ROSAMOND COMMUNITY SERVICES DISTRICT

Kern County, California

CONTRACT DOCUMENTS

SPECIFICATIONS FOR PROJECT NO. 01062-12

ARSENIC REGIONAL CONSOLIDATION PROJECT PHASE 1A

ISSUED FOR BID

March 2026

GEI Consultants, Inc.
35 N. Lake Avenue, Suite 220
Pasadena, California 91101

Bids will be received until 2:00 p.m. on 05/12/2026
at Rosamond Community Services District office at
3179 35th Street West
Rosamond, CA 93560
Bids will be publicly opened.

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ROSAMOND COMMUNITY SERVICES DISTRICT

Rosamond Community Services District

Kern County, California

CONTRACT DOCUMENTS

Arsenic Regional Consolidation Project
Phase 1A

Issued for Bid

March 2026

Contract Documents were prepared by or under the direction of the following registered persons(s):

Richard Sanchez, P.E.

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ROSAMOND COMMUNITY SERVICES DISTRICT

Kern County, California

Office Location
3179 35th Street West, Rosamond, CA 93560

Phone (661) 256-3411
Fax (661) 256-2557
E-mail: kdomingo@rosamondcsd.com

Mailing Address
3179 35th Street West,
Rosamond, CA 93560

BOARD OF DIRECTORS

Board President - Gregory Washington

Vice President – Greg Wood

Board Member – Byron Glennan

Board Member – Jose Hernandez, Jr.

Board Member – Rick Webb

GENERAL MANAGER

Kim Domingo

ASSISTANT GENERAL MANAGER

Ben Stewart

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SECTION A – NOTICE

ROSAMOND COMMUNITY SERVICES DISTRICT

KERN COUNTY, CALIFORNIA

NOTICE INVITING BIDS FOR CONSTRUCTING

ROSAMOND COMMUNITY SERVICES DISTRICT ARSENIC REGIONAL CONSOLIDATION PROJECT PHASE 1A

SPECIFICATIONS FOR PROJECT NO. 01062-12

A-1 Invitation for Bids

NOTICE IS HEREBY GIVEN that sealed bids will be received by the ROSAMOND COMMUNITY SERVICES DISTRICT, hereinafter referred to as the District, for furnishing all labor, services, materials, tools, equipment, supplies, transportation, !utilities, and all other items and facilities necessary therefore, as provided in the Contract Documents for the acceptable completion of the work described in Section A-4, together with all appurtenances thereto, in strict accordance with the Specifications and Drawings on file at the office of the District.

Bids shall be made in accordance with the prevailing rate of per diem wages for this locality and project as determined by the Director of Industrial Relations pursuant to Labor Code Section 1770 et seq. Prevailing wage schedules for Kern County are available from the Department of Industrial Relations-Division of Labor Statistics & Research via the internet at www.dir.ca.gov. Copies of the prevailing rates of per diem wages are also on file at the office of the District and will be made available to any interested party on request.

A-2 Date of Opening of Bids

Bids will be received at the offices of ROSAMOND COMMUNITY SERVICES DISTRICT at 3179 35th Street West, Rosamond, CA 93560, until 2:00 p.m. on 05/12/2026. The Bids will be publicly opened. Bids shall be timely submitted in sealed envelopes marked as directed in Section A-13. Facsimile bids will not be accepted. Bids received after said deadline time will be returned unopened to the bidder.

A mandatory pre-bid conference and tour will be held on 04/23/2026 at 10:00 a.m. commencing at the District office located at 3179 35th Street West, Rosamond, CA 93560.

A-3 Location of the Work

The work to be constructed hereunder is located within Kern County, California, in the vicinity of Rosamond, California.

A-4 Description of Work

The principal components of work to be performed under these Specifications include the following:

a. **Schedule A, General Items**: Mobilization/demobilization, preparation and Compliance with Storm Water Pollution Prevention Plan (SWPPP) and dust control plan (PM-10), implementation of traffic control plan, and development of cost-loaded critical path method (CPM) schedule.

b. **Schedule B, Water Systems:** Construction of water systems including furnishing and installing 8-inch and 10-inch diameter AWWA C900 PVC water main pipe, 2-inch Schedule 80 PVC water pipe, 6-inch diameter AWWA C200 steel water main pipe, combination air valve assemblies, butterfly valve assemblies, pressure reducing valve assemblies, meter assemblies, backflow prevention assemblies, sampling stations, pipe supports, trust blocks, pipe joint restraints, and all necessary appurtenances. Work includes hydrostatic pressure testing and disinfection of water pipelines constructed. Work also includes sheeting, shoring, and bracing as needed for water main installation, potholing of existing utilities, connections of new water mains to existing water mains and water systems, site restoration, asphalt pavement restoration, and demolition of existing wells, tanks, and existing facilities.

A-5 Classification of Contractors License/Contractor Registration

A contractor submitting a proposal shall possess, at the time the contract is awarded, that classification of contractor's license required by law to enable the contractor to perform the work contemplated under the Contract Documents, as more specifically set forth in the specifications. Contractors shall provide the District with their Contractor's license number and expiration date as provided in the proposal.

No contractor or subcontractor may be listed on a proposal (if submitted on or after April 1, 2015) unless registered with the Department of Industrial Relations pursuant to Labor Code section 1725.5 [with limited exceptions from this requirement for bid purposes only under Labor Code section 1771.1(a)].

No contractor or subcontractor may be awarded the contract for the project (if awarded on or after April 1, 2015) unless registered with the Department of Industrial Relations pursuant to Labor Code section 1725.5.

A-6 Award of Contract

Each bid shall be made on the proposal forms furnished by the District and shall be in accordance with the Specifications and Drawings, and other documents. The District reserves the right, after opening bids, to reject any or all bids, and to make award to any bidder. Bids will be compared on the basis of several items of work shown on the Proposal Bidding Schedule.

Proposals will be accepted until the date and time specified in the Notice of Inviting Bids. The Contract will be awarded as soon as practicable to the lowest responsible bidder that has submitted a responsive bid, price and other factors considered, provided its Bid is reasonable and is in the best interest of the District to accept. The District reserves the right, after opening bids, to reject any or all bids, or to make award to the lowest responsive and responsible bidder and reject all other bids. Refer to Paragraph B-3 for information regarding "Responsible Bidder" and submission of a "Responsive Bid".

The successful Bidder will be notified in writing by District of the Award of Contract within 60 days after opening of Bids. Accompanying the Notice of Award will be four copies of the Contract, which successful Bidder will be required to execute properly and return to District, together with properly executed Performance Bond, Payment Bond, Certificates of Insurance and Endorsement, and Non-Collusion Affidavits, all within 10 days after date of receipt of such Notice of Award. District will promptly determine whether such Contract, Bonds, and Certificates of Insurance and Endorsement are as required by the Specifications and, upon such determination, will forward a fully signed copy of the Contract to successful Bidder.

A-7 Site Conditions

Each bidder shall carefully examine the Drawings, read the Specifications and the forms of the Contract Documents, and shall visit the site of the proposed work to fully inform himself as to all existing conditions and limitations that may affect the execution of work under the Contract, and each such bidder shall include in the prices bid the cost of all incidentals and appurtenances. The failure or omission of any bidder to receive or examine any form, instrument, addendum, or other document, or his failure to visit the worksite and acquaint himself with conditions at the construction site, shall in no respect relieve any such bidder from any obligation imposed by his bid or by the Contract. The submittal of a bid shall be taken as prima facie evidence of Compliance with all instructions contained herein.

A-8 Certified Checks and Bonds

Each bid shall be under sealed cover and must be accompanied by a Bid Guarantee in the form of either cash, a certified or cashier's check, or by a corporate surety bond on the form furnished by the District and made payable to Rosamond Community Services District as a guaranty that the bidder will, if an award is made to him in accordance with the terms of his bid, promptly secure worker's compensation insurance, liability insurance, and any other insurance required by the Contract Documents, execute a

contract in the required form, and furnish satisfactory bonds for the faithful performance of the Contract and for the payment of claims of all persons supplying labor and materials for the construction of the work. Should the successful bidder fail to so perform, the District shall be entitled to retain the moneys represented by said check or bond as liquidated damages on account of the delay and inconvenience occasioned to the District, it being expressly agreed and understood that the amount of said check or bond constitutes reasonable damages and that it is impracticable or extremely difficult to ascertain actual damages. Said cash, check or bidder's bond shall be in an amount not less than ten percent (10%) of the amount of the bid. The Faithful Performance Bond and Payment Bond shall each be not less than one-hundred percent (100%) of the total amount of the bid price named in the contract.

The District reserves the right to reject any bond, if in the opinion of the Engineer or the District's Attorney, the Surety's acknowledgment is not legally sufficient. All sureties utilized by bidders shall be legally qualified to do business in the State of California, shall carry a current Best's Insurance Guide rating of "A" or better, Class X or better, and shall furnish such reports as to their financial condition, from time to time, as may be requested by the District, including the Financial Statement of Bonding Company furnished with the Bond. The premiums for all said bonds shall be paid by the bidder. If any surety becomes unacceptable to the District in the absolute judgment and discretion of the District, then the bidder/contractor shall promptly furnish at its own expense such additional bonds as may be required by the District to protect the District's interests and the interests of persons supplying labor or materials in the prosecution of the work contemplated by these Contract Documents.

In the event of any conflict between the terms of the Contract Documents and the terms of the bonds, the terms of the Contract Documents shall control and the bonds shall be deemed to be amended thereby. The District shall be entitled to exercise any and all rights granted by the Contract Documents in the event of default, without control by the surety, provided that the District promptly notifies the surety at the time or before the exercise of such rights. The exercise by the District of such rights shall not affect the liability of the surety under the bonds.

Bid security of unsuccessful bidder will be returned to the bidder within sixty (60) days of the time the execution of the contract by the District and the successful bidder award of contract is made.

A-9 Contract Retention

At the request and expense of the Contractor securities equivalent to any amount withheld by the District to ensure the Contractor's performance under the Contract shall be deposited with the District as substitute security, or, at the Contractor's request, with a state or federally chartered bank in California as the escrow agent.

A-10 Wage Rates/Compliance Monitoring

Bids shall be made in accordance with the prevailing hourly rate of per diem wages for this locality and project as determined by the Direction of Industrial Relations pursuant to Labor Code section 1770 et seq., a copy of which wage rate schedule is on file at the office of the District and by this reference incorporated herein. The Contractor shall post a copy of said documents at each job site. The Contractor and any Subcontractor under him shall pay not less than the specified prevailing rate of per diem wages for general, holiday and overtime work to all workers employed in the execution of this contract.

This project is subject to Compliance monitoring and enforcement by the Department of Industrial Relations. Each contractor and subcontractor shall furnish the records specified in Labor Code section 1776 directly to the Labor Commissions, in the manner set forth in Labor Code section 1771.4.

Contractors shall be required to post job site notices, as prescribed by regulation.

A-11 Use of Apprentices

If the project requires the employment of workers in any apprenticeable craft or trade, once awarded, the Contractor or Subcontractors must apply to the Joint Apprenticeship Council unless already covered by local apprenticeship standards under Labor Code Section 1777.5.

A-12 Contract Documents

The Contract Documents shall consist of the Notice Inviting Bids, the Instructions to Bidders, the accepted Proposal and Proposal Bidding Schedule, the Contractor's Licensing Statement, the Information Required of Bidders, the Agreement, the Proposal Bond, the Faithful Performance Bond, the Payment Bond, the Non-Collusion Affidavits, the Notice to Proceed, General Conditions, Special Conditions, the Specifications and Drawings, Appendices and any change order or Addenda, setting forth any modifications or interpretations of any of said Documents, all of which documents are on file or will be on file in the office of GEI Consultants at 35 N. Lake Avenue, Suite 220, Pasadena, CA 91101, and which are hereby referred to and made a part of this Notice Inviting Bids.

All questions about the meaning or intent of the Contract Documents are to be directed to the Engineer. Interpretations or responses considered necessary by the Engineer in response to such questions will be issued by Addenda emailed **ONLY** to all parties recorded by the Engineer as having received the Bidding Documents. If you wish to receive addenda by some means other than email, please advise the Engineer immediately. Questions received less than three days prior to the date for opening of bids may not be answered. Only questions answered by formal written Addenda will be binding. Oral and other interpretations or responses will be without legal effect and are not to be relied upon by the Bidders unless they are integrated into the written Contract Documents.

