 58(b) shall become the sole and absolute property of the District to the extent necessary to repay the District any excess in the cost of the work above the contract price. After issuance of notice to discontinue work, no payment upon progress estimates or otherwise shall thereafter be made to the Contractor for the work covered by said notice until completion of work and final settlement.

57.10 The making of an estimate and payment in accordance therewith shall not preclude the District from demanding and recovering from the Contractor such damages as it may be entitled to under the contract because of his failure to comply with the Specifications.

58. Final Cost Statement.

58.1 Final Cost Statement is a document which summarizes all of the Contractor's earnings under this contract and any amounts due the District from the Contractor, and from which the final payment is made.

58.2 Upon completion of all of the work to be performed under this contract as set forth in Section 45, the Contractor shall submit for approval by the District in a form satisfactory to the District the amount and value of all acceptable work, and all extra work or changes approved by the District.

58.3 The Engineer shall approve the amount and value of all acceptable work and any extra work or changes approved by the District. Upon mutual agreement thereof, this District will prepare the Final Cost Statement document which shall be submitted to the Contractor for his acceptance and signature.

58.4 Upon endorsement by the Contractor of the Final Cost Statement, the District shall accept the work and authorize the final payment according to Sections 61 and 62 hereof.

59. Disputed Final Payment.

59.1 In the event that the Contractor and the District cannot mutually agree as to the amount and value of the work, as set forth in this Final Cost Statement, the District will prepare the Final Cost Statement based upon the Engineer's determination of the amount and value of the work to which this Contractor may

be entitled. Upon receipt of this Final Cost Statement, the Contractor shall file with the District within five (5) calendar days thereafter, a written statement setting forth in complete detail the basis for his disagreement, including, but not limited to, any amount or value in disagreement or dispute.

59.2 The Board reserves the right to accept the work and file the necessary Notice of Completion.

59.3 The Board shall investigate and consider the items of disagreement or dispute and render its decision thereon as to the amount due the Contractor within a reasonable time.

59.4 The District will authorize payment of that portion of the Final Cost Statement to which the Contractor and the District have mutually agreed according to Section 58 hereof. Reference is made to Section 64 of these General Conditions.

60. Acceptance.

Upon endorsement by the Contractor of the final cost statement, the Engineer shall prepare a memorandum of completion to advise the Board that the work has been satisfactorily completed and is ready for acceptance. At its next succeeding meeting, the Board shall consider acceptance of the work, and upon acceptance, shall authorize payment to the Contractor.

61. Final Payment.

61.1 At the end of thirty-five (35) days after filing the notice of completion, as set forth above, the total balance due the Contractor, or in case of a dispute, any portion of the total balance which has been mutually agreed is not in dispute, if unencumbered, or any part thereof unencumbered, shall be paid provided that a guarantee bond shall have been filed with the District.

61.2 For the purposes of this section, unencumbered balance means that portion over and above the face amount of all the stop notices on file with the District plus 25 percent of the face amount for potential interest and the cost of litigation as provided for in the Civil Code Section 3186-7.

62. Final Payment Terminates Liability.

62.1 The acceptance by the Contractor of the final payment aforesaid shall be a release to the District and its agents from all claim liability to the Contractor for anything done related to the work or for any act or neglect of the District related to the work, except the claim against the District for the remainder, if any, of the amounts kept or retained as hereinbefore provided.

62.2 No agent of the District shall be personally responsible for any liability arising under the contract. No claim shall be made or filed, and neither the District nor any of its agents shall be liable for, or held to pay any money, except as specifically provided in the contract.

63. Releases.

63.1 Prior to payment of the final progress payment, the District may require the Contractor to obtain releases from each of the subs, material suppliers, equipment rental firms and employees, whether or not any have filed a preliminary notice with District, who have performed any work for the Contractor under this contract for which any payment may be warranted.

63.2 Releases shall be submitted in a form approved by the District. Conditional releases may be unacceptable and acceptance thereof will be at the discretion of the District.

64. Disputes Settled by Arbitration.

In the event there is a dispute between the parties as to any of the terms and conditions of this agreement, including but not limited to the accounting rendered by the District, and said dispute cannot be resolved according to Section 59 of these General Conditions, the dispute shall be submitted to arbitration before a single arbitrator agreed to by the parties or failing such agreement appointed by the American Arbitration Association and resolved according to Article 1.5 of the Public Contract Code. Regardless of the manner of appointment of said arbitrator, the arbitration shall be conducted according to the then prevailing rules of the American Arbitration Association for commercial arbitration, except that each party shall bear their own costs and attorney's fees which they incur.

64.1 As required under Section 20104, et seq., of the California Public Contract Code (Stats. of 1990), any 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 District shall be processed in accordance with the provisions of said Section 20104, et seq., related to informal conferences, non-binding judicially-supervised mediation, and judicial arbitration.

64.2 A single written claim shall be filed under this Article prior to the date of final payment for all demands resulting out of the Contract.

64.3 Within thirty (30) days of the receipt of the claim, District may request additional documentation supporting the claim or relating to defenses or claims District 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.

64.4 Unless further documentation is requested, District 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, District shall respond within the same amount of time taken by Contractor to respond, or fifteen (15) days, whichever is greater, after receipt of the 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 District, District shall respond within the same amount of time taken by the Contractor to respond or thirty (30) days, whichever is greater.

64.5 If the Contractor disputes District's response, or District 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 District within fifteen (15) days after the deadline of District to respond or within fifteen (15) days of District's response, whichever occurs first. District shall schedule the meet and confer conference within thirty (30) days of the request.

64.6 If following the meet and confer conference the claim or any portion remains in dispute, the claimant may pursue the remedies authorized by law. For purposes of these provisions, the running of the period of time within which a claim must be filed shall be tolled from the time the claimant submits his or her written claim until the time the claim is denied, including any period of time utilized by the meet and confer conference.

REV: 07/13

END OF PART B

PART C

SPECIAL CONDITIONS

1. Requirements.

The work to be performed under this contract shall consist of furnishing all plans, tools, materials, supplies and manufactured articles and for furnishing all transportation, services, including fuel, power and water, and essential communications and the performance of all labor, work or other operations required for the fulfillment of the contract in strict accordance with the specifications, schedules and drawings, all of which are made a part hereof, and including such detail sketches as may be furnished by the Engineer from time to time during the construction in explanation of said drawings. The work shall be complete, and work, materials and services not expressly called for in the specifications or not shown on the drawings, which may be necessary for complete and proper construction to carry out the contract in good faith, shall be performed, furnished and installed by the Contractor at no increase in cost to the District.

2. General Description.

Casitas Municipal Water District (District) is soliciting formal bids for a contract for replacement of existing 4-inch, 6-inch, 8-inch, and 10-inch water mains, valves, fire hydrants, and service laterals on Ventura Street and Summer Street, in Ojai, CA. Work locations are contained within the Casitas Municipal Water District service area in Ventura County, CA as shown in the Contract Documents. The existing main will be abandoned in place and capped, and approximately 2,624 lf of new water mains will be installed. Work includes:

2.1 Installation of new water mains

2.2 Installation of new service laterals

2.3 Installation of new water main valves

2.4 Installation of new fire hydrants

2.5 Abandonment of existing water mains

3. General Sequence of Work.

3.1 Contractor will notify District Engineer of start date and general plan or order of work to be completed. Refer to Part E of these documents for additional information on the order of work and shutdowns. A pre-construction meeting shall be held by the District Engineer for contract work and field verification of all final installation locations under contract.

3.2 District Inspector will verify all work is completed in a manner consistent with the governing agency standards and will verify measurement of work.

3.3 Contractor submits a monthly progress payment.

4. Beginning and Completion of the Work.

The Contractor shall begin the work within fourteen calendar days after the date on the Notice to Proceed. Work shall be performed on Mondays through Fridays unless otherwise approved by the District. All work shall be performed between the hours of 8:00 a.m. and 4:30 p.m. No work shall occur on District observed holidays. The Contractor shall notify the District Inspector of work dates two days in advance of work start. Time extensions for the project shall be granted with written permission from the District Engineer based on unreasonable weather conditions. Extension of work will be granted only for unfavorable weather conditions or natural disasters.

5. Contract Drawings.

When deemed necessary by the District Engineer, additional detailed drawings will be furnished during the progress of work. The drawings included in the contract are identified as follows:

Sheet #	Title	Drawing
1	Title Sheet, Sheet Index, Vicinity Map, & Location Map	G-01
2	Service Lateral Replacement Tables	G-02
3	Sheet Layout Plan	G-03
4	Ventura St Plan Sta 1+00 to 9+00	C-01
5	Ventura St Plan Sta 9+00 to 19+13	C-02
6	E. Summer St Plan Sta 0+50 to 5+00 and Details	C-03

6. Permits

All work shall be conducted under Encroachment Permits obtained by the Contractor from the governing agency whose right-of-way is encroached upon. The Contractor is responsible for complying with all applicable conditions listed on the governing agency encroachment permit respective of where the work is being performed. The Contractor, at their sole expense, shall be required to obtain all other permits and/or licenses as required, including any duplicate permits required by the permitting agencies.

7. Access to the Site and Haul Routes.

7.1 Contractor shall include complete mobilization in the unit price items for each bid item. No additional compensation shall be granted for location of contract work.

7.2 The Contractor shall make his or her own investigation of the condition of the available public or private roads or other access, and of clearances, restrictions, bridge load limits, bond requirements and other limitation which affect or may affect transportation and ingress and egress at the job site. The unavailability of transportation facilities or limitation thereon shall not become a basis for claims for damages or extension of time for completion of work. It shall be the Contractor's responsibility to construct and maintain, at Contractor's own expense and at Contractor's own risk, any haul roads, access roads, bridges or drainage structures required by construction operations.

7.3 Existing Public or Private Roads. The use of existing roads shall be at the Contractor's own expense and risk. It shall be the Contractor's responsibility to anticipate and meet all conditions properly imposed upon the use of existing roads by those having jurisdiction there over, including (without limitation of the generality of the foregoing) seasonal or other limitations or restrictions, the payment of excess size and weight fees, and the posting of bonds conditioned upon repair of road damage caused by contract-generated traffic. It shall be the Contractor's responsibility to satisfy all lawful demands for repair of damage to existing roads caused by contract-generated traffic and barricade public access to project sites.

7.4 Haul Routes. The hauling of sand, gravel, earth materials or other intra-job hauling over public highways, roads or bridges shall be in compliance with the applicable local regulations and shall be such as to minimize interference with or congestion of local traffic.

7.5 The Contractor shall provide worker training and follow-up reminders about traffic safety issues and restrictions to all employees and representatives from firms traveling to the work site. Contractor shall promptly take corrective action, including forbidding the offending party from the work site, against parties found to be speeding on roads leading to the job site.

7.6 Cost. The cost of all work described in this paragraph shall be included in the prices bid in the schedule for other items of work.

8. Water and Power.

The Contractor will be required to make arrangements for water and power the Contractor may require during construction of the project. If water is obtained from existing District facilities, the water will be furnished free of charge, but Contractor shall install and subsequently remove at Contractor's expense, all temporary facilities required to obtain and use the water. Contractor shall take care not to waste water or allow leakage from temporary water facilities.

9. Safety.

9.1 The Contractor shall execute and maintain Contractor's work so as to avoid injury or damage to any person or property. The Contractor shall comply with the requirements of the specifications relating to safety measures applicable in particular operations or kinds of work.

9.2 In carrying out the Contractor's work, the Contractor shall at all times, exercise all necessary precautions for the safety of employees appropriate to the nature of the work and the conditions under which

the work is to be performed, and be in compliance with all federal, state and local statutory and regulatory requirements including State of California, Division of Industrial Safety (Cal/OSHA) regulations. Safety precautions as applicable shall include, but not be limited to, adequate life protection, and lifesaving equipment; adequate illumination for underground and night operations; instructions in accident prevention for all employees; such machinery guards, safe walkways, scaffolds, ladders, bridges, gang planks, confined space procedures, trenching and shoring, and other safety devises, equipment and wearing apparel as are necessary or lawfully required to prevent accidents or injuries; traffic control per County of Ventura requirements; and adequate facilities for the proper inspection and maintenance of all safety measures.

9.3 The name and telephone number of at least one medical provider in the vicinity and the telephone number of the local ambulance service shall be prominently displayed adjacent to the work area.

9.4 Contractor shall ensure all Contractor and subcontractor employees adhere to traffic laws. The Contractor shall provide worker training and follow-up reminders about traffic safety issues and restrictions to all employees and representatives from firms traveling to the work locations. Any employee or subcontractor the District receives reports regarding failing to abide the traffic regulations shall be removed from the job and replaced at no cost to the District.

10. Public Access.

Contractor shall prioritize the vehicular ingress/egress of residents and visitors to maintain effective traffic control. Traffic control and equipment must be staged in a manner that will minimize impacts to the flow of traffic. Contractor shall maintain vehicle and pedestrian access for all access roads at all times.

END OF PART C

PART D

MEASUREMENT AND PAYMENT

1. General. This section defines rate schedule item prices and the manner in which they will be used to determine measurement and payment for all items included in the bid sheet.

2. Unbalanced Prices. Proposed rate schedule item prices which are so unbalanced as to be detrimental to the District's interests may be rejected or cause rejection of the Bidder's entire bid at the discretion of the District.

3. Costs Included. Each proposed bid schedule item price shall cover all costs and charges, including, without limitation, the costs of materials, fabrication, delivery, installation or application, supervision, bond and insurance charges, overhead, profit and taxes. Lump sum prices shall be the exact amount to be applied for the work actually provided for the purpose of establishing the payment due the Contractor.

4. Term of Prices. Bid schedule item prices accepted by the District shall be held good and in effect until the work is completed and accepted by the District unless modified by change order.

5. Measurement and Payment.

5.01 This section defines the manner and method of measurement and payment for all items included in the Proposal and as amended by change order.

5.02 Compensation for all plant, equipment, tools, materials, labor, service, safety, permits, and all other items required to complete the work in conformity with the contract documents will be included in the payment provided in this section unless specifically excluded. No other compensation will be made except for the items listed on the bid sheet. Work for which no separate payment has been provided will be considered as a subsidiary obligation of the Contractor and the cost therefor shall be included in the applicable contract price for the item to which the work applies. All measurements of the work done will be made by the Engineer.

Bid Schedule Item No. 1 – Mobilization.

This bid item shall consist of preparatory work and operations, including, but not limited to, those necessary for the movement of personnel, equipment, supplies and incidentals to the project site; for the establishment of all offices, portable restrooms, and other facilities necessary for work on the project; and for all other work and operations which must be performed or costs incurred prior to beginning work on the various items on the project site.

Full compensation for Mobilization, including all labor, materials, tools, equipment and incidentals and for conforming to all applicable provisions of the Standard Specifications, these Special Provisions, and the requirements of the District shall be considered as included in the lump sum price paid for Bid Item 1, Mobilization, complete and in-place, and no additional compensation will be allowed therefor. This item

will be paid at 50% upon start of the work, and 50% when the project is complete, and all materials and equipment have been mobilized off the project site.

Bid Schedule Item No. 2 – Water Pollution Control Program.

This work consists of preparing a Water Pollution Control Program for the project work area for submittal and acceptance by the District. All work and material provided under this section shall be performed or furnished in accordance with the Caltrans Standard Specifications Section 13 "Water Pollution Control".

Full compensation for Water Pollution Control Program, including all labor, materials, tools, equipment and incidentals and for conforming to all applicable provisions of the Standard Specifications, these Special Provisions, and the requirements of the District shall be considered as included in the lump sum price paid for Bid Item 2, Water Pollution Control Program, complete and in-place, and no additional compensation will be allowed therefor.

Bid Schedule Item No. 3 – Tree Protection Plan.

This work consists of tree protection. All work and material provided shall be performed or furnished in accordance with the Tree Protection Plan prepared by Rincon Consultants (March 2019), these Special Provisions, and the requirements of the District, and the City of Ojai. The Contractor shall protect all trees to remain from damage or injury resulting from the Contractor's operation. Tree protection signage and root se3verance shall follow the guidelines and recommendations provided.

Full compensation for Tree Protection, including all labor, materials, tools, equipment and incidentals and for conforming to all applicable provisions of the Standard Specifications, these Special Provisions, and the requirements of the District shall be considered as included in the lump sum price paid for Bid Item 3, Tree Protection Plan, complete and in-place, and no additional compensation will be allowed therefor.

Bid Schedule Item No. 4 – Traffic Control.

This work shall include routing of pedestrian, vehicular, and construction traffic; furnishing labor, tools, equipment, materials and incidentals for implementing and providing the traffic control devices, phasing, signage, striping, and personnel in accordance with the Contract Documents.

Full compensation for Traffic Control, including all services, material costs, delivery, installation, and for conforming to all applicable provisions of the Standard Specifications, these Special Provisions, and the requirements of the District shall be considered as included in the lump sum price paid for Bid Item 4, Traffic Control, complete and in-place, and no additional compensation will be allowed therefor.

Bid Schedule Items No. 5, 6, & 7 – Installation of C900 PVC Pipe.

The unit price bid per linear foot of water main installation shall include the cost of but not limited to potholing, pavement cutting and removal, excavating pipe trench, tunneling, hauling, disposal, furnishing and placing blocking under pipe, furnishing and installing C900 PVC water main pipe, tracer wire, warning/identification tape, couplings, reducers, bends, adapters, tees, crosses, polyethylene encasement around ductile iron pipe, fittings and valves, valve boxes, joint restraints per Approved Plans, thrust blocks, chlorinating for disinfection, pressure testing, temporary bulkheads, bedding material, backfilling, temporary pavement resurfacing, dewatering, flushing and disinfecting, hydrostatic test, removal and replacement where required of existing improvements which interfere with construction (includes all existing improvements

located inside and outside the traveled roadway, such as curb, gutter, cross gutters, curb ramps, catch basin aprons, sidewalks, driveways, sprinklers, irrigation boxes, irrigation piping, parkways, landscaping, trees, fencing, steel traffic posts, etc.), removing existing service piping, maintaining continuous water service including all costs of high lining services, disposing of all excess excavated or removed material, and all other labor, equipment and material incidental to the installation of the pipe, complete in place.

Full compensation for installing PVC Pipe including all labor, equipment, materials, tools and incidentals, and for conforming to all applicable provisions of the Standard Specifications, these Special Provisions, and the requirements of the District, shall be considered as included in the prices paid per linear foot, complete and in place, and no additional compensation will be allowed therefor.

Bid Schedule Items No. 8 & 9 – Installation of Gate Valves.

The unit price bid for each valve shall include the cost of but not limited to furnishing and installing gate valves for water mains, installation hardware, anchor blocks, valve box and cover, valve cans, backfilling, pavement restoration, thrust blocks and all other labor, equipment and material incidental to the installation of the valve, complete in place.

Full compensation for installing Gate Valves including all labor, equipment, materials, tools and incidentals, and for conforming to all applicable provisions of the Standard Specifications, these Special Provisions, and the requirements of the District, shall be considered as included in the prices paid per each valve, complete and in-place, and no additional compensation will be allowed therefor.

Bid Schedule Item No. 10 – Installation of Fire Hydrant Assemblies.

The work under this item shall include the cost of but not limited to pavement cutting and removal, excavating, shoring, tunneling, furnishing and installing 6-inch pipe, couplings, reducers, restrained joints, 6-inch gate valves, valve box and cover, backfilling, improvements located outside the traveled roadway (such as concrete curb and gutter, curb ramps, sidewalk, driveways, sprinklers, parkways, etc.), disposing and salvaging of existing fire hydrants and respective pipe, materials and concrete or thrust blocks, disposing of all excess excavated or removed material, and all other labor, equipment and material incidental to the installation of fire hydrant assembly, complete in place. Where a valve assembly is installed within concrete gutter, the Contractor shall replace a minimum of 10 linear feet of curb and gutter joint to joint, in kind, with no additional compensation. Re-sod all lawns that may have been damaged or removed using suitable topsoil.

Full compensation for installing Gate Valves including all labor, equipment, materials, tools and incidentals, and for conforming to all applicable provisions of the Standard Specifications, these Special Provisions, and the requirements of the District, shall be considered as included in the price of Bid Item 11 paid per each hydrant assembly, complete and in-place, and no additional compensation will be allowed therefor.

Bid Schedule Item No. 11 & 12 – Installation of Water Service Laterals.

The work under this item shall include the cost of but not limited to pavement cutting and removal,

excavating, shoring, tunneling, furnishing and installing all tubing, fittings (transition fittings), corporation and angle ball valves, service saddles, connecting to all existing services from the new main to the District side of the meter, removing existing water service piping, backfilling, temporary resurfacing, flushing and disinfecting, hydrostatic test, removal and replacement where required of existing improvements (exclusive of utilities) which interfere with construction (includes all existing improvements located outside the traveled roadway, such as curb, sidewalk, driveways, sprinklers, parkways, etc.), disposing of all excess excavated or removed material, and all other labor, equipment and material incidental to the installation or connection of 1-inch and 2-inch services complete in place.

Full compensation for installing Water Service Laterals including all labor, equipment, materials, tools and incidentals, and for conforming to all applicable provisions of the Standard Specifications, these Special Provisions, and the requirements of the District, shall be considered as included in the price of Bid Item 11 paid per each lateral, complete and in-place, and no additional compensation will be allowed therefor.

Bid Schedule Item No. 13 – Installation of Water Meter Box.

The work under this item shall include the cost of but not limited to installing a installing a new meter box appropriately sized for the later and planned water meter size for that location. This also includes replacement where required of existing improvements (located outside the traveled roadway, such as curb, sidewalk, driveways, sprinklers, parkways, etc.), disposing of all excess excavated or removed material, and all other labor, equipment and material incidental to the installation of meter boxes complete in place.

Full compensation for installing Water Meters Boxes, including all labor, equipment, materials, tools and incidentals, and for conforming to all applicable provisions of the Standard Specifications, these Special Provisions, and the requirements of the District, shall be considered as included in the price of Bid Item 13 paid per each location, complete and in-place, and no additional compensation will be allowed therefor.

Bid Schedule Item No. 14 – Intersection Tie-ins.

The work under this item shall include the cost of but not limited to pavement cutting and removal, excavating, shoring, furnishing and installing couplings, reducers, restrained joints, backfilling, disposing of existing pipe, materials and concrete or thrust blocks, disposing of all excess excavated or removed material, and all other labor, equipment and material incidental to the reconnection of the new water main to the existing water mains at each intersection, complete in place. Restrained connections or thrust blocks shall be required where new piping connects to existing piping.

Full compensation for completing Tie-ins including all labor, equipment, materials, tools and incidentals, and for conforming to all applicable provisions of the Standard Specifications, these Special Provisions, and the requirements of the District, shall be considered as included in the price of Bid Item 14 paid for each intersection, complete and in-place, and no additional compensation will be allowed therefor.

Bid Schedule Item No. 15 – AC Pavement Restoration.

The work under this item shall include the cost of but not limited to pavement saw cutting and removal, excavating, backfilling, disposing of all excess excavated or removed material, aggregate base, compaction, asphalt, oil, tack, striping, pavement markers, loop detectors, and all other labor, equipment and material incidental to repaving the water main trenches complete and in place.

Full compensation for completing AC Pavement Restoration including all labor, equipment, materials, tools and incidentals, and for conforming to all applicable provisions of the Standard Specifications, these Special Provisions, the requirements of the District, and the City of Ojai shall be considered as included in the unit price for Bid Item 15 paid per square foot of pavement installed, complete and in-place, and no additional compensation will be allowed therefor.

Bid Schedule Item No. 16 – Abandonment of Water Mains.

The work under this item shall include the cost of but not limited to the abandonment or removal and disposal of pipe, service laterals, and fire hydrant laterals, slurry and concrete encasement, slurry pipe fill, hauling and disposal fees and all other labor, equipment and material incidental to the removal, disposal, and abandonment of the pipe.

Full compensation for Abandonment of Water Mains including all labor, equipment, materials, tools and incidentals, and for conforming to all applicable provisions of the Standard Specifications, these Special Provisions, and the requirements of the District, shall be considered as included in the lump sum price paid for Bid Item 16 for abandonment, complete and in-place, and no additional compensation will be allowed therefor.

END OF PART D

PART E

ORDER OF WORK AND SHUTDOWNS

A. Investigations

The first order of work for installing the water main is to locate the existing points of connection for the new water mains to the existing water main. The purpose of this investigation is to determine the size, materials, and exact location for the tie-ins. Pothole information shall also be gathered during this investigation in order to determine the validity of the pipeline profile and alignment, and any potential utility conflicts. In the event the Contractor discovers discrepancies between the Plans and actual site conditions, the Contractor shall notify the District, in writing, so that the District can make any necessary changes to the horizontal and vertical designs. The cost for completing this activity shall be considered included in the various items for which the work is appurtenant and no additional compensation or contract time extension will be allowed as a result of any time delay in making the necessary changes.

B. Shutdowns

Compliance with the following items shall be required for any shutdowns:

- All shutdowns by the Contractor shall be approved in advance by the District.
- The District shall be given not less than 48 hours notice before any connection is to be made to any existing main.
- All necessary Encroachment Permits, Rights-of-Entry, etc., shall be obtained.
- All materials for the connection must be on hand at the jobsite prior the shutdown.
- Shutdowns in residential and commercial areas shall be made at times when there will be the least interruption of service.
- Connections shall be made only after complete and satisfactory preparation and notification of affected persons for such work has been made.
- The District will be responsible for all main valve operation.
- The contractor shall properly plan and prepare for the tie-in work so as to limit the duration of the shutdown to no longer than 8 hours.
- Work which will require disruption of service in water mains shall be planned and executed so that it will not disrupt service before 8:30 A.M. and insure restoration of service before 4:00 P.M. each day To comply with this schedule the Contractor must consider the time required to:
  1. Turn off customer services and isolation valves
  2. Drain and dispose the water from the isolated section of the water line to be cut
  3. Perform cut-in operations
  4. Flush the water line prior to service restoration.

C. Order of Installation

Work shall be completed in order to minimize shutdowns utilizing the available operable valves in the District's system. The following is the anticipated number of days each service area will be without water. If the Contractor chooses to perform the work or shutdowns in another manner or Highline the water services during construction, that shall be noted in the Bidder's Plan for Construction noted in Part A of these documents.

Shut Down Days:	**Install:**
1. Ventura Street from Ojai to Matilija	Matilija Crossing
2. Ventura Street from Ojai to Matilija	Service Lateral Connections
1. Ventura Street from Matilija to Summer	Aliso, Oak, & Eucalyptus Crossings
2. Ventura Street from Matilija to Summer	Service Lateral Connections
3. Ventura Street from Matilija to Summer	Service Lateral Connections (if needed)
1. Signal Street from Grand to Aliso	Summer Crossing & 512 Signal Lateral
1. Summer Street from Ventura to Signal	Service Lateral Connections
2. Summer Street from Canada to Signal	Ventura Street Crossing

END OF PART E

APPENDIX A

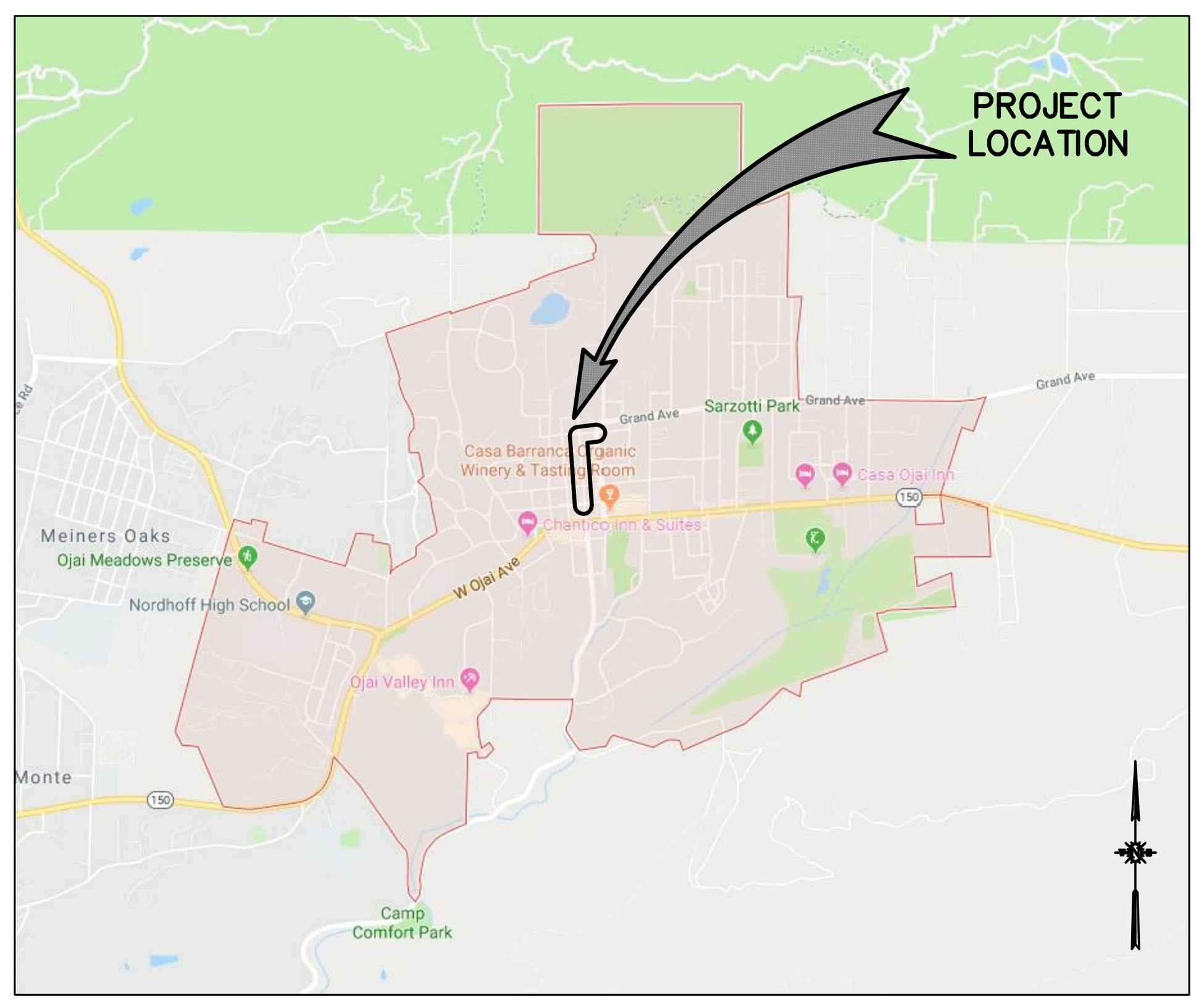
DRAWINGS

VENTURA STREET WATER MAIN REPLACEMENT
SPECIFICATION NO. 18-404

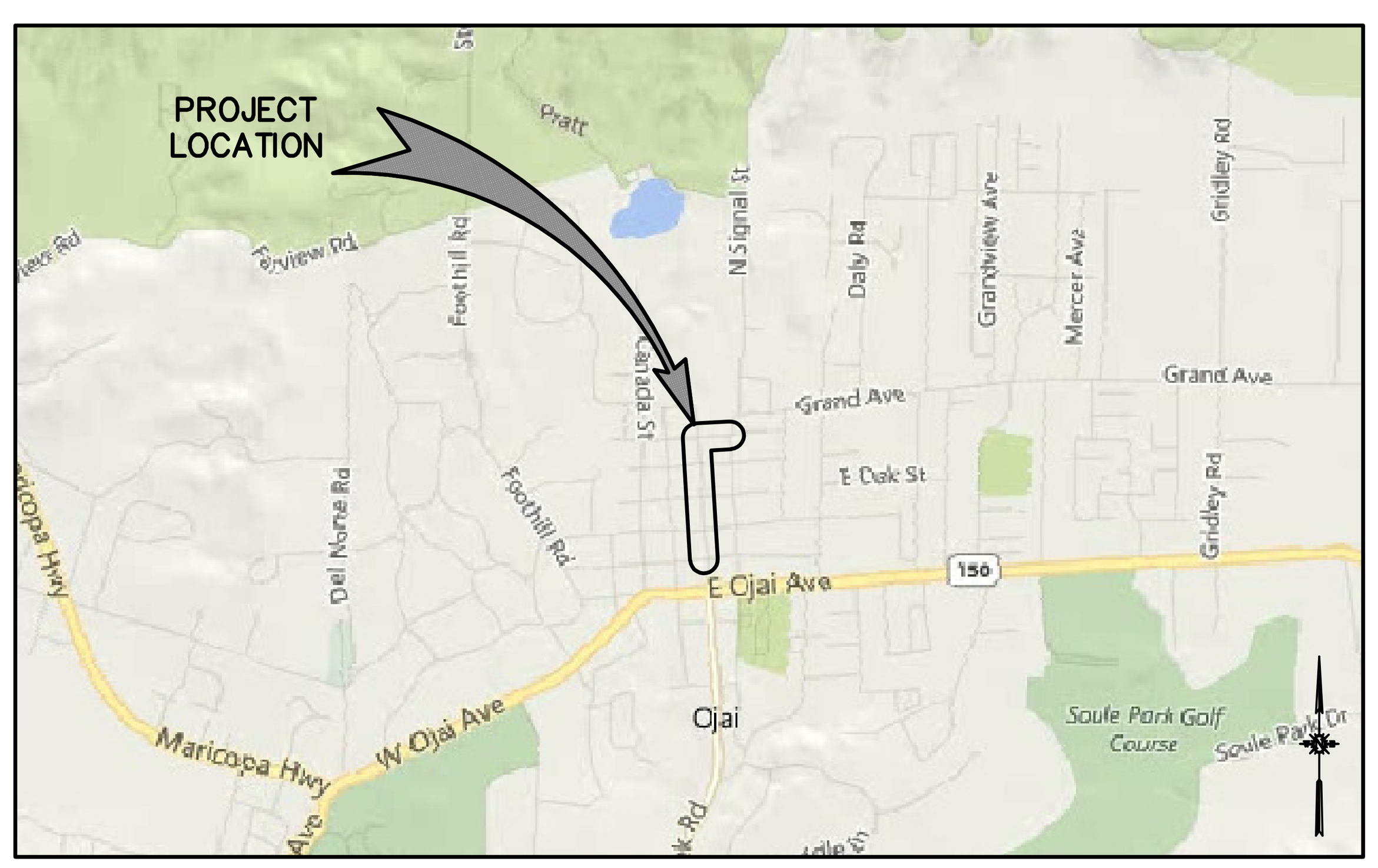
MAY 2019

CASITAS Municipal Water District

SHEET INDEX		
SHEET NO.	DRAWING NO.	DESCRIPTION
1	G-01	TITLE SHEET, SHEET INDEX, VICINITY MAP, AND LOCATION MAP
2	G-02	SERVICE LATERAL REPLACEMENT TABLES
3	G-03	SHEET LAYOUT PLAN
4	C-01	VENTURA ST PLAN STA 1+00 TO 9+00
5	C-02	VENTURA ST PLAN STA 9+00 TO 19+13
6	C-03	E. SUMMER ST PLAN STA 0+50 TO 5+00 AND DETAILS



VICINITY MAP
NOT TO SCALE



LOCATION MAP
2,000' 0' 2,000'
1 in. = 2,000 ft.

DIAL TOLL FREE
811
AT LEAST TWO DAYS BEFORE YOU DIG

811 Know what's below. Call before you dig.

(line)	EXISTING MINOR CONTOUR LINE
(line)	EXISTING MAJOR CONTOUR LINE
(line)	PROPERTY BOUNDARY
S	EXISTING SEWER MAIN
G	EXISTING GAS MAIN
W	EXISTING WATER MAIN
OHW	EXISTING OVERHEAD WIRE
(line)	FLOWLINE
(line)	CURB
W	PROPOSED WATER MAIN
(line)	PROPOSED WATER LATERAL
(symbol)	EXISTING POWER POLE
(symbol)	EXISTING LIGHT STANDARD
(symbol)	EXISTING WATER METER
(symbol)	EXISTING GAS VALVE
(symbol)	EXISTING FIRE HYDRANT
(symbol)	EXISTING WATER METER
(symbol)	EXISTING PIPE CAP
(symbol)	PROPOSED FIRE HYDRANT
(symbol)	PROPOSED WATER VALVE
(symbol)	PROPOSED PIPE CAP

INSTALLATIONS:

127 LF	6" C900 PVC	22	EA	8" GATE VALVE	41	EA	1" SERVICE
2,450 LF	8" C900 PVC	2	EA	10" GATE VALVE	2	EA	2" SERVICE
47 LF	10" C900 PVC	3	EA	FIRE HYDRANT ASSEMBLY			

RETIREMENTS:

1,750 LF	4" CIP	3	EA	4" GATE VALVE	38	EA	3/4" SERVICE
750 LF	6" CIP	8	EA	6" GATE VALVE	1	EA	2" SERVICE
50 LF	8" CIP	1	EA	8" GATE VALVE			
20 LF	10" CIP	1	EA	10" GATE VALVE			
		4	EA	FIRE HYDRANT ASSEMBLY			

ABBREVIATIONS

Δ	CURVE ANGLE
Ø	NOMINAL DIAMETER
ABAN.	ABANDON
ACP	ASBESTOS-CEMENT PIPE
C	CLASS
C.I. OR CIP	CAST IRON PIPE
CMWD	CASITAS MUNICIPAL WATER DISTRICT
CNC	CONCRETE
CO.	COUNTY
D.I.	DUCTILE IRON
DR	DIMENSION RATIO
DWY	DRIVEWAY
E	EAST OR EASTING
(E) OR EX.	EXISTING
EA	EACH
ELEV	ELEVATION
FG	FINISH GRADE
FLG	FLANGE
FOC	FACE OF CURB
FT.	FOOT (FEET)
H	HORIZONTAL
HDPE	HIGH DENSITY POLYETHYLENE
ICV	IRRIGATION CONTROL VALVE
IN.	INCH(ES)
INV	INVERT
L	LENGTH
LF	LINEAR FEET
LSTD	LIGHT STANDARD
LT	LEFT
MAX.	MAXIMUM
MBX	MAIL BOX
MIN.	MINIMUM
MJ	MECHANICAL JOINT
N	NORTH OR NORTHING
N'LY	NORTHERLY
NAD83	NORTH AMERICAN DATUM OF 1983
NAVD88	NORTH AMERICAN VERTICAL DATUM OF 1988
NO.	NUMBER
O.D.	OUTER DIAMETER
O.F.C.I.	OWNER-FURNISHED/CONTRACTOR-INSTALLED
PO	PUSH ON
PVC	POLYVINYL CHLORIDE
R	RADIUS
RT	RIGHT
RW	RIGHT OF WAY
R&R	REMOVE AND REPLACE
S	SOUTH
SD	STANDARD
S'LY	SOUTHERLY
SN	SIGN
SS	SANITARY SEWER
SMH	SEWER MANHOLE
SSPWC	STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION
STA	STATION(ING)
STL	STEEL
SWS	STOP SIGN WHITE STRIPE
VCP	VITRIFIED CLAY PIPE
W	WEST OR WATER
W/	WITH
W'LY	WESTERLY
WM	WATER METER

REV	DATE	BY	DESCRIPTION
0	5/3/19	MK	ISSUED FOR CONSTRUCTION

CASITAS Municipal Water District

DESIGNED: AJS
DRAWN: AJS
CHECKED: MK
QA/QC:
CONSTRUCTABILITY:

PROJECT ENGINEER: R.C.E. EXP.
5/3/2019 DATE

REGISTERED PROFESSIONAL ENGINEER MICHAEL KIELBORN NO. 70112 EXP. 9/30/2020 CIVIL STATE OF CALIFORNIA

0 1/2 1 2
THIS BAR IS 2 INCHES AT FULL SCALE. IF NOT 2 INCHES, THEN SCALE ACCORDINGLY.
SCALE: AS SHOWN

CASITAS MUNICIPAL WATER DISTRICT
VENTURA STREET WATER MAIN REPLACEMENT

TITLE SHEET, SHEET INDEX, VICINITY MAP, AND LOCATION MAP

PROJECT NUMBER 18-404
DRAWING NUMBER G-01
SHEET NUMBER 1 OF 6

GENERAL NOTES

1. LOCATION AND DEPTH OF EXISTING UTILITIES ARE APPROXIMATE AND BASED ON AVAILABLE INFORMATION PROVIDED BY UTILITY COMPANIES.
2. PRIOR TO CONSTRUCTION, CONTRACTOR SHALL POTHOLE AND VERIFY LOCATION AND DEPTH OF EXISTING UTILITIES AND NOTIFY ENGINEER OF ANY DISCREPANCIES. CONTRACTOR SHALL USE POSITIVE LOCATION METHODS PER CALTRANS PUBLICATION - "POLICY ON HIGH AND LOW RISK UNDERGROUND FACILITIES WITHIN HIGHWAY RIGHTS OF WAY".
3. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY OF THE DISCOVERY OF ANY UTILITY THAT WAS OMITTED FROM THE PLANS, INCORRECTLY SHOWN OR NOT PROPERLY MARKED. IF THE UTILITY DOES NOT PROVIDE LOCATION INFORMATION OR MARKING SERVICES IN THE FIELD, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER.
4. OVERHEAD UTILITIES ARE NOT SHOWN IN ALL INSTANCES. CONTRACTOR SHALL USE DUE CARE WHEN WORKING NEAR OR UNDER SAID UTILITIES AND SHALL PROTECT THEM IN PLACE.
5. THE CONTRACTOR SHALL NOT INTERRUPT THE UTILITY SERVICE FUNCTION, DISTURB THE SUPPORT BASE, OR MODIFY ANY FACILITY WITHOUT AUTHORITY FROM THE UTILITY OWNER.
6. EXISTING PIPELINES/UTILITIES THAT CROSS NEW SYSTEM PIPING OR SIMILAR EXCAVATIONS REQUIRED TO CONSTRUCT THE PIPING, SHALL BE PROTECTED IN PLACE, UNLESS OTHERWISE NOTED. ALL EXISTING PIPELINES/UTILITIES SHALL BE SUPPORTED ACROSS THE EXCAVATION DURING CONSTRUCTION.
7. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE UTILITY OWNER IF ANY UTILITY IS DISTURBED OR DAMAGED DURING THE COURSE OF THE WORK. THE CONTRACTOR SHALL BEAR THE COSTS OF REPAIR OR REPLACEMENT OF ANY MARKED UTILITY WHERE DAMAGE WAS CAUSED BY THE CONTRACTOR'S ACTIVITIES.