A-13 Address and Marking of Proposal

The envelope enclosing the proposal shall be sealed and addressed to the Rosamond Community Services District and mailed to 3179 35th Street West, Rosamond, CA 93560. The envelope shall be plainly marked in the upper left-hand corner with the name and address of the bidder and shall bear the words "Proposal for", followed by title of the Specifications for the work and the date and hour for opening of bids. The certified or cashier's check, money order, or bidder's bond, where applicable, shall be made payable to Rosamond Community Services District. The bid security shall be enclosed in the same envelope with the proposal.

Date: 03/25/2026 Rosamond Community Services District

By: s/s Kim Domingo
General Manager

SECTION A1 – NOTICE (PUBLISHED VERSION)

ROSAMOND COMMUNITY SERVICES DISTRICT
Kern County, California

NOTICE INVITING BIDS
FOR CONSTRUCTING

ROSAMOND COMMUNITY SERVICES DISTRICT
ARSENIC REGIONAL CONSOLIDATION PROJECT
PHASE 1A

NOTICE IS HEREBY GIVEN that sealed bids will be received by the ROSAMOND COMMUNITY SERVICES DISTRICT (hereinafter "District") until 2:00 p.m. on 05/12/2026 for completion of the ROSAMOND COMMUNITY SERVICES DISTRICT ARSENIC REGIONAL CONSOLIDATION PROJECT PHASE 1A, located within Kern County and in the vicinity of the City of Rosamond. Bids will be received at the offices of the District at 3179 35th Street West, Rosamond, CA 93560, until the stated time and date, at which time and place the bids will be publicly opened and read aloud. If a contract is awarded, it will be awarded to the responsible Bidder submitting the lowest responsive Bid Proposal on the basis of prices in the Base Bid items which are selected by the District. The bidding requirements and the work are fully described in the Plans and Specifications, referred to as Specifications for Project No. 01062-12, which are available for inspection during normal business hours without charge at the offices of the District and at the offices of GEI Consultants, Inc., 35 N. Lake Avenue, Suite 220, Pasadena, CA 91101. The Plans and Specifications may also be viewed via the following link: https://www.rosamondcsd.com/engineering-planning. Requests for Plans and Specifications will be honored at the office of GEI Consultants, Inc. (GEI), for the amount of $100 per set (non-refundable). Payment shall be made with check or money order payable to "Rosamond Community Services District". A mandatory pre-bid conference and tour will be held on 04/23/2026 at 10:00 a.m. commencing at the District Office 3179 35th Street West, Rosamond, CA 93560, and then continued at the project site.

While the work is more fully described and detailed in the Plans and Specifications, it includes the following:

a. **Schedule A, General Items**: Mobilization/demobilization, preparation and Compliance with Storm Water Pollution Prevention Plan (SWPPP) and dust control plan (PM-10), implementation of traffic control plan, and development of cost-loaded critical path method (CPM) schedule.

b. **Schedule B, Water Systems:** Construction of water systems including furnishing and installing 8-inch and 10-inch diameter AWWA C900 PVC water main pipe, 6-inch diameter AWWA C200 steel water main pipe, combination air valve assemblies, butterfly valve assemblies, blowoff assembly, meter assemblies, backflow prevention assemblies, sampling stations, pipe supports, trust blocks, pipe joint restraints, and all necessary appurtenances. Work includes hydrostatic pressure testing and disinfection of water pipelines constructed. Work also includes sheeting, shoring, and bracing as needed for water main installation, potholing of existing utilities, connections of new water mains to existing water mains and water systems, site restoration, asphalt pavement restoration, and demolition of existing wells, tanks, and existing facilities.

The work must be completed during the period identified in the Specifications.

A contractor submitting a proposal shall possess, at the time the contract is awarded, that classification of contractor's license required by law to enable the contractor to perform the Work contemplated under the Contract Documents, as more specifically set forth in the specifications.

No contractor or subcontractor may be listed on a proposal (if submitted on or after April 1, 2015) unless registered with the Department of Industrial Relations pursuant to Labor Code section 1725.5 [with limited exceptions from this requirement for bid purposes only under Labor Code section 1771.1(a)].

No contractor or subcontractor may be awarded the contract for the project (if awarded on or after April 1, 2015) unless registered with the Department of Industrial Relations pursuant to Labor Code section 1725.5.

The District reserves the right, after opening bids, to reject any or all bids, to waive or to make award to the lowest responsible bidder and reject all other bids.

This published notice does NOT reproduce all of the bidding requirements; accordingly, the above-referenced Plans and Specifications are hereby referred to and made a part of this Notice Inviting Bids. An acceptable bid can only be prepared by reading and following all of the instructions that are found in the Specifications, which includes Sections A and B thereof and the which should be read carefully.

Each Bidder is required to sign a Noncollusion Affidavit and submit it with his bid.

The successful Bidder is required to furnish a Payment Bond in an amount of 100% of the contract and a Faithful Performance Bond in an amount of 100% of the contract; the bonds to be secured by a surety company or surety companies satisfactory to the District.

Bids shall be based on the payment of not less than the prevailing rate of wages for this locality and project as determined by the Director of the California Department of Industrial Relations pursuant to Labor Code Section 1770 et seq. Copies of the prevailing rates of per diem wages are on file at the office of the District and will be made available to any interested party on request. Prevailing wage schedules for Kern County are also available from the Department of Industrial Relations-Division of Labor Statistics & Research via the internet at www.dir.ca.gov.

This project is subject to Compliance monitoring and enforcement by the Department of Industrial Relations. Each contractor and subcontractor shall furnish the records specified in Labor Code section 1776 directly to the Labor Commissions, in the manner set forth in Labor Code section 1771.4.

Contractors shall be required to post job site notices, as prescribed by regulation.

Pursuant to Public Contract Code Section 22300, equivalent securities may be substituted for monies withheld to ensure performance of the contract.

The Contractor, its Subcontractors and Suppliers will be required to comply with all applicable State and Federal requirements.

Date: 03/25/2026

Rosamond Community Services District

By: s/s Kim Domingo
General Manager

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SECTION B – INSTRUCTIONS TO BIDDERS

B-1 Form of Proposal and Signature

The Proposal shall be submitted only on the form attached hereto or copies thereof and shall be enclosed in a sealed envelope and marked and addressed as hereinafter directed. The bidder shall state in figures the unit prices or the specific sums, as the case may be, for which he proposes to supply the labor, materials, supplies, or machinery, and perform the work required by the Contract and other Contract Documents, including the Specifications. If the unit price and the total amount named by a bidder for any item are not in agreement, the unit price alone will be considered as representing the bidder's intention and the totals will be corrected to conform thereto. If the Proposal is made by an individual, it shall be signed by him and his full name and address shall be given; if it is made by a firm, it shall be signed with the co-partnership name by a member of the firm, who shall also sign his own name, and the name and address of each member of such firm 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, the names and titles of all officers of the corporation shall be given, and the address of the corporation and the state in which incorporated shall be stated. Proposals will be considered only from persons licensed as required under applicable provisions of the Contractors' State License Law and rules and regulations adopted pursuant thereto; and each bidder shall insert his license number in the place provided in the Proposal.

B-2 Preparation of the Proposal

Blank spaces in the Proposal shall be properly filled. The phraseology of the Proposal must not be changed, and no additions shall be made to the items mentioned therein. Unauthorized conditions, limitations, or provisos attached to a Proposal will render it informal and may cause its rejection. If erasures, interlineations or other changes appear on the form, each erasure, interlineation or change must be initialed by the person signing the Proposal. Alternative proposals will not be considered unless specifically provided for in the Bidding Schedule. Proposals may be withdrawn without prejudice by written or telegraphic requests received from bidder prior to the time for opening of bids, and Proposals so withdrawn will be returned to bidders unopened when reached in the process of opening bids. No Proposal may be withdrawn after the hour fixed for opening bids without rendering the accompanying certified or cashier's check or bidder's bond subject to retention as liquidated damages in like manner as in the case of failure to execute the Contract after award, as in the Contract Documents herein provided. No Proposal received after the time fixed or at any place other than the place stated in the Notice Inviting Bids will be considered. Where bonds are required, the bidder shall name in his Proposal the surety or sureties which have agreed to furnish said bonds.

B-3 Responsible Bidder

All bidders must submit statements regarding previous experience in performing comparable work, business and technical organization, financial resources, and plant available to be used in performing the work. Moreover, only bids from contractors possessing a Class A license will be accepted. The District reserves the right to reject any and all bids to the fullest extent of the law.

B-4 Brokerage of Work Not Favorably Considered

In general, the brokerage of work will not be favorably considered, and the subletting of the entire Contract or of substantial complete units of it will be permitted only upon an adequate showing of the necessity involving some new condition not reasonably foreseen at the time of the Proposal and by approval of the District.

B-5 Equalizing Factors

Wherever applicable, equalizing elements or factors not specifically mentioned or provided for herein, such as interest during construction, cost of transportation, inspection (including salaries and travel subsistence expenses), installation and operation, or any other factor or element in addition to that of price which would affect the total cost or value to the District, will be taken into consideration in comparing bids for award of the Contract.

B-6 Servicing and Maintenance

Each bidder must, if requested, furnish evidence that there is an efficient service organization which regularly carries a stock of repair parts for the proposed equipment to be furnished and installed in the work and that the organization is conveniently located for prompt service.

B-7 Local Conditions

Before submitting a Proposal, the Bidder shall carefully examine the Drawings, read the Specifications, all other Contract Documents, and fully inform himself as to all conditions and limitations, including the character of equipment and facilities needed preliminary to and during the prosecution of the work, the uncertainty of weather, site accessibility, groundwater level, and soil conditions along the line or work, and as to all other matters which can in any way affect the work to be done. Failure to do so will not release bidders from the responsibility for estimating properly the difficulty or cost of successfully performing the work. The District makes no representation or warranty regarding the accuracy or interpretation of information derived from maps, plans, specifications, profiles, drawings, borings, or other investigations and will not be responsible for any understanding or representations concerning conditions made by any of its officers or agents, including the Engineer or his assistants, prior to the execution of the Contract. The quantities of work or material stated in the unit price items of the Bidding Schedule are given only as a basis for the comparison of bids, and the District does not represent or warrant that the actual

amount of work or material will correspond therewith, but reserves the right to increase or decrease the quantity of any unit price items of the work as may be deemed necessary or expedient by the Engineer.

B-8 Execution of Contract

The District reserves the right to accept or reject bids for a period of thirty (30) days after date of opening, and no bid can be withdrawn during said period. A bidder to whom award is made shall execute a written Contract with the District in the form attached hereto and obtain insurance and faithful performance and labor and material bonds of the types and character and in the amounts required in Paragraph B-9, B-10, and B-11, within fifteen (15) days from the date of the mailing of a notice from the District to the bidder of the acceptance of his Proposal, or such additional time as may be allowed by the Engineer. If a bidder to whom award is made fails or refuses to so perform, his Bid Guarantee shall become the property of the District, as provided for in Paragraph A-8, and the award will be annulled, and in the discretion of the District, an award may be made to the bidder whose Proposal is next most acceptable to the District; and such bidder shall fulfill every requirement hereof as if he were the party to whom the first award was made. As referenced in Paragraph D-4 unless otherwise ordered by the Engineer, the Contractor shall begin work within twenty (20) calendar days after issuance of the Notice to Proceed. The Contractor shall complete all specified work in one hundred and eighty (180) days of Notice to Proceed.

B-9 Bonds

In conformance with Paragraph A-8 of the Notice Inviting Bids, a bidder to whom the Contract is awarded shall, within the time specified in Paragraph B-8, furnish a surety bond conditioned upon the full and faithful performance of all obligations required to be performed under the Contract and full performance and verity of all warranties and guarantees therein contained. Said bond, referred to herein as the Faithful Performance Bond, shall be in an amount equivalent to one-hundred percent (100%) of the total amount payable under the Contract Documents. The form of the Faithful Performance Bond set forth in these Contract Documents is a mandatory form.

In conformance with Paragraph A-8 of the Notice Inviting Bids, a bidder to whom the Contract is awarded shall, within the time specified in Paragraph B-8, furnish a Payment Bond, approved by the District. Said Payment Bond shall be in the sum of not less than one-hundred percent (100%) of the total amount payable under the Contract Documents. The form of the Payment Bond set forth in these Contract Documents is a mandatory form.

Said bonds shall be of a form satisfactory to the District and shall be obtained from responsible corporate sureties acceptable to the District. All sureties utilized by bidders shall be legally qualified to do business in the State of California, shall carry a current Best's Insurance Guide rating of "A" or better, Class X or better. Said sureties shall furnish reports as to their financial condition from time to time as requested by the District. The premiums for said bonds shall be paid by the bidder.

If any surety becomes unacceptable to the District or fails to furnish reports as to its financial condition as requested by the District, the Contractor shall promptly furnish such additional security as may be required from time to time to protect the interests of the District and of persons supplying labor or materials in the prosecution of the work contemplated by this Contract.

In the event of any conflict between the terms of the Contract and the terms of said bonds, the terms of the Contract shall govern and said bonds shall be deemed to be amended thereby. Without limiting the foregoing, the District shall be entitled to exercise all rights granted to it by the Contract in the event of default, without control thereof by the surety, provided that the District gives the surety notice of such default at the time or before the exercise of any such right by the District and, regardless of the terms of said bonds, the exercise of any such right by the District shall in no manner affect the liability of the surety under said bonds.

B-10 Workers' Compensation Insurance

Prior to execution of the Contract as specified under Paragraph C-22 and in conformance with Section 3700 of the California Labor Code, a bidder to whom the Contract has been awarded shall sign and file with the District the following certification: "I am aware of the provisions of Section 3700 of the Labor Code which require every employer to be insured against liability for workers' compensation or to undertake self-insurance in accordance with the provisions of that code, and I will comply with such provisions before commencing the performance of the work of this Contract." In addition, before the Contract is executed on behalf of the District, a bidder to whom the Contract has been awarded shall furnish satisfactory evidence that he has secured, in the manner required by law, the payment of the workers' compensation provided for in the California Labor Code and all amendments thereto. The requirements specified herein do not apply to Contracts for furnishing materials and equipment only.

B-11 Public Liability and Property Damage Insurance

The Contractor shall at his own expense maintain in effect at all times during the performance of the work, comprehensive liability insurance in the amounts given below, in a form and with insurance companies acceptable to the District. Such insurance shall contain endorsements as follows: (a) including the State of California, the California Department of Water Resources, the District, the Engineer, and their respective directors, officers and agents as additional named insureds; (b) providing contractual liability coverage for the Contractor's indemnification obligations under the Contract documents; (c) providing coverage for explosion, collapse and underground hazards; (d) personal injury coverage, including injury to the Contractor's own employees; (e) providing that the insurance may not be canceled or reduced until thirty (30) days after the District and the Engineer shall receive written notice of such cancellation or reduction; (f) providing "cross liability" or "severability of interest" coverage for all insureds, providing that the coverage afforded the additional named insureds shall not be prejudiced by any failure of the Contractor to comply with notice requirements of the policy; and (g) providing that any other insurance maintained by the District or the Engineer is excess and not contributing

insurance with the insurance required herein. The amount of coverage shall be no less than the following:

Commercial General Liability Insurance: This insurance shall contain broad form contractual liability with a combined single limit of a minimum of $5,000,000 each occurrence and an aggregate limit of at least $10,000,000. Coverage must be purchased on a post 2004 ISO occurrence or equivalent and include coverage for, but not limited to, the following:

a. Bodily Injury and Property Damage
b. Personal Injury and Advertising Injury
c. Fire legal liability
d. Products and completed operations

This policy shall also contain the following endorsements or language, which shall be indicated on the certificate of insurance:

a. Waiver of subrogation in favor of District and acceptable to District.
b. Additional insured endorsement in favor of and acceptable to District.
c. Separation of insureds.

Business Automobile Insurance: This insurance shall contain a combined single limit of at least $5,000,000, and include coverage for, but not limited to the following:

a. Bodily injury and property damage.
b. Any and all vehicles owned, used or hired.

This policy shall also contain the following endorsements, which shall be indicated on the certificate of insurance:

a. Waiver of subrogation in favor of District and acceptable to District.
b. Additional insured endorsement in favor of District and acceptable to District.
c. Separation of insureds.

Workers' Compensation and Employers' Liability Insurance: This insurance shall include coverage for, but not limited to:

a. Contractor’s statutory liability under the workers' compensation laws of the state(s) in which the services are to be performed. If optional under state laws, the insurance must cover all employees anyway.
b. Employers' Liability with limits of at least $1,000,000 each accident, $1,000,000 by disease policy limit, $1,000,000 by disease each employee.

This policy shall also contain the following endorsements or language, which shall be indicated on the certificate of insurance:

a. Waiver of subrogation in favor of and acceptable to District.

The Contractor shall, within the period stated in Paragraph B-8 and as a condition precedent to execution of the Contract by the District, deliver to the District a certificate of insurance issued by the insurer reflecting the existence of the required insurance, together with signed copies of the above-specified endorsements. If required by the District, the Contractor shall also furnish a complete copy of the policy and all endorsements. The Contractor shall also disclose the amount of the deductible under its policy(ies) and if the District determines that the deductible is excessive, may require the Contractor to post a bond guaranteeing payment of any losses and defense costs within the deductible layer.

The Contractor shall, within the period stated in Paragraph B-8 and as a condition precedent to execution of the Contract by the District, deliver to the District a certificate of insurance issued by the insurer reflecting the existence of the required insurance, together with signed copies of the above-specified endorsements. The Contractor shall also furnish a complete copy of the policy and all endorsements. The Contractor shall also disclose the amount of the deductible under its policy(ies) and if the District determines that the deductible is excessive, may require the Contractor to post a bond guaranteeing payment of any losses and defense costs within the deductible layer.

B-12 Subcontracts

Each bidder shall set forth in his or her Proposal on the form provided therefor:

a. The name and 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 work or improvement, 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 (½) of one percent (1%) of the Contractor's total bid; and

b. The portion of the work which will be done by each such subcontractor and a description of the nature of such work.

B-13 Non-Collusion Affidavits

Each bidder shall execute and submit with their bid a Non-Collusion Affidavit in the form attached hereto. Additionally, the principal contractor shall secure from each proposed subcontractor a Non-Collusion Affidavit in the form also attached hereto.

B-14 Bidder's Bond

Each proposal must be accompanied by a certified or cashier's check drawn on a responsible bank, or a bidder's bond made by a responsible corporate surety, payable to the Rosamond Community Services District, as guarantee that if the bid is accepted the bidder will, within the time specified in the Instructions To Bidders, enter into a written contract in the form hereinafter set forth and obtain insurance and faithful performance and

labor and material payment bonds of the types and character and in the amounts as in said Instructions To Bidders requires. Said check or bid bond shall be for a sum not less than ten percent (10%) of the aggregate sum of the proposal. Checks will be returned (a) to unsuccessful bidders as soon as practicable after the opening of bids, and (b) to the successful bidder as soon as he has executed the contract and obtained the required insurance and bonds provided he so performs in the manner and within the time stated in the Instructions To Bidders. Should the successful bidder fail to so perform, the District shall be entitled to retain the moneys represented by said check or bond as liquidated damages on account of the delay and inconvenience occasioned to the District, it being expressly agreed and understood that the amount of said check or bond constitutes reasonable damages and that it is impracticable or extremely difficult to ascertain actual damages. There is enclosed following the Proposal for these Specifications a form of Bidder's Bond, and all Bidders submitting bonds as bid guarantees are required to make use of this form and to submit the complete form with submitted proposals. As referenced in Paragraph D-4 unless otherwise ordered by the Engineer, the Contractor shall begin work within twenty (20) calendar days after issuance of the Notice to Proceed. The Contractor shall complete all specified work in one hundred and eighty (180) days of Notice to Proceed. In addition, reference Paragraph D-5 for Liquidated Damages for Delays.

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Rosamond Community Services District

Kern County, California

PROPOSAL

FOR CONSTRUCTING
Arsenic Regional Consolidation Project
Phase 1A
Specifications for Project No. 01062-12

Proposals received until 2:00 p.m., 05/12/2026

Rosamond Community Services District
3179 35th Street West
Rosamond, CA 93560

The undersigned hereby declares that the only persons or parties interested in this Proposal as principals are those named herein; that no director or officer of the District is in any manner interested, directly or indirectly, in this Proposal or in the profits to be derived from the Contract proposed to be taken; that this bid is made without any connection with any other person or persons making a bid for the same purpose; that the bid is in all respects fair and without collusion or fraud; that the undersigned has read the Notice Inviting Bids and the Instructions to Bidders hereto attached, and agrees to all the provisions thereof; that the undersigned has examined the site of the work, the form of the Agreement approved by the District, and the Specifications and Drawings and other Contract Documents therein referred to, and proposes and agrees that if this bid as submitted in the attached Bidding Schedule be accepted, he will contract in the form so approved to perform all the work mentioned and as provided in said approved form of the Agreement and the Specifications and Drawings and other Contract Documents and to complete the same within the time stipulated therein; and that he will accept in full payment therefor the prices named in said Bidding Schedule. Said prices are to include and cover the furnishing of all materials except as otherwise provided in the Specifications or other Contract Documents, the performing of all labor requisite or proper, and the providing of all necessary machinery, tools, apparatus, and other means of construction, and the performance and completion of all the work in the manner set forth, described, and shown in the Contract Documents including the Specifications, the Drawings for the work and in the form of the Agreement. The undersigned has checked carefully all words and figures inserted in said Bidding Schedule and understands that the District will not be responsible for any errors or omissions on the part of the undersigned in making up this Proposal.

The undersigned hereby agrees to execute the Agreement and furnish the required bonds and insurance within fifteen (15) days from the date of mailing of notice of acceptance of this Proposal, or within such additional time as may be allowed by the Engineer. A certified or cashier's check or a bidder's bond made payable to the District in the amount of (full bid amount) $_____, said amount to be not less than ten percent (10%) of the amount of the proposal, is attached hereto as a guarantee that the

undersigned will so perform. It is understood and agreed by the undersigned that if he does not so perform, the District shall be entitled to retain the moneys represented by said check or bond.

The bidder further declares that the surety or sureties named in the spaces provided below have agreed to furnish bonds in the form and aggregate amounts set forth in Paragraph B-9 of the Instructions to Bidders, in the event Contract is awarded on the basis of this Proposal.

The bidder further declares under penalty of perjury that the statements contained herein are true and correct.

Dated _____, 2026

_____

_____

Bidder

Bidder's post office address: By:

_____ _____

_____ _____

Title

(CORPORATE SEAL)

Names and addresses of all members of the firm or names and titles of all officers:

_____

_____

_____

_____

_____

_____

_____

_____

_____

Corporation organized under the laws of the State of:

_____

Contractor' License No.

_____

Expiration Date

_____

Surety or Sureties

_____

_____

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PROPOSAL BOND
KNOW ALL MEN BY THESE PRESENTS

That we, _____ as Principal(s) (hereinafter called the Principal), and the _____ as Surety (hereinafter called the Surety), are held and firmly bound unto ROSAMOND COMMUNITY SERVICES DISTRICT (hereinafter called the Obligee) in the penal sum of ten percent (10%) of the amount of accompanying bid (_____ dollars) for the payment of which, well and truly to be made, we bind ourselves, our heirs, administrators, executors, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, said Principal is submitting herewith a bid, or proposal for the ROSAMOND COMMUNITY SERVICES DISTRICT, REGIONAL ARSENIC CONSOLIDATION PROJECT PHASE 1A.

NOW, THEREFORE, if the bid or proposal is not withdrawn within sixty (60) days after the date set for the opening of bids, and notwithstanding the award of the Contract to another bidder, if the bid or proposal of said Principal shall be accepted, and the Contract for such work be awarded to the Principal thereupon by the said Obligee, and said Principal shall within the period specified in the Contract Documents enter into a written Contract and obtain insurance and faithful performance and labor and material bonds of the type and character and in the amount as may be specified, then this obligation shall be null and void; otherwise to be and remain in full force and effect.

In witness whereof, we hereunto set our hands and seals this _____ day of _____, 2026.

_____(SEAL)
(Principal)

By_____

_____(SEAL)
(Surety)

By_____

NOTE: This bond must be acknowledged before a Notary Public, and a legally sufficient power of attorney must be attached to the bond to verify the authority of any party signing on behalf of a surety.