BASIS OF BEARINGS

THE BASIS OF BEARINGS AND COORDINATES FOR THIS SURVEY WERE DETERMINED LOCALLY BY USING THE GEODIC VALUES FROM CONTINUOUSLY OPERATION REFERENCE STATIONS (CORS) OPERATED BY THE LEICA SMARTNET REFERENCE NETWORK. COORDINATES ARE PUBLISHED IN NORTH AMERICAN DATUM OF 1983 (NAD83), CALIFORNIA COORDINATE SYSTEM (CCS) ZONE 5 IN U.S. SURVEY FEET.

BASIS OF ELEVATIONS

ELEVATIONS BASED ON DIFFERENTIAL LEVELING BETWEEN PROJECT POINT NUMBER 1 AND FOUND USGS BENCHMARK STAMPED M 173 1934, LOCATED AT THE SOUTHEAST CORNER OF THE INTERSECTION OF HIGHWAY 150 (OJAI AVENUE) AND SIGNAL STREET, SET VERTICALLY IN THE WEST FACE OF THE WEST CONCRETE WALL OF THE POST OFFICE, 42.0 FEET SOUTHERLY FROM THE CENTER OF HIGHWAY 150, 24.5 FEET EASTERLY FROM THE CENTER OF SIGNAL STREET, 1.0 FOOT SOUTH FROM THE NORTHWEST CORNER OF THE BUILDING PER COUNTY OF VENTURA SURVEY MONUMENT DATA SHEET. SURVEY DATE 1992. ELEVATION TAKEN AS 748.31 FEET (NAVD88).

BOUNDARY

ALL RIGHT OF WAY AND PROPERTY LINES ARE SHOWN FOR REFERENCE ONLY. NO BOUNDARY SURVEY WAS CONDUCTED.

N. VENTURA STREET SERVICE LATERAL REPLACEMENT

STREET ADDRESS	METER NO.	NEW SERVICE SIZE	NOTES
511 N VENTURA ST	83202572	1"	
510 N VENTURA ST	83209721	1"	
509 N VENTURA ST	83202575	1"	
508 N VENTURA ST	83202571	1"	
507 N VENTURA ST	-	1"	INSTALL NEW LATERAL AND METER BOX FOR FUTURE CONNECTION
505 N VENTURA ST	83210128	1"	
503 N VENTURA ST	83210126	1"	
501 N VENTURA ST	83210153	1"	
411 N VENTURA ST	83202576	1"	
410 N VENTURA ST	83202574	1"	
407 N VENTURA ST	83202577	1"	
405 N VENTURA ST	83202573	1"	
403 N VENTURA ST	83202578	1"	
401 N VENTURA ST	83209592	1"	
102 E OAK ST	83202650	1"	
311 N VENTURA ST	83202649	1"	
312 N VENTURA ST	83202648	1"	
310 N VENTURA ST	83202632	1"	
309 N VENTURA ST	83202629	1"	
307 N VENTURA ST	83203890	1"	
306 N VENTURA ST	83203886	1"	
104 W ALISO ST	83202726	1"	CONVERT EXISTING 4-SERVICE MANIFOLD TO 4 NEW INDIVIDUAL SERVICES, METERS, AND BOXES
	APT 5: 83203851	1"	
	APT 6: 83202735	1"	
	APT 7: 83203854	1"	
211 N VENTURA ST	83203757	1"	
208 N VENTURA ST	83203767	1"	
207 N VENTURA ST	83203755	1"	
206 N VENTURA ST	83203756	1"	
206-A N VENTURA ST	83203769	1"	
204 N VENTURA ST	83203766	1"	
204-A N VENTURA ST	83203770	1"	
203 N VENTURA ST	83203951	1"	
107 N VENTURA ST	83203804	1"	
122 E OJAI AVE	-	2"	INSTALL METER BOX FOR FUTURE 2" CONNECTION ON THE CORNER OF VENTURA ST AND MATILIJA ST

E. SUMMER STREET SERVICE LATERAL REPLACEMENT

STREET ADDRESS	METER NO.	NEW SERVICE SIZE	NOTES
102 E SUMMER ST	83203831	1"	
104 E SUMMER ST	83203827	1"	
106 E SUMMER ST	83202618	1"	
107 E SUMMER ST	83203823	1"	
108 E SUMMER ST	83202614	1"	
110 E SUMMER ST	83202612	1"	
112 E SUMMER ST	83202613	1"	
211 E SUMMER ST		2"	

DIAL TOLL FREE
811
AT LEAST TWO DAYS
BEFORE YOU DIG

Know what's below.
Call before you dig.
UNDERGROUND SERVICE ALERT (USA) OF SOUTHERN CALIFORNIA

F:\proj\2018\180812\4 Production And Drafting\... Fri 03.May.19 02:34:53 PM by: Anthony Severy

REV	DATE	BY	DESCRIPTION
0	5/3/19	MK	ISSUED FOR CONSTRUCTION

CASITAS Municipal Water District

DESIGNED: AJS
DRAWN: AJS
CHECKED: MK
QA/QC:
CONSTRUCTABILITY:

PROJECT ENGINEER:
R.C.E. EXP.
5/3/2019
DATE

REGISTERED PROFESSIONAL ENGINEER
MICHAEL KIELBORN
NO. 70112
EXP. 9/30/2020
CIVIL
STATE OF CALIFORNIA

0 1/2 1 2
THIS BAR IS 2 INCHES AT FULL SCALE. IF NOT 2 INCHES, THEN SCALE ACCORDINGLY.

SCALE:
AS SHOWN

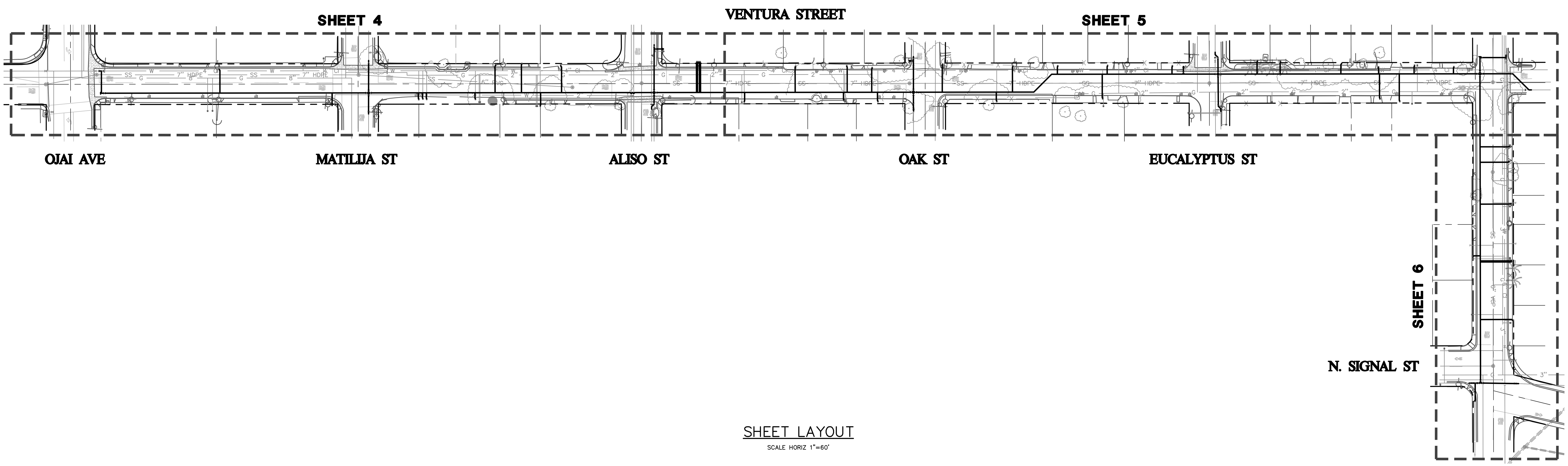
CASITAS MUNICIPAL WATER DISTRICT
VENTURA STREET WATER MAIN REPLACEMENT

SERVICE LATERAL REPLACEMENT TABLES

PROJECT NUMBER
18-404

DRAWING NUMBER
G-02

SHEET NUMBER
2 OF 6



SHEET LAYOUT

SCALE HORIZ 1"=60'

DIAL TOLL FREE
811
AT LEAST TWO DAYS
BEFORE YOU DIG

Know what's below.
Call before you dig.

60' 30' 0' 30' 60'
1 inch = 60 ft.

REV	DATE	BY	DESCRIPTION
0	5/3/19	MK	ISSUED FOR CONSTRUCTION

CASITAS Municipal Water District

DESIGNED: AJS
DRAWN: AJS
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QA/QC:
CONSTRUCTABILITY:

PROJECT ENGINEER: R.C.E. EXP.

5/3/2019
DATE

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MICHAEL KIELBORN
NO. 70112
EXP. 9/30/2020
CIVIL
STATE OF CALIFORNIA

0 1/2 1 2
THIS BAR IS 2 INCHES AT FULL SCALE. IF NOT 2 INCHES, THEN SCALE ACCORDINGLY.

SCALE:
1"=60'

CASITAS MUNICIPAL WATER DISTRICT
VENTURA STREET WATER MAIN REPLACEMENT

SHEET LAYOUT PLAN

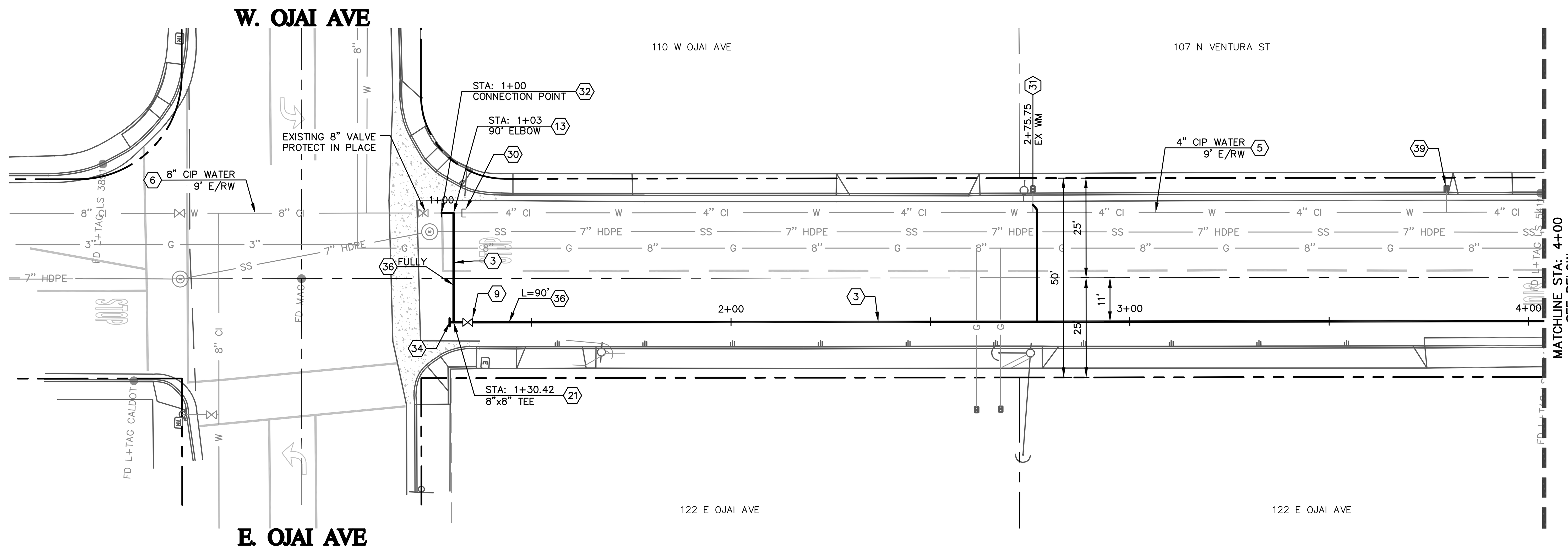
PROJECT NUMBER
18-404

DRAWING NUMBER
G-03

SHEET NUMBER
3 OF 6

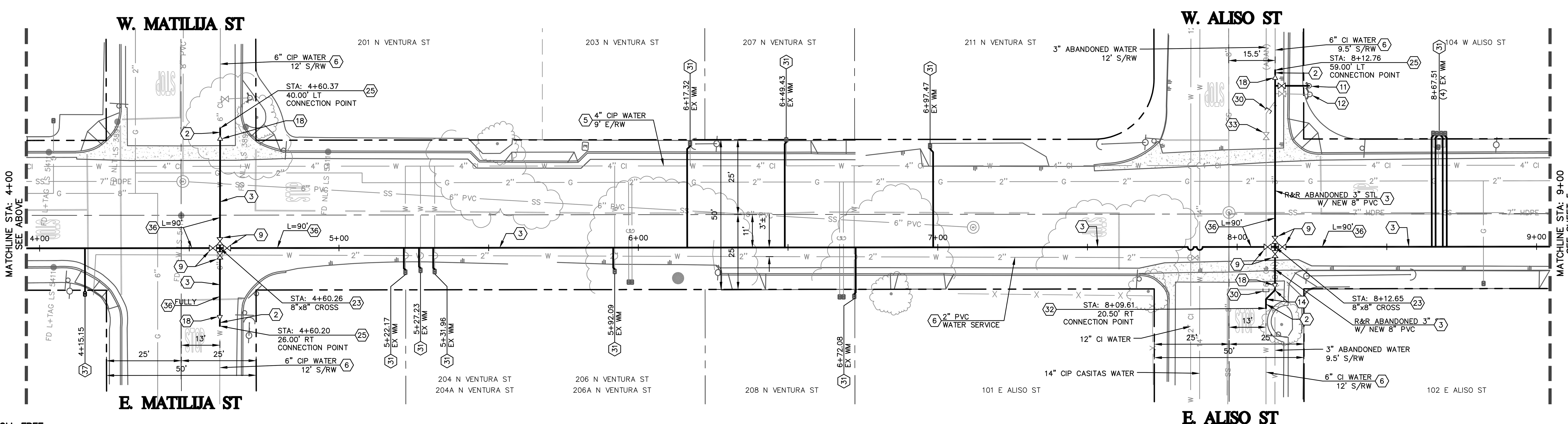
CONSTRUCTION NOTES

- (2) INSTALL NEW 6" C900 DR18 PVC WATER MAIN IN OPEN TRENCH PER COUNTY STANDARD DETAIL E-10a
- (3) INSTALL NEW 8" C900 DR18 PVC WATER MAIN IN OPEN TRENCH PER COUNTY STANDARD DETAIL E-10a
- (5) ABANDON EXISTING IN PLACE
- (6) PROTECT EXISTING IN PLACE
- (9) INSTALL 8" RESILIENT WEDGE GATE VALVE (FLGxMJ) WITH MECHANICAL JOINT RESTRAINT, ANCHOR AND VALVE BOX TO GRADE PER DISTRICT STANDARD DETAIL SD-3
- (11) INSTALL FIRE HYDRANT ASSEMBLY PER DISTRICT STANDARD DETAIL SD-93. EXACT LOCATION TO BE DETERMINED BY THE DISTRICT DURING CONSTRUCTION.
- (12) ABANDON EXISTING FIRE HYDRANT AND LATERAL. HYDRANT TO BE REMOVED, LATERAL TO BE ABANDONED, THE HYDRANT VALVE TO BE CLOSED, AND VALVE CAN FILLED WITH 2-SACK SLURRY PER DISTRICT STANDARDS. ALL REMOVED MATERIAL AND EQUIPMENT TO BE DISPOSED OF BY THE CONTRACTOR, UNLESS SPECIFICALLY NOTED OTHERWISE.
- (13) INSTALL 8" 90° DUCTILE IRON ELBOW (MJxMJ) WITH MECHANICAL JOINT RESTRAINTS AND THRUST BLOCK PER DISTRICT STANDARD DETAIL SD-2
- (14) INSTALL 6" 45° DUCTILE IRON ELBOW (MJxMJ) WITH MECHANICAL JOINT RESTRAINTS AND THRUST BLOCK PER DISTRICT STANDARD DETAIL SD-2
- (18) INSTALL 8"x6" DUCTILE IRON REDUCER (MJxMJ) WITH MECHANICAL JOINT RESTRAINTS
- (21) INSTALL 8"x8"x8" DUCTILE IRON FLANGED TEE AND THRUST BLOCK PER DISTRICT STANDARD DETAIL SD-2
- (23) INSTALL 8"x8" DUCTILE IRON FLANGED CROSS
- (25) INSTALL TRANSITION COUPLING
- (30) CAP AND ABANDON EXISTING MAIN IN PLACE
- (31) INSTALL NEW SERVICE LATERAL AND CONNECT TO EXISTING METER PER DISTRICT STANDARD DETAILS SD-11 & SD-12
- (32) CONNECT TO EXISTING PER TYPICAL THRUST RESTRAINT CONNECTION DETAIL 1, SHEET 6
- (33) ABANDON EXISTING VALVE PER DISTRICT SPECIFICATIONS
- (34) BLIND FLANGE
- (35) REMOVE EXISTING SERVICE MANIFOLD AND METER BOX, AND INSTALL (4) NEW SERVICE LATERALS AND METERS, WITHIN EXISTING BOXES PER DISTRICT STANDARD DETAILS SD-11 & SD-12. REPAIR SIDEWALK PER CITY OF OJAI STANDARD SPECIFICATIONS.
- (36) FULLY RESTRAIN ALL JOINTS USING MECHANICAL JOINT RESTRAINTS AND/OR BELL RESTRAINT HARNESSES WITHIN MINIMUM RESTRAINED LENGTH PER PLAN
- (37) INSTALL NEW SERVICE LATERAL AND METER BOX FOR FUTURE USE PER DISTRICT STANDARD DETAILS SD-11 & SD-12. EXACT LOCATION TO BE DETERMINED BY THE DISTRICT DURING CONSTRUCTION.
- (39) EXISTING WATER METER AND SERVICE TO BE ABANDONED.



VENTURA STREET – WATER MAIN

SCALE HORIZ 1"=20'



VENTURA STREET – WATER MAIN

SCALE HORIZ 1"=20'

DIAL TOLL FREE
811
AT LEAST TWO DAYS
BEFORE YOU DIG

811 Know what's below. Call before you dig.

20' 10' 0' 10' 20'
1 inch = 20 ft.

REV	DATE	BY	DESCRIPTION
0	5/3/19	MK	ISSUED FOR CONSTRUCTION

CASITAS Municipal Water District

DESIGNED: AJS
DRAWN: AJS
CHECKED: MK
QA/QC:
CONSTRUCTABILITY:

PROJECT ENGINEER: R.C.E. EXP.
5/3/2019 DATE

REGISTERED PROFESSIONAL ENGINEER MICHAEL KIELBORN NO. 70112 EXP. 9/30/2020 CIVIL STATE OF CALIFORNIA

0 1/2 1 2
THIS BAR IS 2 INCHES AT FULL SCALE. IF NOT 2 INCHES, THEN SCALE ACCORDINGLY.
SCALE: 1"=20'

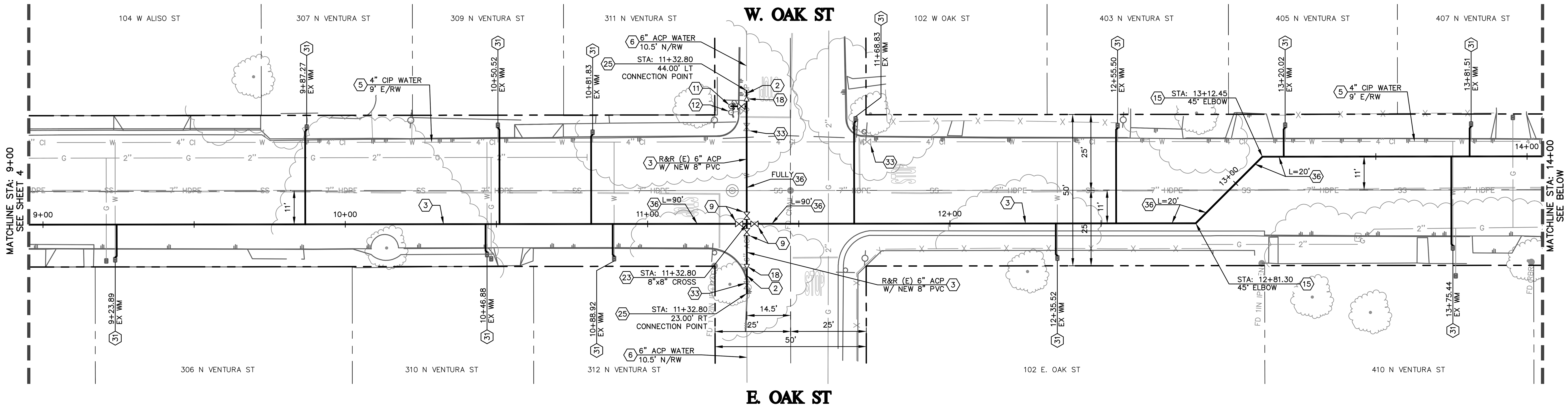
CASITAS MUNICIPAL WATER DISTRICT
VENTURA STREET WATER MAIN REPLACEMENT

VENTURA ST PLAN STA 1+00 TO 9+00

PROJECT NUMBER 18-404
DRAWING NUMBER C-01
SHEET NUMBER 4 OF 6

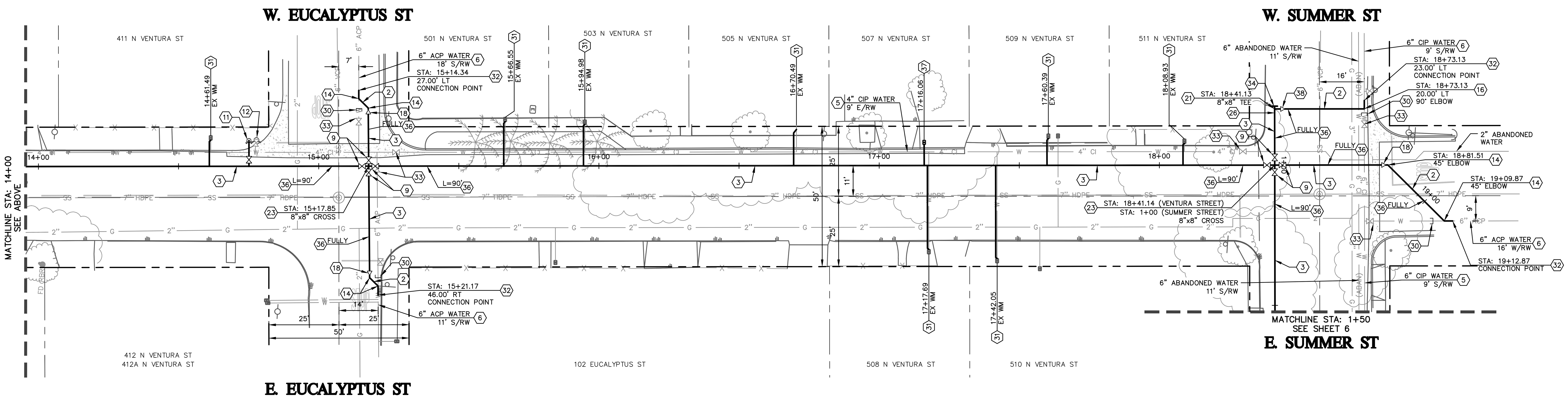
CONSTRUCTION NOTES

- (2) INSTALL NEW 6" C900 DR18 PVC WATER MAIN IN OPEN TRENCH PER COUNTY STANDARD DETAIL E-10a
- (3) INSTALL NEW 8" C900 DR18 PVC WATER MAIN IN OPEN TRENCH PER COUNTY STANDARD DETAIL E-10a
- (5) ABANDON EXISTING IN PLACE
- (6) PROTECT EXISTING IN PLACE
- (9) INSTALL 8" RESILIENT WEDGE GATE VALVE (FLGxMJ) WITH MECHANICAL JOINT RESTRAINT, ANCHOR AND VALVE BOX TO GRADE PER DISTRICT STANDARD DETAIL SD-3
- (11) INSTALL FIRE HYDRANT ASSEMBLY PER DISTRICT STANDARD DETAIL SD-93. EXACT LOCATION TO BE DETERMINED BY THE DISTRICT DURING CONSTRUCTION.
- (12) ABANDON EXISTING FIRE HYDRANT AND LATERAL. HYDRANT TO BE REMOVED, LATERAL TO BE ABANDONED, THE HYDRANT VALVE TO BE CLOSED, AND VALVE CAN FILLED WITH 2-SACK SLURRY PER DISTRICT STANDARDS. ALL REMOVED MATERIAL AND EQUIPMENT TO BE DISPOSED OF BY THE CONTRACTOR, UNLESS SPECIFICALLY NOTED OTHERWISE.
- (14) INSTALL 6" 45° DUCTILE IRON ELBOW (MJxMJ) WITH MECHANICAL JOINT RESTRAINTS AND THRUST BLOCK PER DISTRICT STANDARD DETAIL SD-2
- (15) INSTALL 8" 45° DUCTILE IRON ELBOW (MJxMJ) WITH MECHANICAL JOINT RESTRAINTS AND THRUST BLOCK PER DISTRICT STANDARD DETAIL SD-2
- (18) INSTALL 8"x6" DUCTILE IRON REDUCER (MJxMJ) WITH MECHANICAL JOINT RESTRAINTS
- (21) INSTALL 8"x8"x8" DUCTILE IRON FLANGED TEE AND THRUST BLOCK PER DISTRICT STANDARD DETAIL SD-2
- (23) INSTALL 8"x8" DUCTILE IRON FLANGED CROSS
- (25) INSTALL TRANSITION COUPLING
- (26) INSTALL FLANGED COUPLING ADAPTOR
- (30) CAP AND ABANDON EXISTING MAIN IN PLACE
- (31) INSTALL NEW SERVICE LATERAL AND CONNECT TO EXISTING METER PER DISTRICT STANDARD DETAILS SD-11 & SD-12
- (32) CONNECT TO EXISTING PER TYPICAL THRUST RESTRAINT CONNECTION DETAIL 1, SHEET 6
- (33) ABANDON EXISTING VALVE PER DISTRICT SPECIFICATIONS
- (34) BLIND FLANGE
- (36) FULLY RESTRAIN ALL JOINTS USING MECHANICAL JOINT RESTRAINTS AND/OR BELL RESTRAINT HARNESSES WITHIN MINIMUM RESTRAINED LENGTH PER PLAN
- (37) INSTALL NEW SERVICE LATERAL AND METER BOX FOR FUTURE USE PER DISTRICT STANDARD DETAILS SD-11 & SD-12. EXACT LOCATION TO BE DETERMINED BY THE DISTRICT DURING CONSTRUCTION.
- (38) INSTALL 8"x6" DUCTILE IRON REDUCER (FLGxMJ) WITH MECHANICAL JOINT RESTRAINT



VENTURA STREET – WATER MAIN

SCALE HORIZ 1"=20'



VENTURA STREET – WATER MAIN

SCALE HORIZ 1"=20'

DIAL TOLL FREE
811
AT LEAST TWO DAYS BEFORE YOU DIG

Know what's below. Call before you dig.

20' 10' 0' 10' 20'
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REV	DATE	BY	DESCRIPTION
0	5/3/19	MK	ISSUED FOR CONSTRUCTION

CASITAS Municipal Water District

DESIGNED:	AJS
DRAWN:	AJS
CHECKED:	MK
QA/QC:	
CONSTRUCTABILITY:	

PROJECT ENGINEER: R.C.E. EXP. — 5/3/2019 DATE

REGISTERED PROFESSIONAL ENGINEER MICHAEL KIELBORN NO. 70112 EXP. 9/30/2020 CIVIL STATE OF CALIFORNIA

0 1/2 1 2
THIS BAR IS 2 INCHES AT FULL SCALE. IF NOT 2 INCHES, THEN SCALE ACCORDINGLY.
SCALE: 1"=20'

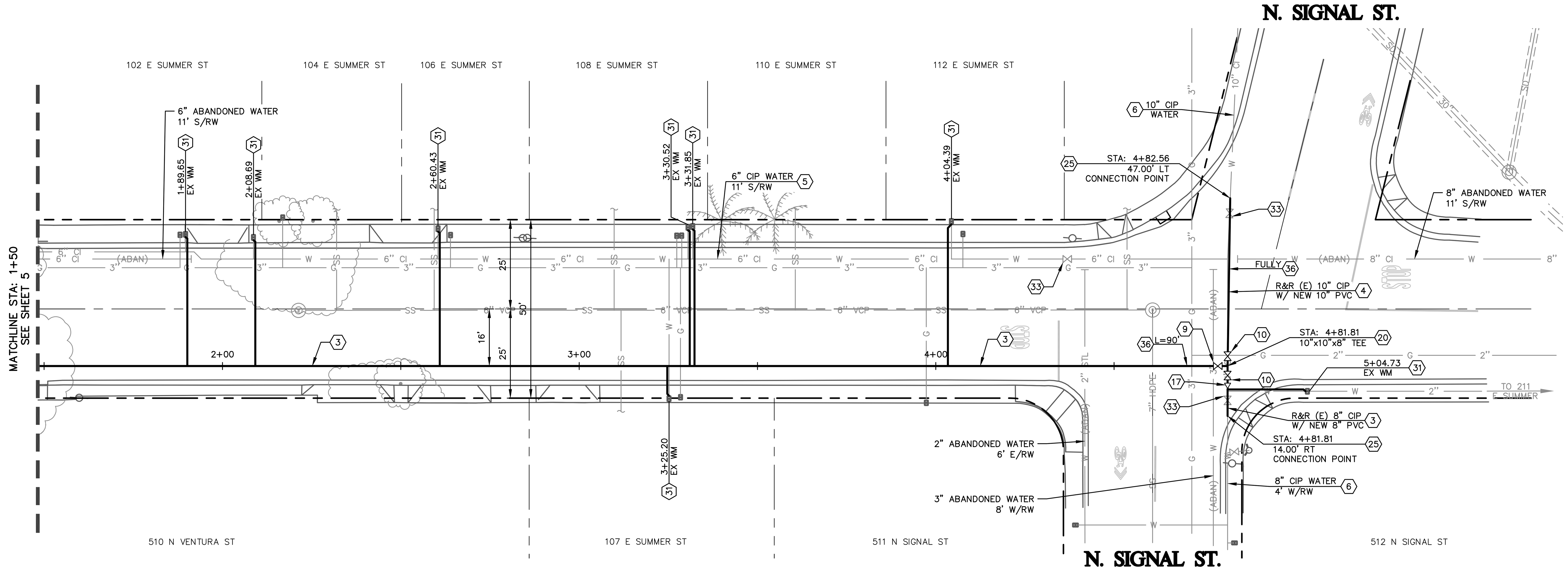
CASITAS MUNICIPAL WATER DISTRICT
VENTURA STREET WATER MAIN REPLACEMENT

VENTURA ST PLAN STA 9+00 TO 19+13

PROJECT NUMBER 18-404
DRAWING NUMBER C-02
SHEET NUMBER 5 OF 6

CONSTRUCTION NOTES

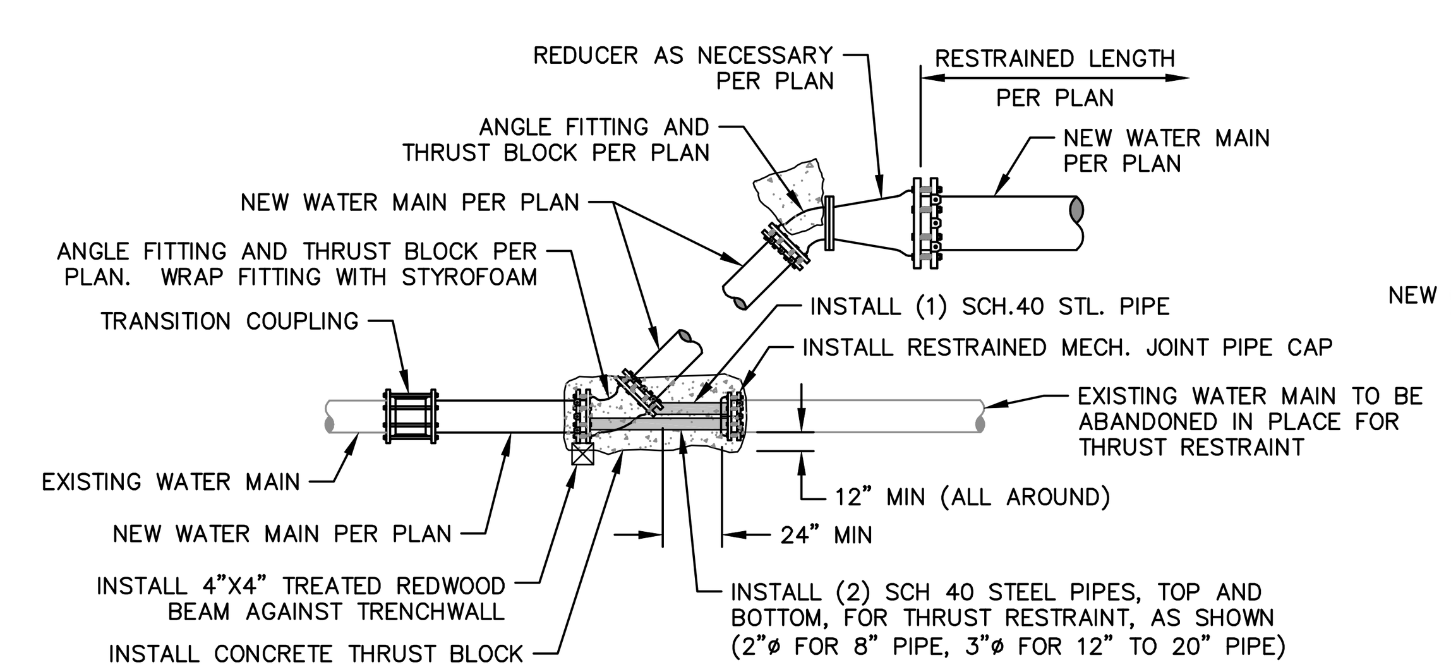
- (3) INSTALL NEW 8" C900 DR18 PVC WATER MAIN IN OPEN TRENCH PER COUNTY STANDARD DETAIL E-10a
- (4) INSTALL NEW 10" C900 DR18 PVC WATER MAIN IN OPEN TRENCH PER COUNTY STANDARD DETAIL E-10a
- (5) ABANDON EXISTING IN PLACE
- (6) PROTECT EXISTING IN PLACE
- (9) INSTALL 8" RESILIENT WEDGE GATE VALVE (FLGxMJ) WITH MECHANICAL JOINT RESTRAINT, ANCHOR AND VALVE BOX TO GRADE PER DISTRICT STANDARD DETAIL SD-3
- (10) INSTALL 10" RESILIENT WEDGE GATE VALVE (FLGxMJ) WITH MECHANICAL JOINT RESTRAINT, ANCHOR AND VALVE BOX TO GRADE PER DISTRICT STANDARD DETAIL SD-3
- (17) INSTALL 10"x8" DUCTILE IRON REDUCER (MJxMJ) WITH MECHANICAL JOINT RESTRAINTS
- (20) INSTALL 10"x10"x8" DUCTILE IRON FLANGED TEE AND THRUST BLOCK PER DISTRICT STANDARD DETAIL SD-2
- (25) INSTALL TRANSITION COUPLING
- (30) CAP AND ABANDON EXISTING MAIN IN PLACE
- (31) INSTALL NEW SERVICE LATERAL AND CONNECT TO EXISTING METER PER DISTRICT STANDARD DETAILS SD-11 & SD-12
- (33) ABANDON EXISTING VALVE PER DISTRICT SPECIFICATIONS
- (36) FULLY RESTRAIN ALL JOINTS USING MECHANICAL JOINT RESTRAINTS AND/OR BELL RESTRAINT HARNESSES WITHIN MINIMUM RESTRAINED LENGTH PER PLAN



20' 10' 0' 10' 20'
1 inch = 20 ft.

E. SUMMER STREET – WATER MAIN

SCALE HORIZ 1"=20'

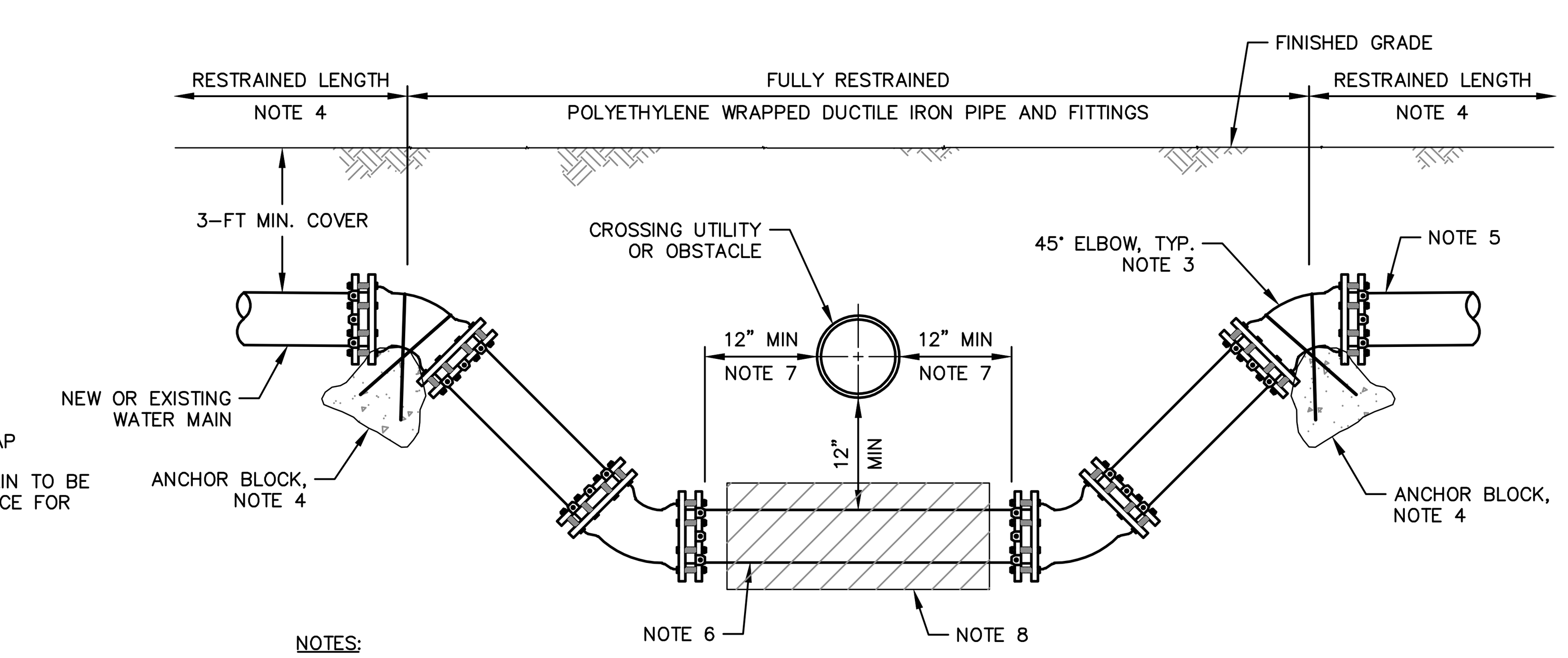


NOTE:

1. STEEL TUBING SHALL BE PLACED OVER BOLT AND NUT TO PREVENT LATERAL MOVEMENT
2. THRUST CONNECTION SHALL NOT BE REMOVED. IT PROVIDES REQUIRED THRUST RESTRAINT.