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PROPOSAL BIDDING SCHEDULE

ROSAMOND COMMUNITY SERVICES DISTRICT

ARSENIC REGIONAL CONSOLIDATION PROJECT

PHASE 1A

SPECIFICATIONS FOR PROJECT NO. 01062-12

Item	Description	Quantity	Unit	Unit Price	Total
Schedule A: General Items					
1	Mobilization/Demobilization (5% of Total Cost)	1	LS		
2	Preparation and Compliance with SWPPP	1	LS		
3	Preparation and Compliance with PM-10 (Dust Control Plan)	1	LS		
4	Traffic Control Plan and Implementation	1	LS		
5	Cost-Loaded Critical Path Method (CPM) Schedule	1	LS		
Subtotal for Schedule A					
Schedule B: Water Systems					
6	Sheeting, Shoring, and Bracing	1	LS		
7	Pothole Existing Utilities	1	LS		
8	Connection to Existing Water Main on 30th Street W	1	LS		
9	Connection to Existing Water Main on 20th Street W	1	LS		
10	8-inch Diameter C900 PVC Water Main Pipe	20	LF		
11	10-inch Diameter C900 PVC Water Main Pipe	1242	LF		
12	1-inch Combination Air Valve Assembly	1	EA		
13	8-inch Butterfly Valve	3	EA		
14	2-inch Diameter SCH 80 PVC Water Pipe	110	LF		
15	2-inch Water Meter Assembly	1	EA		
16	2-inch Pressure Reducing Valve	1	EA		
17	8-inch Reduced Pressure Zone Backflow Prevention Assembly	1	EA		
18	10-inch Reduced Pressure Detector Backflow Prevention Assembly	1	EA		
19	1-inch Sampling Station	1	EA		
20	Connection to Existing Water System at Rosamond High School	1	LS		
21	Connection to Existing Water System at Antelope Valley Mobile Estates	1	LS		
22	Destroy Two Wells at Antelope Valley Mobile Estates Well Site	1	LS		
23	Removal of Existing Facilities at Rosamond High School Well Site	1	LS		
24	Removal of Existing Facilities at Antelope Valley Mobile Estates Well Sites	1	LS		
25	6-inch Diameter C200 Steel Water Pipeline at Rosamond High School Well Site	1	LS		

26	Removal and Replacement of Existing Water Meter at Rosamond High School	1	LS		
27	Hydrostatic Pressure and Leakage Testing of Pipelines	1	LS		
28	Disinfection and Bacteriological Testing of Pipelines	1	LS		
29	Site Restoration	1	LS		
30	Asphalt Pavement Restoration	1	LS		
31	Project Identification Sign	1	EA		
Subtotal for Schedule B					
Total Cost (A + B)					

TOTAL BID AMOUNT FOR SCHEDULE A – B (ITEMS 1-31): $_____

The costs of any work shown or required in the Plans and Specifications, but not specifically identified as a Bid Item are included in related Pay Items, and no additional compensation shall be due Contractor by virtue of Contractor's Compliance with the Plans and Specifications. It is further understood that the Bidder has made independent examinations of the physical conditions of the site work and has carefully studied the attached Contract Documents. The costs for any work shown shall include all taxes, delivery charges, and permits. The District reserves the right to reject any or all Bids and to waive any informality or irregularity in any Bid.

End of Section**

MEASUREMENT AND PAYMENT

ARSENIC REGIONAL CONSOLIDATION PROJECT
PHASE 1A

Payment for the various items of the Proposal Bidding Schedule, as further specified herein, shall include all compensation to be received by the Contractor for furnishing all tools, equipment, supplies, manufactured articles, labor, operations, and incidentals appurtenant to the items of work being described, as necessary to complete the various items of the Work all in accordance with the requirements of the Contract Documents, including all appurtenances thereto, and including all costs of permits and cost of compliance with the regulations of public agencies having jurisdiction, including Safety and Health Requirements of the California Division of Industrial Safety, and the Occupational Safety and Health Administration of the U.S. Department of Labor (OSHA). No separate payment will be made for any item that is not specifically set forth in the Proposal Bidding Schedule, but which is necessary for the complete construction of the Work and all costs therefore shall be included in the prices named in the Proposal Bid Schedules for the various appurtenant items of work.

SCHEDULE A – GENERAL ITEMS

1. **Mobilization/Demobilization (shall not exceed 5% of total cost) (Bid Item No. 1)**

   a) **Description:** This item shall include all activities and costs for transportation of personnel, equipment, and operating supplies to and from the site; establishment and removal of portable sanitary and refuse facilities; obtaining an adequate source of fresh water; location, provision, installation and removal of field offices & equipment/materials, storage yards, excavation equipment, buildings, and other necessary facilities for the Contractor's operations at the site; site cleanup, restoration of facilities, roads, fences, etc. modified or disturbed during the course of the project. Provisions for contract closeout, including cleaning, final site clean-up, waste disposal, touch up and repair, final equipment check, construction survey, providing project Record Drawings and providing warranties.

   b) **Measurement and Payment:** The Final Pay Lump Sum Price paid for this item shall include full compensation for all labor, materials, transportation, supplies, tools, equipment, and incidentals and for doing all other work and operations which must be performed or costs incurred to complete this effort.

2. **Preparation and Compliance with SWPPP (Bid Item No. 2)**

a) **Description:** The Contractor shall comply with all local, state and federal requirements for Storm Water Pollution Prevention and shall prepare a Storm Water Pollution Prevention Plan (SWPPP) and obtain all necessary permits. Contractor shall install, construct, maintain all necessary measures to comply with and keep the necessary records in accordance with the requirements of the Storm Water Pollution Prevention Plan (SWPPP).

The contractor shall prepare all plans and shall obtain all necessary permits prior to commencement of construction.

b) **Measurement and Payment:** The Final Pay Lump Sum Price paid for SWPPP shall include full compensation for making all completed arrangements and permission, furnishing all plans, permits, fees, labor, materials, tools, equipment, and incidentals and for doing all work involved in SWPPP Compliance.

3. **Preparation and Compliance with PM-10 (Dust Control Plan) (Bid Item No. 3)**

a) **Description:** The Contractor shall comply with all local, State, and federal requirements for Site dust control and shall prepare a PM-10 Dust Management Plan and obtain all necessary permits. Contractor shall install, construct, maintain all necessary measures to comply with and keep the necessary records in accordance with the requirements of the PM-10 Dust Prevention Plan.

The contractor shall prepare all plans and shall obtain all necessary permits prior to commencement of construction.

b) **Measurement and Payment:** The Final Pay Lump Sum Price paid for PM-10 Dust Control Plan shall include full compensation for making all completed arrangements and permission, furnishing all plans, permits, fees, labor, materials, tools, equipment, and incidentals and for doing all work involved in PM-10 Compliance.

4. **Traffic Control Plan and Implementation (Bid Item No. 4)**

a) **Description:** This item shall include providing all labor, materials, transportation, supplies, tools, equipment, and incidentals required to design, furnish, install, maintain, and operate all necessary facilities to provide traffic control for safety and proper construction of the work.

b) **Measurement and Payment:** The Final Pay Lump Sum Price paid for this item shall include full compensation for all labor, materials, transportation, supplies, tools, equipment, and incidentals and for doing all other work and operations which must be performed or costs incurred prior to beginning, during and after the completion of the Work on this contract item and no additional allowance shall be made therefore.

5. **Cost-Loaded Critical Path Method (CPM) Schedule (Bid Item No. 5)**

a) **Description:** This item shall include providing all labor, materials, transportation, supplies, tools, equipment, and incidentals required to, develop the project cost-loaded critical path method schedule, managing, updating and implementing the construction program including project and progress meetings.

b) **Measurement and Payment:** The Final Pay Lump Sum Price paid for this item shall include full compensation for all labor, materials, transportation, supplies, tools, equipment, and incidentals and for doing all other work and operations which must be performed or costs incurred prior to beginning, during and after the completion of the Work on this contract item and no additional allowance shall be made therefore.

SCHEDULE B – Water Systems

6. **Sheeting, Shoring, and Bracing (Bid Item No. 6)**

a) **Description:** This item shall include providing all labor, materials, transportation, supplies, tools, equipment, incidentals and stamped engineering plans required for sheeting, shoring, and bracing that conform to the applicable requirements of OSHA.

b) **Measurement and Payment:** The Final Pay Lump Sum Price paid for this item shall include full compensation for all labor, materials, transportation, supplies, tools, equipment, and incidentals and for doing all other work and operations which must be performed or costs incurred prior to beginning, during and after the completion of the Work on this contract item and no additional allowance shall be made therefore.

7. **Pothole Existing Utilities**
(Bid Item No. 7)

a) **Description:** This item shall include providing all labor, materials, transportation, supplies, tools, equipment, and incidentals for doing all the work to Pothole Existing Utilities. Contractor shall provide labor, materials and equipment necessary for potholing confirmation of existing utilities along the alignment of the project in conformance with the Contract Documents, the preparation of the multiple "30 Day Pothole Reports" for the entire pipeline route, and the cost for coordinating with landowners, utility companies, and/or other jurisdictional agencies.

b) **Measurement and Payment:** The Final Pay Lump Sum Price paid for this item shall include full compensation for all labor, materials, transportation, supplies, tools, equipment, and incidentals and for doing all other work and operations which must be performed or costs incurred prior to beginning, during and after the completion of the Work on this contract item and no additional allowance shall be made therefore.

8. **Connection to Existing Water Main on 30th Street W**
(Bid Item No. 8)

a) **Description:** This item shall include providing all labor, materials, transportation, supplies, tools, equipment, and incidentals required to furnish and install connection to the existing water main including, but not limited to, tees, reducers, joint restraints, thrust blocks, and all necessary appurtenances, and other incidentals to complete the Work.

Water main connection is listed below:

- 30th St W as shown in Sta 10+00 in Dwg. C-01

Water main connection work includes the removal of an existing 90-degree elbow.

b) **Measurement and Payment:** The Final Pay Lump Sum Price paid for this item shall include full compensation for all labor, materials, transportation, supplies, tools, equipment, and incidentals and for doing all other work and operations which must be performed or costs incurred prior to beginning, during and after the completion of the Work on this contract item and no additional allowance shall be made therefore.

9. **Connection to Existing Water Main on 20th Street W (Bid Item No. 9)**

a) **Description:** This item shall include providing all labor, materials, transportation, supplies, tools, equipment, and incidentals required to furnish and install connection to the existing water main including, but not limited to, tapping sleeves, joint restraints, thrust blocks, and all necessary appurtenances, and other incidentals to complete the Work.

Water main connections are listed below:

- 20th St W as shown in Sta 10+00 in Dwg. C-03

b) **Measurement and Payment:** The Final Pay Lump Sum Price paid for this item shall include full compensation for all labor, materials, transportation, supplies, tools, equipment, and incidentals and for doing all other work and operations which must be performed or costs incurred prior to beginning, during and after the completion of the Work on this contract item and no additional allowance shall be made therefore.

10. **8-inch Diameter C900 PVC Water Main Pipe (Bid Item No. 10)**

a) **Description:** This item shall include providing all labor, materials, transportation, supplies, tools, equipment, and incidentals required to furnish and install 8-inch diameter C900 DR18 CL 235 PVC water main pipe and/or 8-inch diameter C900 DR14 CL 305 PVC water main pipe including, but not limited to, the procurement and installation of all pipe, fittings, couplings, detectable locating tape, tracer wire, backfill material, and appurtenances. The Contractor shall perform all activities, including but not limited to; excavation, subgrade preparation, bedding preparation, laying of joints, installation of thrust blocks and/or restrained fittings, backfill and compaction, and testing. All water pipelines shall have a minimum cover of 36-inches. Installation location of DR 14 and DR 18 PVC water main pipe shall be as shown in Project Drawings.

b) **Measurement and Payment:** The Final Pay Quantity Unit Price per Linear Foot of 8-inch C900 PVC water main pipe paid for this item shall include full compensation for all labor, materials, transportation, supplies, tools, equipment, and incidentals and for doing all other work and operations which must be performed or costs incurred prior to beginning, during and after the completion of the Work on this contract item and no additional allowance shall be made therefore.

11. **10-inch Diameter C900 PVC Water Main Pipe (Bid Item No. 11)**

a) **Description:** This item shall include providing all labor, materials, transportation, supplies, tools, equipment, and incidentals required to furnish and install 10-inch diameter C900 DR18 CL 235 PVC water main pipe and/or 10-inch diameter C900 DR14 CL 305 PVC water main pipe including, but not limited to, the procurement and installation of all pipe, fittings, couplings, detectable locating tape, tracer wire, backfill material, and appurtenances. The Contractor shall perform all activities, including but not limited to; excavation, subgrade preparation, bedding preparation, laying of joints, installation of thrust blocks and/or restrained fittings, backfill and compaction, and testing. All water pipelines shall have a minimum cover of 36-inches. Installation location of DR 14 and DR 18 PVC water main pipe shall be as shown in Project Drawings.

b) **Measurement and Payment:** The Final Pay Quantity Unit Price per Linear Foot of 10-inch C900 PVC water main pipe paid for this item shall include full compensation for all labor, materials, transportation, supplies, tools, equipment, and incidentals and for doing all other work and operations which must be performed or costs incurred prior to beginning, during and after the completion of the Work on this contract item and no additional allowance shall be made therefore.

12. **1-inch Combination Air Valve Assembly (Bid Item No. 12)**

a) **Description:** This item shall include providing all labor, materials, transportation, supplies, tools, equipment, and incidentals required to furnish and install 1-inch combination air valve assemblies per Drawing C-101, Standard Detail W-8 including, but not limited to, valve, valve box, concrete pad, bollards, assembly encasement, thrust blocks, all necessary appurtenances, restrained fittings, and other incidentals to complete the Work.

b) **Measurement and Payment:** The Final Pay Quantity Unit Price per Assembly paid for this item shall include full compensation for all labor, materials, transportation, supplies, tools, equipment, and incidentals and for doing all other work and operations which must be performed or costs incurred prior to beginning, during and after the completion of the Work on this contract item and no additional allowance shall be made therefore.

13. **8-inch Butterfly Valve**
(Bid Item No. 13)

a) **Description:** This item shall include providing all labor, materials, transportation, supplies, tools, equipment, and incidentals required to furnish and install 8-inch butterfly valves to be installed in location as shown per Project Drawings (including valve box assembly per Drawing C-101, Standard Detail W-9). Bid item includes, but not limited to, valve box, thrust blocks, restrained fittings, all necessary appurtenances, and other incidentals to complete the Work.

b) **Measurement and Payment:** The Final Pay Quantity Unit Price per Valve paid for this item shall include full compensation for all labor, materials, transportation, supplies, tools, equipment, and incidentals and for doing all other work and operations which must be performed or costs incurred prior to beginning, during and after the completion of the Work on this contract item and no additional allowance shall be made therefore.

14. **2-inch Diameter SCH 80 PVC Water Pipe**
(Bid Item No. 14)

a) **Description:** This item shall include providing all labor, materials, transportation, supplies, tools, equipment, and incidentals required to furnish and install 2-inch diameter Schedule 80 PVC water pipe including, but not limited to, the procurement and installation of all pipe, fittings, couplings, detectable locating tape, tracer wire, backfill material, and appurtenances. The Contractor shall perform all activities, including but not limited to; excavation, subgrade preparation, bedding preparation, laying of joints, installation of thrust blocks and/or restrained fittings, backfill and compaction, and testing. All water pipelines shall have a minimum cover of 36-inches. Installation of Schedule 80 PVC water pipe shall be as shown in Project Drawings.

b) **Measurement and Payment:** The Final Pay Quantity Unit Price per Linear Foot of 2-inch diameter Schedule 80 PVC water pipe paid for this item shall include full compensation for all labor, materials, transportation, supplies, tools, equipment, and incidentals and for doing all other work and operations which must be performed or costs incurred prior to beginning, during and after the completion of the Work on this contract item and no additional allowance shall be made therefore.

15. **2-inch Water Meter Assembly**
(Bid Item No. 15)

a) **Description:** This item shall include providing all labor, materials, transportation, supplies, tools, equipment, and incidentals required to furnish and install 2-inch water meter assemblies per Drawing C-101, Standard Detail W-5 including, but not limited to, fittings, piping, bypass, gate valves, precast concrete vault, pipe supports, concrete pad, adaptors, all necessary appurtenances, and other incidentals to complete the Work.

b) **Measurement and Payment:** The Final Pay Quantity Unit Price per Water Meter assembly paid for this item shall include full compensation for all labor, materials, transportation, supplies, tools, equipment, and incidentals and for doing all other work and operations which must be performed or costs incurred prior to beginning, during and after the completion of the Work on this contract item and no additional allowance shall be made therefore.

16. **2-inch Pressure Reducing Valve**
(Bid Item No. 16)

a) **Description:** This item shall include providing all labor, materials, transportation, supplies, tools, equipment, and incidentals required to furnish and install 2-inch pressure reducing valves to be installed in location as shown per Project Drawings (including valve box assembly per Drawing C-101, Standard Detail W-9). Bid item includes, but not limited to, valve box, thrust blocks, restrained fittings, all necessary appurtenances, and other incidentals to complete the Work.

b) **Measurement and Payment:** The Final Pay Quantity Unit Price per Valve paid for this item shall include full compensation for all labor, materials, transportation, supplies, tools, equipment, and incidentals and for doing all other work and operations which must be performed or costs incurred prior to beginning, during and after the completion of the Work on this contract item and no additional allowance shall be made therefore.

17. **8-inch Reduced Pressure Zone Backflow Prevention Assembly**
(Bid Item No. 17)

a) **Description:** This item shall include providing all labor, materials, transportation, supplies, tools, equipment, and incidentals required to furnish and install 8-inch reduced pressure zone backflow prevention assemblies per Drawing C-101, Standard Detail W-14, and the Uniform Plumbing Code including, but not limited to, fittings, piping, protective enclosure/vault, reinforced concrete pad, pipe supports, all necessary appurtenances, and other incidentals to complete the Work.

b) **Measurement and Payment:** The Final Pay Quantity Unit Price per Assembly paid for this item shall include full compensation for all labor, materials, transportation, supplies, tools, equipment, and incidentals and for doing all other work and operations which must be performed or costs incurred prior to beginning, during and after the completion of the Work on this contract item and no additional allowance shall be made therefore.

18. **10-inch Reduced Pressure Detector Backflow Prevention Assembly (Bid Item No. 18)**

a) **Description:** This item shall include providing all labor, materials, transportation, supplies, tools, equipment, and incidentals required to furnish and install 10-inch reduced pressure detector backflow prevention assemblies per Drawing C-101, Standard Detail W-14A, and the Uniform Plumbing Code including, but not limited to, fittings, piping, protective enclosure/vault, reinforced concrete pad, pipe supports, all necessary appurtenances, and other incidentals to complete the Work.

b) **Measurement and Payment:** The Final Pay Quantity Unit Price per Assembly paid for this item shall include full compensation for all labor, materials, transportation, supplies, tools, equipment, and incidentals and for doing all other work and operations which must be performed or costs incurred prior to beginning, during and after the completion of the Work on this contract item and no additional allowance shall be made therefore.

19. **1-inch Sampling Station (Bid Item No. 19)**

a) **Description:** This item shall include providing all labor, materials, transportation, supplies, tools, equipment, and incidentals required to furnish and install 1-inch sampling stations per RCSD Standards and the Uniform Plumbing Code including, but not limited to, fittings, piping, valves, all necessary appurtenances, and other incidentals to complete the Work.

b) **Measurement and Payment:** The Final Pay Quantity Unit Price per Sampling Station paid for this item shall include full compensation for all labor, materials, transportation, supplies, tools, equipment, and incidentals and for doing all other work and operations which must be performed or costs incurred prior to beginning, during and after the completion of the Work on this contract item and no additional allowance shall be made therefore.

20. **Connection to Existing Water System at Rosamond High School (Bid Item No. 20)**

a) **Description:** This item shall include providing all labor, materials, transportation, supplies, tools, equipment, and incidentals required to connect to the existing water system at Rosamond High School including, but not limited to, reducer, restrained fittings, all necessary appurtenances, and other incidentals required to make connection.

Connection located at the unpaved area north of the Rosamond High School parking lot as shown in Sta 22+41.2 in Dwg. C-02.

Connection work will also include capping of existing water pipeline.

b) **Measurement and Payment:** The Final Pay Lump Sum Price paid for this item shall include full compensation for all labor, materials, transportation, supplies, tools, equipment, and incidentals and for doing all other work and operations which must be performed or costs incurred prior to beginning, during and after the completion of the Work on this contract item and no additional allowance shall be made therefore.

21. **Connection to Existing Water System at Antelope Valley Mobile Estates (Bid Item No. 21)**

a) **Description:** This item shall include providing all labor, materials, transportation, supplies, tools, equipment, and incidentals required to connect to the existing water system at Antelope Valley Mobile Estates including, but not limited to, reducer, restrained fittings, all necessary appurtenances, and other incidentals required to make connection.

Connection located at Antelope Valley Mobile Estates as shown in Sta 11+29.9 in Dwg. C-03.

b) **Measurement and Payment:** The Final Pay Lump Sum Price paid for this item shall include full compensation for all labor, materials, transportation, supplies, tools, equipment, and incidentals and for doing all other work and operations which must be performed or costs incurred prior to beginning, during and after the completion of the Work on this contract item and no additional allowance shall be made therefore.

22. **Destroy Two Wells at Antelope Valley Mobile Estates Well Site (Bid Item No. 22)**

a) **Description:** This item shall include providing all labor, materials, transportation, supplies, tools, equipment, and incidentals required to destroy and dispose of two wells at Antelope Valley Mobile Estates well site based on Kern County Public Health Services Department Well Destruction Procedures dated October 2006. Bid item includes cost of obtaining any relevant permits to destroy and dispose wells.

b) **Measurement and Payment:** The Final Pay Lump Sum Price paid for this item shall include full compensation for all labor, materials, transportation, supplies, tools, equipment, and incidentals and for doing all other work and operations which must be performed or costs incurred prior to beginning, during and after the completion of the Work on this contract item and no additional allowance shall be made therefore.

23. **Removal of Existing Facilities at Rosamond High School Well Site (Bid Item No. 23)**

a) **Description:** This item shall include providing all labor, materials, transportation, supplies, tools, equipment, and incidentals required to remove and dispose of existing facilities at the Rosamond High School well site including, but not limited to, reducer, 90-degree elbows, tees, steel spools, backflow device, electrical panel, pump, and steel pipe as shown in Dwg. C-04.

b) **Measurement and Payment:** The Final Pay Lump Sum Price paid for this item shall include full compensation for all labor, materials, transportation, supplies, tools, equipment, and incidentals and for doing all other work and operations which must be performed or costs incurred prior to beginning, during and after the completion of the Work on this contract item and no additional allowance shall be made therefore.

24. **Removal of Existing Facilities at Antelope Valley Mobile Estates Well Sites (Bid Item No. 24)**

a) **Description:** This item shall include providing all labor, materials, transportation, supplies, tools, equipment, and incidentals required to remove existing facilities at the Antelope Valley Mobile Estates well sites including, but not limited to, tanks, pumps, motors, pipes, foundations, all above ground appurtenances, wooden structure, and other incidentals to complete the Work as shown in Dwg. C-05.

b) **Measurement and Payment:** The Final Pay Lump Sum Price paid for this item shall include full compensation for all labor, materials, transportation, supplies, tools, equipment, and incidentals and for doing all other work and operations which must be performed or costs incurred prior to beginning, during and after the completion of the Work on this contract item and no additional allowance shall be made therefore.

25. **6-inch Diameter C200 Steel Water Pipeline at Rosamond High School Well Site (Bid Item No. 25)**

a) **Description:** This item shall include providing all labor, materials, transportation, supplies, tools, equipment, and incidentals required to furnish and install 6-inch diameter AWWA C200 Steel water pipe including, but not limited to, 90-degree elbows, blind flanges, tees, restrained flange adapters, steel spools, pipe supports, flange isolating kits, and all necessary appurtenances to complete Work as shown in Dwg. C-04. The Contractor is to field verify the lengths required for the C200 steel pipe and spools and shall also verify the location and connection types required to connect to existing water system. The minimum required quantities are shown in Dwg. C-04.

As part of this Bid Item, the Contractor will field verify lengths and materials needed to complete this Work and shall submit an installation plan for review and approval by the Engineer. Installation plan shall include, but is not limited to, all steel pipe material and appurtenances required, layout of pipeline, and design and location of pipe supports. Layout of Pipeline shall take into consideration existing utilities that are to remain in place which could result in additional materials needed. Bid item includes costs associated with testing of any welds in accordance with these specifications.

b) **Measurement and Payment:** The Final Pay Lump Sum Price paid for this item shall include full compensation for all labor, materials, transportation, supplies, tools, equipment, and incidentals and for doing all other work and operations which must be performed or costs incurred prior to beginning, during and after the completion of the Work on this contract item and no additional allowance shall be made therefore.

26. **Removal and Replacement of Existing Water Meter at Rosamond High School (Bid Item No. 26)**

a) **Description:** This item shall include providing all labor, materials, transportation, supplies, tools, equipment, and incidentals required to remove an existing 6-inch water meter and furnish and install 4-inch water meter including two reducers and other necessary appurtenances to complete replacement.

Existing 6-inch meter is located approximately 13.6 feet east of Sta. 11+03.8 as shown in Dwg. C-01. Photograph of existing meter and facilities can be seen in Photo 1-1 in Dwg. C-01.

b) **Measurement and Payment:** The Final Pay Lump Sum Price paid for this item shall include full compensation for all labor, materials, transportation, supplies, tools, equipment, and incidentals and for doing all other work and operations which must be performed or costs incurred prior to beginning, during and after the completion of the Work on this contract item and no additional allowance shall be made therefore.