TYPICAL THRUST RESTRAINT CONNECTION DETAIL (1)

N.T.S.



NOTES:

1. CONTRACTOR SHALL PROVIDE ENGINEER WITH DEPTH OF COVER AND UTILITY CLEARANCES PRIOR TO CONSTRUCTION.
2. MINIMUM DIMENSIONS SHALL COMPLY WITH DISTRICT STANDARDS FOR MINIMUM SEPARATION REQUIREMENTS.
3. ALL FITTINGS SHALL BE MECHANICAL JOINT FITTINGS WITH RESTRAINTS. FLANGED JOINTS MAY BE USED WHERE CONDITIONS WARRANT, TO THE APPROVAL OF THE GOVERNING AGENCY.
4. PROVIDE RESTRAINED LENGTHS AND/OR ANCHOR BLOCK SIZING PER DISTRICT GUIDELINES.
5. INSTALL AIR VACUUM AND RELEASE VALVES AT HIGH POINTS RESPECTIVELY, PER DISTRICT STANDARDS.
6. INSTALL BLOW-OFFS AT LOW POINTS RESPECTIVELY, PER DISTRICT STANDARDS.
7. 9-FT MINIMUM NO JOINTS WHERE CROSSING EXISTING SEWER, STORM DRAIN, OR RECYCLED WATER.
8. INSTALL PIPE CASING CENTERED UNDER CROSSING UTILITY WHERE JOINT SEPARATION REQUIREMENTS CANNOT BE MET.

TYPICAL WATERLINE UNDER-CROSSING DETAIL (2)

N.T.S.

DIAL TOLL FREE
811
AT LEAST TWO DAYS
BEFORE YOU DIG

Know what's **below.**
Call before you dig.

REV	DATE	BY	DESCRIPTION
0	5/3/19	MK	ISSUED FOR CONSTRUCTION

CASITAS Municipal Water District

DESIGNED:	AJS
DRAWN:	AJS
CHECKED:	MK
QA/QC:	
CONSTRUCTABILITY:	

PROJECT ENGINEER: R.C.E. EXP. — 5/3/2019 DATE

REGISTERED PROFESSIONAL ENGINEER — MICHAEL KIELBORN — NO. 70112 — EXP. 9/30/2020 — CIVIL — STATE OF CALIFORNIA

0 1/2 1 2
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SCALE: 1"=20'

CASITAS MUNICIPAL WATER DISTRICT
VENTURA STREET WATER MAIN REPLACEMENT

E. SUMMER ST PLAN STA 0+50 TO 5+00 AND DETAILS

PROJECT NUMBER: 18-404
DRAWING NUMBER: C-03
SHEET NUMBER: 6 OF 6

APPENDIX B

CASITAS MUNICIPAL WATER DISTRICT

STANDARD DETAILS AND SPECIFICATIONS (MARCH 2019)

CASITAS Municipal Water District

STANDARD DETAILS AND SPECIFICATIONS

FOR THE

CONSTRUCTION OF WATER MAINS AND FACILITIES

MARCH 2019

APPROVED:

General Manager

Engineering Manager

Michael Shields

Operations and Maintenance Manager

Owner of this manual is responsible to obtain the most recent version from the Casitas Municipal Water District website prior to the start of any project within the District's service area.

This manual is not a textbook nor a substitute for engineering knowledge, experience or judgment. Neither does it impose any standard of conduct or duty to the public. Instead, the methods and procedures contained in this manual should be reviewed by the engineer using them to determine applicability to a specific project. When methods and procedures are not applicable, the engineer should request guidance from the District.

This manual is intended for use by private Owners who retain a Contractor to install facilities which will be transferred to the District. These specifications may also be used for District-funded capital projects in which the District retains a Contractor. In this case, these specifications will be used in conjunction with the Contract Documents. In the event there are discrepancies between the Contract Documents and these specifications, the Contractor shall seek clarification from the District.

Table of Contents

LIST OF TABLES

`

1 DEFINITIONS

Agreement: The executed form of letter agreement between the District and the Owner in which the Owner agrees to construct facilities which, when constructed to these Specifications, will be accepted and owned by the District; or the Agreement between a Contractor and the District for the construction of District facilities.

Contract Documents: The Notice Inviting Bids, Bid Documents, Bonds, Agreement, General Conditions, Special Conditions, Technical Specifications, Drawings, and Addenda which document the scope of work and terms for a District-funded construction project.

Contractor: The licensed Contractor either engaged by the Owner to construct facilities for acceptance by the District, or who has directly entered an Agreement with the District for the performance of work and the construction of District facilities.

District: CASITAS MUNICIPAL WATER DISTRICT, a municipal water District established in 1952, 1055 North Ventura Avenue, Oak View, California, 93022.

District Representative: The person or engineering firm appointed by the Board of Directors of the District to represent the District.

Drawings: The official plans, profiles, typical cross-sections, working drawings, detail drawings and supplemental drawings, or exact reproductions thereof, approved by the District, which show the locations, character, dimensions, and details of the work to be done.

Engineer: The General Manager of Casitas Municipal Water District or his/her duly authorized Representative.

Groundwater: Subsurface water found in the saturation zone.

Laboratory: The laboratory designated by the District's Representative and/or District to test materials and work involved in the Contract.

Mechanical Joints: Bolted joints.

Owner: Legal property owner of parcel(s) to whom water service is/will be provided by Casitas Municipal Water District.

Rated Working Pressure or Pressure Class: A pipe classification system based upon the internal working pressure of the fluid in the pipe, type of pipe material and the thickness of the pipe wall.

Specifications: The directions, provisions, requirements, and standard details pertaining to

the method and manner of performing the work, and to the qualities of materials to be furnished for acceptance by the District. May also be referred to herein as “Standards”.

Standard Details: Casitas Municipal Water District Standard Details.

2 TERMS

Wherever the terms “required”, “permitted”, “ordered”, “designated”, “directed”, “prescribed”, or similar terms are used, it shall be understood the requirements, permission, order, designation, prescription, or direction of the District Representative is intended. Similarly, the terms “acceptable”, “satisfactory”, “or equal”, or similar terms shall mean acceptable to or satisfactory to the District Representative, unless otherwise expressly stated. The word “provide” shall be understood to mean furnish and install.

3 ABBREVIATIONS

AASHTO	American Association of State Highway and Transportation officials
ANSI	American National Standards Institute
APWA	American Public Works Association
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
AWS	American Welding Society
AWWA	American Water Works Association
CMLC	Cement mortar lined and coated
DI	Ductile iron
DR	Dimension Ratio
FIP	Female Iron Pipe
HDPE	High-density polyethylene
mg/l	Milligrams per liter
MIP	Male Iron Pipe
NPDES	National Pollutant Discharge Elimination System
OSHA	Occupational Safety and Health Administration
OD	Outside diameter
PC	Pressure class
ppm	Parts per million
psi	Pounds per square inch
PVC	Polyvinyl chloride
State	California Standard Specifications, State of California, Department of Transportation, Division of Highways (Caltrans)
SWRCB	State Water Resources Control Board
TMDL	Total Maximum Daily Load
UL	Underwriter Labs

4 REFERENCES

4.1 General Codes or Specifications

Standard Specifications for Public Works Construction 2018 Edition, by APWA, the "Green Book."

Standard Specifications State of California Business and Transportation Agency, Department of Transportation Standard Specifications (Caltrans), latest edition.

State of California Department of Industrial Relations, Division of Industrial Safety, "Construction Safety Orders" (Shoring), latest edition.

City Standards, City of San Buenaventura, California.

County of Ventura Public Works Agency Road Standards, Ventura, California, latest edition.

ASTM Specifications

A126	Standard Specification for Gray Iron Castings for Valves, Flanges, and Pipe Fittings
A185	Standard Specification for Welded Steel Wire Fabric for Concrete Reinforcement.
A193	Standard Specification for Alloy-Steel and Stainless Steel Bolting for High Temperature or High Pressure Service and Other Special Purpose Applications
A194	Standard Specification for Carbon Steel, Alloy Steel, and Stainless Steel Nuts for Bolts for High Pressure or High Temperature Service, or Both
A233	Standard Specification for Mild Steel Covered Arc-Welding Electrodes
A307	Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod
A436	Standard Specification for Austenitic Gray Iron Castings
A536	Standard Specification for Ductile Iron Castings
A570	Standard Specification for Hot-Rolled Carbon Steel Sheet and Strip, Structural Quality
A615	Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement
A668	Standard Specification for Steel Forgings, Carbon and Alloy, for General Industrial Use
A1011	Standard Specification for Steel, Sheet and Strip, Hot Rolled, Carbon, Structural, High-Strength, Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength
B61	Standard Specification for Steam or Valve Bronze Castings
B62	Standard Specification for Composition Bronze or Ounce Metal Castings
C33	Standard Specification for Concrete Aggregates
C94	Standard Specification for Ready-Mixed Concrete
C150	Standard Specification for Portland Cement

C309	Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete
C685	Concrete Made by Volumetric Batching and Continuous Mixing
D698	Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort
D1248	Standard Specification for Polyethylene Plastic Extrusion Materials for Wire and Cable
D1557	Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort
D2419	Standard Test Method for Sand Equivalent value of Soils and Fine Aggregate

AWWA Manuals:

M6	Water Meters: Selection, Installation, Testing and Maintenance.
M11	Steel Pipe: A Guide for Design and Installation
M17	Fire Hydrants: Installation, Field Testing and Maintenance
M22	Sizing Water Service Lines and Meters
M23	PVC Pipe Design and Installation
M41	Ductile Iron Pipe and Fittings
M44	Distribution Valves: Selection, Installation, Field Testing, and Maintenance
M51	Air Valves, Air Release, Air/Vacuum, and Combination

AWWA Standards

C104	Cement Mortar Lining for Ductile Iron and Gray Iron Pipe and Fittings for Water
C110	Ductile Iron and Gray-Iron Fittings
C111	Rubber Gasket Joints for Ductile Iron Pressure Pipe And Fittings
C115	Flanged Ductile Iron Pipe with Ductile-Iron or Gray-Iron Threaded Flanges
C150	Thickness Design of Ductile Iron Pipe
C151	Ductile Iron Pipe, Centrifugally Cast
C153	Ductile Iron Compact Fittings
C200	Steel Water Pipe 6 Inches and Larger. Note - Steels to be ASTM A283 or A570.
C205	Cement-Mortar Protective Lining and Coating for Steel Water Pipe, 4-In. and Larger, Shop Applied. Note - Cement to meet ASTM C150
C206	Field Welding of Steel Water Pipe. Note - Welding Electrodes to meet ASTM A233 and Welding Procedures to meet AWS D10.9
C207	Steel Pipe Flanges for Water Works Service - Sizes 4-In. through 144-In.
C208	Dimensions for Fabricated Steel Water Pipe Fittings
C223	Fabricated Steel and Stainless Steel Tapping Sleeves
C500	Metal-Seated Gate Valves for Supply Service

C503	Wet-Barrel Fire Hydrants
C504	Rubber-Seated Butterfly Valves
C509	Resilient-Seated Gate Valves for Water Supply Service
C550	Protective Interior Coatings for Valves and Hydrants
C600	Installation of Ductile Iron Mains and Their Appurtenances
C602	Cement Mortar Lining of Water Pipelines in Place – 4 in. and Larger
C604	Installation of Buried Steel Water Pipe – 4 in. and Larger
C605	Underground Installation of Polyvinyl Chloride (PVC) and Molecularly Oriented Polyvinyl Chloride (PVCO) Pressure Pipe and Fittings
C606	Grooved and Shouldered Joints
C651	Disinfecting Water Mains
C900	Polyvinyl Chloride (PVC) Pressure Pipe and Fabricated Fittings, 4-In. Through 12-In., for Water
C905	Polyvinyl Chloride (PVC) Pressure Pipe and Fabricated Fittings, 14-In. through 48-In., for Water Transmission and Distribution

5 MATERIALS

5.1 GENERAL REQUIREMENTS

This section discusses the materials involved in potable water systems and associated construction activities.

The materials selected were chosen for their strength, durability, and ease of maintenance. In some instances, the District's requirements exceed those of the industry or regional standards. Where applicable, industry or regional standards, such as AWWA or other standards, are referenced and it is the responsibility of the Contractor to be familiar with those standards to insure compliance. Titles corresponding to the specific numbers are given in the reference section of the standards.

All equipment, materials, and supplies to be incorporated in the work shall be new unless otherwise specified.

Contractor is to follow manufacturer's recommendations for storage in order to prevent material damage. Failure to do so will be a cause for the District to reject such improperly stored materials.

In some instances, particular manufacturers and product names are mentioned as being approved. Other products may also meet the requirements, but must be first approved in writing by the District before delivery and before such material is used in the work. One factor which may be considered by the District in any consideration of other products is the need for some degree of standardization. In the event the Contractor furnishes the material, process, or article better than that specified, the difference in cost of such material, process, or article so furnished shall be at no expense to the District.

5.2 TESTING AND FINAL ACCEPTABILITY OF MATERIAL

The District will require tests and certifications as deemed necessary to show the specified materials have been employed. Notwithstanding prior factory or yard inspections, the District Representative shall have the right to reject any damaged or defective materials found on the job which will affect the durability or performance of the installation, and order its removal from the site.

No materials shall be installed until approved by the District. All installations which are to be backfilled shall be inspected and approved by the District's Representative prior to backfilling and the Contractor shall give 24 hours' notice in advance of backfilling to the District's Representative so proper inspection may be provided.

All materials not conforming to the requirements of these specifications shall be considered as defective and all such materials, whether in place or not, shall be

rejected.

The inspection of the work shall not relieve the Contractor of any obligations to fulfill the specifications as prescribed. Defective work shall be made good, and unsuitable materials may be rejected notwithstanding the fact that such defective work and unsuitable materials were previously overlooked by the District's Representative and accepted.

All materials for use in the work shall be stored by the Contractor in such a manner as to prevent damage from exposure to the elements, admixture of foreign materials, or from any other cause. The District is not responsible for damage or loss of materials by weather or other causes.

5.3 MAIN LINE PIPE MATERIALS

5.3.1 PVC Pipe

Polyvinyl chloride (PVC) pipe shall conform to the quality and strength requirements of AWWA C900-16 and C905-97.

Each standard or random length of pipe shall be clearly marked with the following:

- Nominal size and outside diameter (OD) base, e.g., six-inch cast iron pipe size.
- Material code "PVC 1120."
- Dimension Ratio, e.g., DR 25, where the DR is equal to the outside diameter divided by the pipe thickness.
- AWWA pressure class, i.e., PC 150.
- AWWA designation "AWWA C900" or “AWWA C905”.
- Manufacturer's trade name and production record code.
- Seal (mark) of testing agency.

The standard laying length shall be 20 feet (plus/minus one inch) in all classes and sizes. Pressure rating shall be as determined by the District Representative.

For Class 150 and 200 (C900 and C905, respectively) pipe, the minimum short piece of pipe length shall be two feet unless prior approval is received from the District Representative.

Sections 5.5.4 and 5.9.3 of these Standards include hot-tapping requirements.

"Heavy wall tap couplings" or "threaded brass insert couplings" are not accepted.

AWWA C900 and C905 pipe has the same outside diameter (OD) as that of ductile iron pipe in the sizes furnished.

One gasket shall be furnished with each length of elastomeric-gasket bell-end pipe and two gaskets shall be furnished with each coupling where couplings are used.

Pipe surfaces shall be free from nicks, scratches and other blemishes. The joining surfaces of pipe spigots and of integral bell and sleeve reinforced bell sockets shall be free from gouges or other imperfections that might cause leakage.

Approved PVC pipe is:

- Vinyl Tech
- Diamond Plastics C900

Other manufacturers require prior approval by the District.

5.3.1.1 Joint Mechanisms

The joints must meet DR requirements and shall be one of the following:

- Integral wall - thickened bell end (bell and spigot with rubber gasket.)
- Integral sleeve reinforced bell end
- Elastomeric gasket couplings

PVC solvent cement joints, although allowed by AWWA C900 and C905, must receive prior approval from the District Representative.

5.3.1.2 Couplings and Fittings

Where couplings are used, they shall meet the requirements of AWWA C900 and C905. Couplings shall be as furnished by the manufacturer and shall be marked with same information as the pipe. Couplings with no stops shall only be used at closures.

5.3.1.3 Cast Iron Fittings

Cast iron fittings with grip-tite ends shall be used for PVC pipe are described in Section 5.4.1.

5.3.1.4 Locating Wire

Copper wire shall be provided, which shall be 12 gauge, single strand, with 30 mil high-density polyethylene (HDPE) insulation, blue in color. Adhesive tape shall be Polyken No. 900 or Scotchrap No. 50.

5.3.1.5 Pipe Indicator Tape

Pipe indicator tape shall be 4.5-mil solid aluminum foil imprinted with the warning “CAUTION – WATER LINE BURIED BELOW” on both sides, completely encased to prevent ink rub-off. Tape shall be four inches wide and shall be blue with black ink per APWA standards.

5.3.1.6 Physical Test Requirements.

Hydrostatic, burst, and sustained pressure and crushing tests shall be conducted at the factory in accordance with AWWA C900-16 and C905-97. All testing shall be done by a recognized testing laboratory with such testing available for inspection by the District. If required, the manufacturer shall supply a letter of certification attesting to their pipe meeting these specifications. The hydrostatic proof test for every piece of pipe shall be as shown in Table 1.

Table 1
Hydrostatic Test Pressures for PVC Pipe

Pipe Class	Dimension Ratio (DR)	Pressure Rating (psi)
C900	DR = 18 or Class 150	600
	DR = 14 or Class 200	800
C905	41	200
	32.5	250
	26	320
	25	330
	21	400
	21	400
	18	470

5.3.2 Steel Pipe

All welding shall be done by qualified welders as specified in AWWA C200, C205, C206, C207, C208 and the Standards of the American Welding Society (AWS). Certification per American Society of Mechanical Engineers (ASME) Section IX is mandatory. Provide proof of valid certification to the District Representative prior to commencing work.

Steel pipe shall conform to the quality and strength requirements of AWWA C200 or as specified below. That standard pertains to electrically butt-welded straight-seam or spiral-seam pipe and to seamless pipe six inches in diameter or larger. The steel shall conform to one of the standards shown in Table 2.

Table 2
Steel Pipe Standards

Specification	Grade	Minimum Yield Point (psi)
ASTM A668	Grade C	30,000
	Grade D	33,000
ASTM A1011	Grade 30	30,000
	Grade 36	36,000

Table 2
Steel Pipe Standards

Specification	Grade	Minimum Yield Point (psi)
	Grade 40	40,000
	Grade 45	45,000

The stress in the steel pipe shall not exceed the higher of 15,000 psi or the stress computed using one-half the designated working pressure and the stress formula below except that the minimum thicknesses shown in Table 3 shall be used.

Table 3
Minimum Wall Thickness for Steel Pipe

Nominal Inside Diameter (Inches)	Minimum Thickness (Inches)
4 to 18	0.1046
20 and 21	0.1345
24 and 27	0.1495

Larger diameter steel pipe shall have wall thickness as shown on the Drawings or Contract Documents. The following formula shall be used to determine the stress in the steel cylinder:

$$s = \frac{PDi}{2g}$$

Where:

s	=	Stress, psi
P	=	Working Pressure, psi
Di		Maximum Inside Diameter of Steel Cylinder, inches
g		Wall Thickness of Steel Cylinder, inches

The gauges specified above consider the thicknesses required for welding as well as that required for external loads and a corrosion allowance.

The nominal measurements for steel cylinders 12 inches and smaller shall conform to Table 4.

Table 4
Nominal Dimensions for Steel Cylinders up to 12-inches in diameter

Nominal Inside Diameter (inches)	Nominal Outside Diameter (inches)
4"	4½
6"	6-5/8"
8"	8-5/8"
10"	10¾"
12"	12¾"

For larger pipes, the steel cylinder outside diameter shall be computed using the following formula:

$$Do = D + 2 (t+g)$$

Where:

Do	=	Actual Steel Cylinder OD, inches
D	=	Nominal Inside Diameter, inches
t		Thickness of Cement Mortar Lining, inches
g		Wall Thickness of Steel Cylinder, inches

Another factor for consideration in all steel lines is earth loads. AWWA Manual M11 should be consulted in this regard.

The pipe shall be essentially round. The outside circumference shall not vary more than plus/minus 1.0 percent from the nominal outside circumference based upon the diameter specified (except for the ends which are discussed in Section 5.3.2.1.)

The pipe lengths, generally 40 feet long, shall be furnished with a tolerance of plus/minus two inches. Random lengths shall be furnished in lengths averaging 29 feet or more, with a minimum length of 20 feet.

Seams in steel cylinders shall be fusion, longitudinal, spiral, or girth welded. Longitudinal seams shall be limited to not more than one per plate section. Longitudinal seams must be staggered with longitudinal seams in adjoining plate section. Girth seams shall be limited to one per standard section 16 feet or less in length.

Additional girth seams in longer standard sections may be employed but not to exceed one per each additional full 10 feet beyond the first 20 feet. Seams in special sections may be increased as required.

5.3.2.1 Pipe Ends

Various end treatments can be supplied as discussed in AWWA C200 and are briefly listed below:

- Ends for mechanical coupled field joints, which may be either plain or grooved.
- Ends for lap joints for field welding shall have a bell end pressed or rolled without hammering. The surfaces shall be ground smooth. When assembled, joints must have a minimum 1½ -inch lap with approximately 1/32-inch clearance.
- Plain end pipe shall have a plain end right angle cut.
- Except for butt strap closures, butt welding and field fabricated fittings are not permitted unless approved by the District.
- Deflection of more than three (3) degrees not allowed at joints.
- Ends fitted with butt straps for field welding. The butt straps may be made in halves. Wedding bands shall not be used unless approved in advance by the District Representative.
- Bell-and-spigot ends with rubber gaskets shall have bell ends which are made without hammering. Spigot ends shall be formed or fabricated to the required shape to retain the gasket. The gasket shall be designed and fitted as the sole element dependent upon to make the joint water tight. The gasket shall meet the requirements of AWWA C200.
- Plain ends fitted with flanges.

The allowable tolerance at pipe ends is discussed in AWWA C200.

5.3.2.2 Hydrostatic tests

Each pipe shall be tested by the manufacturer to a pressure not less than that determined by:

$$S = \frac{PDi}{2g}$$

where S = 0.75 times the minimum yield strength of the steel and the other items are as discussed previously.

5.3.2.3 Cement Mortar Lining and Coating (CMLC)

Unless otherwise approved or as revised below, all steel pipe shall be cement mortar lined and coated in accordance with AWWA C205 and ASTM C150 which covers shop applied lining and coating. Cement shall be Portland cement Type II for lining and coating.

Cement mortar lining shall be uniform in thickness except at joints or other discontinuities. Ends of lining shall be left square and uniform and the lining holdback shall be as specified for the particular type of joint.

District requirements for thickness exceed those of the AWWA standard. No wire fabric reinforcement is required for any lining of specials less than 24 inches in diameter.

Cement mortar lining thickness shall be as shown in Table 5.

Table 5
Cement Mortar Lining Thickness for Steel Pipe

Nominal Pipe Size (inches)	Lining Thickness (inches)	Tolerance (inches)
6 to 12	5/16	-1/16 + 1/8
14 to 16	3/8	-1/16 + 1/8
18 to 36	1/2	-1/16 + 1/8

For larger diameter steel pipe, cement mortar coating shall be as shown on the Drawings or in the Contract Documents.

Cement mortar coating shall be a reinforced coating over all outside surfaces of the pipe and specials. The coating shall be of a uniform thickness except at joints or other discontinuities in the pipe. Ends of coatings shall be left square and uniform and the coating holdback shall be as specified for the particular type of joint. Cement mortar coating thickness shall be as shown in Table 6.

Table 6
Cement Mortar Coating Thickness for Steel Pipe

Nominal Pipe Size (inches)	Coating Thickness (inches)	Tolerance (inches)
4 to 6	1/2	-0 + 1/8
8 to 10	3/4	-0 + 1/8
12 and above	1	-0 + 1/8

After inspection of welded joints and electrically bonded connections, the outside joint recess shall be coated.

Flanges shall be coated with Sanchem NO-OX-ID per Section 5.8 and in accordance with AWWA C205.

5.3.2.4 Electrically Bonded Connections

All unwelded steel pipe joints shall have jumper bond connections. Material and shape shall be as shown on Drawings or in Contract Documents.

5.3.2.5 Factory Tests and Inspection

The District Representative shall at all times have the right to inspect the work and

materials during the manufacturing process and to make or witness such tests as required in these specifications, or as deemed advisable. The Contractor will then perform any and all additional work required to assure the pipeline is electrically continuous. In lieu of the preceding, the Contractor shall upon request submit a certificate certifying the materials meet the requirements of this specification. All testing will be done in recognized testing laboratories within the State of California approved by the District Representative.

5.3.2.6 Fabricated Angles

Fabricated angles shall meet the requirements of AWWA C208. Except for butt strap closures, field fabricated fittings are not permitted unless approved by the District Representative.

5.3.2.7 Welded Joints

One of each section shall be swaged out to form a female or bell end which shall permit the male or spigot end to enter approximately 12 inches with a minimum clearance of 1/32-inch. The spigot end shall be "sized" to permit it to enter the bell end of the adjacent section and the weld bead shall be ground flush for the distance it is to enter the bell end.

5.3.2.8 Butt Strap Closures

The butt straps shall be the same thickness as the pipe wall but not less than six gauge, at least 10 inches wide with longitudinal seams, rolled to fit the outside cylinder diameter and shall be centered over the ends of the pipe sections they are to join. A standard five-inch steel coupling shall be welded to the top section of the butt strap to permit access for mortar lining the inside of the joint. The coupling shall be closed with a five-inch solid steel plug welded to the coupling.

5.3.2.9 Welding electrodes

Welding electrodes shall comply with the Standards of the AWS. After the joints have been welded, the joint shall be coated in the same manner as specified for rubber ring joints in Section 6.6.4.4.

5.3.2.10Shop Drawings

Shop drawings of all pipe and fittings shall be submitted to the District's Representative for approval prior to fabrication of the pipe and fittings. Pipe lay sheets shall be included, consisting of drawings of lay, identification of joints, horizontal and vertical angles and appurtenances. Stationing and elevation shall be shown on all joints, angles and appurtenances. Elevation shall consist of top of pipe and finished surface at these points. Format for shop drawings and lay sheets may be obtained from the District Representative. Such approval is an additional precaution against errors and is not to be construed as relieving the Contractor of the full responsibility for the accuracy of the shop drawings.

Fabricated angles shall meet the requirements of AWWA C208.

5.3.2.11Pipe Markings

Markings shall include a designation mark for each pipe or fitting furnished and field top shall also be indicated.

5.3.2.12Pipe Indicator Tape

Pipe indicator tape shall be 4.5-mil solid aluminum foil imprinted with the warning "CAUTION – WATER LINE BURIED BELOW" on both sides, completely encased to prevent ink rub-off. Tape shall be four inches wide and shall be blue with black ink per APWA standards.

5.3.3 Ductile Iron Pipe

5.3.3.1 Pipe

Ductile iron pipe shall conform to AWWA C151 for both quality and strength. Each pipe shall include the letters "DI" or word "DUCTILE" to indicate the pipe material. The standard nominal laying length shall be 18 or 20 feet. Random and short lengths shall be per AWWA C151.

5.3.3.2 Joints

Joints shall be of the rubber gasket push-on joint type conforming to the requirements of AWWA C111 unless otherwise specified. If required, the manufacturer shall supply a letter of certification attesting to their pipe meeting these specifications.

5.3.3.3 Service Line Taps

For 1-inch and 2-inch service line taps, service saddles are required. For larger sizes, contact the District representative. Tapping of the main pipeline is not allowed.

5.3.3.4 Lining and Coating

Unless otherwise approved, the internal surfaces shall be lined with a uniform thickness of cement mortar and then sealed with a bituminous coating in accordance with AWWA C104.

5.3.3.5 Pipe Indicator Tape

Pipe indicator tape shall be 4.5-mil solid aluminum foil imprinted with the warning "CAUTION – WATER LINE BURIED BELOW" on both sides, completely encased to prevent ink rub-off. Tape shall be four inches wide and shall be blue with black ink per APWA standards.

5.4 MAIN LINE FITTINGS

5.4.1 Gray-Iron and Ductile Iron Fittings

Fittings shall be cement mortar lined or epoxy lined and shall meet the requirements of AWWA C104, C110, C111, and C200. The pressure rating shall be as determined by the District Representative. This standard covers, but is not limited to, fittings with combinations of ends including mechanical joints, plain end, flanged, and push on

joints. The fitting types are as follows:

- 90° bend, 45° bend, 22½° bend, 11¼° bend.
- Tees, crosses, reducers, caps, plugs, connecting pieces, flanged bends, flanged tees, flanged crosses, flanged reducers.

Unless otherwise approved, the internal surfaces shall be lined and manufactured to exceed the minimum requirements of AWWA C151/ANSI A21.51-96.

Care must be exercised to not mix mechanical and flange joint ends since they will not mate.

5.4.2 Flanges

Per AWWA C206, C207 and C208, flanges shall be flat-faced and meet the requirements of AWWA C207 and should be AWWA standard steel hub flanges (these flanges meet ANSI B-16.5.) The flanges shall be marked with the size, name, and trademark of manufacturer and with the AWWA class, i.e., "E".

Flanges shall comply with the specifications shown in Table 7.

Table 7
Flange Specifications

Working Pressure (psi)	Specification	Class
0 – 275	AWWA C207 and ANSI B-16.5	E (flat face)
0 - 300	AWWA C207 and ANSI B-16.5	F (flat face)

Higher class flanges are required when necessary to match valves.

5.4.3 Above Ground Bolts and Nuts

Bolts and nuts for aboveground installations shall be cadmium plated and shall conform to ASTM A307, Grade B, when a ring gasket is used and shall conform to ASTM A193 when a full-face gasket is used. Bolts and nuts shall be heavy hexagon series. Nuts shall conform to ASTM A194 either in Grade 1, 2 or 2H. The fit shall be ANSI B1.1 Class 2, except that Class 3 fit shall be used in holes tapped for studs. Threads may be made either cutting or cold forming. Between 3-inch and 12-inch shall project through the nut when drawn tight. Bolts for underground installations shall be hot-dip galvanized. All buried bolts shall be completely coated with Sanchem NO-OX-ID or appropriate equal, which must be applied in two coats to a minimum thickness of 15 millimeters per coat.

5.4.4 Gaskets

Gaskets shall be of the full face gasket type, 1/16-inch thick where both flanges are flat; drop in gaskets may be used with prior District approval. Drop-in gasket type 1/16-inch may be used where a raised face flange is present.

5.4.4.1 Class "E" Flanges

Cloth-inserted rubber. Gaskets shall be suitable for a pressure of 350 psi at a temperature of 180 degrees F.

5.4.4.2 Class "F" Flanges

Acrylic or aramid fiber bound with nitrile. Products: Garlock Bluegard, or approved equal. Gaskets shall be suitable for a water pressure of 740 psi at a temperature of 100 degrees F. Gaskets shall comply with ANSI B16.20.

5.4.5 Flexible Couplings

Flexible couplings are designed to connect plain end pipes with a mechanical compression joint to provide a stress relieving, flexible, leak-proof joint. Their use must be approved by the District Representative prior to ordering/installing couplings. They can be ordered in steel or cast iron pipe sizes (note: C900 and C905 PVC pipe has same outside diameter as cast iron.) The couplings shall either be Romac XR501, Romac Macro HP, or approved equal.

5.4.6 Grooved-End Couplings

Grooved-end couplings shall be of the two-piece style housing, Victaulic Style 75, 77 or approved equal conforming to AWWA C606. Pipe shall be square cut grooved. Gasket shall be suitable for potable water. This type coupling shall not be used for burial service. Couplings shall be painted the same color as the pipe in accordance with Section 5.8.1 of these Standards.

5.4.7 Transition Couplings

Transition couplings are used to connect pipes of the same nominal size but different materials. Asbestos cement, steel, and PVC pipes can be connected to one another. Mechanical joint fittings and transition rubber gaskets are not accepted unless approved the District Representative.

5.4.8 Flanged Coupling Adapters

Flanged coupling adaptors are used to connect plain end pipe to flanged valves, pumps, meters, etc. They eliminate the need for both a flanged spool and coupling. Generally, they are available in sizes through 12 inches. Approved are Romac FCA501 or approved equal.

5.4.9 Insulating Couplings

Insulating couplings are used to stop the flow of electric current across the joint by means of an insulating boot. Approved are Romac IC501.

5.4.10 Special Steel Pipe Fittings and Fitting Dimensions

AWWA C200 and C208 cover special fittings, such as elbows, tees, crosses, reducers, etc., and should be consulted for a specific application. Compact fittings are not approved. The outside surface shall be protected with Sanchem NO-OX-ID per Section 5.8 herein.

Fitting dimensions shall conform to AWWA Specification C208, except that reducers shall consist of taper sections between six-inch minimum lengths of adjoining pipe. The taper shall be a minimum of 12 inches in length of each two-inch diameter change and the gauge shall be equal to that of the larger adjoining pipe. The diameter of the six-inch sections shall match the adjoining pipes and the gauge shall be sufficient to maintain a stress of not less than 15,000 psi at the designated working pressure and shall be not less than 10 gauge.

All special sections and fittings shall be fabricated in a shop by the manufacturer from District-approved shop drawings under the inspection of a District Representative. Except for butt strap closures, field fabricated fittings are not permitted unless approved by the District Representative.

5.4.11 Mechanical Restraint Joints

Restrained joint fittings shall be provided at all tees, crosses, reducers, bends, caps, plugs and valves such that the pipe is fully restrained in all directions.

These shall be Underwriter Lab (UL) approved through 12-inch for both ductile iron and PVC. The restraint mechanism shall consist of individually activated gripping surfaces to maximize restraint capability. Twist-off nuts, sized the same as the tee-head bolts, shall be used to insure proper activating of restraining devices. The gland shall be manufactured of ductile iron conforming to ASTM A536-80. The retainer-gland shall have a pressure rating equal to that of the pipe on which it is used through 14-inch with a minimum safety factor of 2:1. Approved manufacturers: Star Pipe Products, SIP Industries, and EBAA Iron Inc.

When it is necessary to restrain push-on joints adjacent to restrained fittings, a harness restraint device shall be used. All harnesses shall have a pressure rating equal to that of the pipe on which it is used through 14-inch. Harness assemblies including tie bolts shall be manufactured of ductile iron conforming to ASTM A536-80. Approved manufacturers: Star Pipe Products, SIP Industries, and EBAA Iron Inc.

5.5 MAIN LINE VALVES

5.5.1 Butterfly Valves

Butterfly valves per AWWA C504 shall be used for general waterline use when line pressure is less than 150 psi in lines larger than 12-inches or where required by the District.

Identification copper wire used for locating PVC pipe must be installed continuously

between successive valve boxes as described in Section 6.6.2.4.

5.5.1.1 General

Butterfly valves shall be tightly closing, rubber seated valves conforming to AWWA C504 except as herein modified. Valves shall be designed for tight shut-off with no water leaks when subjected to a maximum differential pressure across the disc of 150 psi.

5.5.1.2 Coating

The interior cast iron surfaces of valves, including the disc, shall be coated with 100 percent solids, catalytically setting epoxy which is manufactured for use in the interior of potable water systems and per Section 5.8. Valve bodies and operator corrosion housings shall be protected with Sanchem NO-OX-ID per Section 5.8 of these Specifications.

5.5.1.3 Operators

All valve operators shall be fully gasketed, weatherproofed and factory packed with grease. Operators shall be of the size required for opening and closing the valve against its design water pressure and shall have a torque rating not less than that shown in AWWA Specification C504.

The operator shall be capable of withstanding an input torque of 450 foot-pounds at extreme operator position without damage.

Buried operators shall be worm gear or screw type with counter-clockwise opening equipped with standard AWWA two-inch operating nuts. Operators shall be specifically designed and suitable for permanent buried service.

Operators for valves located above ground shall have disc-position indicators and hand-wheel or as specified.

5.5.1.4 Marking

The manufacturer shall show the manufacturer's name or mark, the year of manufacture, valve size and the designation of working pressure.

5.5.1.5 Approved Valves

Butterfly valves be from those listed in Table 8.

Table 8
Approved Butterfly Valves

Manufacturer	Pressure Class (psi)	Model No.
Mueller	150	Line seal III
Dezurik	150	
Dezurik	250	
AVK	150	816

5.5.1.6 Painting
All exposed metal surfaces of valves installed above ground or in vaults shall be painted per Section 5.8.1 and 6.15 of these Standards and in accordance with AWWA C105.

5.5.1.7 Valve Restraints
Valve restraints shall be used when installing push-on valves below ground. When placing thrust blocks around a fitting, the concrete must be around the fitting and not the joint.

5.5.1.8 Valve Stacks and Covers
Refer to Standard Detail SD-3. Christy Cover G3, Stack-8" SDR 35, or approved equal.

5.5.2 Gate Valve, Wedge and Resilient-Seated Gate Valves
Per AWWA, this specification pertains to above-ground valves three-inch and smaller and buried valves twelve-inches and smaller and shall be rated for the working pressure of the pipeline. When determined by the District Representative, high pressure wafer sphere butterfly valve or plug valve must be used regardless of main size.

Valves shall be tightly closing, rubber seated valves conforming to AWWA C500 and C509 except as herein modified. Valves shall be designed for tight shut-off with no water leaks when subjected to a maximum differential pressure across the disc of 200 psi.

Valves shall meet the requirements of AWWA C500, C509, and C550 specifications and shall be of the same size as the main in which they are installed.

All valves shall be counter-clockwise opening, non-rising stem type. Buried valves shall be equipped with two-inch square cast iron operating nuts. Valves located above ground or in vaults shall have a hand-wheel or as specified in the Contract Documents.

5.5.2.1 Coatings
The interior cast iron surfaces of valves shall be coated with 100 percent solids, catalytically setting epoxy which is manufactured for use in the interior of potable water systems and per Section 5.8 of these Standards. Valve bodies shall be protected with Sanchem NO-OX-ID per Section 5.8 herein.

5.5.2.2 Marking
The valve shall show the manufacturer's name or mark, the year of manufacture, valve size, and the designation of working pressure.

5.5.2.3 Approved valves
Gate valves shall be those listed in Table 9.

Table 9
Approved Gate Valves

Manufacturer	Pressure Rating (psi)	Model No.
Clow Resilient Wedge	200	2639-2640
Clow Resilient Wedge	250	2638
Mueller Resilient Wedge	200	A-2362
AVK Resilient Wedge	250	AVK 45/65

For higher pressure installations, contact the District Representative.

5.5.2.4 Painting
All exposed metal surfaces of valves installed above ground or in vaults shall be painted per Section 5.8 of these Standards and in accordance with AWWA C105.

5.5.2.5 Valve restraints
Valve restraints shall be used when installing push-on valves below ground. When placing thrust blocks around a fitting, the concrete must be around the fitting and not the joint.

5.5.2.6 Valve Stacks and Covers.
Refer to Standard Detail SD-3. Christy Cover G3, Stack-8" SDR35, or approved equal.

5.5.3 Tapping - Sleeves and Valves
When tapping pipe, no tapping shall be done less than two feet from a joint. Edge of sleeve must not be closer than 18 inches from a joint.

5.5.3.1 Valve Stacks and Covers.
Refer to Standard Detail No. SD-3. Christy Cover G3, Stack-8" SDR 35, or approved equal.

5.6 EARTHWORK

Earthwork shall be as listed in the Standard Specifications for Public Works Construction Latest Edition, by APWA.

Within the rights-of-way of the State Department of Transportation, the Ventura County Public Works Agency Transportation Department, the City of Ojai, and the City of Ventura, earthwork shall be in accordance with requirements and provisions of the permits issued by those agencies. Such requirements and provisions, where applicable, shall take precedence and supersede the provisions of these Specifications.

Disposal of any and all excavation materials is the responsibility of the Contractor, including compliance with the requirements of all agencies having jurisdiction.

5.6.1 Pipe Zone
The pipe zone shall include the full width of trench from four inches below the bottom of the pipe or conduit to a horizontal level 12 inches above the top of the pipe per Standard Detail SD-1.

5.6.2 Sheeting, Shoring and Bracing of Trenches
Trenches shall have sheeting, shoring, and bracing conforming to the latest Cal-OSHA requirements. Shoring plans must be prepared and stamped by a Professional Engineer registered in the State of California.