27. **Hydrostatic Pressure and Leakage Testing of Pipelines (Bid Item No. 27)**

a) **Description:** This item shall include providing all labor, materials, transportation, supplies, tools, equipment, and incidentals required for hydrostatic pressure and leakage testing of water main pipelines in accordance with Section 15005 – Pipeline Pressure and Leakage Testing and applicable standards.

b) **Measurement and Payment:** The Final Pay Lump Sum Price paid for this item shall include full compensation for all labor, materials, transportation, supplies, tools, equipment, and incidentals and for doing all other work and operations which must be performed or costs incurred prior to beginning, during and after the completion of the Work on this contract item and no additional allowance shall be made therefore.

28. **Disinfection and Bacteriological Testing of Pipelines (Bid Item No. 28)**

a) **Description:** This item shall include providing all labor, materials, transportation, supplies, tools, equipment, and incidentals required to provide disinfection and bacteriological testing of the water main pipelines per Section 15008 – Disinfecting of Water Distribution System and applicable standards.

b) **Measurement and Payment:** The Final Pay Lump Sum Price paid for this item shall include full compensation for all labor, materials, transportation, supplies, tools, equipment, and incidentals and for doing all other work and operations which must be performed or costs incurred prior to beginning, during and after the completion of the Work on this contract item and no additional allowance shall be made therefore.

29. **Site Restoration**
(Bid Item No. 29)

a) **Description:** This item shall include providing all labor, materials, transportation, supplies, tools, equipment, and incidentals required to provide site restoration, including protecting-in-place or removing and replacing all existing utilities and private and public improvements, including, but not limited to, curbs, gutters, concrete pavement, asphalt pavement, aggregate base, sidewalks, walkways, parking lots, landscaping, landscaping irrigation facilities, signs, fences, shot put area, and walls.

b) **Measurement and Payment:** The Final Pay Lump Sum Price paid for this item shall include full compensation for all labor, materials, transportation, supplies, tools, equipment, and incidentals and for doing all other work and operations which must be performed or costs incurred prior to beginning, during and after the completion of the Work on this contract item and no additional allowance shall be made therefore.

30. **Asphalt Pavement Restoration**
(Bid Item No. 30)

a) **Description:** This item shall include providing all labor, materials, transportation, supplies, tools, equipment, and incidentals required to provide asphalt pavement restoration, including, but not limited to, replacement of pavement in accordance with County Standards, striping, and pavement reflectors.

b) **Measurement and Payment:** The Final Pay Lump Sum Price paid for this item shall include full compensation for all labor, materials, transportation, supplies, tools, equipment, and incidentals and for doing all other work and operations which must be performed or costs incurred prior to beginning, during and after the completion of the Work on this contract item and no additional allowance shall be made therefore.

31. **Project Identification Sign**
(Bid Item No. 31)

a) **Description:** This item shall include providing all labor, materials, transportation, supplies, tools, equipment, and incidentals required to provide, install, and maintain Project identification signage during Project construction in accordance with these specifications. This item also includes the removal and disposal of signs at the completion of Project and returning sign location site to pre-construction conditions or better.

b) **Measurement and Payment:** The Final Pay Quantity Unit Price per sign paid for this item shall include full compensation for all labor, materials, transportation, supplies, tools, equipment, and incidentals and for doing all other work and operations which must be performed or costs incurred prior to beginning, during and after the completion of the Work on this contract item and no additional allowance shall be made therefore.

****END OF SECTION****

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INFORMATION REQUIRED OF BIDDER

In conformance with requirements of Sections B and D of these Specifications, the Bidder sets forth the following information:

a. Listed below are three projects performed under the bidder's supervision during the past five (5) years involving work of scope and complexity comparable to that to be installed under Contract Specifications. Failure to demonstrate adequate experience shall be grounds for rejection of bids.

1. Project Title: _____

   Bid Award Agency: _____

   Geologist: _____

   Engineer: _____

   Date Completed: _____

   Total Contract Cost: _____

2. Project Title: _____

   Bid Award Agency: _____

   Geologist: _____

   Engineer: _____

   Date Completed: _____

   Total Contract Cost: _____

3. Project Title: _____

   Bid Award Agency: _____

   Geologist: _____

   Engineer: _____

   Date Completed: _____

b. The bidder shall herein set forth the name and the location of the place of business of each Subcontractor who will perform work or labor or render service to the General Contractor in or about the construction of work or improvement in an amount in excess of one-half of

1 percent (0.5%) of the General Contractor's total bid and the portion of the work that will be done by each such Subcontractor. Attach additional sheets if necessary.

Name of Subcontractor	Business Address	Work Description

NOTE: Attach additional sheets and attachments as required. Bidder is cautioned that failure to supply <u>all</u> items of information required of bidders may cause the bid to be considered non-responsive.

AGREEMENT

THIS AGREEMENT, made and entered into this _____ day of _____, 2026, by and between Rosamond Community Services District, hereinafter called the "District," and _____, hereinafter called the "Contractor;"

WITNESSETH: That the District and the Contractor, for the consideration hereinafter named, agree as follows:

1. This Contract is for all materials and services necessary to complete the project described in the Contract Documents for the Specifications for Project No. 01062-12 for Construction of the Arsenic Regional Consolidation Project Phase 1A.

2. The Contract includes all of the Contract Documents, to wit: the Notice Inviting Bids, the Instructions to Bidders, the accepted Proposal and Proposal Bidding Schedule, the Contractor's Licensing Statement, the Information Required of Bidders, the Agreement, the Faithful Performance Bond, the Payment Bond, the Non-Collusion Affidavits, the Notice to Proceed, the General Conditions, the Special Conditions, the Specifications and Drawings, Appendices, and any change order or Addenda setting forth any modifications or interpretations of any of said Documents. All said Documents are hereby incorporated in and made a part of this Agreement.

3. The Contractor shall furnish all labor, materials, equipment, and other facilities and perform in good and workmanlike manner all work under the Contract for the District in strict conformity with this Contract and the Contract Documents, including but not limited to the Specifications and Drawings, and to the approval and entire satisfaction of the Engineer and District.

4. Notwithstanding anything in this Contract or the Contract Documents to the contrary, the Contractor hereby makes and shall obtain or caused to be obtained from all subcontractors and suppliers all certifications, stipulations and agreements required by, and shall ensure that Contractor and all subcontractors and suppliers comply with all applicable requirements of the Rosamond Community Services District. Contractor further agrees to assist District by providing it with any further information or documentation that the District reasonably determines may be necessary from Contractor for the District.

5. The District will pay the Contractor in current funds for the performance of the Contract the sum stated in the Proposal Bidding Schedule, in the manner, at the time and upon the conditions as stated in the Contract Documents, and will otherwise fulfill its obligations as provided in the Contract.

6. All time limits stated in the Contract Documents are of the essence.

7. This Agreement shall be binding upon and shall inure to the benefit of the parties hereto, as well as their heirs, successors, and assigns.

8. Unless otherwise ordered by the Engineer, the Contractor shall begin the Work within ten (10) calendar days after issuance of the Notice to Proceed and complete the work in accordance with the schedule set forth in the Special Conditions. Pursuant to section 53069.85 of the Government Code, Contractor agrees that if the work is not completed on or before the expiration of the completion time or times specified in the Special Conditions, or within such extensions of time as may be granted, the District may retain the sum set forth in the Special Conditions each day thereafter, Sundays and holidays included, that the Work remains uncompleted, which sum is agreed upon as the proper measure of liquidated damages which the District will sustain per day by the failure of the Contractor to complete the Work at the time stipulated, and this sum is not to be construed in any sense a penalty or forfeiture.

9. Labor Certification - Contractor states that it 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 provisions of that Code, and Contractor agrees to comply with such provisions before commencing the performance of the Work of this Contract.

10. **Indemnification:**

    a. The Contractor shall assume the defense of and indemnify and save harmless the District and the Engineer and their respective directors, officers, employees and agents from any and all loss, damage, liability, claims, or causes of action of every nature whatsoever for damage to or destruction of property, including the District's property, or for injury to or death of persons, including Contractor's employees, in any manner, including that alleged to have been caused by the negligence of the indemnities of any of them, arising out of or incident to the performance of this Contract; provided, however, that the Contractor shall have no such obligation with respect to such of the foregoing as are actually caused by the sole negligence or willful misconduct of the indemnities or any of them; and provided further, that the Contractor shall not be liable for damages resulting solely from error or omission in design that were not due to or contributed to by negligence or fault of the Contractor, his subcontractors, agents or employees.

    b. The Contractor shall at all times preserve and protect the work installed and performed hereunder, and assume full responsibility for the condition thereof until final acceptance by the District. Contractor shall be liable for any loss or damage to any work in place and to any materials on the job site that may be caused by Contractor, his employees, agents, or guests. Any such damage shall be immediately repaired by Contractor, and, upon failure to do so, the District may remedy the same and deduct the cost thereof from any amount due or to become due to the Contractor.

    c. The Contractor shall assume the defense of and indemnify and save harmless the District and the Engineer and their respective directors, officers, employees and agents, and the real property upon which the work called for by this Contract is being performed, against any and all liens, claims, demands, and costs, including

attorney's fees, for labor and material furnished to the Contractor or any of his subcontractors in connection with the performance of this Contract. In the event that the Contractor or any of his subcontractors shall fail to pay for any material or labor used in the performance of this Contract, or any lien is filed against the said property, or any claim is asserted or action is filed against the said property, or any claim is asserted or action filed on any Bond, by any person claiming to have furnished labor or materials to the Contractor or any of his subcontractors in connection with the performance of this Contract, the District shall be entitled, at its option, to pay for said material or labor, or discharge any such lien, or to pay or settle any such claim or action and to deduct the amount so paid, together with any and all costs and attorney's fees incurred by or on behalf of the District in connection with any such payment, discharge, or settlement, from amounts due or to become due to the Contractor hereunder. The District may also deduct from any amounts due or to become due to the Contractor, any other amounts owing by the Contractor to the District, including the cost of any materials, labor, services, equipment or facilities supplied by the District as to which the Contractor has the obligation to supply the same hereunder. In the event that the balance that otherwise would be due the Contractor, shall be insufficient to so reimburse the District, the Contractor shall pay the District any deficiency upon demand.

d. The Contractor shall pay all royalties and license fees. He shall, at his own cost, expense and risk, defend any and all suits or claims for infringement of any patent rights and shall save the District and its Directors, officers, employees and agents harmless from loss of account thereof; except that the District shall be responsible for all such loss when a particular manufacturer is specified by it, but if the Contract has information that the process or article specified is or may be an infringement of a patent, he shall be responsible for such loss unless he promptly gives such information, in writing, to the Engineer.

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

Rosamond Community Services District

(District Seal) By: _____

_____
Rosamond Community Services District

Contractor

By: _____
(Title)

(CONCORPORATE SEAL) And: _____
(Title)

END OF SECTION

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FAITHFUL PERFORMANCE BOND
KNOW ALL MEN BY THESE PRESENTS

THAT, WHEREAS, the Rosamond Community Services District, State of California, entered into a Contract dated_____, 2026, with _____ _____ hereinafter designated as the "Contractor," for _____ _____ _____ _____; and,

WHEREAS, the said Contractor is required under the terms of said Contract to furnish a bond for the faithful performance of said Contract.

NOW, THEREFORE, WE, the undersigned Contractor, as Principal, and _____ _____ (corporate surety), a corporation organized and existing under the laws of the State of _____, and duly authorized to transact business under the laws of the State of California, as Surety, are held and firmly bound unto Rosamond Community Services District in the penal sum of _____ Dollars ($_____), lawful money of the United States, said sum being equal in amount to one-hundred percent (100%) of the total Contract amount payable by the said Rosamond Community Services District under the terms of the Contract, 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 THIS OBLIGATION IS SUCH, THAT, if the above-bonded Contractor, his or its heirs, executors, administrators, successors, or assigns, shall in all things stand to and abide by, and well and truly keep and perform the covenants, conditions, and agreements in the said Contract and any alteration thereof made as therein provided, on his or their part, to be kept and performed at the time and in the manner therein specified, and in all respects according to their true intent and meaning, and shall indemnify and save harmless the Rosamond Community Services District, its officers and agents, as therein stipulated, then this obligation shall become null and void; otherwise it shall be and remain in full force and effect.

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

IN WITNESS WHEREOF, WE have hereunto set our hands and seals this _____ _____ day of _____, 2026.

Contractor: _____ Surety: _____

By: _____

Title: _____

By: _____

Title: _____

By: _____

Title: _____

Home Office
Address: _____

Phone: _____

Attorney-
In-Fact: _____

Address: _____

Phone: _____

Seal

NOTE: This bond must be acknowledged before a Notary Public, and a legally sufficient power of attorney must be attached to the bond to verify the authority of any party signing on behalf of a surety.

PAYMENT BOND
KNOW ALL MEN BY THESE PRESENTS

THAT, WHEREAS, the ROSAMOND COMMUNITY SERVICES DISTRICT has awarded _____ hereinafter designated as the "Contractor," for the Arsenic Regional Consolidation Project Phase 1A; and,

WHEREAS, said Contractor is required by the provisions of Division 4, Part 6, Title 3, of the Civil Code of the State of California, including, but not limited to Civil Code Sections 9550-9566, inclusive, to furnish a bond in connection with said Contract, as hereinafter set forth.

NOW, THEREFORE, WE, _____

_____

the undersigned Contractor, as Principal, and _____

_____

a corporation organized and existing under the laws of the State of _____ and duly authorized to transact business under the laws of the State of California, as Surety, are held and firmly bound unto the ROSAMOND COMMUNITY SERVICES DISTRICT in the sum of $_____Dollars ($_____), lawful money of the United States, said sum being equal in amount to one-hundred percent (100%) of the total Contract amount payable by the said ROSAMOND COMMUNITY SERVICES DISTRICT under the terms of the Contract, for which payment well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, THAT, if said Contractor, his or its heirs, executors, administrators, successors, assigns, or subcontractors shall fail to pay for any materials, provisions, implements, or machinery 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 as required by the provisions of Division 4, Part 6, Title 3, Chapter 5 of the Civil Code; and provided that the claimant shall have complied with the provisions of said Code, the surety or sureties hereon will pay for the same in an amount not exceeding the sum specified in this bond, otherwise the above obligation shall be void. In case a suit is brought upon this bond, the said Surety will pay a reasonable attorney's fee to be fixed by the court. This bond shall inure to the benefit of any and all persons, companies, and corporations entitled to file claims under Division 4, Part 6, Title 3 of the Civil Code, so as to give a right of action to them or their assigns in any suit brought upon this bond. And the said Surety, for value received, hereby stipulates and agrees that no change, extension of time, alternation, or addition to the terms of the Contract or to the work to be performed thereunder or the Specifications accompanying the same shall in any way affect its obligations on this bond, and it does hereby waive notice of any such change, extension of time, alteration, or addition to the terms of the Contract or to the work or to the Specifications.

IN WITNESS WHEREOF, WE have hereunto set our hands and seals this _____ _____ day of _____, 2026.

In witness whereof, we hereunto set our hands and seals this _____ day of _____, 2026.

Contractor:	_____	Surety:	_____
By:	_____	By:	_____
Title:	_____	Title:	_____
By:	_____	Home Office Address:	_____
Title:	_____	Phone:	_____
		Attorney-in-Fact:	_____
		Address:	_____
_____		Phone:	_____
Seal			

Date of Bond shall not be prior to date of Contract.

NOTE: This bond must be acknowledged before a Notary Public, and a legally sufficient power of attorney must be attached to the bond to verify the authority of any party signing on behalf of a surety.

NON–COLLUSION AFFIDAVIT

TO BE EXECUTED BY BIDDER AND SUBMITTED WITH BID

STATE OF CALIFORNIA)
) ss
COUNTY OF KERN)

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

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

Signed: _____

Title: _____

Subscribed and sworn to before me this
_____ date of _____, 2026.

Seal of Notary

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Notary Public

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SUBCONTRACTOR'S NON–COLLUSION AFFIDAVIT
TO BE EXECUTED BY EACH AWARDEE OF A SUBCONTRACTOR

STATE OF CALIFORNIA)
)ss
COUNTY OF KERN)

I, _____, declare that I am _____
(sole owner, a partner, president, secretary, etc.)
of _____
the party making the foregoing bid covering _____
that such bid is not made in the interest of or on behalf of any undisclosed person, partnership, company, association, organization, or corporation; that such bid is genuine and not collusive or sham; that said bidder has not directly or indirectly induced or solicited any other bidder to put in a false or sham bid, and has not directly or indirectly colluded, conspired, connived, or agreed with any bidder or anyone else to put in a sham bid, or that anyone shall refrain from bidding; that said bidder has not in any manner, directly or indirectly, sought by agreement, communications, or conference with anyone to fix the bid price of said bidder or any other bidder, or to fix any overhead, profit, or cost element of the bid price, or of that of any other bidder, or to secure any advantage against the public body awarding the contract of anyone interested in the proposed contract; that all statements contained in the bid are true; and, further, that the bidder has not, directly or indirectly, submitted his or her bid price or any breakdown thereof, or the contents thereof, or divulged information or date relative thereto, or paid, and will not pay, any fee in connection therewith to any corporation, partnership, company, association, organization, bid depository, or to any member or agent thereof, or to any other individual except to such person or persons as have a partnership or other financial interest with said bidder in his general business. The provisions of this affidavit shall not be held as disqualifying a person, firm, or cooperation who has submitted a sub-proposal to one bidder from submitting separate sub-proposals or quoting prices for materials or work to other bidders.

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

Signed: _____

Title: _____

Subscribed and sworn to before me this
_____ date of _____, 2026.

Seal of Notary

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Notary Public

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NOTICE TO BIDDERS OF JOB SITE TOUR

You may choose to attend a pre-bid conference and scheduled tour of the Arsenic Regional Consolidation Project Phase 1A site of the Rosamond Community Services District to be conducted by the District on April 23, 2026. The pre-bid conference will start promptly at 10:00 a.m. at the Rosamond Community Services District (RCSD) at 3179 35th Street West, Rosamond CA 93560. It is anticipated that the conference and tour will last approximately one hour.

This will be the only formal tour of the job site conducted by the District.

/s/ Kim Domingo

General Manager

Rosamond Community Services District
3179 35th Street West
Rosamond, CA 93560
Phone (661) 256-3411

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NOTICE OF AWARD

TO: _____

_____

PROJECT: ROSAMOND COMMUNITY SERVICES DISTRICT

Arsenic Regional Consolidation Project Phase 1A

_____

The District has considered the BID submitted by you for the above described WORK in response to its Request for Bids dated _____, and Contract Documents.

You are hereby Notified that your BID has been accepted, and the sum of the items amounts to

$_____.

You are required by the Contract Documents to execute the Agreement within ten (10) calendar days from the date of this Notice. You are also required to provide all bonds and certificates of insurance required by the Contract Documents within said ten (10) day period.

If you fail to execute said Agreement within ten (10) days from the date of this Notice, said District will be entitled to consider all your rights arising out of the District's acceptance of your BID as abandoned. The District will be entitled to such other rights as may be granted by law.

You are required to return an acknowledged copy of this NOTICE OF AWARD to the District.

Dated this _____ day of _____, 2026.

ROSAMOND COMMUNITY SERVICES DISTRICT

OWNER

By: _____

Kim Domingo

Title: General Manager

ACCEPTANCE OF NOTICE

Receipt of the foregoing NOTICE OF AWARD is hereby acknowledged

By: _____

this the _____ Day of _____, 2026

By: _____

Title _____

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NOTICE TO PROCEED FORM

TO: _____

_____

_____

PROJECT: ROSAMOND COMMUNITY SERVICES DISTRICT
SPECIFICATIONS FOR PROJECT NO. 01062-12
Arsenic Regional Consolidation Project Phase 1A

DATE:

You are hereby notified to commence work in accordance with the Contract Documents for the above-described project on or before _____. **You are to complete the WORK by _____(date).**

DISTRICT – ROSAMOND COMMUNITY SERVICES DISTRICT

By: _____
Kim Domingo, General Manager

ACCEPTANCE OF NOTICE

Receipt of the above NOTICE TO PROCEED is hereby acknowledged by _____ this the _____ day of _____, 2026.

By: _____

Title: _____

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NOTICE TO PROCEED CHECKLIST

To: _____

_____

From: The Board of Directors,
Rosamond Community Services District

Notice is hereby given that you are authorized and directed to proceed with the following project in accordance with the Contract Documents:

Specifications for Project No. 01062-12 for Constructing the Arsenic Regional Consolidation Project Phase 1A

These documents have been received and are on file with Rosamond Community Services District:

The Agreement, fully executed	[ ]
Payment Bond (100%)	[ ]
Faithful Performance Bond (100%)	[ ]
Worker's Compensation Insurance Certificate	[ ]
Liability Insurance Policy or Certificate, with Endorsements	[ ]
Non-Collusion Affidavits	[ ]

A copy of the Award of Contract has been mailed by this District to the California Division of Apprenticeship Standards, Department of Industrial Relations.

Under the terms of the Contract, work is to start within twenty (20) calendar days after the date set forth below and is to be completed within the time set forth in the Special Conditions.

Rosamond Community Services District

_____ By: _____

Date

Kim Domingo
General Manager

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SECTION C – GENERAL CONDITIONS

C-1 Definitions

The following terms, as used in any of the Contract Documents, are respectively defined as follows:

a. **"Application for Payment" –** the form to be used by Contractor in requesting payments which is to include such supporting documentation as is required by the Contract Documents.

b. **"Board of Directors" or "Board"** – The Board of Directors of the District.

c. **"Certificate of Completion and Final Acceptance"** – the certification and acceptance by Engineer of Work when it has been completed in all respects in accordance with the Contract Documents.

d. **"Change Order" –** a written order to Contractor from Engineer authorizing a change in the Work, or an adjustment in the Contract Price or Contract Time issued after the effective date of the Contract.

e. **"Change Work"** – a substitution, addition, deletion or revision in the Work within the general scope of the Contract necessary to the completion of the Work.

f. **"Contract Documents"** – The Notice Inviting Bids, the Instructions to Bidders, the accepted Proposal and Proposal Bidding Schedule, the Contractor's Licensing Statement, the Information Required of Bidders, the Agreement, the Faithful Performance Bond, the Payment Bond, the Non-Collusion Affidavits, the Notice to Proceed, General Conditions, Special Conditions, the Specifications and Drawings, Appendices and any change order or Addenda, setting forth any modifications or interpretations of any of said Documents.

g. **"Contract"** – The Contract Documents executed by the authorized officers of the District and the Contractor.

h. **"Contractor" or "CONTRACTOR"** – the bidder who submitted the accepted Proposal and who executed a Contract to complete the Work in accordance with the Contract Documents, and the legal representatives of said party.

i. **"Contract Price"** – the monies payable by District to Contractor under the provisions of the Contract Documents.

j. **"Contract Time" –** the length of time stated in the Contract Documents for the completion of the Work.

k. **"Construction Schedule" –** an outline of construction activities showing the sequence and timeline for completing the components of the Work.

l. **"Day"** – a calendar day of 24 hours measured from midnight to the next midnight.

m. **"Defective" –** an adjective which when modifying the word Work refers to Work that is unsatisfactory, faulty or deficient, or does not conform to the Contract Documents, or does not meet the requirements of any inspection, reference standard, test or approval referred to in the Contract Documents, or has been damaged prior to Engineer's recommendation of final payment, unless responsibility for the protection thereof has been assumed by District.

n. **"Detail Drawings"** – details of standard structures, devices, or installations referred to on the Project Drawings or in the other Contract Documents.

o. **"District" or "DISTRICT" or "Owner"**– Rosamond Community Services District.

p. **"Effective Date of the Contract"** - the date indicated in the Contract in which a fully executed Contract is delivered by the District.

q. **"Engineer" or "ENGINEER" or "DISTRICT'S REPRESENTATIVE"** – Unless otherwise stated, to be named upon award of the Contract, acting either directly or through a properly authorized representative, GEI Consultants Inc., 35 N. Lake Avenue, Suite 220, Pasadena, CA 91101.

r. **"Equipment" –** products with operational parts, regardless of whether motorized or manually operated, and particularly including products with service connections (wiring, piping, and other like items).

s. **"Extra Work" –** Work outside the general scope of the Contract.

t. **"Field Order" –** a written order issued to Contractor by Engineer which orders minor Change Work but which does not involve a change in the Contract Price or the Contract Time, or such an order issued when, as determined, the time required for development and execution of a Change Order would result in delay or stoppage of the Work or would allow a hazardous condition to exist.

u. **"Final Inspection"** – determines if the Work has reached Final Completion.

v. **"Final Completion"** – indicates that the Work has been fully completed in accordance with the Contract Documents and is ready for acceptance and final payment by the District.