5.6.3 Imported Sand – Pipe Zone and Pipe Bedding
Imported sand used in the pipe zone and for the pipe bedding shall consist of natural or manufactured granular material, or a combination thereof, free of deleterious amounts of organic material, mica, loam clay, rocks and other substances not suitable for the purpose intended. Imported sand shall be graded such that 100% passes 3/8" sieve and 0 - 10% passes No. 200 sieve. Sand shall have a sand equivalent of not less than 50 per ASTM D2419.

5.6.4 Rock Fill for Foundation Stabilization
Rock fill shall be crushed or natural rock containing less than one percent asbestos by weight or volume.

5.6.5 Native Earth Backfill – Trench Zone
In the absence of stricter requirements, the material above the pipe zone may be native material that does not contain rocks larger than three inches and shall be so graded that at least 40 percent of the material passes a No. 4 sieve. The Contractor may use imported sand in the trench zone, provided there is no additional cost to the District.

5.6.6 Special Slurry Backfill
For pipelines which are laid in an already paved street, the backfill required above the pipe zone may be a one sack slurry mix in lieu of compacted soil backfill.

5.6.7 Asphalt Concrete Paving
Asphalt concrete paving shall conform to Class B-AR-4000 (for the Structural Section) and C2-AR-4000 (for the cap) as listed in the Standard Specifications for Public Works Construction Latest Edition, by APWA.

Within the rights-of-way of the State Department of Transportation, the Ventura County Public Works Agency Transportation Department, the City of Ojai, and the City of Ventura, asphalt concrete paving shall be in accordance with requirements and provisions of the permits issued by those agencies. Such requirements and provisions, where applicable, shall take precedence and supersede the provisions of these Specifications.

5.7 CONCRETE AND MORTAR WORK
Concrete work shall be in accordance with the Standard Specifications for Public Works

Construction Latest Edition, by APWA.

Within the rights-of-way of the State Department of Transportation, the Ventura County Public Works Agency Transportation Department, the City of Ojai, and the City of Ventura, concrete and mortar work shall be in accordance with requirements and provisions of the permits issued by those agencies. Such requirements and provisions, where applicable, shall take precedence and supersede the provisions of these Specifications.

5.7.1 Design Criteria

Concrete for thrust blocks, pipe, and pump can encasement, and other unreinforced concrete, shall contain not less than five sacks of Portland cement per cubic yard and attain a strength not less than 2,000 psi at 28 days.

5.7.2 Cement Mortar Lining and Coating (CMLC).

Unless otherwise approved or as revised below, all steel pipe shall be mortar lined and coated in accordance with AWWA C205, which covers shop applied lining and coating, per main line pipe materials.

Ends of lining shall be left square and the lining holdback shall be as specified for the particular type of joint.

5.7.3 Concrete Admixtures

Concrete admixtures shall be as specified in the Contract Documents or shown on the Drawings.

Do not use any accelerating water-reducing admixture or any other type of admixture that contains chlorides or other corrosive elements in any concrete without prior District Representative approval.

To prevent segregation and improve workability, or to cause an increase in strength, a reduction in mixing water will be permitted when approved in writing by the District's Representative. Only admixtures which reduce shrinkage by at least 10 percent and are not lignin are permitted. Admixtures will not be permitted in a concrete mixture placed contiguous to steel water line piping and appurtenances.

5.7.4 Reinforcing Steel

Where specified, reinforcing bars shall be Deformed Billet-Steel Bars for Concrete Reinforcement, ASTM A615 unless otherwise noted.

5.7.5 Embedments

The Contractor shall furnish all embedments required for proper installation of accessories or equipment specified in the Contract Documents or shown on the Drawings.

5.7.6 Forms

Forms for exposed interior and exterior concrete shall be plastic coated, edge sealed plywood. All sharp edges shall be chamfered with 3/4-inch by 3/4-inch triangular fillets.

5.7.7 Curing Compound

Curing compound shall conform to ASTM C309.

5.8 PAINTING

This section covers the paint materials. "Painting" as it relates to construction is discussed in Section 6.15. Painting materials shall comply with AWWA D102.

Exterior surfaces of all buried metal (except bronze) shall receive two coats of Sanchem NO-OX-ID, 15 mils each.

The interior of valves, with the exception of bronze and working parts (see exceptions below), shall be coated with 100 percent solids, catalytically setting epoxy which is manufactured for use in the interior of potable water systems. The fusion method of coating 100 percent solid epoxy is acceptable. The two components shall be of different colors to aid in complete mixing. The epoxy lining shall be factory applied and field applications will not be allowed.

Exceptions to the above policy for interior coating require written District approval in advance of delivery to the job site.

5.8.1 Steel, cast iron and other bitumen coated metals

Above-ground facilities and/or facilities in vaults shall be primed in accordance with the Contract Documents and finish coats of Rust-oleum, or as approved for the particular installation. Table 11 shows the coating requirements for potable water facilities.

Table 11
Coating Requirements for Potable Water Facilities

Facility	Finish Coat
Line Valve Stack Cover	Rust-oleum Sunrise Red
Closed Valve Stack Cover (Zone Valve)	Rust-oleum Sunrise Red
Fire Hydrant Valves Stack Cover and Fire Hydrant Body	Rust-oleum Safety Yellow
Blow-off Valve Stack Cover	Rust-oleum Metallic Aluminum
By-Pass Valve Stack Cover	Rust-oleum Metallic Aluminum

Table 11
Coating Requirements for Potable Water Facilities

Facility	Finish Coat
Detector Check Meter Piping and Valves	Meter Piping – as determined by District Representative; Valves - Rust-oleum Safety Yellow
Master Meter Piping and Valves	Meter Piping – as determined by District Representative; Valves - Rust-oleum Metallic Aluminum
Combination Air Release Can	Rust-oleum Safety Yellow
Guard Post	Rust-oleum Metallic Aluminum
Bottom and Top of Lid(s)	Hot dipped Galvanized
Ladder	Rust-oleum Metallic Aluminum
Bolts and Nuts	Sanchem NO-OX-ID

5.9 SERVICE LINE MATERIALS AND FITTINGS

The materials covered in this section include the service saddle, service line pipe, corporation stop and angle meter stop inside the meter box. Where specific manufacturers' products are listed, it should be understood that other products which are equivalent may be used if approved in writing by the District. The minimum service line size is one inch.

Water meter types and manufacturers will be selected by the District. Table 12 shows requirements for service line materials and fittings.

Table 12
Service Line Materials and Fittings

Service Line	Meter Size	Corp Stop Inlet	Corp Stop Outlet	Mfr	Type
1-inch	¾- and 1-inch	MIP Thread	Compression or MIP Thread	Ford or Mueller	FB1100-4-Q-NL, F500-4NL,B-25028N, B-20013N
2-inch	1½- and 2-inch	MIP Thread	Compression or MIP Thread	Ford or Mueller	FB1100-6-Q-NL, FB1100-7-Q-NL B-25025N, B-25028N

5.9.1 Copper Pipe

Copper pipe material shall be used for all service lines from one-inch through two-inches. The pipe shall be Type K soft copper tubing for 1-inch service lines and Type K-

2 hard for 2-inch service lines, made in the USA. Solder fittings shall be soldered with solder containing no lead; instead, it shall be a blend of copper, phosphorous, and silver. Service lines are to receive backfill of imported sand within the pipe zone in accordance with Standard Details SD-11 and SD-12.

5.9.2 Service Saddles

These shall be of the double-strap type made of bronze with bronze nuts. The thread shall be female iron pipe thread. They shall be as shown in Table 13.

Table 13
Approved Tapping Saddles

Main Material	Manufacturer	Type
Ductile or AC	Ford	202B
Ductile or AC	Mueller	BR2B
PVC	Ford	202BS
PVC	Mueller	BR2S
Steel, Schedule 40 and Schedule 80	Ford	FC202
Steel	Forged Steel 3000#	Threadolet

5.9.3 Hot Tapping

Hot taps on steel mains must use reinforcement collars when the diameter of the branching pipe is less than half the main pipe diameter. When the branching pipe equals or exceeds half the pipe diameter, a full wrap saddle shall be used.

Hot taps of one-inch through two-inch on steel main must use a 3,000-pound steel coupling. Tapping sleeves must comply with AWWA C223. Approved tapping sleeves are Romac SST.

The effective shoulder width (W) of collars or wrappers from the inside surface of the steel riser to the outside edge of the collar or wrapper measured on the surface of the cylinder shall be not less than one-third nor more than one-half the inside diameter of the steel riser. The thickness of the collar or wrapper shall be not less than T as determined by:

$$T = \frac{(P_w)(ID\ cyl)(ID\ riser)}{36{,}000\ (W)}$$

where P_w is the design class in pounds per square inch and other dimensions are in inches.

5.9.4 Abandonment of Water Service Lines

Where shown on the Drawings or directed by the Engineer, abandon existing water service lines, 2 inch and smaller, at the corporation stop while main line is pressurized. Where making abandonments at existing corporation stops, shut the corporation stop, remove the service line from the corporation stop and cap corporation stop with the

appropriate threaded cap or plug, approved by District. If the water service line cannot be removed without damaging the existing corporation stop and/or creating a leak, the water service line shall be cut off at the existing corporation stop and sealed with silver solder. Nut on the bottom of the existing corporation stop, if present, shall be completely tightened. If the existing corporation stop leaks when fully closed or after being tightened, the existing corporation stop shall be completely plugged as approved by the District.

Where shown on the Drawings or directed by the Engineer, abandon existing water service lines, 2 inch and smaller, at the corporation stop while main line is de-pressurized. Where making abandonments at existing corporation stops, remove the corporation stop, and plug the existing saddle with the appropriate threaded plug, approved by the District. If the corporation stop is directly tapped into the main, remove the existing corporation stop and seal opening with a full circle clamp, approved by District.

5.9.5 Corporation Stops

Corporation stops shall be bronze.

5.9.6 Angle Meter Stops

Angle meter stops shall be bronze. Table 14 shows the requirements for angle meter stops.

Table 14
Angle Meter Stops

Service Line	Meter Size	Angle Meter Stop	Inlet Side	Outlet Side	Mfr	Type
1-inch	¾- and 1-inch	MIP Thread	FIP Thread	Compression or MIP Thread	Ford or Mueller	KV-13-332-W-NL KV-13-444-W-NL H-14265N
2-inch	1½- and 2-inch	MIP Thread	FIP Thread or Compression	Compression or MIP Thread	Ford or Mueller	FV13-666-W-NL FV13-777-W-NL B-24276N

5.9.7 Angle Meter Stop Adapters

Angle Meter Stop Adapters shall be as shown in Table 15.

Table 15
Angle Meter Stop Adapters

Size	Inlet	Outlet	Manufacturer	Type
¾-inch	Compression	MIP Thread	Ford	C84-33-Q-NL
1-inch	Compression	MIP Thread	Ford	C84-44-Q-NL
1 ½ -inch	Compression	MIP Thread	Ford	C84-66-Q-NL
2-inch	Compression	MIP Thread	Ford	C84-77-Q-NL

5.9.8 Customer Hand Valves

Customer hand valves shall be bronze ball valves with a customer handle. The outlets are always female iron pipe threads. Table 16 shows the requirements for customer hand valves.

Table 16
Customer Hand Valves

Meter Size	Inlet	Outlet	Manufacturer	Type
3/4-inch	Meter Swivel	FIP	Ford	B13-332W-HB34S-NL
1-inch	Meter Swivel	FIP	Ford	B13-444W-HB34S-NL
1-1/2-inch	Flanged	FIP	Ford	BF13-666W-NL
2-inch	Flanged	FIP	Ford	BF13-777W-NL

5.9.9 Meter Boxes

Table 17 shows the requirements for 3/4", 1", 1½", and 2" meters.

Table 17
Meter Boxes

Meter Size	Manufacturer	Box Model Number	Cover Model Number
5/8", 3/4" or 1"	Old Castle	FL12	FL12D
1½" or 2"	Old Castle	FL36	FL36D

For larger meter sizes and traffic-rated meter boxes, contact the District Representative.

Meter boxes shall be set as shown in Standard Detail SD-11. District crews will install the meter.

5.9.10 Double Check Valves

Double check valves shall be provided and installed per details shown on Contract Documents.

5.9.11 Fire hydrants

Fire hydrants shall be wet barrel type meeting AWWA C503 and have a six-inch flanged inlet with one 2½ -inch and one four-inch valved outlet with National Standard fire hose threads.

Fire hydrants at or near street intersections shall be located inside the intersection valving and located at the curb return. Fire hydrants located between intersections must

be located on property lines. For typical installation refer to Standard Detail SD-9.

Other hydrant requirements are:

- The outlets shall be protected with plastic or metal caps attached to the hydrant head with a chain.
- Hydrant flanges shall contain eight equally spaced bolt holes for static pressures under 200 psi and 12 equally spaced bolt holes for static pressures greater than 200 psi.
- All hydrants shall be permanently marked with the manufacturer's name and the year of manufacture.
- Hydrant lateral shall be PVC as shown on Standard Detail SD-9.
- Hydrant valve shall be a six-inch valve with flange by push on ends for PVC pipe. The District Representative may require a break-off check-valve depending on site conditions.
- Painting shall be per Section 5.8 and 6.15 of these Standards.
- Spool shall be used between the bury/ell and fire hydrant. Spools generally are available in 30", 36", 42" and 48" lengths. An approved product is Tyler.
- Hydrant burys for PVC pipe shall be a six-inch inside diameter and made of cast iron conforming to ASTM A126. The burys shall be one piece with the top having a flange drilled with holes to receive the extension spool or hydrant. The bottom shall have a 90° bend end for meeting the horizontal pipe. In the event the hydrant lateral is PVC then the bury end shall be a push on joint fitting. Burys are generally available in 30", 36", 42" and 48" lengths. An approved product is "Tyler Hydrant Burys."

5.9.11.1Bolts

Alloy steel break-off (shear) bolts shall be used to attach the fire hydrant to the extension spool. Buried bolts and nuts shall be hot dip galvanized coated with Sanchem NO-OX-ID per Section 5.8 herein.

5.9.11.2Mains to Fire Hydrants

Separate lines used only for fire hydrants shall be a minimum of six inches in diameter. Actual size to be determined by the District Representative.

5.9.11.3Approved Fire Hydrant Assemblies

Table 18 shows approved fire hydrant assemblies.

Table 18
Fire Hydrant Assemblies

Manufacturer	Classification	Model
Jones	Residential	4040
	Commercial	4060
	Industrial	4065
Clow	Residential	850
	Commercial	860
	Industrial	865

5.9.12 Combination Air Release Assemblies

For typical installation refer to combination air release assembly Standard Detail SD-5.

The combination air release assembly has the features of an air release valve and an air and vacuum valve. Both units shall be housed in a cast iron body and all internal parts such as the float, bushings, level pins, seat and baffle shall be either stainless steel or brass as furnished by the manufacturer. All assemblies shall be rated at 300 psi maximum operating pressure.

Air and vacuum valves are to be connected to the high point of the main lines. Air and vacuum valves at or near street intersections must be located inside the intersection valving where practical and located at the beginning or end of curb return. Air and vacuum valves located between intersections must be located on property lines.

Approved air and vacuum assemblies are as shown in Table 19.

Table 19
Air and Vacuum Valve Assemblies

Size	Valve No.
ARI	
1”	D040
2”	D040
Vent-O-Mat	
3”	Series RBX
4”	Series RBX
Crispin	
1”	UL10
2”	UL20
APCO	
1”	143C
2”	145C

5.9.13 Blow-off Assemblies.

Blow-offs shall be wet barrel type meeting AWWA C503 and have a four-inch inlet. Blow-offs shall have one 2½ -inch valved outlet with National Standard fire hose threads. For typical installation refer to Standard Detail SD-7.

The outlet shall be protected with a cap attached to the hydrant head with a chain.

All blow-off valves shall be permanently marked with the manufacturer's name and the year of manufacture.

Separate lines used only for blow-offs shall be a minimum of four inches in diameter. Actual size to be determined by the District.

Blow-off valve shall be a four-inch flanged gate valve flange.

6 CONSTRUCTION

6.1 General Requirements

This section describes the use of materials and workmanship to be employed in construction of the water system. The developer/engineer shall prepare such general and special specifications as are necessary to define the nature and location of the work, contractual arrangements, payment for work and any other matters concerning the Owner or Contractor; these items are not discussed within the standards presented here.

In accordance with the provisions of California Business and Professions Code Section 7059, the District requires the Contractor be licensed in the State of California and possess a Class A or C-34 license.

The construction section is intended to highlight the features of construction which are deemed to be most significant. In any construction activity, the recommendations of the manufacturer of a product, especially where more stringent, should apply.

Specific references which are incorporated into this section include:

- AWWA C206 Field Welding of Steel Pipes.
- AWWA C600 Installation of Ductile Iron Mains and their Appurtenances
- AWWA C602 Cement Mortar Lining of Water Pipelines in Place – 4 in. and Larger
- AWWA C604 Installation of Buried Steel Water Pipe – 4 in. and Larger
- AWWA C605 Underground Installation of Polyvinyl Chloride (PVC) and Molecularly Oriented Polyvinyl Chloride (PVCO) Pressure Pipe and Fittings
- AWWA C900 Polyvinyl Chloride (PVC) Pressure Pipe, four inches through 12 inches.

- AWWA C905 Polyvinyl Chloride (PVC) Pressure Pipe, 14 inches through 36 inches.
- AWWA Manual M11 Steel Pipe - Design and Installation.
- AWWA Manual M17 Installation, Operation and Maintenance of Fire Hydrants.
- AWWA Manual M23 PVC Pipe - Design and Installation.

Section 5 of these Standards contains material descriptions. The Contractor should use that section along with this section and the respective Standard Details as a reference.

6.1.1 Protection/Operation of Existing Water System

A primary concern of the District is the protection and operation of the existing water system. No Contractor is allowed to operate any existing water valves or to cause a shutdown of any portion of the District's water system without prior approval from the District.

Following approval from the District, any operation of valves in a planned shutdown will be done by the District. Any planned shutdown shall be discussed at the preconstruction meeting and at least three weeks in advance of a planned shutdown. Shutdowns will only be allowed if no other reasonable alternative exists, such as the use of a hot-tap connection in lieu of a cut-in tee. When shutdowns are required in a part of the District's system, the District will evaluate whether the shutdown should be done during the day or at night. Contractor economics shall be weighed less heavily in the decision than the interruption and inconvenience to existing customers. Any shutdown shall involve a thorough notification plan for existing customers as well as the provision of a temporary highline, bottled water, water tanks, etc. where appropriate, at no expense to the District.

6.1.2 Quality of Materials.

Materials and equipment to be incorporated into the work shall be new and unused. In case a reference is not clear as to which of several available grades is desired, the highest quality material shall be used.

Contractor shall have at the job site or be able to supply upon request, shop drawings, and certified copies of factory or laboratory test reports showing the strength characteristics of any materials used in the work. For all reinforced concrete work, Contractor shall furnish in advance of placing concrete, the mix design and calculated concrete strength as prepared by the concrete supplier.

The Contractor's attention is called to the time required for obtaining certain materials and equipment to be furnished. It shall be the responsibility of the Contractor to promptly place orders for items of extended delivery times.

6.1.3 Construction Water

All water used for construction shall be metered. The Contractor shall apply at the District's headquarters office for one or more construction meters. After receipt of a

deposit amount, the District will install the meter at the fire hydrant location approved by the District. Upon request and approval by the District Representative, the District will move the hydrant meter to another location. The Contractor is not to move the construction meter(s). Charges for construction water are covered by the District's Rates and Regulations for Water Service. Unpaid invoices will result in removal of the construction meter.

6.1.4 Substitutions

Where articles or materials are specified by brand or trade name, alternate materials or articles equal to those specified may be approved provided the request for approval is in writing accompanied by supporting data and received in ample time to permit investigations without delaying the work. Unless substitutions have received prior approval, no deviation from the Standards is allowed.

6.1.5 Quality of Workmanship

All work will be done by persons experienced in the specific work, under competent supervision, and in a first class manner to the District's complete satisfaction.

6.1.6 Supervision and Superintendence

The Contractor shall designate and keep on the work a competent superintendent, who shall not be replaced without written notice to the District's Representative, at all times during its progress. 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, the Owner's Representative may desire to inform the foreman or other worker in charge of the particular part of the work to whom the given information is relevant. Information so given shall be as binding as if given to the superintendent.

6.1.7 Defective Work

Any defective materials or workmanship which shall become evident within one year after acceptance of completed work shall be replaced or repaired without cost to the District. The District has the right to bring legal action to correct the deficiencies as well as to withhold exoneration of performance bonds.

6.1.8 District Inspection, Field Acceptance and Guarantee Period

Whether expressly indicated on the Drawings or not, all Contractors shall call the Underground Service Alert prior to any excavation. Failure to do so shall not relieve the Contractor of any liability associated with disturbance/breakage of existing utilities. The District will inspect all pipe installation including appurtenant structures and trench backfill within the pipe zone. The Contractor must provide five working days' notice to the District Representative prior to the start of any work. Such notification will allow for

scheduling a preconstruction meeting between interested parties. Failure to provide proper notification may delay the starting date since the District Representative may not be able to inspect the work and cannot accept any work for which inspection has not been arranged.

The District's Representative shall at all times have access to the work during construction to inspect the progress, workmanship, and materials used in the work.

Whenever the Contractor varies the normal period during which work or any portion of it is carried on each day, 48 hours' notice shall be given to the District's Representative so the Representative may be present to observe the work in progress. If the Contractor fails to give such notice, any work done in the absence of the District's Representative will be subject to rejection.

The Contractor shall give 48 hours' notice to the District's Representative in advance of backfilling or otherwise covering any part of the work so the District's Representative may observe such part of the work before it is concealed.

The observation, if any, by the District's Representative of the work shall not relieve the Contractor of any obligations and the primary responsibility for compliance with all District requirements and standards rests with the Contractor.

Defective work shall be made good, and materials and equipment furnished and work performed which is not in accordance with the Contract Documents may be rejected notwithstanding the fact such materials, equipment and work were previously observed by the District's Representative or that payment therefore was included in an estimate for payment.

Field acceptance is made by the District Representative and will not coincide with the date of the District Board of Director's acceptance of the work. However, the one-year guarantee period for all work shall begin as of District Board of Director's acceptance. Any defective work discovered during this period shall be repaired or replaced. A new one-year guarantee period will begin for such corrected work.

6.1.9 Public Relations.

The Contractor shall conduct its affairs in a manner which will lessen the disturbance to residents in the vicinity of the work. In this regard, formal working period shall be 8:00 a.m. to 4:30 p.m., Monday through Friday, excluding District holidays, unless prior written approval is received from the District. For updated schedule of holidays contact the District Representative. Inspections requested by or made necessary as a result of the actions of the Contractor outside the normal working period or on Saturdays, Sundays, or District holidays must be scheduled and approved in advance by the District. All costs for the required inspections outside the normal working period shall be the responsibility of the Contractor with payment agreed to by the Contractor in advance of the inspection at the rate established by the District.

The Contractor shall provide a minimum 48-hour written advance notice to the District Representative for all work anticipated outside the normal working period with payment agreed to by the Contractor in advance.

6.1.10 Sanitation

The Contractor shall provide and maintain enclosed toilets for the use of employees engaged in the work. These accommodations shall be maintained in a neat and sanitary condition.

6.1.11 Cleanup and Dust Control

Throughout all phases of construction, including suspension of work, and until final acceptance of the project, the Contractor shall keep the work site clean and free from rubbish and debris. The Contractor shall also abate dust nuisance by cleaning, sweeping and sprinkling with water, or other means as necessary. The use of water resulting in mud on public streets or District grounds will not be permitted as a substitute for sweeping or other methods. Their supply and application shall be at no expense to the District.

Materials and equipment shall be removed from the site as soon as they are no longer necessary; and upon completion of the work and before final inspection, the entire work site shall be cleared of equipment, unused materials and rubbish so as to present a satisfactory, clean and neat appearance.

Care shall be taken to prevent spillage on haul routes. Any such spillage shall be removed immediately and the area cleaned.

6.1.12 Observation of Work by Public Agencies

The Contractor is responsible for procuring, scheduling and coordinating all observations/inspections by Public Agencies as required by their respective permits and governing codes. The District's Representative shall be notified in writing, 48 hours in advance, of such scheduled inspection, and shall have the opportunity to be present during the inspection.

6.1.13 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 District’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.

6.1.14 Traffic Control Devices and Signs

Within the rights-of-way of the State Department of Transportation, the Ventura County

Public Works Agency Transportation Department, the City of Ojai, and the City of Ventura, construction shall be in accordance with requirements and provisions of the permits issued by those agencies. Such requirements and provisions, where applicable, shall take precedence and supersede the provisions of these Specifications.

Construction signing, striping, barricades and other traffic control devices used for handling traffic and public convenience shall conform to the latest edition of the State of California, Department of Transportation, "Manual of Traffic Controls for Construction and Maintenance Work Zones" at no expense to the District. Signs shall be illuminated or reflectorized when they are used during hours of darkness. Provide cones, pylons, barricades or posts used in the diversion of traffic with flashers or other illumination if in place during hours of darkness at no expense to the District.

Maintain a 24-hour emergency service to remove, install, relocate and maintain warning devices and furnish to the authority having jurisdiction names and telephone numbers of three persons responsible for this emergency service. In the event these persons do not promptly respond or the authority having jurisdiction deems it necessary to call out other forces to accomplish emergency service, the Contractor will be held responsible for the cost of such emergency service.

6.2 PERMITS

The following permits may be required of the Contractor:

6.2.1 Encroachment.

Within the rights-of-way of the State Department of Transportation, the Ventura County Public Works Agency Transportation Department, the City of Ojai, and the City of Ventura, encroachment shall be in accordance with requirements and provisions of the permits issued by those agencies. Such requirements and provisions, where applicable, shall take precedence and supersede the provisions of these Specifications.

All approvals must be obtained from local agencies prior to mobilizing/beginning of work, e.g. approved encroachment permit.

6.2.2 Easements.

Contractor shall comply with any terms, conditions, limitations, or other provision contained in any temporary or permanent easements issued to the District.

6.3 UTILITIES AND EXISTING FACILITIES

6.3.1 Utilities and Existing Facilities

Whether expressly indicated on the Drawings or not, all Contractors shall call the Underground Service Alert prior to any construction of pipelines. Failure to do so shall not relieve the Contractor of any liability associated with disturbance/breakage of existing utilities.

In case it shall be necessary to remove and or relocate any such utilities, facilities or

any portions thereof, the Contractor shall notify the District and authorized agent of the owner of the utility and/or facility so affected. The Contractor shall not interfere with said utility and/or facility structures until disposition of the obstruction to the work is determined and/or notice to relocate or remove is given by the District or authorized agent of the owner of the utility and/or facility so affected.

Any existing utility or facility, shown or not shown on the Drawings, inadvertently damaged during excavation shall be repaired by the Contractor at no expense to the District.

The fact that any underground utility and/or facility is not shown on the Drawings shall not relieve the Contractor's responsibility to comply with these standards. It shall be the Contractor's responsibility to ascertain, prior to commencing work, the existence of any underground utilities or facilities which may be subject to damage by reason of Contractor's operations.

6.3.2 Separation Requirements for Water and Wastewater Lines

California Waterworks Standard (Title 22, Chapter 16, Article 4, Section 64572) for separation of water and wastewater lines shall be followed. In the event special permission is needed, it shall be the Owner's responsibility to attain such written approval from the Division of Drinking Water and the District prior to construction.

6.4 EARTHWORK/CLEARING AND GRUBBING

6.4.1 General

Earthwork shall include all necessary clearing, grubbing, grading, excavation, backfilling, compaction and cleaning up debris.

Included is controlling water, bracing excavations, stabilizing subgrade, protecting existing structures and facilities and such supplementary operations as are necessary to properly complete the entire work indicated or specified.

6.4.2 Obstructions

The Contractor's attention is directed to the possible existence of pipe and other underground improvements which may or may not be shown on the Drawings. The Contractor shall preserve and protect any such improvements whether shown on the Drawings or not. Where it is necessary to remove and replace or to relocate such improvements in order to prosecute the work, they shall be removed, maintained and permanently replaced by the Contractor.

6.4.3 Oak Tree Ordinance

The Owner and the Contractor must be aware of local oak tree ordinances which govern the protection, trimming, and removal of oak trees, as well as the limits of construction around oak trees. In general, any work under or within the protected zone of an oak tree may be subject to special requirements, with which the Owner and/or Contractor must comply.

6.4.4 Working Area

Except for specified off-site construction, all earthwork shall be confined strictly within site property lines or limits described in the Contract Documents and/or shown on the Drawings.

6.4.5 Clearing and Grubbing

All vegetation, such as roots, brush, heavy sods, heavy growth of grass and all decayed vegetable matter, rubbish and other unsuitable material within the area of the work shall be stripped or otherwise removed prior to starting excavation and backfill.

6.4.6 Grading and Stockpiling

The Contractor shall control grading in a manner to prevent water running into excavations. Obstruction of surface drainage shall be avoided and means shall be provided whereby stormwater can flow uninterrupted in existing gutters, other surface drains, or temporary drains. Material for backfill or for protection of excavation in public roads from surface drainage shall be neatly placed and kept shaped so as to cause the least possible interference with public travel. Free access must be provided to all fire hydrants, water valves, meters, and private drives.

6.4.7 Imported Backfill Material

Whenever the excavated material is not suitable for backfill, the Contractor shall furnish suitable imported backfill material.

6.4.8 Relative Compaction

Relative compaction specified herein shall be a percentage of the maximum density at optimum moisture content as determined by AASHTO Test No. T180-57 Modified. Unless otherwise specified, the relative compaction for earthwork in open fields shall be 90%. In populated areas and in public and private roads and driveways the relative compaction shall be minimum 90%.

6.4.9 Compaction Tests

Compaction tests for Owner-installed facilities will be made at no cost to the District by an approved laboratory in accordance with ASTM D1557 or better. The number of tests and their location and depth shall be determined by the District's Representative. The Contractor shall make all necessary excavations for compaction tests as directed by the District's Representative and shall refill and recompact these excavations to the densities as specified herein.

For District capital projects, the District will retain a geotechnical firm to perform compaction testing. If the initial compaction test does not meet the specifications, the Contractor shall be billed for subsequent compaction tests until the specifications are met.

In all cases, compaction test results shall be submitted in writing tp the District Representative prior to testing for pipe and joint leakage.

6.4.10 Correction of Faulty Grades

Where excavation is inadvertently carried below subgrade and/or foundation elevations, it shall be rectified by backfilling with approved sand, compacted to structural standards and/or one sack slurry as directed by the District's Representative, all at the expense of the Contractor.

6.4.11 Soil Sterilant

The Contractor shall treat the finished subgrade of specified areas with an approved soil sterilant. All paved embankments, walkways, drainage structures, parking, and road areas require soil sterilant. The sterilant shall be applied in accordance with the manufacturer's directions and local environmental regulations.

6.4.12 Final Clean-up

After backfill has been completed, the site shall be dressed smooth and left in a neat and presentable condition, free of all cleared vegetation, rubbish and other construction wastes.

6.4.13 Seeding

The Contractor is required to scarify and seed the ground at locations along the pipeline where the native vegetation has been destroyed by construction operations and at other areas where seeding is determined to be necessary by the District's Representative. The areas shall be seeded with a District-approved mixture.

6.5 EXCAVATION AND TRENCHING

6.5.1 Safety Precautions

All excavations shall be performed, protected and supported as required for safety and in the manner set forth in accordance to the latest rules, orders and regulations prescribed by the State of California Department of Industrial Relations, Division of Industrial Safety “Construction Safety Orders.”

Shoring plans must be prepared and stamped by a Civil Engineer registered in the State of California, whose license is currently in effect.

6.5.2 Alignment and Grades.

Trench depth shall be adequate to accommodate the pipe and its foundation at the profile shown on the Drawings. In the absence of such profile grade, the top of pipe grade shall be located three (3) feet below the existing street grade or existing ground. The measurement of the depth shall be at the trench centerline.

When the natural ground above the pipeline trench is over excavated and/or the pipeline is to be placed in new excavation, excavation material shall be placed and compacted to an elevation of not less than three feet above the top of pipe prior to trench excavation.

6.5.3 Foundation in Poor Soil

Where rock excavation is required, the rock shall be excavated to a minimum over depth of six (6) inches below the trench depths indicated on the Drawings or in the Contract Documents. Overdepths in the rock excavation and unauthorized overdepths shall be backfilled with the same material as the bedding zone. Whenever wet or otherwise unstable soil incapable of properly supporting the pipe as determined by the District Representative is encountered in the bottom of the trench, such soil shall be removed to the depth required and the trench backfilled to the proper grade with an appropriate material between a course sand and a crushed rock to provide a stable foundation.

The necessity of replacing unsuitable material at depths of more than two feet below bottom of pipe grade will be determined by the District's Representative. If the necessity for such additional removal and replacement was occasioned by an act or failure to act on the part of the Contractor, it shall be rectified by backfilling with approved sand compacted to structural standards and/or one sack slurry as directed by the District's Representative.

6.5.4 Trench Width

The width of the trench within the pipe zone shall be such that the clear space between the barrel of the pipe and the trench wall complies with the Standard Detail SD-1. In general, the widths shown in Table 20 shall be adhered to.

Table 20 – Trench Widths

	Trench Width	
Nominal Diameter	**Minimum**	**Maximum**
6" - 12"	O.D. + 6"	O.D. + 9"
14" - 30"	O.D. + 9"	O.D. + 12"

Trench widths in excess of those shown may be as wide as necessary if for the explicit purpose of installing sheeting and bracing during the performance of the work.

6.5.5 Pipe Subgrade

The trench bottom shall have a flat or semi-circular cross section. The bottom of the trench shall be graded and prepared to provide a firm and uniform bearing throughout the entire length of each joint except for required "bell holes" at joints.

Foundations in poor soil where rock and soft spongy and deleterious material exists shall be removed.

6.5.6 Dewatering

The Contractor shall comply with the requirements of the Los Angeles Regional Water

Quality Control Board Order No. R4-2013-005, General NPDES Permit No. CAG994004 Waste Discharge Requirements for Discharge of Groundwater from Construction and Project Dewatering to Surface Waters in Coastal Watersheds of Los Angeles and Ventura Counties, or most recent General Permit.

The Contractor shall provide and maintain at all times during construction ample means and devices with which to promptly remove and properly dispose of all water from any source entering the excavation or other parts of the work.

To ensure a firm, unyielding excavation and preservation of the final line and grade of the bottom of excavation, dewatering shall be continuous until such times as water can be allowed to rise.

The Contractor shall dispose of the water from the work in a suitable manner without damage to adjacent property. No water shall be drained into work built or under construction without prior consent of the District's Representative. Water shall be disposed in such a manner as not to be a menace to the public health.

6.6 PIPE BEDDING AND LAYING FOR PVC, DI, AND STEEL PIPE

6.6.1 General

This portion of the work includes the furnishing and installation of all materials and their proper assembly to result in a first class waterline installation true to line and grade and free from leaks, cracks and obstructions.

Do not lay pipe without giving the District Representative due notice to inspect the bedding.

All pipe 24 inches or greater in diameter shall be braced and stulled to prevent damage during shipment. Any damaged pipe or fittings delivered and unloaded at trench side shall be removed by the Contractor from the work site.

For steel and ductile iron pipe, the off-loading of the pipe as well as placement in the trench shall be handled with straps. Chains or bare cinch or choker type cables shall not be used. The slings shall be sufficient width to prevent damage to the lining or coating. On 20-foot lengths of pipe or longer, two straps must be used.

The approved water pipeline design is based upon a proper combination of pipe strength and pipe support. No acceptance will be given unless the work of trenching, bedding, laying, backfilling and compaction is conscientiously done in accordance with the procedures outlined in these Standards and the Contract Documents.

Grades shall be transferred from surveyor’s reference set points based on approved construction plan and grade. Each length of pipe shall be laid on bedding as specified and shall have full bearing for its entire length between bell holes excavated in said bedding material to allow for unobstructed assembly of all joints.

No wedging or blocking with wood or soil to support the pipe is permitted. Under no circumstances will a Contractor be allowed to dump backfill materials on top of a pipe which is not continuously supported in its final grade position.

Pipe shall not be laid when the District Representative determines the condition of the trench is unsuitable. As the work progresses, the interior of the waterline shall be cleared of all dirt and superfluous materials of every description. Trenches shall be kept free from water until sufficient backfill has been applied to keep the pipe in place. At times when work is not in progress, open ends of pipe and fittings shall be securely closed to the satisfaction of the District Representative so trench water, earth or other substance shall not enter the pipe or fittings. Pipe or fittings damaged during assembly shall be removed and replaced.

6.6.2 Pipe Indicator Tape

During the backfilling process, all water mains, service lines, and system appurtenances shall have pipe indicator tape installed continuously throughout their length at 18 inches above the pipe. At tees, tape ends, etc., the warning tape shall be tied together (spliced) with knot to create a continuous warning tape throughout the length of the pipeline and associated branch lines, appurtenances, etc.

6.6.3 Pipe Laying for PVC Pipe C900 and C905

Because it is a plastic product, the pipe should be covered with an opaque material if it is to be stored outside for a prolonged period of time (more than 45 days.)

Gasket lubricants shall be non-toxic and water soluble specially prepared for use in potable water systems.

In obtaining a square end cut, a PVC pipe cutter is recommended, but conventional fine-tooth hand or power saws may be used.

Field beveling of pipe ends after cutting can be done with special beveling tools or with such items as rasps.

The minimum short length of pipe shall be two feet and must meet the requirements of DR18 and DR14. The use of short pieces must be approved in advance by the District Representative.

6.6.3.1 Trench Grade Sheets

Prior to laying pipe, trench grade sheets must be submitted to the District's Representative with identification of horizontal and vertical angles and appurtenances. Stationing and elevation shall be at 25- foot intervals and on all angles and appurtenances. Elevation shall consist of top of pipe and finished surface at these points.

6.6.3.2 Lowering of Pipe into Trench.

Pipe shall not be lowered into the trench until the pipe bedding has been brought to

grade.

6.6.3.3 Pipe Deflection

The pipe joint shall not be deflected either vertically or horizontally beyond the limits recommended by the manufacturer. Table 21 shows the minimum curve radii for C900 and C905 pipe.

Table 21 – Pipe Layout for Curved Alignment

C900 Pipe Diameter	**Minimum Curve Radius**
4 inch	100 feet
6 inch	150 feet
8 inch	200 feet
10 inch	250 feet
12 inch	300 feet
C905 Pipe Diameter	**Minimum Curve Radius**
14-36 inch	764 feet

Special design is required for short curve radius.

Pipe deflection by the use of staking or any mechanical means is not permitted under any circumstances.

6.6.3.4 Locating Wire

Twelve gauge blue insulated copper wire shall be provided in the pipe zone directly on top of the pipe centerline. Copper wire shall be periodically wrapped or taped to the water pipe at intervals of five feet apart along the barrel by means of short strips of adhesive tape Wire shall be continuous between successive valve boxes (including air and vacuum and valve boxes associated with fire hydrants and blow-off assemblies.)

The Contractor will perform all required tests to assure the continuity of the copper wire.

6.6.4 Pipe Laying For Steel Pipe

6.6.4.1 Shop Drawings

Shop drawings of all pipe and fittings shall be submitted to the District's Representative for approval prior to fabrication of the pipe and fittings. Pipe lay sheets shall be included, consisting of drawings of lay, identification of joints, horizontal and vertical angles, and appurtenances. Stationing and elevation shall be shown on all joints, angles, and appurtenances. Elevation shall consist of top of pipe and finished surface at these points. Fabricated angles shall meet the requirements of AWWA C208. Except for butt strap closures, field fabricated fittings are not permitted unless approved by the District. Format

for shop drawings and lay sheets may be obtained from the District Representative. Such approval is an additional precaution against errors and is not to be construed as relieving the Contractor of the full responsibility for the accuracy of the shop drawings.

6.6.4.2 Trench Grade Sheets

Prior to laying pipe, trench grade sheets must be submitted to the District's Representative with identification of horizontal and vertical angles and appurtenances. Stationing and elevation shall be shown on all joints, angles and appurtenances. Elevation shall consist of top of pipe and finished surface at these points.

6.6.4.3 Rubber Ring Joints

Joining the pipe is similar to that for PVC and DI pipe with exceptions noted under Section 6.6.3.9 Welded Joints and Section 6.6.3.12 Electrically Bonded Connections.

6.6.4.4 Flanged Joints

The inherent problem with flanges is they are rigid and do not provide flexibility. Three keys to their installation are (1) uniform tightening of the bolts; (2) do not mate steel raised face flanges with flat face cast iron flanges or vice versa and (3) prevention of bending or torsional strains. Proper anchorage is important to meet the latter objective.

All flanges, bolts and nuts must be covered with Sanchem NO-OX-ID per Section 5.8 of these Standards.

6.6.4.5 Flexible Coupling Joints

Joints shall be completed in the trench after the pipe is laid to the alignment and grade shown on the Drawings. Each pipe, for a distance of six to eight inches back from the end, shall be thoroughly cleaned to remove oil, dirt, loose scale, rust, and other foreign matter. Flanges, gaskets, and sleeves shall then be assembled on the pipe ends in accordance with the manufacturer's recommendations. Coupling sleeves shall be accurately centered over the pipe ends and one pipe and shall touch the coupling sleeve centering stop if the coupling sleeve is so equipped. Bolts and nuts must be covered with Sanchem NO-OX-ID per Section 5.8 of these Specifications.

6.6.4.6 Lowering of pipe and accessories into trench

Pipe shall not be lowered into the trench until the pipe bed has been brought to grade. The sealing surfaces of all materials shall be kept clean during installation.

When pipe laying is not in progress, the open ends of installed pipe shall be closed to prevent entrance of trench water or other substances into the line.

The pipe joint shall not be deflected either vertically or horizontally beyond the limits recommended by the manufacturer.

6.6.4.7 Mortar Lining of the Interior Joints

When the section has been laid in place, the joint shall be finished by pulling a rubber ball, or the equivalent, through the joint to finish it off smooth with the inside surface of

the lining (swabbing.)

The Contractor must obtain a Confined Space Permit prior to mortar lining the interior joints when the pipe is 24-inches or larger.

No pipe shall be filled with water until at least 24 hours after the joints have been mortared.

6.6.4.8 Welded Joints

Field welding of joints shall be in accordance with AWWA C206.

No welded joint shall be backfilled until it has been inspected by the District Representative. Sufficient trench space shall be left open in the vicinity of each joint to permit visual inspection around the entire joint.

All welding shall be done by experienced welders qualified in accordance with the standards of the AWS and certified per ASME Section IX. Welding electrodes shall comply with the requirements of ASTM Specification A233. Welding procedures shall meet qualifications of AWS Standard D10.9 Qualification of Welding Procedures and Welders for Piping and Tubing.

Welds shall be applied by means of continuous stringer beads. Each bead shall be thoroughly cleaned and descaled before the succeeding bead is applied. The metal shall be deposited in successive layers and the minimum number of passes or beads in the completed weld shall be as shown in Table 22.

Table 22 – Welding for Steel Pipe

Steel Cylinder Thickness (inches)	Fillet Weld Minimum Number of Passes
Smaller than 3/16"	1
3/16" and ¼"	2
5/16"	3
3/8"	3

In all welding, undercutting of the base metal adjoining the weld is a defect and shall be repaired. Overlapping or burning back the inside or outside corner during the application of a fillet weld is not permitted. The finished fillet weld must be free of grooves, deep valleys or ridges and contain no abrupt changes in section at the toe.

Lap or fillet welds shall have legs of equal size except when specified otherwise and they shall have a throat profile that is straight to slightly convex. In no case is a throat with a concave surface acceptable.

After the joints are welded, each joint shall be grouted with cement mortar in the same manner as specified for mortar lining of interior joints.

6.6.4.9 Butt Strap Closure Joints

Butt strap closure joints shall be completed in the trench after the pipe is laid to the alignment and grade shown on the Drawings.

They shall be field welded to the outside of the pipe along both edges by full circumferential fillet welds. The interior of butt strap joints shall be grouted with cement mortar as specified in Section 6.6.3.8 for mortar lining of interior joints.

A ½-standard five-inch pipe coupling shall be welded to the top section of the butt strap to permit access for mortar lining the inside of the joint. The coupling shall be closed with a five-inch solid steel plug welded to the coupling.

The exterior of butt strap joints shall be wrapped with mesh wire and completely covered with mortar equal to the thickness of the existing coating.

Except for butt strap closures, field fabricated fittings and welded butt joints are not permitted, unless approved by the District Representative.

6.6.4.10Mortar Coating of Exterior

Grout shall be composed of one part Type II cement to not more than two parts sand thoroughly mixed with water to the consistency of thick cream. Sand gradation shall conform to the requirements of ASTM C33 except that 100 percent shall pass the No. 16 sieve.

The joints shall be coated with cement-mortar, retained by suitable bands or diapers so as to bridge the joint and retain the grout without leakage. The diaper shall be made of heavy duty sail cloth of sufficiently close weave to prevent cement loss from the mortar. The fabric shall be hemmed on each edge and shall contain a metal strap within each hem sufficiently longer than the circumference of the pipe to allow a secure attachment of the diaper to the pipe. The diaper width will depend on pipe size and design and shall be the width recommended by the manufacturer. The diapers shall be Mar-Mac fabric diapers or approved equal.

The grout space, prior to filling, shall be flushed with water so the surface of the joint to be in contact with the grout will be thoroughly moistened when the grout is poured. The joint shall be filled with grout by pouring from one side only, and shall be rodded with a wire or other flexible rod or vibrated so the grout completely fills the joint recess by moving down one side of the pipe, around the bottom of the pipe, and up the opposite side. Pouring and rodding the grout shall be continued to allow completion of the filling of the entire joint recess in one operation. Care shall be taken to leave no unfilled space. The exposed portion of the grout at the top of the pipe shall be coated with a sealing compound or covered with burlap or moist earth.

6.6.4.11Electrically Bonded Connections

Jumper bond connections shall be welded on all underground connections where sections of steel pipe are joined by means of rubber rings.

The Contractor will make electrical and mechanical tests to determine that each joint between sections of pipe is satisfactorily bonded. The Contractor will then perform all additional work required to assure the pipeline is electrically continuous.

6.6.5 Pipe Laying for Ductile Iron Pipe

Ductile iron pipe shall be laid in accordance with manufacturer instructions and in general compliance with the applicable procedures as listed for PVC and steel pipe. Where specified, the District may request a specification for such installation practices.

Tapping of the pipeline for services is not allowed.

6.7 BACKFILL AND COMPACTION FOR PVC, DI AND STEEL PIPE

6.7.1 General

Backfill and compaction will be as listed in the Standard Specification for Public Works Construction Latest Edition, by APWA/AGC.

Within the rights-of-way of the State Department of Transportation, the Ventura County Public Works Agency Transportation Department, the City of Ojai, and the City of Ventura, backfill and compaction shall be in accordance with requirements and provisions of the permits issued by those agencies. Such requirements and provisions, where applicable, shall take precedence and supersede the provisions of these Specifications.

There are several distinct zones to be considered in the backfilling procedure as shown in Standard Detail SD-1.

In all cases, the filling of trenches shall be subject to approval by the District Representative and/or City or County Public Works Inspector who shall have full authority to order compaction tests to demonstrate the actual backfill density.

6.7.2 Backfilling Pipe Zone

Sand as specified in Section 5.6.3 of these Standards must be used and shall be placed in the pipe zone with particular attention to getting material to the underside of the pipe and fittings to provide a firm support along the full length of the pipe. Care shall be exercised in backfilling to prevent damage to the pipe or coating, as applicable.

6.7.3 Jetting Method in the Pipe Zone

Jetting with water to consolidate the sand in the pipe zone is acceptable when foundation soil provides adequate drainage and jetting is approved by District Representative.

Acceptability of backfill in the pipe zone will be determined primarily by visual inspection and probing by the District Representative to determine that no voids exist in the backfill. The backfill within the pipe zone shall be per Standard Detail SD-1.

6.7.4 Backfilling Above Pipe Zone

Testing for pipe and joint leakage will be done after consolidation of the backfill to the top of the base zone and after service lines are installed to the property lines.

Contractor shall assume the responsibility of removal and replacement of backfill necessary for correction of defective conditions revealed by testing at no expense to the District.

In traffic areas within public rights-of-way where pavement is to be replaced, the City or County requirements may call for a cement sand slurry mixture to be used for trench backfill at no expense to the District.

Standard Detail SD-1 shows the District's trench requirements within the paved right-of-way.

6.7.5 Compaction Tests

All required excavations and tests for private Owner-installed facilities will be performed at no expense to the District. Tests shall be performed in accordance to ASTM D1557 by an approved geology laboratory.

The Contractor shall make all necessary excavations for compaction tests. The number of tests and their location and depth shall be determined by the District's Representative and/or a Representative of those agencies where construction is within their rights-of-way.

Compaction test results shall be submitted in writing to the District inspector prior to testing for pipe and joint leakage.

6.8 THRUST BLOCKS AND ANCHOR BLOCKS

Do not place concrete without giving the District’s inspector 48 hours’ notice.

6.8.1 Concrete Thrust and Anchor Blocks

Concrete thrust and anchor blocks shall be placed as required and shall consist of Portland cement concrete containing not less than five sacks of cement per cubic yard and shall conform to the applicable provisions of the Standard Specifications for Portland Cement Concrete. Concrete thrust and anchor blocks shall be placed between the undisturbed ground and the fittings to be anchored. The concrete shall be placed so pipe joints and fittings are accessible for repair. All concrete supports shall be allowed to cure for at least five days prior to filling the supported pipe with water or per special design provisions.

Quantity of concrete and the area of bearings on the pipe and undisturbed soil shall be as shown on the Drawings and per Standard Detail SD-2.

6.9 RESURFACING AND RESTORATION

Resurfacing and restoration will must comply with the Standard Specifications for Public Works Construction Latest Edition by APWA.

Within the rights-of-way of the State Department of Transportation, the Ventura County Public Works Agency Transportation Department, the City of Ojai, and the City of Ventura, resurfacing and restoration shall be in accordance with requirements and provisions of the permits issued by those agencies. Such requirements and provisions, where applicable, shall take precedence and supersede the provisions of the Specifications.

Substructures removed or damaged on public or private property shall be restored or replaced unless such structures are designated on Drawings "to be abandoned." Such structures include, but are not limited to: trees, bushes, plantings, ground cover, mail boxes, fences, and sprinkler systems.

Any temporary paving, barricades or special provisions required by public agencies shall be furnished at no expense to the District.

6.10 HOT TAPPING

Each new service shall have its own service line unless prior approval is received from the District Representative.

Hot tapping shall only be done in the presence of the District Representative. The tapping mechanism shall be as recommended by the tapping manufacturer.

Hot taps on steel mains must use reinforcement collars when the diameter of the branching pipe is less than half the main pipe diameter. When the branching pipe equals or exceeds half the pipe diameter, a full wrap saddle shall be used.

Hot taps of one-inch through two-inch must use a reinforcement collar and a 3,000-pound steel coupling.

6.10.1 Hot Tapping Contractors

Contractor must adhere to approved District tapping standards. No tapping shall be performed on steel cylinder pipe where the horizontal or spiral weld of the pipe will be in contact with any part of the nozzle or collar per Standard Detail SD-11.

Approved hot tapping Contractors for District-owned water systems 3-inches and larger are:

- Koppl Company, Inc.

Contractors who wish to perform 1-inch or 2-inch hot taps must provide proof of experience and references and receive prior District approval to perform hot-tapping.

6.11 SERVICE CONNECTIONS AND SERVICE LINES

As shown on Standard Details SD-11 and SD-12, service connections to the main where copper tubing is used for the service line shall be made at 20° above horizontal (springline.)

Water service laterals at intersections shall be located outside of the intersection valving whenever possible.

Service lines shall be one continuous length "snaked" within the trench to allow for expansion or contraction.

6.11.1 Service Taps

In no case shall a service tap be made in a main closer than two feet from a joint or fitting. Service taps shall not be less than two feet apart on PVC main, and no less than 18 inches apart on steel pipe mains. Service taps shall be located opposite the meter locations so the service laterals will be perpendicular to the water main and street centerline. Service tap locations varying more than five feet from the perpendicular must be approved by the District's Representative prior to installation. Unless otherwise noted on the Drawings, service taps shall be located so the water service lateral is parallel to and 10 feet from the sewer lateral serving the same property.

6.11.2 Dielectric Connections

Dielectric connections shall be provided where dissimilar metals are joined and shall conform to details shown on the Drawings or in the Contract Documents.

6.11.3 Earthwork

Earthwork shall conform to Standard Detail SD-11.

6.12 INSTALLATION OF VALVES AND FITTINGS

Valves and fittings shall be installed at the locations and grades shown on the Drawings. The following items comprise a partial check list:

- All line valves at intersections shall be located as close as possible to the beginning of curb return and/or end of curb return.
- Water distribution mains shall have valves spaced no greater than 1,000 feet apart or as shown on the Drawings.
- At water main intersections, each branch shall be valved. Where relatively short blocks separate water main intersections, one of the two valves between the water main intersections may be eliminated.
- All valves and appurtenances at depths greater than eight feet require special design and District approval.
- Valve restraints shall be used when installing push-on valves below ground.
- When placing thrust blocks around a fitting, the concrete must be around the fitting and not the joint.

6.13 INSTALLATION OF FIRE HYDRANT ASSEMBLIES

Fire hydrant assemblies are to be installed in accordance with the general instructions contained in AWWA C600 and AWWA Manual No. M17 and Standard Detail SD-9.

The setback from the curb face must be per Standard Detail SD-9, whether the fire hydrant is on a public street or within a private street.

Fire hydrants at or near street intersections shall be located inside the intersection valving and located at the beginning of curb return or end of curb return. Fire hydrants located between intersections must be located on property lines.

The fire hydrant shall be positioned so the bolts between the extension piece and the hydrant are accessible, as shown on Standard Detail SD-9, except the distance from the ground to the bolts shall be six inches.

Painting shall be per Sections 5.8. and 6.15 of these Standards with all metal surfaces above ground being painted.

6.14 INSTALLATION OF METER BOXES

Specific installation details are shown on Standard Details SD-11 and SD-12. The District will select the meter type and install the meter after proper arrangements have been made.

6.15 PAINTING

Paints shall be delivered to the jobsite in original cans or packages bearing the brand name and the manufacturer's name.

Paints specified shall be used unless written District approval to use other products is obtained in advance.

Manufacturer's recommended time between coats will be used as a guide as to when the next coat of paint may be applied.

The Contractor shall notify the District Representative after surface preparation and after the application of each successive coat of paint.

Surfaces to be painted shall first be thoroughly cleaned to remove dirt, loose scale, rust, oil, grease and/or other foreign matter immediately prior to painting.

After cleaning, metal surfaces shall receive two primer coats of a minimum film thickness of 15 millimeters each or equivalent conditioning or seal coats and two finish coats of two millimeter thickness each.

6.16 ABANDONMENT

The Contractor shall remove and dispose of/or abandon in place existing pipelines, structures, or appurtenances as shown on the Drawings.

Abandonment of all water mains and appurtenances shall be approved by the District prior to any such work.

Water lines to be abandoned shall be pumped full with a two-sack sand slurry mix and a blind flange shall be installed on each end, unless otherwise shown on the Drawings. Each end shall be encased with a minimum of six inches of concrete per Section 5.7. Said concrete shall thoroughly cover all exposed metal.

Structures and appurtenances associated with lines to be abandoned shall be removed by the Contractor.

All materials and appurtenances determined by the District Representative to be salvageable are District property and shall be delivered by the Contractor to the District warehouse at no cost to the District.

6.17 HYDROSTATIC TESTING OF WATER MAINS

All completed waterlines, as well as the service lines and appurtenant structures, will be tested by and at the expense of the Contractor in the District Representative's presence prior to field acceptance of the work. The Contractor must correct all defects in workmanship or materials which become evident by inspection or testing at any time during the work. Testing will be done after the complete installation and compaction of all underground utilities, except as modified below.

6.17.1 General Requirements

Pipe and all appurtenances shall be subjected to a four-hour hydrostatic pressure test. This test shall consist of applying to the pipeline a pressure of 50 psi in excess of the designated working class of pipe. Pressure tests shall not be performed until backfill and compaction is completed to subgrade per Section 6.4. Re-tests shall be conducted following "disturbances" of the pipe zone pipeline or appurtenances at the discretion of the District Representative.

The maximum length of pipe to be included in any one test shall be no more than 2,500 feet or the distance between valves, whichever is greater. The Contractor shall provide suitable test bulkheads, blocking and fittings to permit such sectionalizing.

6.17.2 Flushing

Before conducting hydrostatic tests, flush pipes with water to remove dirt and debris. Maintain a flushing velocity of at least 2.5 feet per second (fps) for water testing. Flush pipes for time period as given by the formula:

$$T = \frac{2L}{2.5}$$

in which:

T = flushing time (seconds)

L = pipe length (feet)

For pipelines 24 inches or larger in diameter, acceptable alternatives to flushing are use of high-pressure water jet, sweeping, or scrubbing. Water, sediment, dirt, and foreign material accumulated during this cleaning operation shall be discharged, vacuumed, or otherwise removed from the pipe.

6.17.3 Preparation

The test shall be applied at an approved outlet. The Contractor shall provide and later securely plug such fittings. The line shall be flushed, filled, and maintained at operating pressure for a period of at least 72 hours prior to testing to satisfy any system water absorption. (Seventy-two hour soak period not required for PVC pipe). While filling and immediately prior to testing, all air shall be expelled from the pipeline.

In selected cases, the fire department may require a check of the fire flow or pressure following construction. In such instances, the Owner/Contractor shall assist the fire department, as appropriate.

6.17.4 Procedure

After the 72-hour soak period, the pressure in the pipeline shall be increased to the specified test pressure. When the test pressure is reached, the pumping shall be discontinued until the pressure in the line has dropped 10 psi, at which time the pressure shall again be increased to the specified test pressure. This procedure shall be repeated until four hours have elapsed from the time the specified test pressure was first applied. At the end of this period, the pressure shall be increased to the test pressure for the last time.

6.17.5 Leakage

Leakage shall be considered as the total amount of water pumped into the pipeline during the four-hour period, including the amount required to reach the test pressure for the final time.

If leakage exceeds the allowable leakage, the leak points shall be located and stopped, and all defective pipe, fittings, valves, and other accessories discovered shall be removed and replaced.

Allowable leakage shall be computed as:

$$\text{Where: } L = \frac{CNDP}{1{,}850}$$

L =	Maximum allowable leakage in gallons per hour for the section of pipeline being treated
C =	0.25 for PVC pipe with rubber gasket joints
C =	0.50 for cast iron pipe with rubber gasket joints
C =	0.125 for flanged joints

C = 0 for welded steel pipe with welded joints
N = Number of joints in length tested
D = Diameter of pipe in inches
P = Test pressure in psi

When the pipeline being tested contains more than one type of joint or pipe type allowable, leakage shall be computed for each, then summed for a total allowable leakage. The District Representative will provide the Contractor a temporary water meter to measure leakage.

6.18 DISINFECTION, SAMPLING, AND ANALYSIS

Disinfection is the last step necessary before connection to the existing water mains. After flushing and pressure testing, and prior to acceptance of the work, the entire pipeline including all valves, fittings, hydrants, service laterals, and other accessories shall be disinfected in accordance with the current AWWA Specification C651, including Section 5.2 therein.

Contractor shall also comply with the requirements of:

- California State Water Resources Control Board (SWRCB) California Regulations Related to Drinking Water, Chapter 16. California Water Works Standards
- Order WQ 2014-0194-DWQ General Order No. CAG140001 Statewide National Pollutant Discharge Elimination System (NPDES) Permit for Drinking Water System Discharges to Waters of the United States

Contractor shall comply with Total Maximum Daily Loads (TMDLs) when performing work including:

Casitas Water System
- Total coliform (Ventura coastal)
- Algae (Ventura River)

Ojai Water System
- Algae (Ventura River)

TMDL requirements for both systems include tributaries to the Ventura River.

6.18.1 Repetition of Procedure

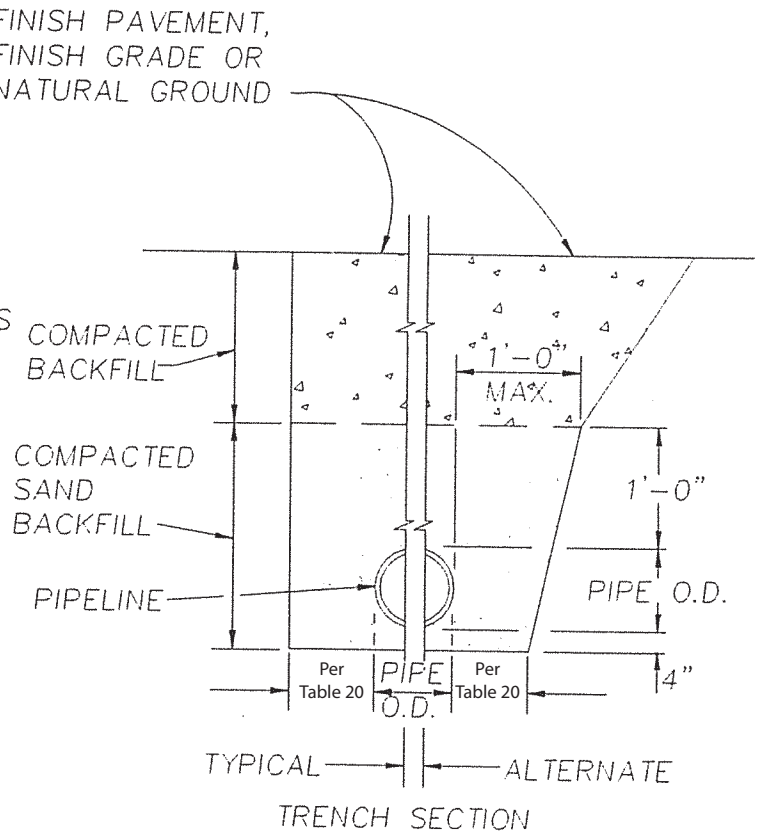
If the disinfection fails, then the procedure shall be repeated at the Contractor's expense until passing.

7 STANDARD DETAILS

SD-1	Typical Trench Sections
SD-2	Typical Thrust Block, Anchor Detail and Schedule
SD-3	Typical Mainline Valve and Anchor
SD-4	Typical Turnout
SD-5	Typical 2-inch Air Valve
SD-6	Typical 2-inch Blow-off and End Drain
SD-7	Typical 4-inch Blow-off
SD-8	Typical 4-, 6-, an 8-inch Blow-off and End Drain
SD-9	Typical Fire Hydrant Wet Barrel Type
SD-10	Not Used
SD-11	Typical Meter Service Plan and Profile
SD-12	Typical Meter Service Copper Pipe Material List
SD-13	Typical Guard Post
SD-14	Water Sampling Station
SD-15	Chlorine Injection Assembly
SD-16	Temporary Construction Sample Station

NOTES:

1. RESURFACING OF THE EXISTING PAVEMENT AND THE PLACING OF THE COMPACTED BACKFILL AND/OR SAND-CEMENT SLURRY WITHIN THE STATE OF CALIFORNIA RIGHT OF WAY SHALL BE IN ACCORDANCE WITH THE DEPARTMENT OF TRANSPORTATION (CALTRANS) GENERAL REQUIREMENTS AND OR SPECIAL REQUIREMENTS AS SET FORTH IN THE STATE'S ENCROACHMENT PERMIT.
2. THE PLACING OF THE COMPACTED BACKFILL AND/OR SAND-CEMENT SLURRY BACKFILL AND THE RESURFACING OF THE EXISTING PAVEMENT WITHIN THE COUNTY OF VENTURA RIGHT OF WAY SHALL BE IN ACCORDANCE WITH THE VENTURA COUNTY PUBLIC WORKS AGENCY'S GENERAL REQUIREMENTS AND OR SPECIAL REQUIREMENTS AS SET FORTH IN THE COUNTY'S ENCROACHMENT PERMIT.
3. COMPACTED BACKFILL AND/OR SAND-CEMENT SLURRY BACKFILL WITHIN THE STATE'S AND COUNTY RIGHT OF WAY SHALL BE THAT AS SET FORTH IN THEIR RESPECTIVE ENCROACHMENT PERMIT.
4. RESURFACING OF EXISTING PAVEMENT WITHIN PRIVATE ROADS OR DRIVEWAYS AND THE PLACING OF THE COMPACTED BACKFILL SHALL BE THE SAME AS THE GENERAL REQUIREMENTS OF THE VENTURA COUNTY PUBLIC WORKS AGENCY FOR RESURFACING WITHIN A COUNTY RIGHT OF WAY.

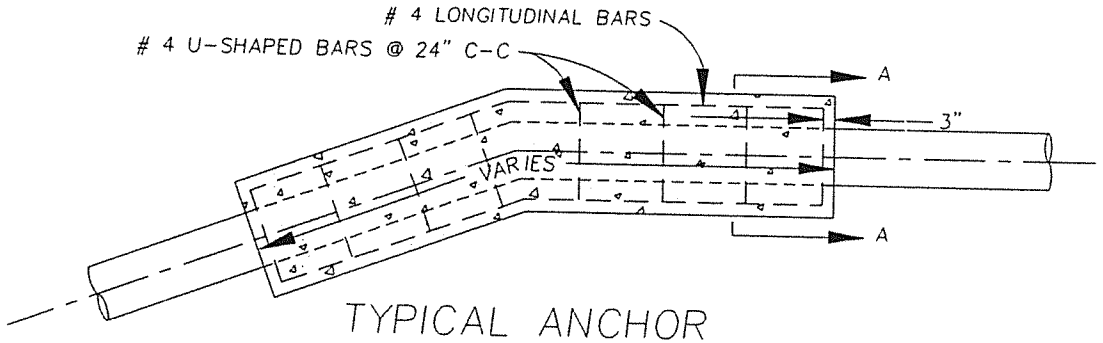


TRENCH SECTION

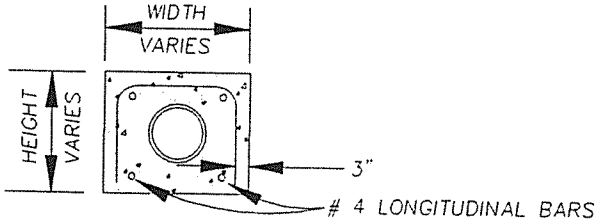
CASITAS MUNICIPAL WATER DISTRICT
OAK VIEW, CALIFORNIA

TYPICAL TRENCH SECTIONS

DRAWN S.E.W.
CHECKED
APPROVED John J. Lynn 10-15-93
SCALE: N.T.S. DATE: OCT 93' NO.: SD - 1



TYPICAL ANCHOR



SECTION A-A

PIPE HAVING MAXIMUM WATER PRESSURE OF 150 P.S.I.

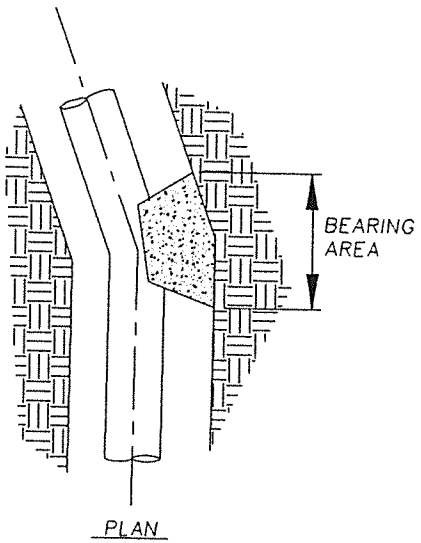
THRUST BLOCK SCHEDULE						
PIPE DIAM.	BEARING AREA IN SQ. FT.					
	BENDS					TEES & DEAD ENDS
	22-1/2°	30°	45°	60°	90°	
6"	4	4	4	6	6	6
8"	4	6	6	9	12	9
10"	4	6	8	12	18	12

12" → 16 sq ft (4'x4')

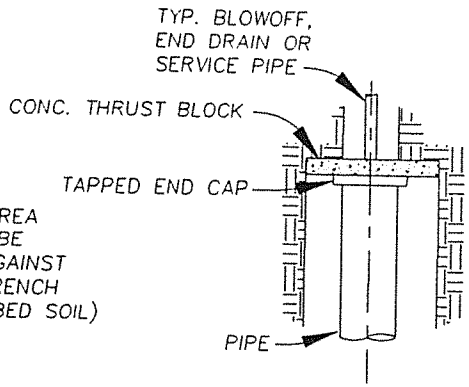
NOTE: MINIMUM BEARING AREA TO BE 4.0 SQ. FT., BEARING AREA SHALL BE APPROXIMATE SHAPE OF A SQUARE.

PIPE HAVING MAXIMUM WATER PRESSURE OF 200 P.S.I.

THRUST BLOCK SCHEDULE						
PIPE DIAM.	BEARING AREA IN SQ. FT.					
	BENDS					TEES & DEAD ENDS
	22-1/2°	30°	45°	60°	90°	
4"	4	4	4	4	6	4
6"	4	4	4	6	9	6
8"	4	6	9	12	16	12



TYPICAL THRUST BLOCK



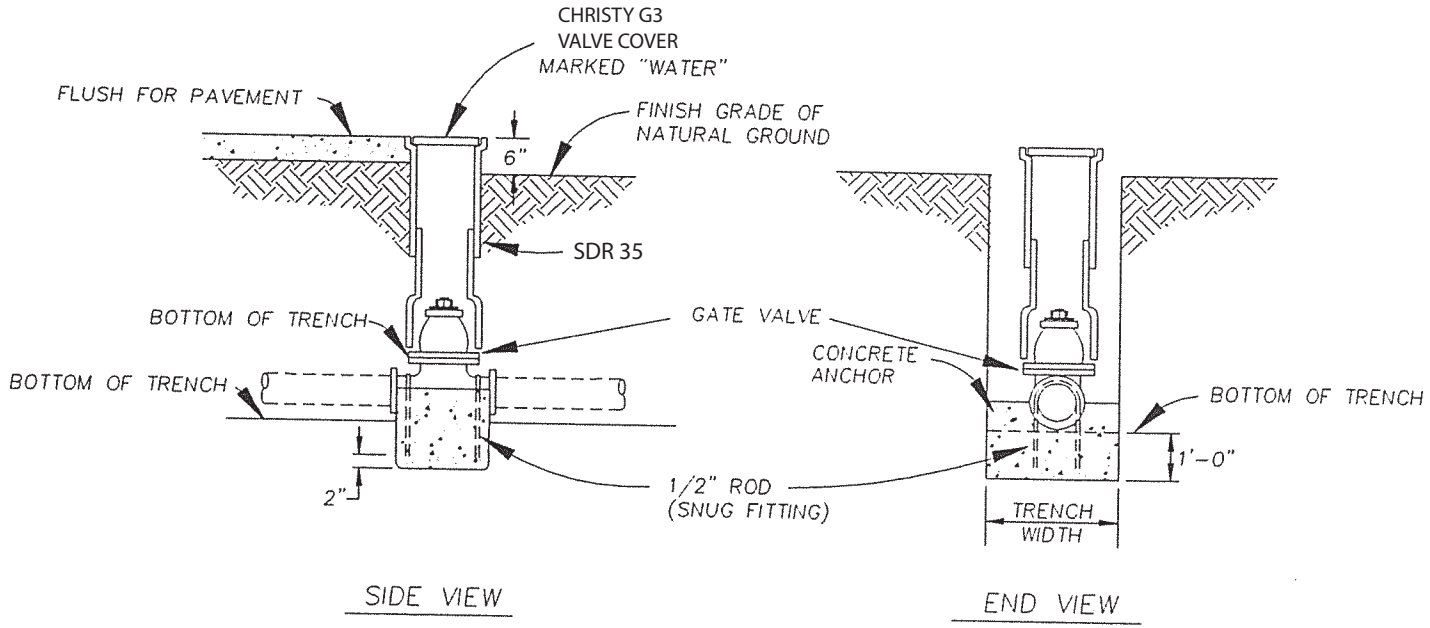
TYPICAL END DETAIL

CASITAS MUNICIPAL WATER DISTRICT
OAK VIEW, CALIFORNIA

TYPICAL THRUST BLOCK
TYPICAL ANCHOR
DETAIL & SCHEDULE

DRAWN S.E.W.
CHECKED
APPROVED John J. Johnson 10-13-93

SCALE: N.T.S. | DATE: OCT 93' | NO.: SD - 2

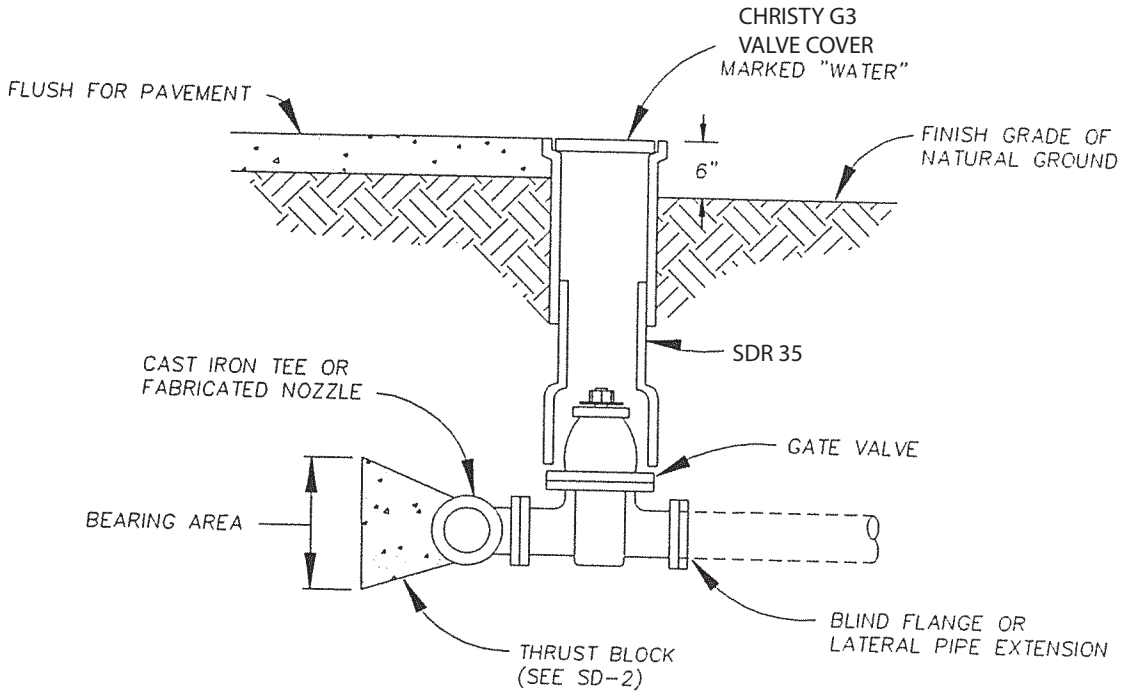


NOTE: REFER TO DISTRICT'S SPECIFICATIONS, APPURTENANT STRUCTURES, FOR MATERIAL SPECIFICATIONS.

CASITAS MUNICIPAL WATER DISTRICT
OAK VIEW, CALIFORNIA

TYPICAL MAINLINE VALVE
AND ANCHOR

DRAWN S.E.W.
CHECKED
APPROVED John J. Johnson 10-18-93
SCALE: N.T.S.
DATE: OCT 93'
NO.: SD - 3

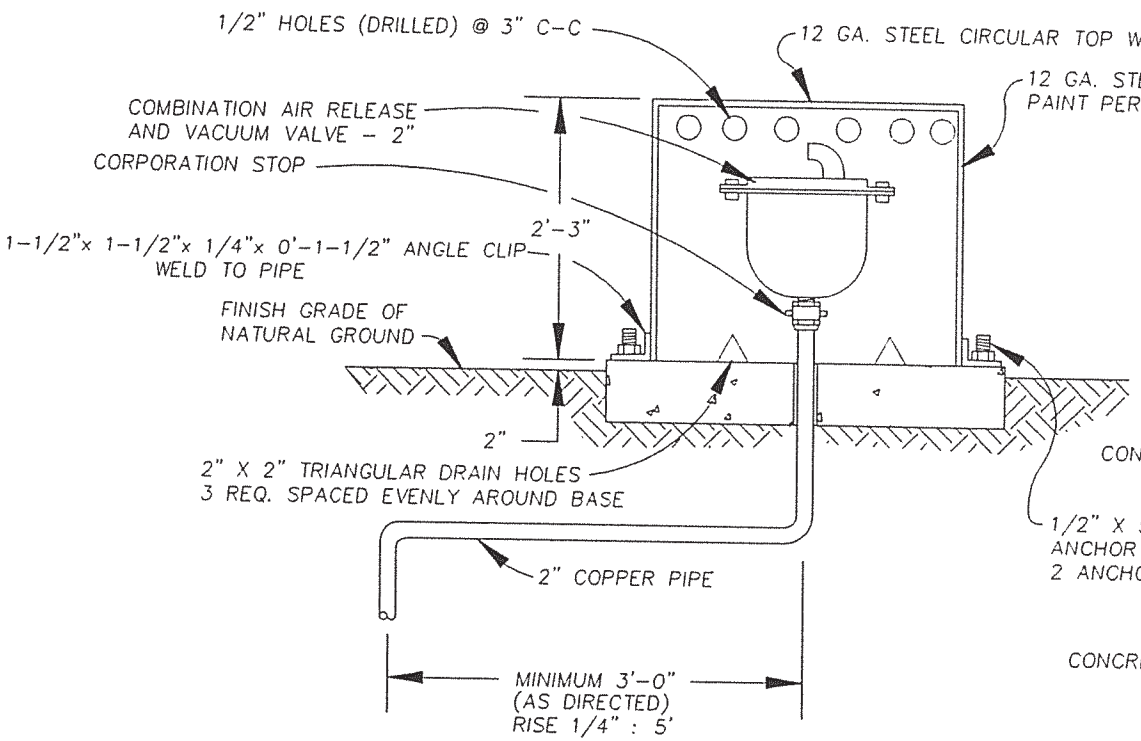


NOTE: REFER TO DISTRICT'S SPECIFICATIONS, APPURTENANT STRUCTURES, FOR MATERIAL SPECIFICATIONS.

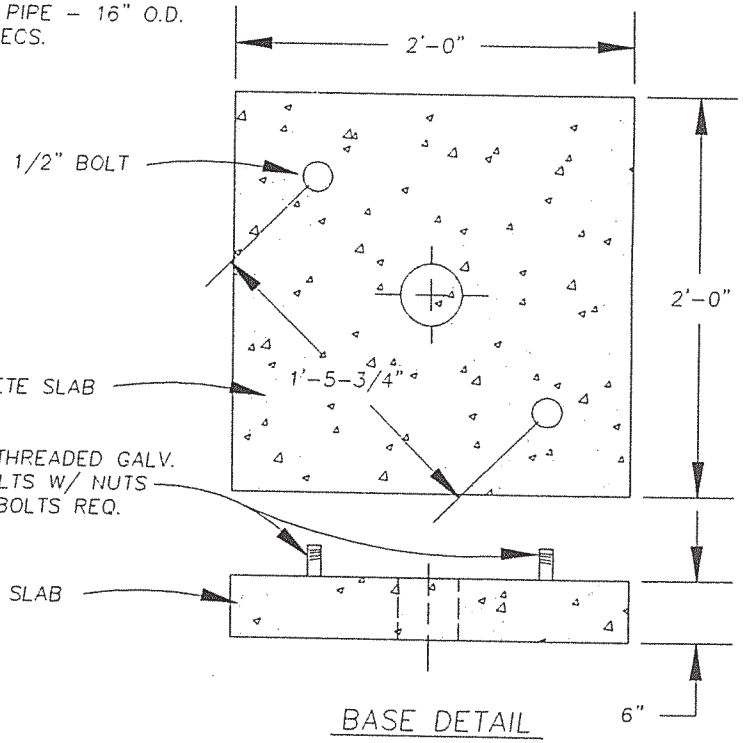
CASITAS MUNICIPAL WATER DISTRICT
OAK VIEW, CALIFORNIA

TYPICAL TURNOUT

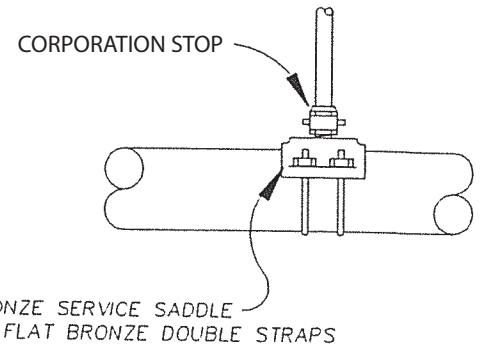
DRAWN S.E.W.	APPROVED John J Johnsen 10-8-93	
CHECKED		
SCALE: N.T.S.	DATE: OCT 93'	NO.: SD – 4



AIR VALVE DETAIL



BASE DETAIL



PIPE CONNECTION DETAIL

NOTE: REFER TO DISTRICT'S SPECIFICATIONS, APPURTENANT STRUCTURES, FOR MATERALS SPECIFICATIONS.

NOTES:

1. FOR CONNECTION TO STEEL PIPE, USE APPROVED SERVICE SADDLE OR REINFORCED WELDED HEAVY COUPLING.
2. TWO GUARD POSTS REQUIRED (SEE SD-13)

CASITAS MUNICIPAL WATER DISTRICT
OAK VIEW, CALIFORNIA

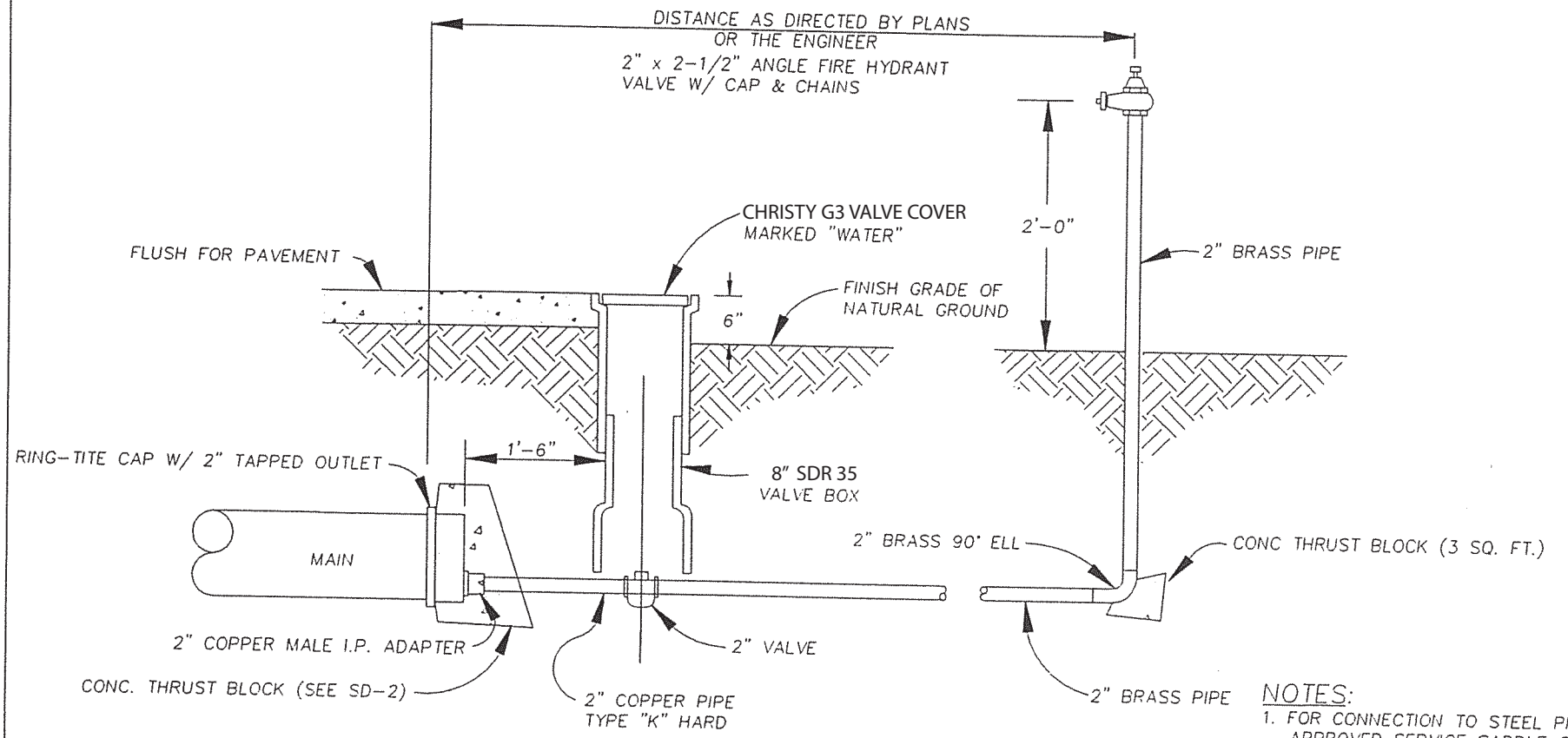
TYPICAL 2" AIR VALVE

DRAWN S.E.W.

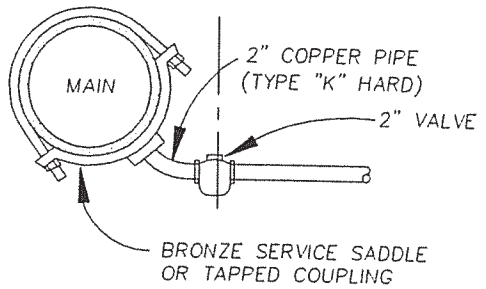
CHECKED

APPROVED John J. Johnson 10-18-93

SCALE: N.T.S. | DATE: OCT 93' | NO.: SD - 5



DEAD-END CONNECTION



ON-RUN CONNECTION

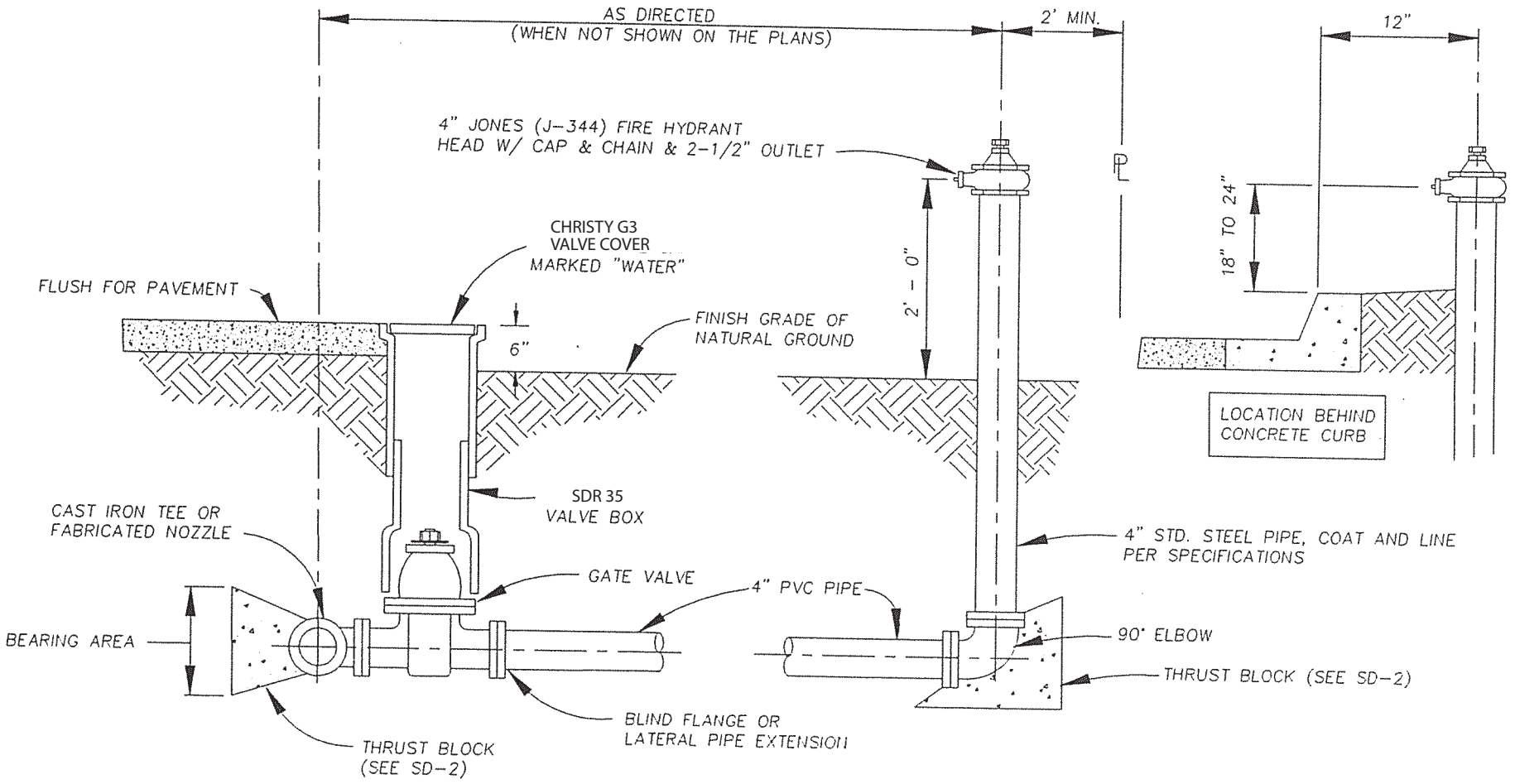
NOTES:

1. FOR CONNECTION TO STEEL PIPE, USE APPROVED SERVICE SADDLE OR REINFORCED WELDED HEAVY COUPLING.
2. TWO GUARD POSTS REQUIRED (SEE SD-13)
4. REFER TO DISTRICT'S SPECIFICATIONS, APPURTENANT STRUCTURES, FOR MATERIAL SPECIFICATIONS.

CASITAS MUNICIPAL WATER DISTRICT
OAK VIEW, CALIFORNIA

TYPICAL 2" BLOW-OFF
AND END DRAIN

DRAWN S.E.W.	APPROVED John J. Johnson 10-18-93	
CHECKED		
SCALE: N.T.S.	DATE: OCT 93'	NO.: SD - 6



NOTES:

1. A MINIMUM OF TWO GUARD POSTS ARE REQUIRED PER EACH 4" BLOW-OFF (SD-13).
2. ALL METAL MATERIAL SHALL BE COATED PER SPECIFICATIONS.
3. REFER TO DISTRICT'S SPECIFICATIONS, APPURTENANT STRUCTURES, FOR MATERIAL SPECIFICATIONS.

CASITAS MUNICIPAL WATER DISTRICT
OAK VIEW, CALIFORNIA

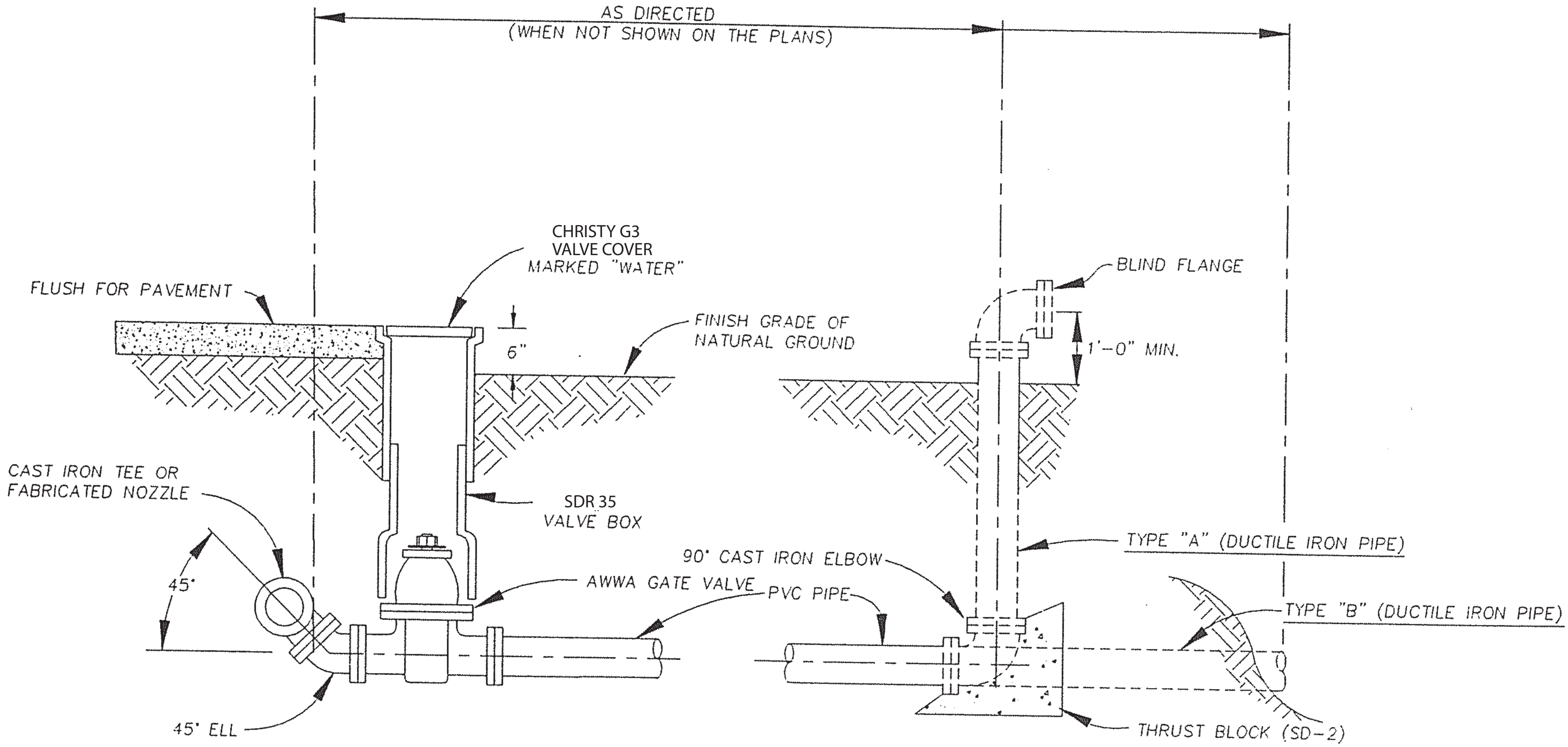
TYPICAL 4" BLOW-OFF

DRAWN S.E.W.

CHECKED

APPROVED John J. Johns 10-18-93

SCALE: N.T.S. | DATE: OCT 93' | NO.: SD - 7



NOTES:

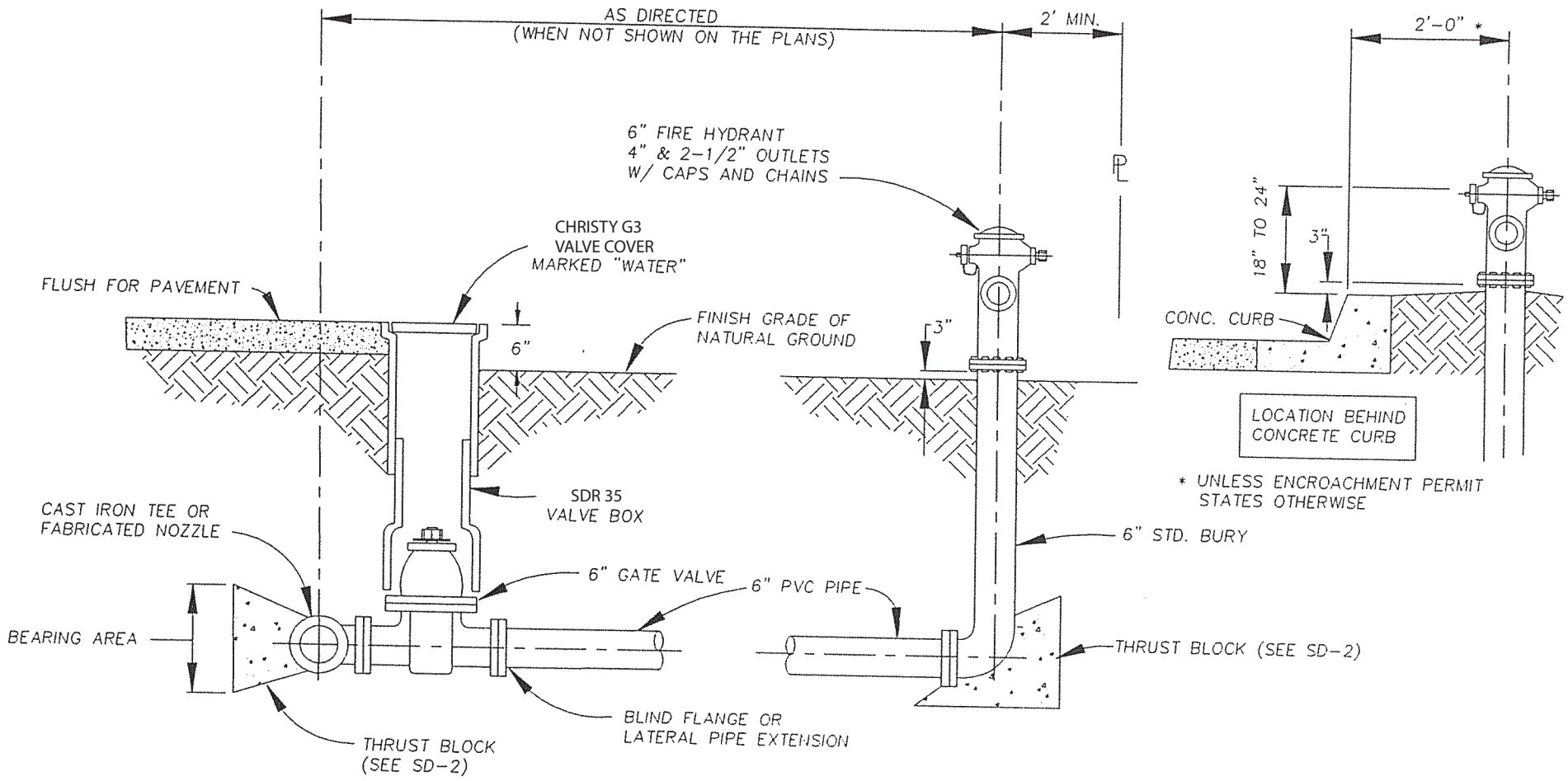
1. TYPE "A" OR "B" - EITHER AS SHOWN ON THE PLAN OR AS DIRECTED BY ENGINEER.
2. REFER TO DISTRICT'S SPECIFICATIONS, APPURTENANT STRUCTURES, FOR MATERIAL SPECIFICATIONS.

CASITAS MUNICIPAL WATER DISTRICT
OAK VIEW, CALIFORNIA

TYPICAL 4"-6"-8" BLOW-OFF AND END DRAIN

DRAWN S.E.W.
CHECKED
APPROVED John J Johnson 10-15-93

SCALE: N.T.S. | DATE: OCT 93' | NO.: SD - 8



NOTES:

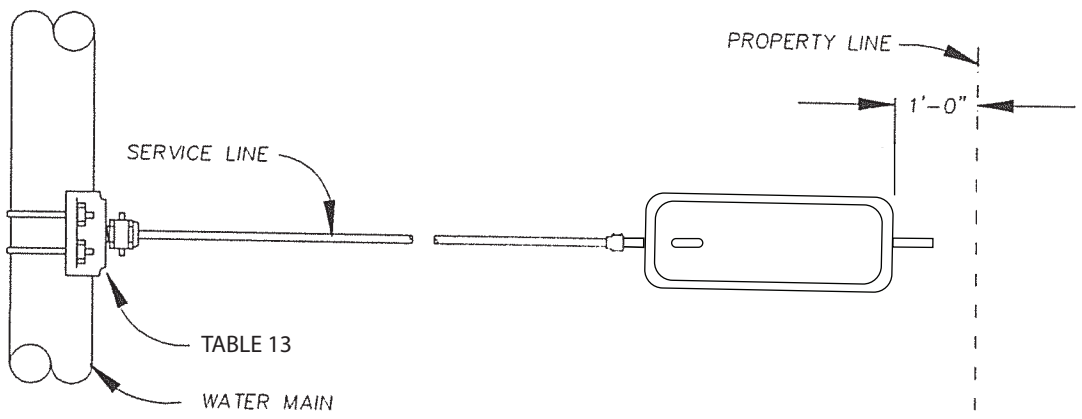
1. A MINIMUM OF TWO GUARD POSTS ARE REQUIRED PER EACH FIRE HYDRANT (SD-13).
2. ALL METAL MATERIAL SHALL BE COATED PER SPECIFICATIONS.
3. REFER TO DISTRICT'S SPECIFICATIONS, APPURTENANT STRUCTURES, FOR MATERIAL SPECIFICATIONS.

CASITAS MUNICIPAL WATER DISTRICT
OAK VIEW, CALIFORNIA

TYPICAL FIRE HYDRANT
WET BARREL TYPE

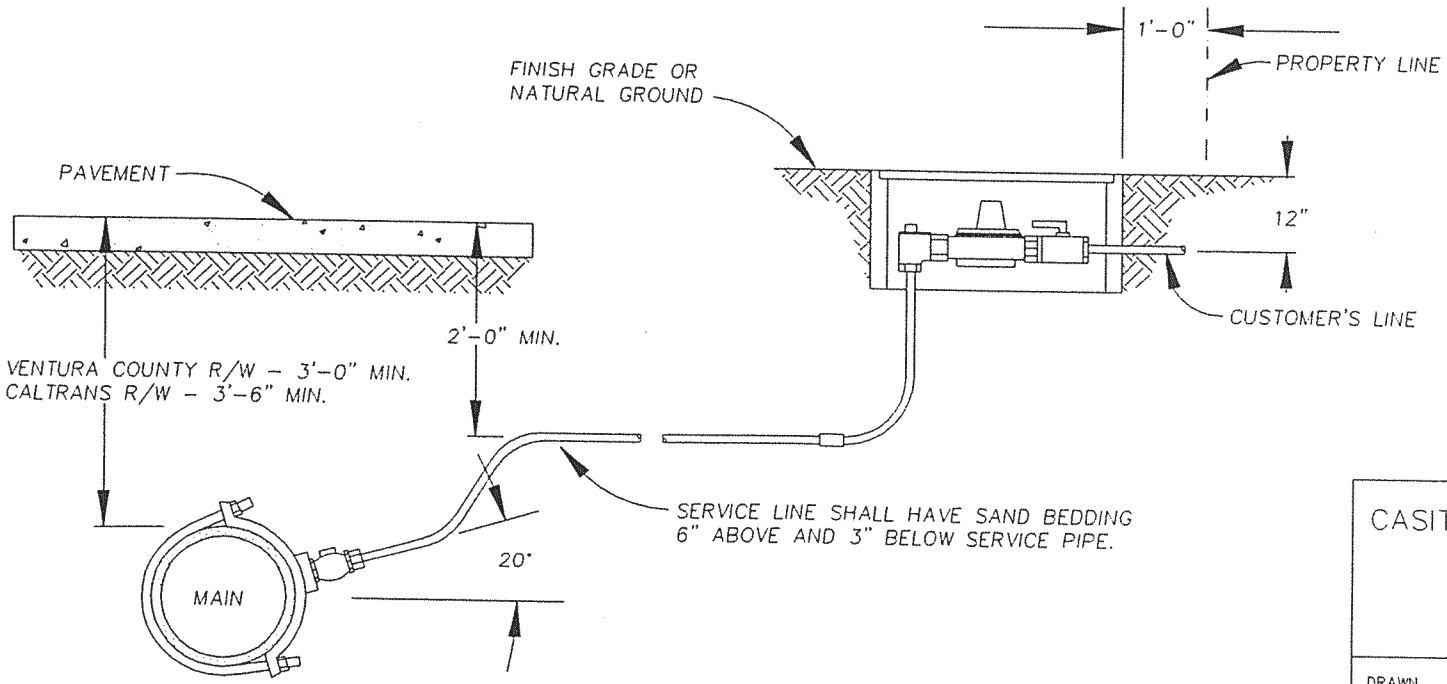
DRAWN S.E.W.
CHECKED
APPROVED John J. Johnson 12-18-93

SCALE: N.T.S. | DATE: OCT 93' | NO.: SD - 9



PLAN

NOTE:
1. CURBS, AS REFERED TO ON THESE DRAWINGS, MEAN CONCRETE CURBS AND GUTTERS.
2. FOR INSTALLATIONS WHERE SIDEWALK ABUTS CURB AND THE PROPERTY LINE, METER BOXES ARE SET FLUSH IN THE SIDEWALK AND ADJACENT TO THE BACK OF THE CURB. INSTALL 2" PVC SLEEVE UNDER SIDEWALK.
3. FOR INSTALLATIONS IN AREA WITH PARKWAY BETWEEN CONC. CURB AND SIDEWALK, METER BOXES ARE SET FLUSH WITH TOP OF CURB AND ADJACENT TO BACK OF CURB.
4. UNLESS SHOWN ON THE CONSTRUCTION DRAWINGS OR OTHERWISE DIRECTED BY THE ENGINEER, ALL METER BOXES SHALL BE LOCATED AS NOTED ABOVE.
5. FOR MATERIAL LIST SEE DETAILS ON SD-12 AND DISTRICT'S SPECIFICATIONS.



PROFILE

CASITAS MUNICIPAL WATER DISTRICT
OAK VIEW, CALIFORNIA

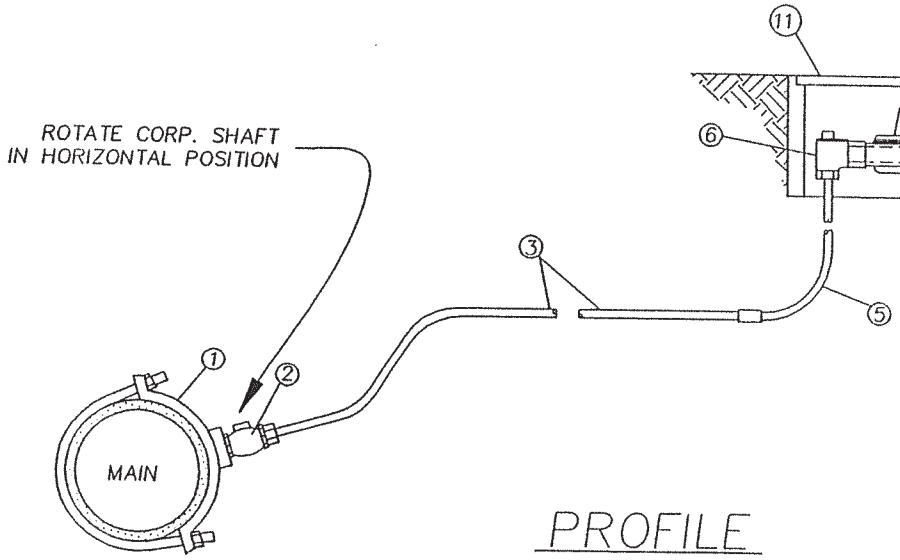
TYPICAL METER SERVICE
PLAN AND PROFILE

DRAWN S.E.W.
CHECKED
APPROVED John J. Lynch 10-18-93

SCALE: N.T.S. | DATE: OCT 93' | NO.: SD - 11

MATERIAL LIST FOR TYPICAL WATER SERVICE

ITEM NO.	DESCRIPTION OF ITEM	SIZE & TYPE OF SERVICE 1" SINGLE		SIZE & TYPE OF SERVICE 2" SINGLE		MATERIAL DESCRIPTION (see specifications)
①	SERVICE SADDLE (DOUBLE STRAP) I.P. THRD'S	1	1"	1	2"	Table 13
②	CORPORATION STOP I.P. THRD'S	1	1"	1	2"	Table 12
③	COPPER TUBING	1	1"	1	2"	TYPE K (1"); TYPE K-2 HARD (2")
④	NOT USED					
⑤	COPPER TUBING	1	1"	1	2"	TYPE K (1"); TYPE K-2 HARD (2")
⑥	ANGLE METER STOP	1	1"	1	2"	Table 14
⑦	SERVICE STOP	1	1"	1	2"	Table 15 & 16
⑧	BRASS NIPPLE (2-1/2" LENGTH)	1	1"	1	2"	STANDARD WEIGHT
⑨	INSULATING COUPLING	1	1"	1	2"	CHRISTY'S TC-CORR
⑩	CUSTOMER SERVICE NIPPLE (12" LENGTH)	1	1"	1	2"	PVC PIPE, SCH. 80, TxT
⑪	METER BOX	1		1		Table 17



PROFILE

NOTES:

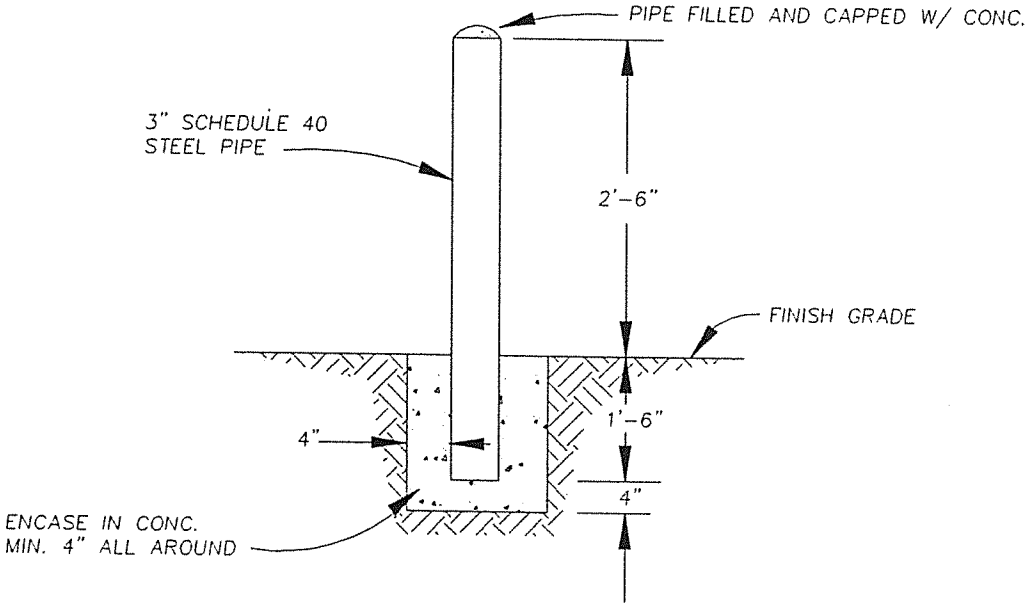
1. REFER TO DISTRICT'S SPECIFICATIONS, APPURTENANT STRUCTURES, FOR MATERIAL SPECIFICATIONS.

CASITAS MUNICIPAL WATER DISTRICT
OAK VIEW, CALIFORNIA

TYPICAL METER SERVICE
COPPER PIPE MATERIAL LIST

DRAWN S.E.W.
CHECKED T.J.C
APPROVED John J. Johnson 12-2-97

SCALE: N.T.S. | DATE: NOV. 97' | NO.: SD -- 12



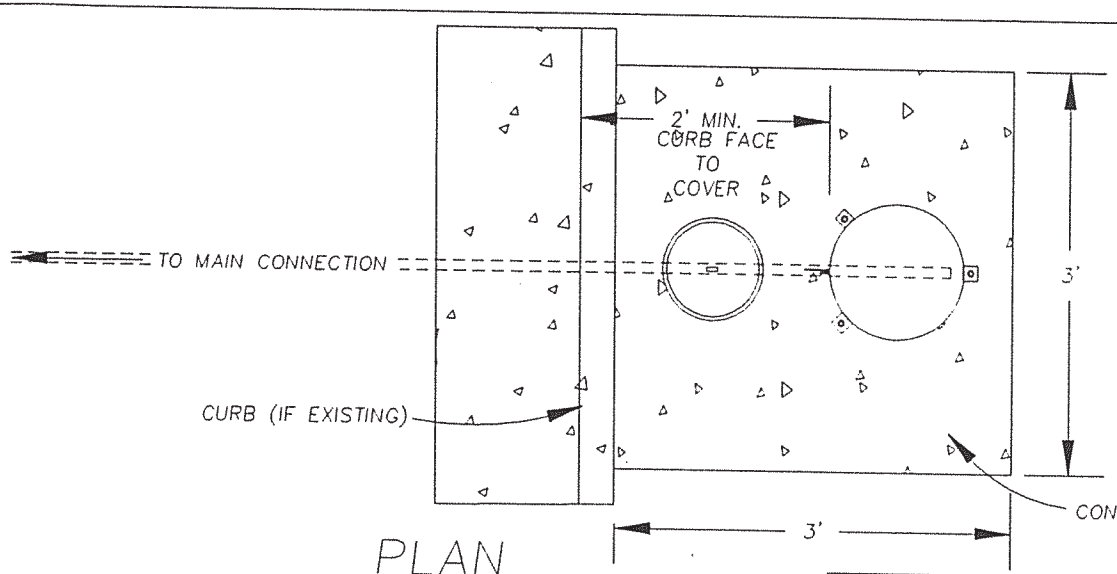
NOTE:
GUARD POSTS SHALL BE PLACED SO AS NOT TO OBSTRUCT THE INTENDED USE OF THE APPURTENANCE AND SHALL BE PLACED IN A LOCATION WHICH IS SATISFACTORY TO THE ENGINEER,

CASITAS MUNICIPAL WATER DISTRICT
OAK VIEW, CALIFORNIA

TYPICAL GUARD POST

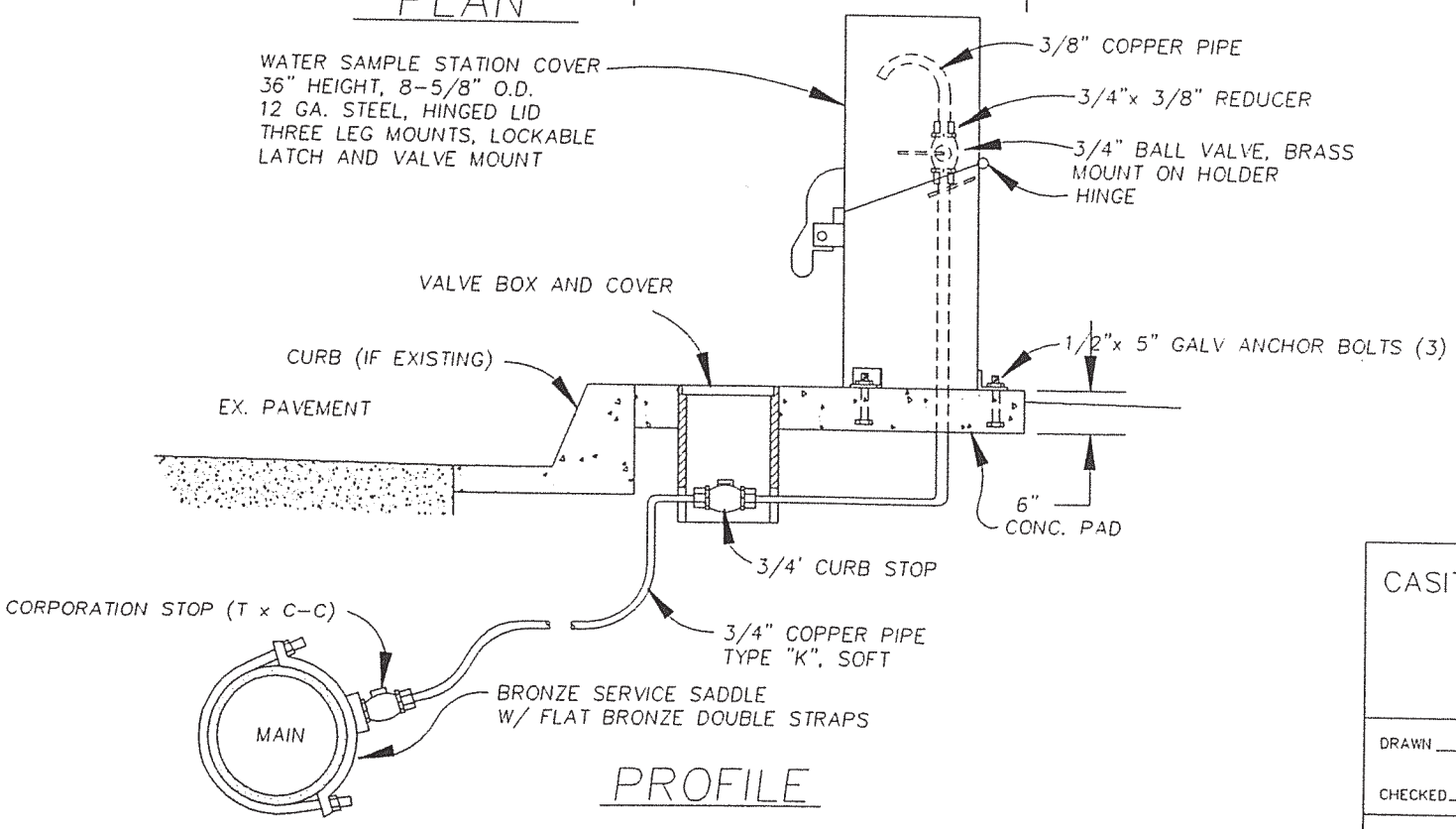
DRAWN S.E.W.
CHECKED
APPROVED John J. Johnson 10-13-93

SCALE: N.T.S. | DATE: OCT 93' | NO.: SD - 13



PLAN

NOTES;
1. STATION COVER MUST BE INSTALLED PLUMB.
2. WATER SAMPLE LINE TO BE INSTALLED FROM MAIN PER SD-11.
3. APPLY TWO COATS OF PRIMER AND ONE COAT OF ALUMINUM PAINT TO STATION COVER.
4. STENCIL "C.M.W.D." AND STATION NO. AS DIRECTED BY THE ENGINEER.
5. REFER TO DISTRICT'S SPECIFICATIONS, APPURTENANT STRUCTURES, FOR MATERIAL SPECIFICATION.

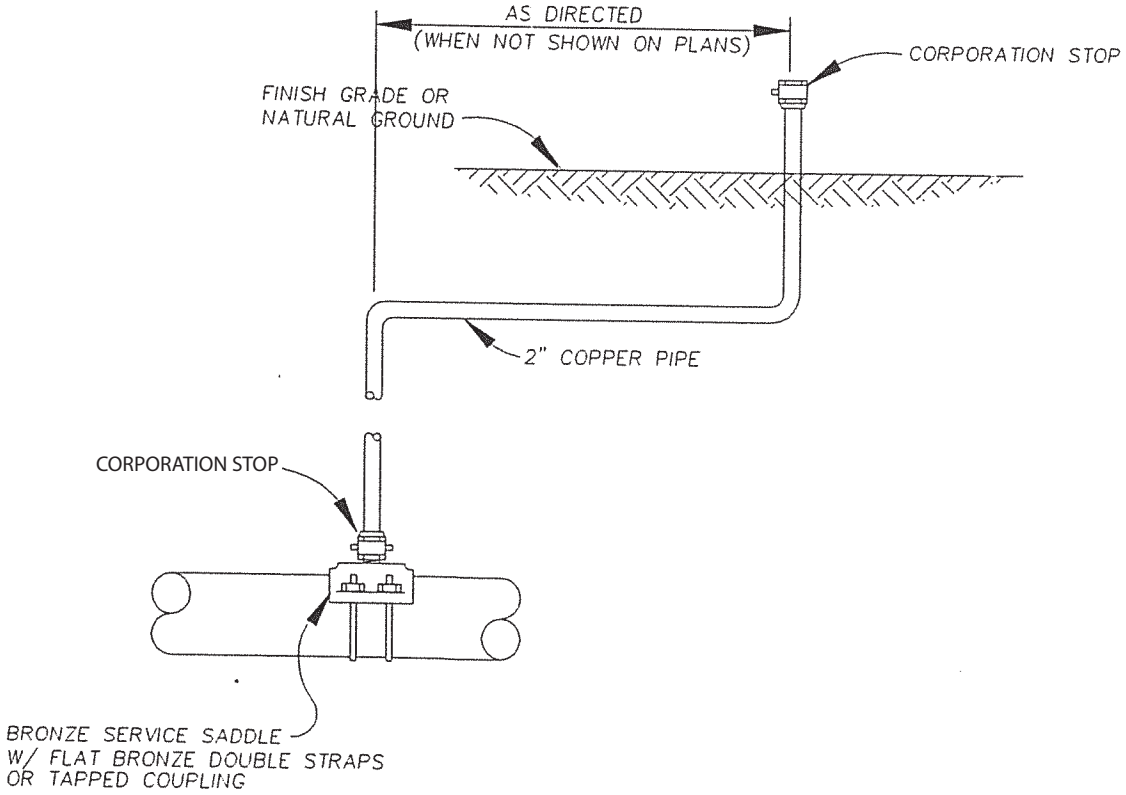


PROFILE

CASITAS MUNICIPAL WATER DISTRICT
OAK VIEW, CALIFORNIA

WATER SAMPLING STATION

DRAWN S.E.W.
CHECKED
APPROVED John J. Johnson 10-18-93
SCALE: N.T.S. | DATE: OCT 93' | NO.: SD - 14



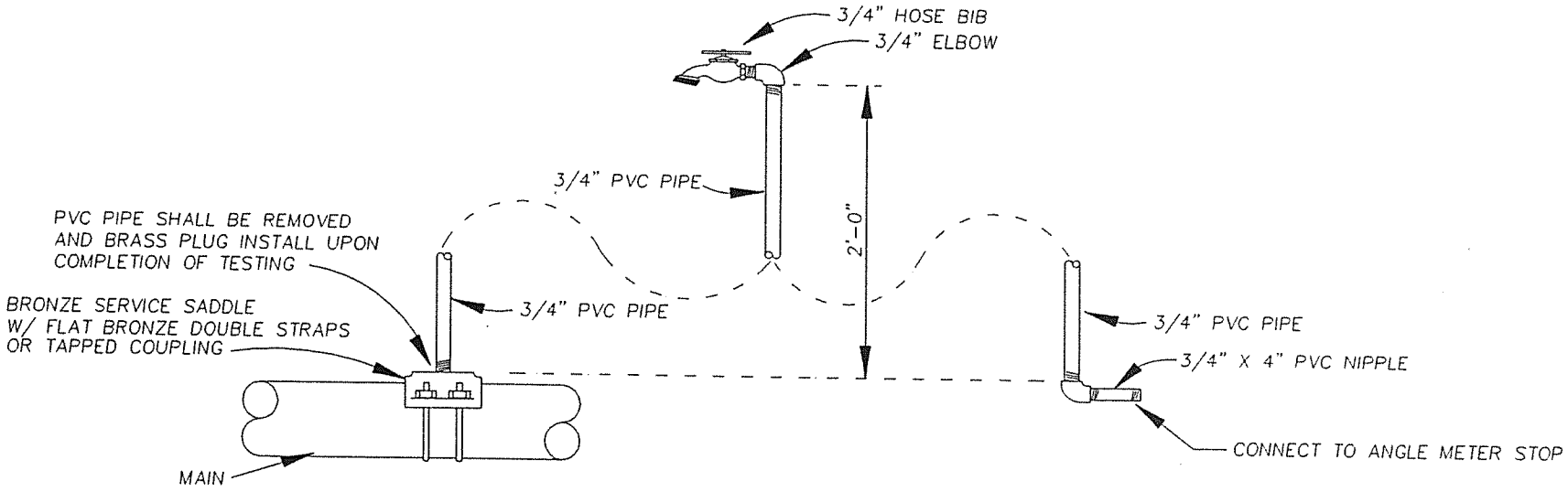
NOTES:
1. FOR CONNECTION TO STEEL PIPE, USE APPROVED SERVICE OR REINFORCED WELDED HEAVY COUPLING.
2. WHEN DIRECTED BY THE ENGINEER, THE ASSEMBLY SHALL BE REMOVED TO THE PIPELINE AND THE LOWER 2" CORPORATION STOP SHALL BE TURNED OFF AND PLUGGED WITH A BRASS PLUG.
3. REFER TO DISTRICT'S SPECIFICATIONS, APPURTENANT STRUCTURES, FOR MATERIAL SPECIFICATION.

CASITAS MUNICIPAL WATER DISTRICT
OAK VIEW, CALIFORNIA

CHLORINE INJECTION ASSEMBLY

DRAWN S.E.W.
CHECKED
APPROVED John J. Johnson 10-15-93

SCALE: N.T.S. | DATE: OCT 93' | NO.: SD – 15



MAIN LINE INSTALLATION

METER SERVICE INSTALLATION

NOTES:

1. SAMPLE STATIONS SHALL BE INSTALLED AT LOCATIONS DESIGNATED BY THE ENGINEER. STATIONS SHALL BE INSTALLED PRIOR TO THE DISINFECTION OF THE FACILITIES AND SHALL REMAIN UNDISTURBED UNTIL SATISFACTORY TEST RESULTS ARE ACHEIVED OR UNTIL DIRECTED BY THE ENGINEER.
2. ALL PVC PIPE SHALL BE NEW AND SCHEDULE 80.
3. REFER TO DISTRICT'S SPECIFICATIONS, APPURTENANT STRUCTURES, FOR MATERIAL SPECIFICATION.

CASITAS MUNICIPAL WATER DISTRICT
OAK VIEW, CALIFORNIA

TEMPORARY CONSTRUCTION SAMPLE STATION

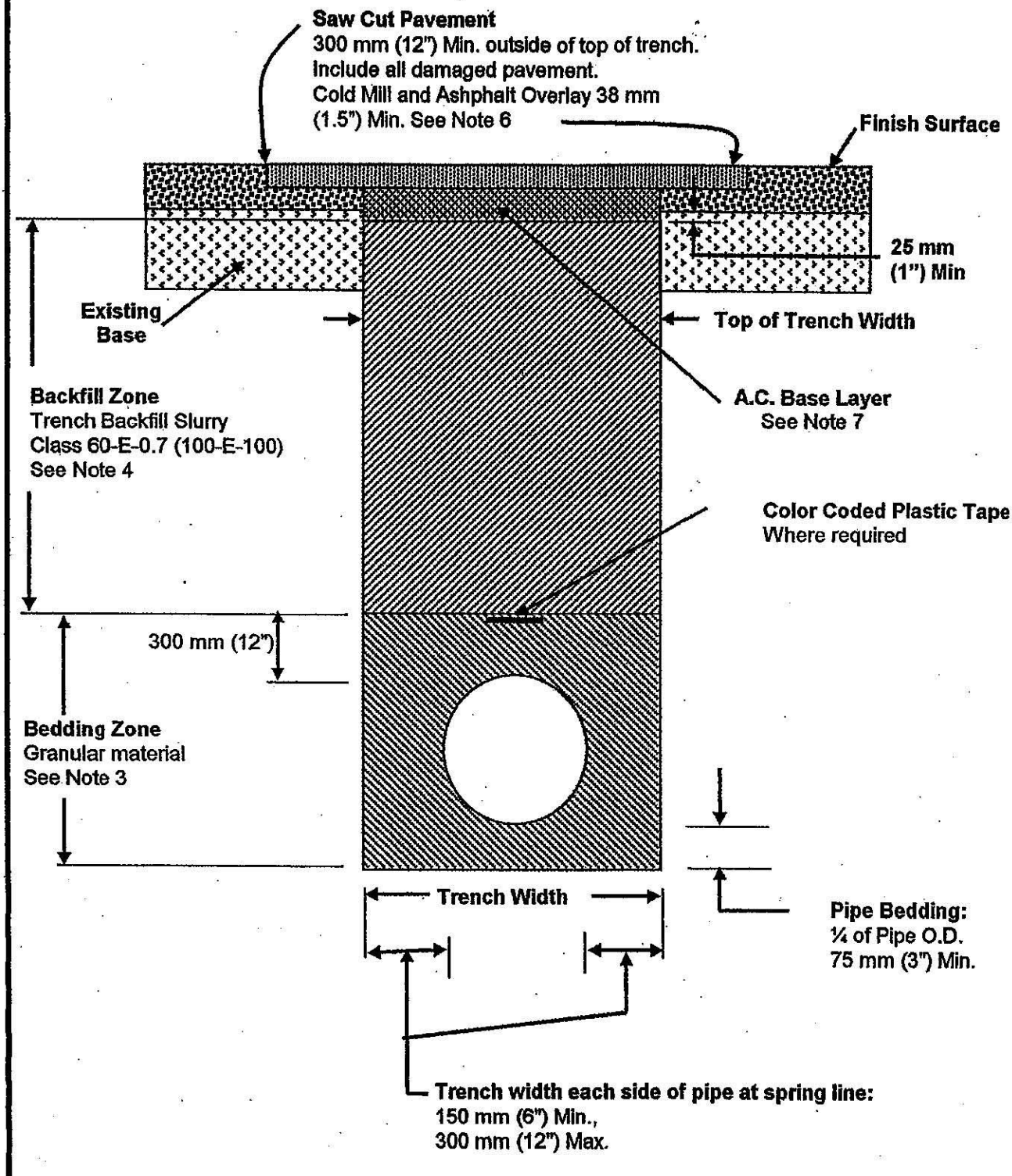
DRAWN S.E.W.

CHECKED

APPROVED John J. Johnson 10-15-92

SCALE: N.T.S. | DATE: JULY 92' | NO.: SD – 16

SI & (US) UNITS	REVISION: A	PLATE E-10a



ADOPTED BY BOARD OF SUPERVISORS: 06/21/05

APPROVED: Ronald L. Coons
DIRECTOR OF PUBLIC WORKS

RECOMMENDED: Mike T. Pringle
RCE 50408
EXPIRES 06-30-05

COUNTY OF VENTURA
PUBLIC WORKS AGENCY
ROAD STANDARDS

TRENCH BEDDING AND BACKFILL IN EXISTING PAVEMENT

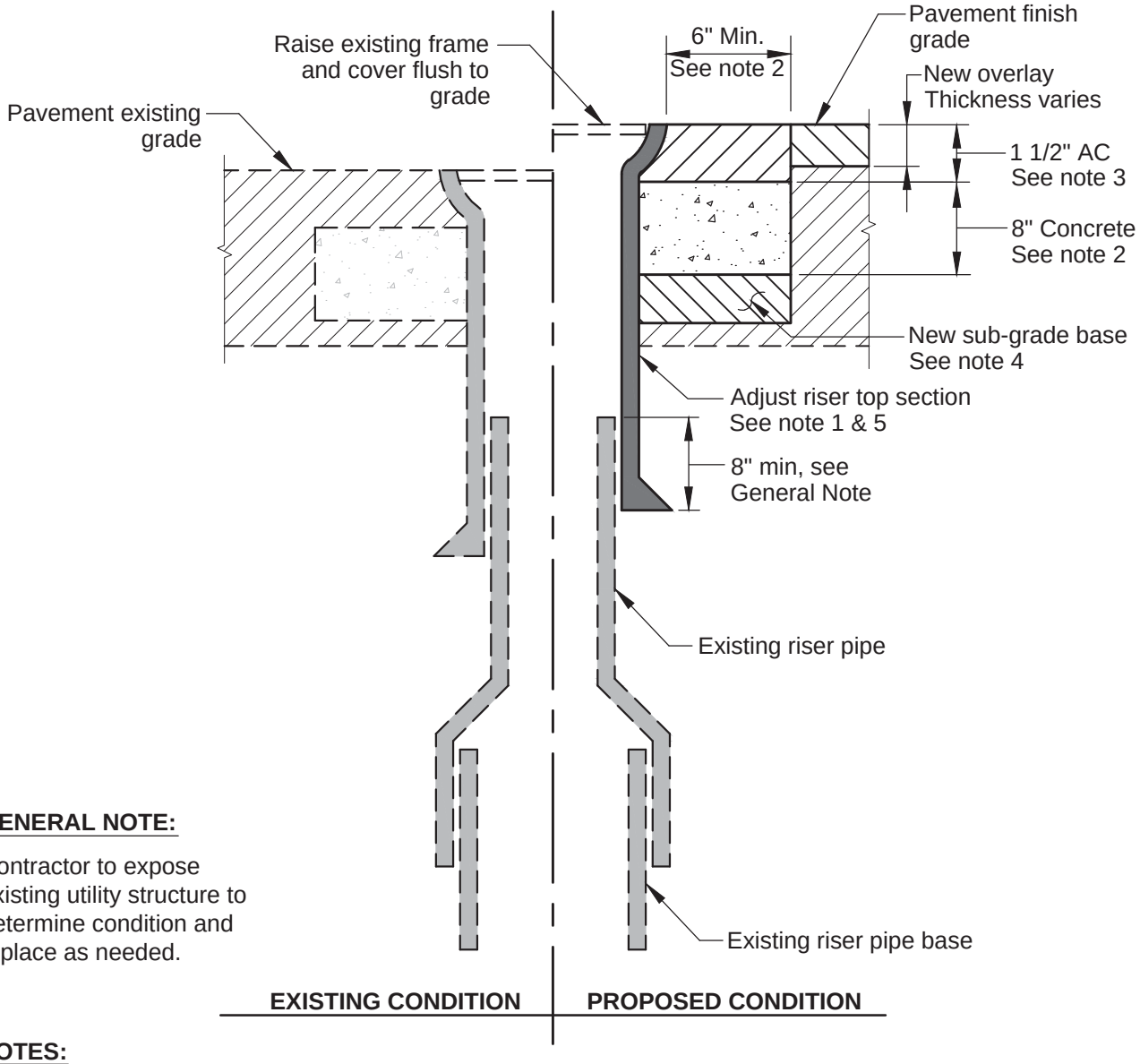
SI & (US) UNITS	REVISION: A	PLATE E-10b

NOTES:

1. Construction shall conform to Standard Land Development Specifications (SLDS) except as noted.
2. Trench width shall be as shown unless otherwise shown on the approved plans.
3. Bedding material shall be granular with 100% passing 19 mm (¾") sieve, 90 to 100% passing the 9.5 mm (3/8") sieve and not more than 4% passing 75 □m (No. 200 sieve).
4. Backfill between the bedding zone and subgrade shall be Trench Backfill Slurry Class 60-E-0.7 (100-E-100). The Director of Public Works may approve the substitution of one of the following:
   a. Controlled Low Strength Material (SLDS 201-6), provided that laboratory control is provided to insure compliance with the specifications.
   b. Non-cementitious backfill, provided that the backfill is tested and certified to meet the approved specifications for the material by an independent testing laboratory (SLDS 306-1.3). A Quality Control Plan shall be submitted for approval.
5. Compaction shall not use flooding, ponding or jetting unless directed by Soils Engr.
6. A.C. Overlay shall be Class III-C2-AR-4000 or III-C2-AR-8000, 38 mm (1.5") min.
7. AC Base Layer
   a. Where existing pavement surface is AC the AC Base Layer thickness shall be equal to or greater than the existing AC thickness plus 25 mm (1") with a minimum of 75 mm (3") and a maximum of 200 mm (8"). For roads where Traffic Index is 7.0 or greater (Plates B-2, B-3 & B-7a), the AC Base layer thickness shall be 100 mm (4") min.
   b. Where existing pavement surface is PCC pavement, saw cut 50 mm (2") into the existing pavement at the outer edge of the trench and break the remaining thickness. Replace the PCC and base to the same depth as the existing pavement. The PCC shall be 330-AS-23 (560-A-3250).

ADOPTED BY BOARD OF SUPERVISORS: 06/21/05	COUNTY OF VENTURA PUBLIC WORKS AGENCY ROAD STANDARDS
APPROVED: Ronald P. Coons DIRECTOR OF PUBLIC WORKS	
RECOMMENDED: Alec T. Pringle RCE 50408 EXPIRES 06-30-05	TRENCH BEDDING AND BACKFILL IN EXISTING PAVEMENT

US UNITS	REVISION:	PLATE E-4a



GENERAL NOTE:

Contractor to expose existing utility structure to determine condition and replace as needed.

NOTES:

1. All necessary portions of the subgrade base and pavement shall be neatly removed. Utility cover shall be raised and the utility riser top sections set to be backfilled to within 1 1/2 inch of the final grade with portland cement concrete. The remaining 1 1/2 inch shall be backfilled with an asphalt concrete wearing surface mixture to match the project surface course. The material shall be placed and compacted in a workmanlike manner to conform to the appearance of the surrounding pavement.
2. Install concrete collar around utility structure, concrete shall be Class 560-C-3250 with maximum 3 inch slump.
3. Asphalt concrete shall be C2-PG 64-10, placed in accordance with Section 302-5.8 of the SSPWC.
4. Backfill compaction shall be a minimum of 95% prior to placing concrete collar.
5. Existing utility installations that do not meet standards must be constructed in compliance with current standard.

ADOPTED BY BOARD OF SUPERVISORS: 05-16-2017

REVISION DATE:	DESCRIPTION:	APPROVED BY:
		J P
		RECOMMENDED BY:
		D F

COUNTY OF VENTURA
PUBLIC WORKS AGENCY

ROAD STANDARDS

RAISE EXISTING UTILITY COVER

APPENDIX C

TREE PROTECTION PLAN

Ventura Street Pipeline Replacement Project

Arborist Report and Tree Protection Plan

prepared for

Casitas Municipal Water District
1055 Ventura Avenue
Oak View, California 93022

prepared by

Rincon Consultants, Inc.
209 East Victoria Street
Santa Barbara, California 93101

March 2019

RINCON CONSULTANTS, INC.
Environmental Scientists | Planners | Engineers
rinconconsultants.com

Rincon Consultants, Inc.

2019 *Arborist Report and Tree Protection Plan, Ventura Street Pipeline Replacement Project.* Rincon Project 19-07171. March 2019.

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1 Introduction

Rincon Consultants, Inc. (Rincon) prepared this report for the Casitas Municipal Water District's (Casitas) Ventura Street Pipeline Replacement project, a component of the Ojai Water System Improvement Project (OWIP) located in the city of Ojai, Ventura County, California. This report documents the results of a tree survey and assessment of impacts to protected trees within this component of the project and provides a tree protection plan (Section 6), pursuant to the Ojai Municipal Code Title 4 Chapter 11

1.1 Project Background

The OWIP is located in the city of Ojai (City) and surrounding unincorporated areas of Ventura County (County). The purpose of the OWIP is to improve fire flow and replace aging mains, not to increase pipeline capacity to serve additional customers. The OWIP would replace approximately eight miles of pipeline segments and includes plans to rehabilitate tanks, booster stations, and wells; construct new tanks and a new well; and demolish existing pump stations and tanks throughout the Ojai system service area.

Pipeline replacements will typically be constructed using open-cut trenching. If trenchless methods are required, construction may include pipe bursting, jack and bore, and horizontal directional drilling if preliminary design shows utility conflicts, significant traffic control requirements, or other issues with the potential to interfere with trenching activities. Pipelines will typically be eight to twelve inches in diameter and would require a three-foot wide trench in which to work and place the pipe. Trenches would generally be no more than five feet deep.

This component of the OWIP, the Ventura Street project is located entirely within the City of Ojai. Construction activities will include pipeline replacement along Ventura Street from Ojai Avenue north to East Summer Street, and then along East Summer Street east to North Signal Street.

1.2 Project Plans

The preliminary drawings for the Ventura Street Project were provided by Casitas on March 13, 2019, as a computer-aided design (CAD) file. The proposed water main and proposed water lateral line locations shown on the drawings were used for the tree survey and protected tree impact analysis. Rincon assumes that the proposed lines are the only areas where ground disturbance will occur. Existing lines and abandonment lines were not assessed in this analysis and report.

2 Regulatory Context

The OWIP is located within public right-of-ways in the City and unincorporated areas of the County. Depending on the location, each project component may be subject to either the City or County tree protection requirements, and in some cases, to both jurisdictions. The Draft Initial Study – Mitigated Negative Declaration (IS-MND) prepared for the Project requires an Arborist Study and Tree Protection Plan (TPP) to minimize impacts to trees during Project implementation (Measure BIO-17). The measure states that prior to obtaining a permit from either jurisdiction, an Arborist Study shall be conducted within portions of the project footprint that occur within 20 feet of the canopy drip line of protected trees. The study shall identify and plot the location of protected trees and determine the jurisdiction of any trees to be impacted. An Arborist Report shall be prepared by a Certified Arborist in compliance with both the City and County ordinance guidelines. At minimum, the Arborist Report shall include the following:

- An inventory of all trees that have a canopy drip line within 20 feet of the project footprint, as feasible without trespassing on private lands. Inventory data should record, at minimum: diameter at breast height (DBH), height, canopy cover information/mapping, health and vigor rating
- Representative photographs of each regulated tree that may be encroached upon
- Description of proposed site development activities including, but not limited to, excavation for trenching, any tree trimming for access, and construction access routes
- A project-specific Tree Protection Plan (TPP) shall be prepared which would at a minimum include site plans, protective tree fencing, the designated tree protection zone (identifying an area sufficiently large enough to protect the tree and its roots from disturbance), activities prohibited/permitted within the tree protective zone, encroachment boundaries, and potential transplanting or replacement tree plantings
- The Arborist Report shall be submitted to the appropriate department of the City of Ojai or County of Ventura for approval prior to the start of any tree-disturbing construction activities, as necessary.

2.1 City of Ojai Municipal Code

The City Municipal Code Title 4 Chapter 11 (City 2008) contains policies that recognize oak, sycamore, heritage and other mature trees as significant historical, aesthetic, and ecological resources. The City defines protected trees as:

- Oak tree of the genus quercus, with a single trunk diameter of eight (8”) inches as measured four and one-half (4-½’) feet above the root crown; or with multiple trunks, where the sum of the two (2) largest trunks measures eleven (11”) inches.
- Sycamore tree of the genus platanus, with a single trunk diameter of eight (8”) inches; or with multiple trunks, where the sum of the two (2) largest trunks measures ten (10”) inches.

- Mature tree of any species which is designated as such by the City Council, with a single trunk diameter of twelve (12") inches; or with multiple trunks, where the sum of the two (2) largest trunks measures fourteen and one-half (14-½") inches.
- Heritage tree of any species which is designated as such by the City Council.

Please note that only the native California sycamore (*Platanus racemosa*) is protected by the City of Ojai Code. The non-native London plane (*Platanus acerifolia*) is not protected (per a telephone conversation with the City of Ojai's Senior Planning and Building Technician, Shari Herbruck, on March 25, 2019) when addressing impacts to trees. Removal of a London plane tree would be considered separately by the City, if proposed, on a case-by-case basis.

3 Protected Tree Survey Methodology

On March 14, 2019, ISA Certified Arborist, Stephanie Lopez (#WE-10442A) and ISA Certified Arborist, Yuling Huo (#WE-11975A) surveyed for protected trees with canopies within 20 feet of proposed water lines, as shown in Figure 1. The CAD file, loaded onto a Trimble device, was used to determine the location of proposed water lines for the survey. Trees located on private property and outside of the project right-of-way were assessed from a distance. All trees were assigned and tagged with a unique identification number. Trees were not physically tagged if they were located outside of the right-of-way. An assessment for risks or hazardous conditions was not included in this report.

Specifically, the arborists measured tree diameter, height, and canopy spread and assessed each tree. Health and condition, including evidence of disease, insect pests, structure, damage and vigor, were incorporated into the overall health rating based on archetype trees of the same species with criteria described in Table 1 (Overall Condition Rating Criteria), below

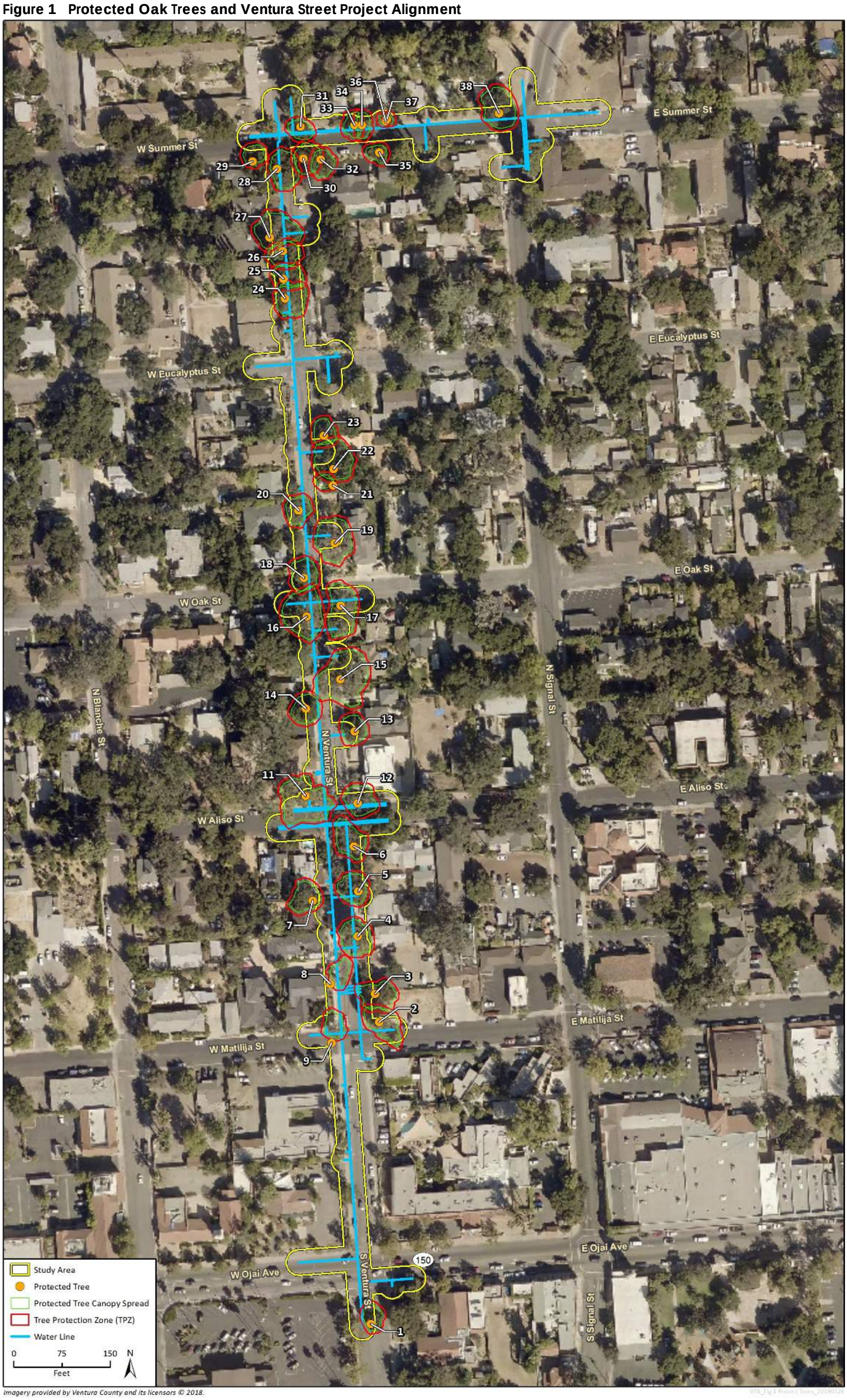
Table 1 Overall Condition Rating Criteria

Rating	Structure
Excellent	In addition to attributes of a 'good' rating, the tree exhibits a well-developed root flare and a balanced canopy. Provides shading or wildlife habitat and is aesthetically pleasing.
Good	Trunk is well developed with well attached limbs and branches; some flaws exist but are hardly visible. Good foliage cover and density, annual shoot growth above average. Provides shading or wildlife habitat and has minor aesthetic flaws.
Fair	Flaw in trunk, limb and branch development are minimal and are typical of this species and geographic region. Minimal visual damage from existing insect or disease, average foliage cover and annual growth.
Poor	Limbs or branches are poorly attached or developed. Canopy is not symmetrical. Trunk has lean. Branches or trunks have physical contact with the ground. May exhibit fire damage, responses to external encroachment/obstructions or existing insect/disease damage.
Dead	Trunk, limbs or branches have extensive visible decay or are broken. Canopy leaves are non-seasonally absent or uniformly brown throughout, with no evidence of new growth.

The City's definition of a tree's dripline will be used to delineate the tree protection zone (TPZ) of protected trees. For the purposes of this report and to remain consistent with the City Municipal Code, Rincon arborists used the definitions provided by the City as follows:

- Canopy spread is equal to a series of points formed by the vertical dripping of water from the outward branches and leaves of a tree.
- Dripline is the canopy spread, plus five (5') feet.

Figure 1 Protected Oak Trees and Ventura Street Project Alignment



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4 Protected Tree Survey Results and Discussion

Thirty-seven (37) protected trees had canopies within 20 feet of the proposed water lines. These included three (3) California sycamores, 27 coast live oaks (*Quercus agrifolia*), and seven (7) valley oaks (*Quercus lobata*). One (1) London plane tree was also observed (Tree #10). This London plane is not protected because although it would be impacted, it is not proposed for removal. According to the project plans no more than 10% of the London plane would be impacted by the project, and thus it is not addressed further in the document. If the tree is damaged by project construction activities to the point of needing removal or dies as a result of the project, additional coordination with the City would be recommended to determine if a replacement is necessary.

Tree #22 is a Heritage tree as designated by the City Council Resolution No. 13-48, Heritage Tree Inventory List. Twenty five (25) trees were determined to be in Good overall condition, ten (10) trees were in Fair overall condition, and three (3) trees were in Poor overall condition. The majority of the protected trees have canopies that are intertwined with overhead utility distribution lines, and several trees (including Tree #'s 4 and 11) have had nearly the entire canopy removed (topped). Appendix A provides the data collected for all protected trees.

Most of the protected trees are surrounded by concrete sidewalks on one or all sides of the trunk, and are located adjacent to or within the asphalt and/or sidewalks of Ventura or Summer Street. In such areas where asphalt or concrete is present within the tree's TPZ, compaction of tree roots is already occurring. Tree #28 is entirely surrounded by asphalt and Tree #1 is located in a planter divider in the middle of Ventura Street.

Several California sycamore and valley oaks did not have foliage present at the time of the survey in early spring, as they are deciduous trees. Observations of leaf buds, live branches, structural integrity, and signs of disease on the trunk/branches were used to determine the health of these trees.

Some trees were not physically tagged because of their location on private property and outside of the project right-of-way. Some protected trees are located in landscaped yards, and as a result, may be consistently irrigated and/or fertilized by property owners.

Several protected trees had been "white washed", with the entire lower two to three feet of the trunk painted with white coating. White washing is typically applied to trees to reflect sunlight which helps to keep the trees cooler, to protect them when temperatures drop drastically in the late fall or early winter, or to protect them from boring pests and insects. None of the protected trees appeared to be diseased or damaged to the point of requiring removal.

Chapter 11, Section 4-11.06. Arborist's Reports (a) (1) of the City of Ojai's Code states that the arborist report should note if active bird nests are observed in the trees. The arborists did not conduct a focused nesting bird survey but were aware of bird behavior in the trees while conducting the tree survey. No active bird nests were observed.

Representative site photographs are provided in Appendix B. The photograph for Tree #26 was obtained from Google Street View (Google 2019).

5 Estimated Impacts

All 37 trees are likely to be impacted by the project to some degree. Eleven (11) of the 37 trees could have up to 30% of their roots and canopies impacted by the project. The remaining 26 trees are expected to have less than 30% of roots and canopies impacted. No trees are expected to be removed. Impacts would include the trimming of branches in the canopy and/or severing of roots. Impact estimates shown in Appendix A are based on the project plans provided and location data collected during the tree survey. Actual impacts won't be known until the time of construction. Percentages shown in Appendix A are for estimated impacts to both the canopy and root system. Actual impacts will depend upon the tree structure and the construction activities (e.g., trench depth and width, need for trimming of canopy for equipment clearance, etc.).

Due to the nature of excavation and trenching, the greatest concern to tree health and mortality associated with the water line replacements is root damage. As long as large lateral roots and sinker roots, which provide tree structural stability, are not removed, most trees should tolerate excavation affecting no more than 30% of the root zone. It should be noted, that root systems vary by depth and may spread based on tree species, age, and soil type. Therefore, the full root zone may extend 2 to 3 times beyond the TPZ or may be less if the roots are impeded by physical barriers. Excessive damage to a tree's TPZ has potential to cause mortality to the respective tree.

Activities that may typically affect tree health and mortality when construction occurs near them include but are not limited to the following:

- Excavation/trenching—root severance
- Soil compaction (during and post-construction)
- Grading (cut and/or fill)
- Substantial trimming of canopy or roots
- Damage to limbs and branches from project equipment collision (mechanical damage)

The ISA recommends that activities affecting the roots of a tree impact no more than 20-25% of the root zone. Removal of larger roots (particularly lateral or sinker roots and roots greater than two inches in diameter) can severely impact the stability of the tree. Healthy and young trees may tolerate impacts to as much as 50% of their canopy or root system, (Sinclair, Lyon, and Johnson; 1987); however, trees that are relatively large and/or old for the species or already under stress will have lower tolerances.

Adherence to the mitigation measures below would minimize impacts to protected trees. In the event that encroachment of the TPZ exceeds 30% or is too great to allow survival of a protected tree (as determined by a Certified Arborist during construction), the impact status would be elevated to a removal. Tree removal is not anticipated at this time.

6 Tree Protection Plan

The following measures shall be implemented to reduce impacts to protected trees.

6.1 Pre-Construction

Worker Awareness

All personnel should be educated by a certified arborist about the TPZs prior to working within or adjacent to these areas. The education should include explanation of importance of the TPZ signage and the protocol for working within TPZs, which is discussed below.

6.2 During Construction

Oversight of Impacts to Trees

No person shall impact protected trees without a certified arborist's or Casitas district representative's (project manager/inspector/etc.) oversight. When the district representative provides oversight he/she will consult with an ISA certified arborist before roots or branches greater than 2 inches in diameter are cut. The arborist will provide input on avoiding or minimizing impacts to roots and branches. A daily log will be completed (by either the arborist or the representative, whomever is on site when cuts are made) that documents all root and branch cuts (size of root and branch, number of roots and branches, and location on the tree). In addition, a copy of this report, the protected tree location map, and the approved City permit must on site and in the possession of the responsible person (district representative/certified arborist approving the cutting of roots and branches).

Fencing/Signage

This project is located on a public right-of-way on a residential street and is linear in nature. Typical fencing around protected trees is not required during construction because establishing fencing daily and then moving the fencing daily for construction is not feasible. As an alternative, portable standalone signs should be placed at TPZs when construction activities are within 10 feet of protected trees. The signs should be moved along the right-of-way as the linear construction progresses. The signs should say "Tree Protection Zone, Contact CMWD District Representative" and should remain in place throughout the temporary period of construction (i.e., may be moved overnight and replaced at the start of the work day, or left in place until construction activities in the area are completed). Presence of the signs should be confirmed by a district representative (e.g. project manager/inspector/etc.) or certified arborist.

Grading/Excavation/Trenching

Where grading, trenching, or any other ground disturbing activity occurs and/or is specifically shown on the project plans within a tree's TPZ, the activity should be done slowly so that when roots are encountered they are not ripped or damaged by equipment. Hand tools or small hand-held power

equipment should be utilized, as feasible. Cutting roots two inches in diameter or greater should be avoided wherever possible.

Root Severance

When root cutting occurs, exposed major roots that are greater than two inches in diameter should not be ripped by construction equipment. Instead, they should be cut cleanly. Cuts should be clean and made at right angles to the roots. New cuts should be wetted and covered with absorbent tarp or heavy cloth fabric.

Pruning/Trimming

All pruning/trimming shall be performed consistent with the ANSI A300 Pruning Standard (ANSI, 2017) and should adhere to the most recent edition of ANSI Z133.1. Pruning/trimming of protected trees will be limited to only what is necessary for construction. Climbing spurs and spikes shall not be used, except in cases of emergency.

Soil Compaction

Soil compaction imposes a complex set of physical, chemical, and biological constraints on tree growth. Principal components leading to limited growth are the loss of aeration and pore space, poor gas exchange with the atmosphere, lack of available water, and mechanical impedance of root growth. Soil compaction is the largest single factor responsible for the decline of trees on construction sites. Given the current site conditions (paved roads and sidewalks), most of the existing protected trees already have compacted soil within the project footprint. The following guidelines are recommended to protect trees from any additional soil compaction that may occur due to project activities:

- No equipment or materials will be stored under canopies, or within the TPZ of protected trees (except in areas of paved asphalt or concrete sidewalks). On-site staging, storage and washing of construction materials and equipment will be limited to designated and approved areas. Steel traffic plates should be employed to protect sensitive root zones as needed.
- In areas of paved asphalt or concrete sidewalks, equipment may travel within TPZs without a monitor present. If pavement or asphalt is being removed within TPZs, or equipment must travel in areas of exposed soil, a certified arborist or district representative should monitor and document the activity.

Exhaust Exposure

Equipment should limit or avoid travel within TPZs (under tree canopies) to reduce impacts from equipment exhaust exposure. If equipment must operate within TPZs, the exhaust should be directed away from the foliage of protected trees, as feasible. When equipment is operating within TPZs, a certified arborist or district representative should monitor and document the activity.

Mechanical Damage

Damage to limbs and branches from project equipment (mechanical damage) may occur if work, including staging and access, occurs within TPZs. If damage occurs to limbs and branches, immediate trimming with clean cuts should occur in accordance with the ANSI standards discussed above. If damage to the bark or trunk occurs, wound dressings are not recommended. Treatment of said

damages may be applied in accordance with the ANSI A300 Management of Trees and Shrubs during Site Planning, Site Development, and Construction (ANSI 2012). A certified arborist or district representative should monitor and document this activity.

6.3 Post-Construction

If any protected tree dies or is damaged to the point of requiring removal during construction activities, the Director (the Community Development Director for private property, and the Public Works Director for public property) may require one of the following mitigation measures:

1. Tree(s) to be removed shall be replaced with trees of suitable type, size, and number. Oaks and sycamores shall generally be replaced with like species; other mature trees shall be replaced with trees from the approved replacement tree list.
2. The number, type, and size of replacement tree(s) shall be either equivalent to the appraised value of the tree based on ISA standards; the total sum of the diameters of all trunks of all replacement trees shall be equal to or greater than the total sum of diameters of the trunks of all removed trees [and no replacement tree shall be less than two (2”) inches in diameter].
3. If a site cannot accommodate the number of replacement trees required, the dollar value of those replacement trees may be paid as an in-lieu fee to the City’s tree fund at the discretion of the Director or Planning Commission.

7 References

American National Standards Institute (ANSI)

2012 Tree, Shrub, and Other Woody Plant Management - Standard Practices (Management of Trees and Shrubs During Site Planning, Site Development, and Construction)

2017 Tree, Shrub, and Other Woody Plant Management - Standard Practices (Pruning)

California Department of Forestry and Fire Protection (CDF)

1989a Tree Notes: Protecting Trees from Construction Impacts.

1989b Tree Notes: Tree Roots; Major Considerations for the Developer.

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2008 Municipal Code. Available online at: http://www.qcode.us/codes/ojai/.

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2000 Guide for Plant Appraisal, 9th Edition. November.

County of Ventura (County)

1992 Tree Protection Ordinance. Available online at: https://docs.vcrma.org/images/pdf/planning/tree-permits/Tree-Protection.pdf.

International Society of Arboriculture

2010 Arborist Certification Study Guide.

Sinclair, W.A., Lyon, H.H., and Johnson, W.T.

1987 *Diseases of Trees and Shrubs.* Comstock Publishing Associates, Ithaca, NY.

Appendix A

Protected Tree Matrix

Tree ID	Latitude	Longitude	Scientific Name	Common Name	Tree Height (feet)	Canopy Spread (feet)	# of Trunks	Diameter #1 (inches)[1]	Diameter #2 (inches)	Proposed Impacts	Overall Health	Notes
1	34.44745535	-119.2470752	Quercus agrifolia	Coast live oak	20	30	1	18	–	Approximately <10 % of canopy and roots impacted.	Good	Ants present.
2	34.44874867	-119.2470516	Platanus racemosa	California sycamore	60	50	2	26	23	Approximately <20% of canopy and roots impacted.	Good	Codominant trunks. Oak sapling and palm growing at base. Canopy intertwined w/ utility lines. Mistletoe present.
3	34.44886937	-119.2470753	Quercus agrifolia	Coast live oak	30	30	1	20	–	Approximately <20% of canopy and roots impacted.	Good	Canopy w/in 20 ft of proposed lines. Tree not tagged.
4	34.44911334	-119.2471685	Platanus racemosa	California sycamore	45	30	1	26	–	Approximately <30% of canopy and roots impacted.	Fair	Canopy intertwined w/ utility lines. Mistletoe present. Tree is topped. Tree not tagged.
5	34.44930683	-119.2471692	Quercus agrifolia	Coast live oak	25	30	2	21	19	Approximately <30% of canopy and roots impacted.	Good	Codominant trunks. Small inactive stick nest present. Canopy intertwined w/ utility lines.
6	34.4494977	-119.2471948	Quercus lobata	Valley oak	60	40	1	29	–	Approximately <20% of canopy and roots impacted.	Good	Extensive epicormic growth. Codominant trunks that fused. Canopy intertwined w/ utility lines.

Tree ID	Latitude	Longitude	Scientific Name	Common Name	Tree Height (feet)	Canopy Spread (feet)	# of Trunks	Diameter #1 (inches)[1]	Diameter #2 (inches)	Proposed Impacts	Overall Health	Notes
7	34.44926443	-119.2474032	Quercus agrifolia	Coast live oak	30	30	1	20	–	Approximately <10% of canopy and roots impacted.	Good	Epicormic growth on trunk. Growing into shed wall. Tree not tagged.
8	34.44890788	-119.2473066	Quercus agrifolia	Coast live oak	25	25	1	25	–	Approximately <25% of canopy and roots impacted.	Poor	Second trunk removed. Limbs severely pruned. Sparse canopy.
9	34.44865656	-119.2472966	Quercus lobata	Valley oak	35	25	1	21	–	Approximately <25% of canopy and roots impacted.	Good	Epicormic growth on trunk. Not yet leafing.
11	34.44971211	-119.2474468	Platanus racemosa	California sycamore	50	40	4	25	20	Approximately <20% of canopy and roots impacted.	Good	Tree has been topped. Tree not tagged.
12	34.44968317	-119.2471774	Quercus lobata	Valley oak	35	35	1	38	–	Approximately <30% of canopy and roots impacted.	Fair	Heavily pruned. Potential beehive in trunk. White treatment at trunk base.
13	34.44998996	-119.2471966	Quercus agrifolia	Coast live oak	25	25	1	21	–	Approximately <5% of canopy and roots impacted.	Good	Canopy w/in 20 ft. of proposed lines. Tree not tagged.
14	34.4500857	-119.2474508	Quercus agrifolia	Coast live oak	30	25	1	25	–	Approximately <5% of canopy and roots impacted.	Good	Tree not tagged.

Tree ID	Latitude	Longitude	Scientific Name	Common Name	Tree Height (feet)	Canopy Spread (feet)	# of Trunks	Diameter #1 (inches)[1]	Diameter #2 (inches)	Proposed Impacts	Overall Health	Notes
15	34.45021158	-119.2472744	Quercus lobata	Valley oak	50	50	1	48	–	Approximately <10% of canopy and roots impacted.	Good	White treatment at trunk base. Epicormic growth on trunk and branches.
16	34.45047974	-119.2474522	Quercus lobata	Valley oak	40	55	1	45	–	Approximately <30% of canopy and roots impacted.	Good	Woodpecker holes. Heavy pruning.
17	34.45052869	-119.2472777	Quercus lobata	Valley oak	50	35	1	45	–	Approximately <30% of canopy and roots impacted.	Good	Woodpecker holes. Previously pruned.
18	34.45064485	-119.2474696	Quercus agrifolia	Coast live oak	25	25	1	25	–	Approximately <25% of canopy and roots impacted.	Good	Canopy intertwined w/ utility lines.
19	34.45079451	-119.2473114	Quercus lobata	Valley oak	40	35	1	48	–	Approximately <25% of canopy and roots impacted.	Good	Heavily pruned. Woodpecker holes.
20	34.45093281	-119.2475008	Quercus agrifolia	Coast live oak	25	25	1	30	–	Approximately <20% of canopy and roots impacted.	Fair	Yellowing, thinning. Tree not tagged.
21	34.4510424	-119.2473259	Quercus agrifolia	Coast live oak	15	15	1	12	–	Approximately <5% of canopy roots impacted.	Good	Excessive lean. Canopy w/in 20 ft of proposed lines.

Tree ID	Latitude	Longitude	Scientific Name	Common Name	Tree Height (feet)	Canopy Spread (feet)	# of Trunks	Diameter #1 (inches)[1]	Diameter #2 (inches)	Proposed Impacts	Overall Health	Notes
22	34.45111235	-119.2473229	Quercus agrifolia	Coast live oak	25	55	1	50	–	Approximately <10% of canopy and roots impacted.	Fair	Adjacent oak competition. Heavily pruned. Rot on branches. Tree not tagged.
23	34.45125432	-119.2473744	Quercus agrifolia	Coast live oak	25	25	1	16	–	Approximately <10% of canopy and roots impacted.	Good	Tree not tagged.
24	34.45183844	-119.2475851	Quercus agrifolia	Coast live oak	40	40	1	33	–	Approximately <30% of canopy and roots impacted.	Good	Canopy intertwined w/ utility lines.
25	34.45192246	-119.2475947	Quercus agrifolia	Coast live oak	35	35	1	24	–	Approximately <30% of canopy and roots impacted.	Good	Heavily pruned.
26	34.45204266	-119.2475987	Quercus agrifolia	Coast live oak	30	35	1	23	–	Approximately <30% of canopy and roots impacted.	Good	Heavily pruned. Canopy intertwined w/ utility lines.
27	34.45209966	-119.2476678	Quercus agrifolia	Coast live oak	30	45	1	40	–	Approximately <30% of canopy and roots impacted.	Fair	Decay on trunk. Sparse foliage. Tree not tagged.

Tree ID	Latitude	Longitude	Scientific Name	Common Name	Tree Height (feet)	Canopy Spread (feet)	# of Trunks	Diameter #1 (inches)[1]	Diameter #2 (inches)	Proposed Impacts	Overall Health	Notes
28	34.45239352	-119.247634	Quercus agrifolia	Coast live oak	25	40	1	34	–	Approximately <30% of canopy and roots impacted.	Fair	Trunk base surrounded by street asphalt. Canopy intertwined w/ utility lines. White treatment at trunk base.
29	34.45242371	-119.2477603	Quercus agrifolia	Coast live oak	20	25	2	12	10	Approximately <5% of canopy roots impacted.	Fair	Excessive lean into road. Dieback.
30	34.45243906	-119.247499	Quercus agrifolia	Coast live oak	25	30	1	25	–	Approximately <5% of canopy and roots impacted.	Poor	White treatment at trunk base. Rot in trunk.
31	34.45257428	-119.247516	Quercus agrifolia	Coast live oak	15	25	1	25	–	Approximately <30% of canopy and roots impacted.	Fair	Succulents growing at trunk base. Tree not tagged.
32	34.45243622	-119.24741	Quercus agrifolia	Coast live oak	25	30	1	19	–	Approximately <5% of canopy and roots impacted.	Fair	Tree not tagged.
33	34.45258513	-119.2472371	Quercus agrifolia	Coast live oak	25	30	1	17	–	Approximately <20% of canopy and roots impacted.	Fair	Dieback. Tree not tagged.

Tree ID	Latitude	Longitude	Scientific Name	Common Name	Tree Height (feet)	Canopy Spread (feet)	# of Trunks	Diameter #1 (inches)[1]	Diameter #2 (inches)	Proposed Impacts	Overall Health	Notes
34	34.45258441	-119.2471987	Quercus agrifolia	Coast live oak	30	30	1	16	–	Approximately <20% of canopy and roots impacted.	Good	Tree not tagged.
35	34.45246936	-119.2471076	Quercus agrifolia	Coast live oak	20	25	1	16	–	Approximately <5% of canopy and roots impacted.	Fair	White treatment at trunk base. Tree not tagged.
36	34.4526034	-119.247076	Quercus agrifolia	Coast live oak	20	15	1	11	–	Approximately <10% of canopy and roots impacted.	Good	Tree not tagged.
37	34.45261111	-119.2470701	Quercus agrifolia	Coast live oak	20	10	1	9	–	Approximately <10% of canopy and roots impacted.	Good	Tree not tagged.
38	34.45264319	-119.2464919	Quercus agrifolia	Coast live oak	30	40	1	60	–	Approximately <20% of canopy and roots impacted.	Poor	Ivy on trunk. Tree not tagged.

[1] Only the two (2) largest trunk diameters (measured at 4.5 feet above the root crown) were recorded for this report.

Appendix B

Tree Photo Log

Photo 1: Tree #1, Coast live oak *(Quercus agrifolia)*

Photo 2: Tree #2, California sycamore *(Platanus racemosa)*

Photo 3: Tree #3, Coast live oak *(Quercus agrifolia)*

Photo 4: Tree #4, California sycamore *(Platanus racemosa)*

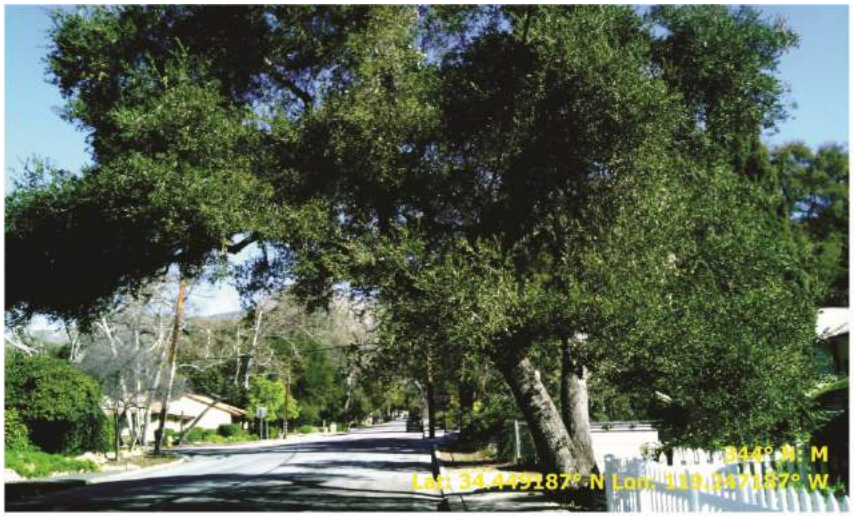

Photo 5: Tree #5, Coast live oak *(Quercus agrifolia)*

Photo 6: Tree #6, Valley oak *(Quercus lobata)*

Photo 7: Tree #7, Coast live oak *(Quercus agrifolia)*

Photo 8: Tree #8, Coast live oak *(Quercus agrifolia)*

Photo 9: Tree #9, Valley oak *(Quercus lobata)*

Photo 11: Tree #11, California sycamore *(Platanus racemosa)*

Photo 12: Tree #12, Valley oak *(Quercus lobata)*

Photo 13: Tree #13, Coast live oak *(Quercus agrifolia)*

Photo 14: Tree #14, Coast live oak *(Quercus agrifolia)*

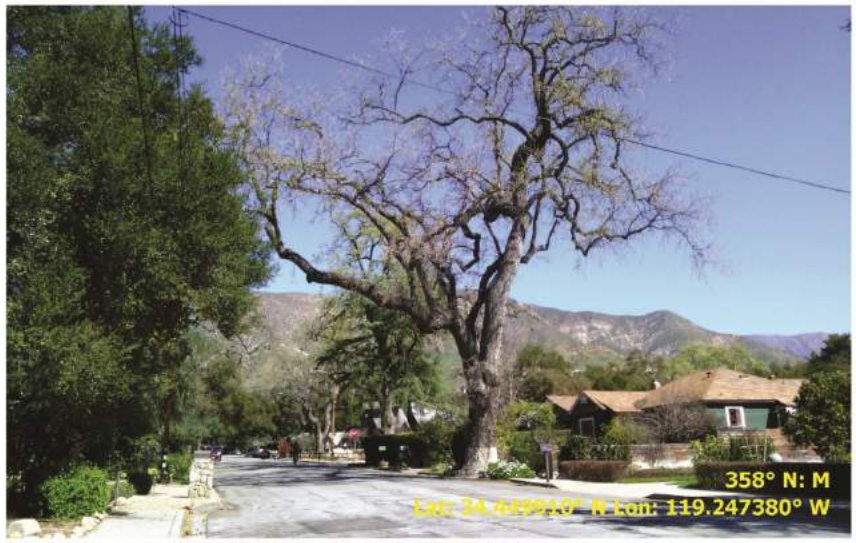

Photo 15: Tree #15, Valley oak *(Quercus lobata)*

Photo 16: Tree #16, Valley oak *(Quercus lobata)*

Photo 17: Tree #17, Valley oak *(Quercus lobata)*

Photo 18: Tree #18, Coast live oak *(Quercus agrifolia)*

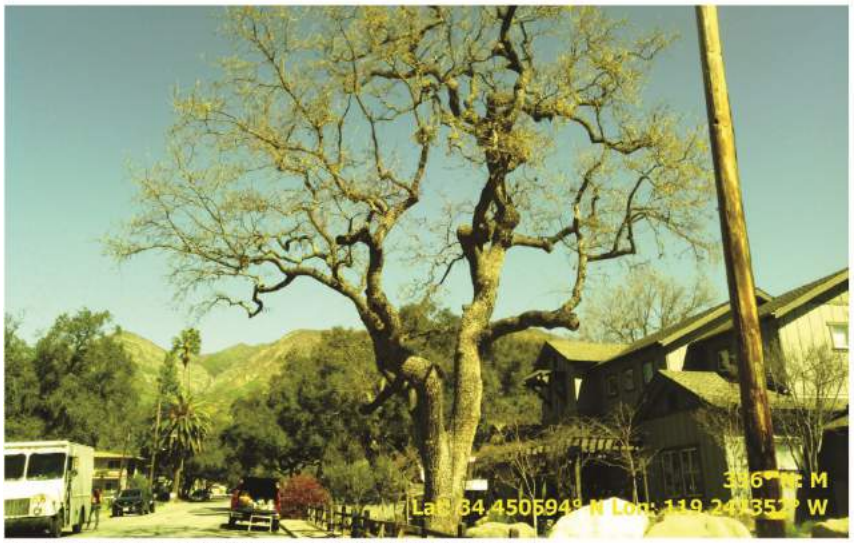

Photo 19: Tree #19, Valley oak *(Quercus lobata)*

Photo 20: Tree #20, Coast live oak *(Quercus agrifolia)*

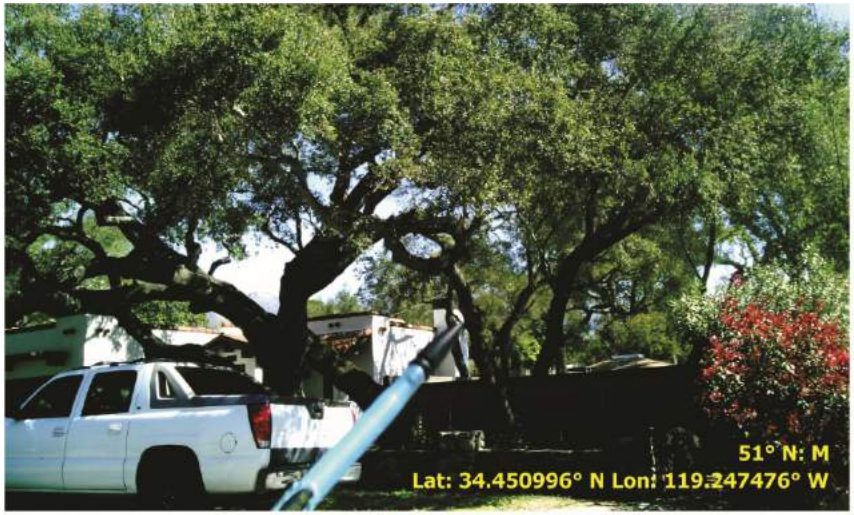

Photo 21: Tree #21, Coast live oak *(Quercus agrifolia)*

Photo 22: Tree #22, Coast live oak *(Quercus agrifolia)*

Photo 23: Tree #23, Coast live oak *(Quercus agrifolia)*

Photo 24: Tree #24, Coast live oak *(Quercus agrifolia)*

Photo 25: Tree #25, Coast live oak *(Quercus agrifolia)*

Photo 26: Tree #26, Coast live oak *(Quercus agrifolia)*

Photo 27: Tree #27, Coast live oak *(Quercus agrifolia)*

Photo 28: Tree #28, Coast live oak *(Quercus agrifolia)*

Photo 29: Tree #29, Coast live oak *(Quercus agrifolia)*

Photo 30: Tree #30, Coast live oak *(Quercus agrifolia)*

Photo 31: Tree #31, Coast live oak *(Quercus agrifolia)*

Photo 32: Tree #32, Coast live oak *(Quercus agrifolia)*

Photo 33: Tree #33, Coast live oak *(Quercus agrifolia)*

Photo 34: Tree #34, Coast live oak *(Quercus agrifolia)*

Photo 35: Tree #35, Coast live oak *(Quercus agrifolia)*

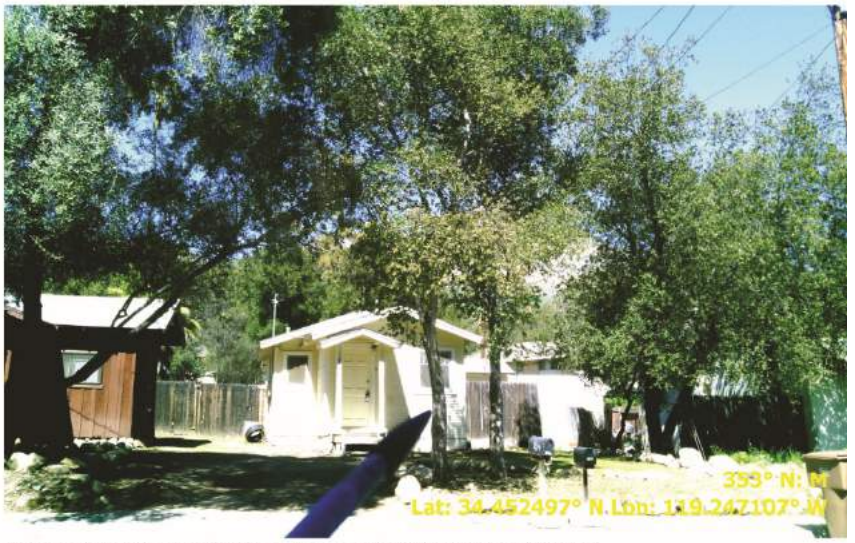

Photo 36: Tree #36, Coast live oak *(Quercus agrifolia)*

Photo 37: Tree #37, Coast live oak *(Quercus agrifolia)*

Photo 38: Tree #38, Coast live oak *(Quercus agrifolia)*

APPENDIX D

MITIGATION MONITORING AND REPORTING PROGRAM

Mitigation Monitoring and Reporting Program

This document is the Mitigation Monitoring and Reporting Program (MMRP) for the Ojai Water System Improvements Project proposed by the Casitas Municipal Water District. CEQA requires a reporting or monitoring program be adopted for the conditions of project approval which are necessary to mitigate or avoid significant effects on the environment (Public Resources Code 21081.6). This mitigation monitoring and reporting program is designed to ensure compliance with adopted mitigation measures during project implementation. For each mitigation measure recommended in the Final Initial Study-Mitigated Negative Declaration (Final IS-MND), specifications are made herein which identify the action required and the monitoring which must occur, and the agency or department responsible for oversight.

In addition to ensuring implementation of mitigation measures, the MMRP provides feedback to agency staff and decision-makers during project implementation, and identifies the need for enforcement action before irreversible environmental damage occurs.

The following table identifies each mitigation measure included in the Final IS-MND, the action required for the measure to be implemented, the time at which the monitoring is to occur, the monitoring frequency, and the agency or party responsible for ensuring the monitoring is performed. In addition, the table includes columns for compliance verification. These columns will be filled out by the monitoring agency or party and would document monitoring compliance. Where an impact was identified to be less than significant, no mitigation measures were required.

Mitigation Measure/ Condition of Approval	Action Required	Monitoring Timing	Responsible Agency	Compliance Verification		
				Initial	Date	Comments
Biological Resources						
BIO-1: Avoid Work above San Antonio Creek during the Rainy Season						
Project activities associated with pipe replacement on the bridge above San Antonio Creek shall not occur during the rainy season (November 15 to April 15), to avoid work when higher flows and steelhead could be present. If activities at this location must occur during the rainy season, a pre-activity survey shall be conducted by a qualified fisheries biologist to determine if flow conditions are suitable for steelhead passage. If flow conditions are not suitable, pipeline replacement can proceed and the activity should be monitored by a qualified biologist, as needed, to confirm flow conditions do not change during the project activity. If flow conditions are suitable for steelhead passage, pipeline replacement shall be postponed until a qualified biologist determines the conditions are no longer suitable and the species is not likely to be present.	Avoid project activities associated with pipe replacement on the bridge above San Antonio Creek between November 15 and April 15. Retain a qualified fisheries biologist to conduct pre-activity surveys.	Avoid rainy season construction above San Antonio Creek throughout project construction. Retain a qualified fisheries biologist prior to any pipe replacement over San Antonio Creek between November 15 and April 15.	Casitas Municipal Water District			
BIO-2: Worker Environmental Awareness Program						
Prior to initiation of all construction activities (including staging and mobilization), all personnel associated with project construction shall attend a Worker Environmental Awareness Program (WEAP) training, conducted by a qualified biologist, to aid workers in recognizing special status biological resources potentially occurring in the project area. This training will include information about southern California steelhead, San Bernardino ringneck snake, coast patch-nosed snake, and hoary bat, as well as other special-status species with potential to occur in the project area. The specifics of this program shall include identification of special-status species and habitats, a description of the regulatory status and general	Retain a qualified biologist to conduct WEAP. Verify all employees have signed a form documenting attendance of the WEAP.	Retain a qualified biologist to conduct WEAP and document attendance prior to initiation of all construction activities.	Casitas Municipal Water District			

Mitigation Measure/ Condition of Approval	Action Required	Monitoring Timing	Responsible Agency	Compliance Verification		
				Initial	Date	Comments
ecological characteristics of special-status resources, and review of the limits of construction and measures required to avoid and minimize impacts to biological resources within the work area. A fact sheet conveying this information shall also be prepared for distribution to all contractors, their employees, and other personnel involved with construction of the project. All employees shall sign a form provided by the trainer documenting they have attended the WEAP and understand the information presented to them. The crew foreman shall be responsible for ensuring crew members adhere to the guidelines and restrictions designed to avoid impacts to special-status species.						
BIO-3: Pre-Construction Wildlife Surveys						
Within one week prior to the commencement of project activities, a qualified wildlife biologist shall conduct pre-construction surveys in portions of the access and construction area, particularly those containing natural vegetation. The surveys will be conducted within the project footprint locations specified below. A 50-foot buffer around the project footprint will be surveyed with inaccessible areas (i.e., private lands) surveyed with binoculars, as practicable. A qualified biologist will conduct a survey within the following locations of the project footprint: Heidelberger Tank, 100 feet east and west San Antonio Creek at Grand Avenue, adjacent to the daylighted portions of Fox Canyon Barranca and Stewart Canyon Creek, and within the disturbed oak woodland habitat in Unit B (if trenching is to occur in this area). The biologist will document existing conditions and search for special-status species (i.e., San Bernardino ringneck snake and coast patch-nosed snake). If San Bernardino ringneck snake and coast patch-nosed snake are found, individual animals shall	Retain a qualified wildlife biologist and verify that they have conducted a pre-construction survey in designated locations of project footprint. Verify protective measures (relocation) are adhered to if San Bernardino ringneck snake or coast patch-nosed snake are found.	Not more than one week prior to commencement of project activities, verify that qualified biologist has conducted surveys. Immediately following discovery of special-status species, verify that relocation measures take place.	Casitas Municipal Water District			

Mitigation Measure/ Condition of Approval	Action Required	Monitoring Timing	Responsible Agency	Compliance Verification		
				Initial	Date	Comments
be relocated to similar habitat away from construction activities, at least 200 feet from any area of project construction.						
BIO-4: Night Construction Avoidance						
Night-time construction shall be avoided adjacent to San Antonio Creek, daylighted portions of Fox Canyon Barranca, and daylighted portions of Stewart Canyon Creek as practicable, to avoid impacts to special-status wildlife in and near these drainages.	Review project construction schedule to verify that nighttime construction is avoided adjacent to the designated barrancas and creeks.	Review construction schedule prior to commencement of construction activities.	Casitas Municipal Water District			
BIO-5: Night Lighting						
If construction must occur at night (between dusk and dawn), all lighting will be shielded and directed downward to minimize the potential for glare or spillover onto adjacent properties and to reduce impacts on local wildlife.	Verify through periodic site visits lighting is shielded and directed downward during any necessary night construction.	Verify lighting measures are adhered to during any night work throughout project construction.	Casitas Municipal Water District			
BIO-6: Nesting Bird Season Avoidance						
To avoid disturbance of nesting and special-status birds, including raptor species protected by the Migratory Bird Treaty Act and California Fish and Game Code 3503, activities related to the project including, but not limited to, vegetation removal, ground disturbance, and construction and demolition shall occur outside of the bird breeding season for migratory birds (February 1 through August 31), if practicable.	Review project construction schedule to verify that ground-disturbance, vegetation removal, and construction and demolition are avoided between February 1 and August 31 to the extent practicable.	Review project construction schedule prior to commencement of construction activities.	Casitas Municipal Water District			
BIO-7: Nesting Birds						
If construction must begin during the breeding season, then a pre-construction nesting bird survey shall be conducted no more than seven days prior to initiation of ground disturbance and vegetation removal activities. The nesting bird pre-construction	Limit all initial ground disturbing activities, including vegetation removal, to the time period between September 1 and January 31.	Verify performance of a nesting bird pre-construction survey no more than seven days prior to initial ground	Casitas Municipal Water District			

Mitigation Measure/ Condition of Approval	Action Required	Monitoring Timing	Responsible Agency	Compliance Verification		
				Initial	Date	Comments
survey shall be conducted on foot inside the project footprint, including a 100-foot buffer (300-foot for raptors), and in inaccessible areas (e.g., private lands) from afar using binoculars to the extent practicable. The survey shall be conducted by a biologist familiar with the identification of avian species known to occur in southern California coastal communities. If nests are found, an avoidance buffer (dependent upon the species, the proposed work activity, and existing disturbances associated with land uses outside of the site) shall be determined and demarcated by the qualified biologist with bright orange construction fencing, flagging, construction lathe, or other means to mark the boundary. All construction personnel shall be notified as to the existence of the buffer zone and to avoid entering the buffer zone during the nesting season. No ground-disturbing activities shall occur inside this buffer until the avian biologist has confirmed breeding/nesting is completed, and the young have fledged the nest. Encroachment into the buffer shall occur only at the discretion of the qualified biologist.	Verify a qualified biologist has prepared a pre-construction nesting bird survey if initial site disturbance cannot be conducted during the time specified above. Verify the specified protective measures are in place to document compliance with applicable state and federal laws and MBTA and California Fish and Game Code requirements pertaining to protection of native birds.	disturbance and vegetation removal. Immediately following discovery of any active nests, verify that appropriate buffers have been established pursuant to the requirements of the mitigation measure.				
BIO-8: Disturbance Area						
Areas of temporary disturbance shall be minimized to the extent practicable.	Review all project construction plans to verify that temporary disturbance area is minimized to the extent practicable.	Review project construction plans prior to commencement of construction activities.	Casitas Municipal Water District			
BIO-9: Staging Equipment						
Staging and laydown areas shall be unvegetated areas and previously disturbed sites only.	Review project construction plans to verify that all staging areas are located in unvegetated and previously disturbed areas.	Review project construction plans prior to commencement of construction activities.	Casitas Municipal Water District			

Mitigation Measure/ Condition of Approval	Action Required	Monitoring Timing	Responsible Agency	Compliance Verification		
				Initial	Date	Comments
BIO-10: Pollutant Management						
All vehicles and equipment shall be in good working condition and free of leaks. The contractor shall prevent oil, petroleum products, or any other pollutant from contaminating the soil or entering a watercourse (dry or otherwise). When vehicles or equipment are stationary, mats or drip pans shall be placed below vehicles to contain fluid leaks.	Verify through periodic site visits equipment is in good working condition and pollution prevention measures are implemented as specified in the mitigation measure.	Conduct periodic site visits continuously during construction activities.	Casitas Municipal Water District			
BIO-11: Material Storage						
Materials shall be stored on impervious surfaces or plastic ground covers to prevent any spills or leakage. Material storage shall be at least 100 feet from San Antonio Creek, and daylighted portions of Fox Canyon Barranca, and Stewart Canyon Creek. Any material/spoils from project activities shall be located and stored 100 feet from potential jurisdictional areas (San Antonio Creek, Fox Canyon Barranca, and Stewart Canyon Creek). Construction materials and spoils shall be protected from stormwater run-off using temporary perimeter sediment barriers such as berms, silt fences, fiber rolls, covers, sand/gravel bags, and straw bale barriers, as appropriate.	Verify through periodic site visits material storage measures, including use of temporary perimeter sediment barriers, have been implemented.	Conduct periodic site visits continuously during construction activities.	Casitas Municipal Water District			
BIO-12: Tracking Loose Material						
Implement Best Management Practices (BMPs) to prevent the off-site tracking of loose construction and landscape materials such as street sweeping, vacuuming, and rumble plates, as appropriate.	Verify through periodic site visits implementation of BMPs to prevent off-site tracking of loose material.	Conduct periodic site visits continuously during construction activities.	Casitas Municipal Water District			

Mitigation Measure/ Condition of Approval	Action Required	Monitoring Timing	Responsible Agency	Compliance Verification		
				Initial	Date	Comments
BIO-13: Pollution Prevention						
Prevent the discharge of silt or pollutants off of the site when working adjacent to potentially jurisdictional waters. Install BMPs (i.e., silt barriers, sand bags, straw bales) as appropriate.	Verify through periodic site visits implementation of BMPs to prevent discharge of silt or pollutants during construction adjacent to potentially jurisdictional waters.	Conduct periodic site visits continuously during construction activities.	Casitas Municipal Water District			
BIO-14: Site Materials and Refuse Management						
All food related trash shall be disposed of in closed containers and removed from the project area each day during the construction period. Construction personnel shall not feed or otherwise attract wildlife to the construction area. At project completion, all project-generated debris, vehicles, building materials, and rubbish shall be removed from the project footprint.	Verify through periodic site visits adherence to trash disposal and refuse management measures specified in the mitigation measure. Verify removal of all debris, vehicles, building materials, and rubbish from project footprint.	Conduct periodic site visits continuously during construction activities. Verify post-construction debris removal once, at project completion.	Casitas Municipal Water District			
BIO-15: Re-fueling and Maintenance						
All re-fueling, cleaning, and maintenance of equipment will occur at least 100 feet from San Antonio Creek and other potentially jurisdictional waters (Fox Canyon Barranca, Stewart Canyon Creek).	Verify through periodic site visits re-fueling, cleaning, and maintenance activities do not occur within 100 feet of potentially jurisdictional waters.	Continuously during construction activities.	Casitas Municipal Water District			
BIO-16: Responding to Spilled Materials						
Any spillage of material will be stopped if it can be done safely. The contaminated area will be cleaned, and any contaminated materials properly disposed. For all spills, the project foreman or other designated liaison will notify CMWD immediately.	Identify designated liaison and review spill response procedures.	Prior to commencement of construction activities.	Casitas Municipal Water District			

Mitigation Measure/ Condition of Approval	Action Required	Monitoring Timing	Responsible Agency	Compliance Verification		
				Initial	Date	Comments
BIO-17: Arborist Study						
Prior to obtaining a permit from either jurisdiction, an Arborist Study shall be conducted within portions of the project footprint occurring within 20 feet of the canopy drip line of protected trees. The study shall plot the location of protected trees in this zone, identify each protected tree, and determine the jurisdiction of any trees to be impacted. An Arborist Report shall be prepared by a Certified Arborist in compliance with both the City of Ojai and County of Ventura ordinance guidelines. Specifically, the Arborist Report shall include, at minimum, the following: ▪ An inventory of all trees containing a canopy drip line within 20 feet of the project footprint, as feasible without trespassing on private lands. Inventory data should record, at minimum: diameter at breast height (DBH), height, canopy cover information/mapping, health and vigor rating ▪ Representative photographs of each regulated tree proposed to be encroached upon within the disturbed oak woodland footprint ▪ Description of proposed site development activities including, but not limited to, excavation for trenching, any tree trimming for access, and construction access routes ▪ A project-specific Tree Protection Plan (TPP) shall be prepared which would at a minimum include site plans, protective tree fencing, the designated tree protection zone (identifying an area sufficiently large enough to protect the tree and its roots from disturbance), activities prohibited/permitted within the tree protective zone, encroachment boundaries, and potential transplanting or replacement tree plantings The Arborist Report shall be submitted to the	Retain a Certified Arborist to complete an Arborist Study containing the requirements specified in the mitigation measure, including a project-specific TPP. Submit the Arborist Study to the appropriate department of the City of Ojai and County of Ventura in compliance with applicable tree permit application procedures.	Retain a Certified Arborist and complete and submit the Arborist Study to the applicable jurisdiction prior to commencement of any tree-disturbing activities.	Casitas Municipal Water District			

Mitigation Measure/ Condition of Approval	Action Required	Monitoring Timing	Responsible Agency	Compliance Verification		
				Initial	Date	Comments
appropriate department of the City of Ojai or County of Ventura for approval prior to the start of any tree-disturbing construction activities, as necessary.						
Cultural Resources						
CUL-1: Archaeological Monitoring						
Ground-disturbing activities shall be monitored by a qualified archaeologist within the mapped boundary of P-56-000061, as well as within a 100-foot radius of the site. Additionally, archaeological monitoring shall be conducted for ground disturbance occurring within 100-feet of the mapped boundaries of P-56-000137, P-56-001779 and P-56-001151. The archaeological monitor shall work under the direction of an archaeologist meeting the Secretary of the Interior's Professional Qualification Standards for archaeology (National Park Service 1983). If cultural resources are encountered during ground-disturbing activities, work in the immediate area shall halt and the find shall be evaluated for significance under CEQA.	Verify a qualified archaeologist has been obtained for the project. Verify work in the immediate area of any cultural resources discoveries has halted until the find has been evaluated.	Verify a qualified archaeologist has been obtained prior to commencement of ground-disturbing activities. Verify work has ceased in the immediate area of any finds immediately following discovery of any cultural resources, as needed.	Casitas Municipal Water District			
CUL-2: Native American Monitoring						
Ground-disturbing activities shall be observed by a Native American monitor within the mapped boundary of P-56-000061 as well as within a 100-foot radius of the site. Further, Native American monitoring shall be conducted within 100-feet of the mapped boundaries of P-56-000137 and P-56-001779. If cultural resources are encountered during ground-disturbing activities, work in the immediate area shall halt and the find shall be evaluated by an archaeologist meeting the Secretary of the Interior's Professional Qualification Standards for archaeology (National Park Service 1983) for significance under CEQA.	Verify a Native American monitor has been obtained for the project. Verify that work in the immediate area of any cultural resources discoveries has halted until the find has been evaluated.	Verify a Native American monitor has been obtained prior to commencement of ground-disturbing activities. Verify work has ceased in the immediate area of any finds immediately following discovery of any cultural resources, as needed.	Casitas Municipal Water District			

Mitigation Measure/ Condition of Approval	Action Required	Monitoring Timing	Responsible Agency	Compliance Verification		
				Initial	Date	Comments
CUL-3: Unanticipated Discovery of Cultural Resources						
If cultural resources are encountered during ground-disturbing activities, work in the immediate area must halt, and an archaeologist meeting the Secretary of the Interior's Professional Qualification Standards for archaeology (National Park Service 1983) shall be contacted immediately to evaluate the find. If the discovery proves to be significant under CEQA, additional work such as data recovery excavation, Native American consultation, and archaeological monitoring may be warranted to mitigate any significant impacts.	Verify a qualified archaeologist has been obtained for the project. Verify that work in the immediate area of any cultural resources discoveries has halted until the find has been evaluated.	Verify a qualified archaeologist has been obtained prior to commencement of ground-disturbing activities. Verify work has ceased in the immediate area of any finds immediately following discovery of any cultural resources, as needed.	Casitas Municipal Water District			
Geology and Soils						
GEO-1: Paleontological Resources						
Prior to the commencement of ground disturbing activities within previously undisturbed portions of the project area, a qualified professional paleontologist shall be retained to conduct paleontological monitoring during project ground disturbing activities. The Qualified Paleontologist (Principal Paleontologist) shall meet Ventura County's (2010) Minimum Qualifications for Paleontological Consultants, including possession of at least Bachelor's Degree or equivalent work experience in paleontology, knowledge of the local paleontology, and experience with paleontological procedures and techniques. Ground disturbing construction activities (including grading, trenching, drilling with an auger greater than three feet in diameter, and other excavation) within project areas with high paleontological sensitivity (i.e., Sespe Formation, Ts; Coldwater Sandstone, Tcw; and, Pleistocene alluvium, Qpa) shall be monitored	Verify that a qualified paleontologist meeting the standards specified in the mitigation measure has been obtained for the project. Verify that paleontological monitoring occurs in accordance with the recommendations of the qualified paleontologist. Verify work in the immediate vicinity of a paleontological resource discovery is halted and the qualified paleontologist is notified to evaluate the find. Verify proper curation of any significant paleontological resource discoveries. Obtain a final paleontological monitoring report and verify the	Verify a qualified paleontologist has been obtained prior to commencement of ground-disturbing activities. Verify paleontological monitoring throughout ground-disturbing activities. Verify work has halted immediately following discovery of a paleontological resource, as needed. Verify proper curation of a significant paleontological resource following	Casitas Municipal Water District			

Mitigation Measure/ Condition of Approval	Action Required	Monitoring Timing	Responsible Agency	Compliance Verification		
				Initial	Date	Comments
on a full-time basis. Spot-check monitoring is recommended for project areas underlain by geologic units with low paleontological sensitivity (i.e., Holocene alluvium; Qha, Qhf, Qw) to determine if underlying sensitive units are being impacted. Monitoring shall be supervised by the Qualified Paleontologist and shall be conducted by a qualified paleontological monitor, who is defined as an individual who meets the minimum qualifications per standards set forth by the Society of Vertebrate Paleontology (2010), which includes a B.S. or B.A. degree in geology or paleontology with one year of monitoring experience and knowledge of collection and salvage of paleontological resources. The duration and timing of the monitoring shall be determined by the Qualified Paleontologist. If the Qualified Paleontologist determines full-time monitoring is no longer warranted, he or she may recommend to reduce monitoring to periodic spot-checking or cease monitoring entirely. Monitoring would be reinstated if any new ground disturbances are required and reduction or suspension would need to be reconsidered by the Qualified Paleontologist. If a paleontological resource is discovered, the monitor shall have the authority to temporarily divert the construction equipment around the find until it is assessed for scientific significance and collected. If a paleontological resource is discovered during construction, construction activities must halt in the area of the discovery, the Qualified Paleontologist shall be notified, and a site evaluation shall be conducted as necessary to assess the site and determine further mitigation measures, as appropriate. Once salvaged, significant fossils shall be prepared to a curation-ready condition and curated in a scientific institution with a permanent paleontological collection (such as the LACM). Curation fees are the responsibility of the project	report is submitted to the designated museum repository.	evaluation by the qualified paleontologist, as needed. Obtain final report and verify submittal to designated repository once following project completion.				

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owner. A final report shall be prepared describing the results of the paleontological monitoring efforts associated with the project. The report shall include a summary of the field and laboratory methods, an overview of the project geology and paleontology, a list of taxa recovered (if any), an analysis of fossils recovered (if any) and their scientific significance, and recommendations. The report shall be submitted to CMWD. If the monitoring efforts produced fossils, then a copy of the report shall also be submitted to the designated museum repository.						
Hazards and Hazardous Materials						
HAZ-1: Hazardous Materials Management and Spill Control Plan						
Before construction begins, the construction contractor shall submit to CMWD for review and approval a Hazardous Materials Management and Spill Control Plan (HMMSCP) that includes a project-specific contingency plan for hazardous materials and waste operations. The HMMSCP shall establish policies and procedures consistent with applicable codes and regulations, including but not limited to the California Building and Fire Codes, as well United States Department of Labor OSHA and California OSHA regulations. The HMMSCP shall articulate hazardous materials handling practices to prevent the accidental spill or release of hazardous materials.	Verify completion of and review a Hazardous Materials Management and Spill Control Plan.	Obtain and review the HMMSCP prior to commencement of construction activities.	Casitas Municipal Water District			

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HAZ-2: Unanticipated Discovery of Contaminated Soil or Groundwater						
In the event that unanticipated, existing soil or groundwater contamination is discovered during construction of the proposed project, the construction contractor shall implement appropriate procedures for the treatment, handling, and notification of unanticipated hazardous materials. The construction contractor shall promptly notify CMWD in writing regarding any material the construction contractor believes may be a hazardous waste. The construction contractor also shall promptly notify CMWD in writing regarding unknown physical conditions at the project site of any unusual nature, different materially from those ordinarily encountered. Upon such notification, CMWD shall promptly investigate the conditions at the project site. If the construction contractor encounters a hazardous environmental condition, the construction contractor shall immediately secure or otherwise isolate such condition, stop all work in connection with such condition and in any area affected thereby, and notify CMWD of the hazardous environmental condition. The construction contractor shall not be required to resume work in connection with such condition or in any affected area until after CMWD has obtained any required permits related thereto and delivered written notice to the construction contractor specifying that such condition and any affected area is or has been rendered safe for the resumption of work and specifying any special conditions under which such work may be resumed safely. The construction contractor is required to comply with all applicable laws related to the work performed, including laws governing hazardous materials treatment, handling, notification, transportation, and disposal of contaminated soil and import of clean fill.	Review contamination discovery procedures described in the mitigation measure with construction contractor, including written notification requirements. Verify any hazardous environmental condition has been secured or otherwise isolated and work has stopped in connection with the condition. Coordinate with applicable agency (e.g., Department of Toxic Substances Control) to obtain any required permits. Provide written notice to construction contractor specifying the hazardous environmental condition has been rendered safe for resumption of work.	Review procedures with contractor prior to commencement of construction activities. Verify securing or isolation of hazardous condition and work has stopped immediately upon notification of the condition. Coordinate with applicable agency to obtain required permits immediately following notification of a hazardous environmental condition. Provide written notification to contractor to resume work upon obtaining any required permits.	Casitas Municipal Water District			

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Transportation and Traffic						
TRA-1: Traffic Control Plan						
To mitigate temporary traffic disruption and ensure public safety, the construction contractor shall prepare a traffic control plan for construction areas located in or near roadways whose traffic volumes exceed Ventura County Levels of Service or City of Ojai criteria. The construction contractors will be required to submit their traffic control plans to the City of Ojai, County of Ventura, and/or Caltrans, as necessary, prior to receiving an encroachment permit.	Obtain and review the traffic control plan. Submit traffic control plans to the City of Ojai, County of Ventura, and/or Caltrans, as necessary.	Review the plan prior to commencement of construction activities. Submit traffic control plans to the appropriate jurisdiction prior to receiving an encroachment permit.	Casitas Municipal Water District			
TRA-2: Emergency Service Providers						
The Project Manager shall notify emergency service providers (fire and police departments within a 0.5-mile radius of the alignment) with construction contact names, locations, schedules, and traffic plans, if applicable, prior to the start of construction.	Verify information specified in the mitigation measure has been provided to emergency service providers.	Verify emergency service providers have been notified prior to commencement of construction activities.	Casitas Municipal Water District			