w. **"Final Punch List"** – contains items that remain uncompleted after Substantial Completion but that must be completed prior to Final Completion.

x. **"Materials" –** products which must be substantially cut, shaped, worked, mixed, finished, refined, or otherwise fabricated, processed, installed, or applied to form Work.

y. **"Modification"** – a Written Amendment to the Contract signed by both parties, a Change Order or a Field Order. Any Modification involving a permit must be supported by the written agreement of the agency issuing the permit. A Modification may be issued only after the effective date of the Contract.

z. **"Notice of Award" –** the written notice by District to the apparent successful Bidder of District's intent to sign and deliver the Contract, upon Contractor's delivery of all Contract Documents.

aa. **"Notice of Completion" –** the written notice filed by District with the County Recorder certifying that the Work has been completed.

bb. **"Notice to Proceed"** – the written notice by District to Contractor fixing the date on which the Contract Time will commence to run and on which Contractor shall start to perform its obligation under the Contract Documents.

cc. **"Plans" or "Drawings" –** means and includes Project Drawings and Detail Drawings.

dd. **"Preconstruction Conference" –** a conference held before Contractor starts Work at the Site, attended by Contractor, Engineer and others as appropriate, to discuss the schedules provided, to discuss procedures for handling Shop Drawings and other submittals and for processing Applications for Payment, and to establish a Working understanding among the parties as to the Work.

ee. **"Products" –** includes purchased items for incorporation into the Work regardless of whether specifically purchased for the Project or taken from Contractor's stock of previously purchased products.

ff. **"Project" –** see Work**.**

gg. **"Project Drawings" –** the drawings developed by District or Engineer, or both, specifically for the Project which show the character and scope of the Work and are part of the Contract Documents.

hh. **"Record Drawings" or "As-Builts"** – a record set of drawings to be maintained by the contractor showing all project conditions, locations, configurations, and any other changes or deviations which may vary from the information represented on the original Plans. These master record drawings of the Contractor's representation of as-built conditions, including all revisions made necessary by addenda and change orders shall be maintained up-to-date during the progress of the Work.

ii. **"Release and Certificate of Final Payment"** – the release by Contractor, in consideration of final payment, of District from all claims and obligations of every nature.

jj. **"Schedule of Values" –** a statement furnished by Contractor to Engineer reflecting the portions of the Contract Price allotted for the various parts of the Work and used as the basis for reviewing Contractor's Application for Payment.

kk. **"Semi-Final Inspection" –** determines if the Work has reached Substantial Completion.

ll. **"Shop Drawings" or "Submittals" –** all drawings, illustrations, schedules and other material prepared by or for Contractor to illustrate some portion of the Work, samples, and all illustrations, brochures, standard schedules, performance charts, instructions, diagrams, and other information prepared by a Supplier and submitted by Contractor to illustrate material or equipment for some portion of the Work.

mm. **"Site" –** the location or locations where the Work is to be accomplished.

nn. **"Special Conditions" –** specific clauses setting forth requirements peculiar to the Work and supplementary to the General Conditions.

oo. **"Specifications"** – the manual prepared by District or for District by the Engineer.

pp. **"Subcontractor" –** an individual, firm or corporation having a direct subcontract with Contractor or with any other Subcontractor for the performance of a portion of the Work at the Site, or for the fabrication and installation of a portion of the Work in accordance with drawings contained in the Contract or furnished by Contractor under the Contract.

qq. **"Substantial Completion" –** means the Work has progressed to the point that the Work is ready for beneficial use and occupancy by the District for the intended purpose.

rr. **"Supplier" –** a manufacturer, fabricator, supplier, distributor, materialman or vendor.

ss. **"SWRCB"** – State Water Resources Control Board

tt. **"Technical Conditions"** – specific clauses setting forth conditions or requirements for materials, equipment, construction systems, standards, Workmanship, measurement and payment.

uu. **"Work" –** the entire construction or the total of the separately identifiable parts thereof required to be furnished under the Contract Documents. Work is the result of performing services, furnishing labor and furnishing and incorporating materials and equipment into the construction, all as required by the Contract Documents.

vv. **"Written Amendment"** – a written amendment of the Contract Documents, signed by District and Contractor on or after the Effective Date of the Contract.

ww. Whenever in the Specifications or upon the Plans the words **DIRECTED, REQUIRED, PERMITTED, ORDERED, DESIGNATED, PRESCRIBED**, or

words of like importance are used, it shall be understood that the direction, requirement, permission, order, designation or prescription of the Engineer is intended, and similarly the words **APPROVED, ACCEPTABLE, SATISFACTORY**, or words of like importance, shall mean approved by or acceptable to, or satisfactory to the Engineer, unless otherwise expressly stated.

xx. **"AASHTO"** – The American Association of State Highway and Transportation Officials.

yy. **"ACI"** – The American Concrete Institute.

zz. **"AISC"** – The American Institute of Steel Construction.

aaa. **"AISI" -** The American Iron and Steel Institute.

bbb. **"ASME"** – The American Society of Mechanical Engineers.

ccc. **"ASTM"** – The American Society for Testing and Materials.

ddd. **"AWS"** – The American Welding Society.

eee. **"AWWA"** – The American Water Works Association.

fff. **"IEEE"** (formerly AIEE) – The Institute of Electrical and Electronics Engineers.

ggg. **"IPCEA"** – The Insulated Power Cable Engineers Association.

hhh. **"NEMA"** – The National Electrical Manufacturers Association.

iii. **"Recipient"** – Rosamond Community Services District.

jjj. **"SSPC"** – The Steel Structures Painting Council.

kkk. **"USAS"** (formerly ASA) – The United States of America Standard(s) Institute.

lll. **"State Standard Specifications"** – Standard Specifications issued by the State of California, Department of Transportation, latest edition.

mmm. **"County"** – County of Kern, California.

nnn. The figures given in the Specifications or upon the Drawings after the word **ELEVATION**, or an abbreviation of it, shall mean distances in feet above U.S. Coast and Geodetic Survey sea level datum, as established by the Engineer.

ooo. All gender specific pronouns shall be interpreted to include all genders.

C-2 Correlation and Intent of Documents

The Contract Documents are complementary, and what is called for in any one shall be as binding as if called for in all. The intention of the Contract Documents is to require a complete and finished piece of work including all labor, materials, equipment, facilities, and transportation necessary for the proper execution of the work, with the exception of such items as are definitely stated in the Specifications or on the Drawings to be furnished by the District. Should there be a conflict between the Specifications and the Drawings, the Specifications shall be controlling.

C-3 Assignment

Neither party to the Contract shall assign the Contract nor sublet it as a whole without the prior written consent of the other, nor shall the Contractor assign any money due or to become due to him hereunder without prior written consent of the Engineer.

C-4 Subcontracts

a. The attention of the Contractor is directed to the provisions of Public Contract Code, Section 4100 et seq. as amended, and said provisions are by this reference incorporated and made a part hereof.

b. Each subcontract shall contain a suitable provision for the suspension or termination thereof should the work be suspended or terminated or should the subcontractor neglect or fail to conform to every provision of the Contract Documents insofar as such provisions are relevant. The Contractor shall be as fully responsible to the District for the acts or omissions of his subcontractors and of the persons either directly or indirectly employed by them as he is for the acts or omissions of persons directly employed by him. Nothing contained in the Contract Documents shall create any contractual relation between any subcontractor and the District. If a legal action against the District is initiated by a subcontractor, the Contractor shall reimburse the District for the amount of legal expenses incurred by the District in defending itself in said action.

c. A copy of each subcontract, if in writing, or if not in writing then a written statement signed by Contractor, giving the name of the subcontractor, and the terms and conditions of such subcontract, shall be filed with District before the subcontractor commences performance of the Work. Each subcontract shall contain a reference to the agreement between District and Contractor, and the terms of that agreement and all parts thereof shall be made a part of such subcontract insofar as applicable to the Work covered thereby. Each subcontract shall provide for its annulment by Contractor at the order of District, if, in District's opinion, the subcontractor fails to comply with the requirements of the principal agreement insofar as the same may be applicable to his work. Nothing herein contained shall create any contractual relation between any subcontractor and District or relieve Contractor of any liability or obligation hereunder.

d. Contractor is hereby alerted to provisions of Section 7107 of the Public Contract Code, requiring Contractor to pay to each of its subcontractors from whom retention has been withheld, each subcontractor's share of the retention received, within seven (7) days from receipt of all or any portion of such retention proceeds from District.

e. Pursuant to Public Contract Code Section 6109, subcontractors who are ineligible to perform work on a public works project as determined by the Department of Industrial Relations pursuant to Section 1777.1 or Section 1777.7 of the California Labor Code shall not perform any portion of the work contemplated herein. Any subcontract between the Contractor and an ineligible subcontractor shall be void as a matter of law, and the ineligible subcontractor shall not receive any payment for performing such work.

C-5 Suspension of Work – Damages for Delay

a. The Engineer may at any time, by notice in writing to the Contractor, suspend any part of the work for such period of time as may be necessary to prevent improper execution of the work on the project, and the Contractor shall have no claim for an extension of time to complete the work, or for damages or additional compensation on account of any such suspension.

b. The District may at any time suspend any part or all of the work upon ten (10) days' written notice to the Contractor, who shall thereupon discontinue all work suspended except for all operations to prevent loss or damage to work already executed as may be directed by the Engineer. The Contractor shall be paid on the same basis as Extra Work for costs of work performed in accordance with such orders of the Engineer during such suspension, provided that this shall not include any costs pertaining to work not suspended by said notice. Work shall be resumed by Contractor after such suspension on ten (10) days' written notice from the District. In the event of suspension of the entire work by the District, the Contractor shall be paid the sum of one-hundred fifty dollars ($150.00) for each calendar day during which the entire work shall have been suspended. Said sum is hereby mutually agreed upon as fixed and liquidated damages in full settlement of all costs and expenses, losses and damages resulting to the Contractor from such suspension.

c. In the event of any suspension of the Work in whole or in part, the Contractor shall be entitled to any extension of time to complete the Work in a length equal to the length of the suspension of the Work. Provided, however, that the Contractor shall not be entitled to an extension of time to complete the Work in the event that the Work is suspended by the Engineer to prevent or correct improper execution of the Work.

C-6 Time of Work – Termination for Delay – Time Extensions

a. The Contractor shall at all times employ such force, plant, materials, and tools as will be sufficient, in the opinion of the Engineer, to prosecute the work at not less than the rates fixed under the terms of the Contract and to complete the work or any separable portions thereof within the time limits fixed therein. If the Contractor refuses or fails to prosecute the work, or any separable part thereof, with such diligence as will insure its completion within the time specified in the Contract, or any extension thereof, or fails to complete said work within such time, the District may, by written notice to the Contractor, terminate his right to proceed with the work or such part of the work as to which there has been delay. In such event the District may take over the work and prosecute the same to completion, by contract or otherwise, and may take possession of, and utilize in completing the work such materials, appliances, equipment, and plant as may be on the site of the work and necessary therefor. Whether or not the Contractor's right to proceed with the work is terminated, he and his sureties shall be liable for all damages, including attorney's fees, sustained or incurred by the District by reason of such default and in enforcing the provisions hereof against the Contractor.

b. The Contractor's right to proceed shall not be so terminated nor the Contractor charged with resulting damage if:

1. The delay in the completion of the work arises from unforeseeable causes beyond the control and without the fault or negligence of the Contractor, including but not restricted to Acts of God (herein to include only the following occurrences or conditions and effect: earthquakes in excess of a magnitude of 3.5 on the Richter Scale and tsunamis), acts of the public enemy, acts of the District in either its governmental or contractual capacity, acts of another Contractor in the performance of a contract with the District, fires, floods, (excluding site flooding due to groundwater), epidemics, quarantine restrictions, strikes, lockouts, freight embargoes, unusually severe weather, or delays of subcontractors or suppliers arising from unforeseeable causes beyond the control and without the fault or negligence of either the Contractor or such subcontractors and suppliers; and

2. The Contractor, within ten (10) days from the beginning of any such delay (unless the Engineer grants a further period of time before the date of final payment under the Contract), shall notify the Engineer in writing of the causes of delay and requests an extension of time. The Engineer shall ascertain the facts and the extent of the delay and extend the time for completing the work when, in his judgment, the findings of fact justify such an extension, and his findings of fact shall be final and conclusive on the parties.

c. The rights and remedies of the District provided in this clause are in addition to any other rights and remedies provided by law or under this contract.

d. A request for an extension of time, or the granting of an extension of time, shall not constitute a basis for any claim against the District for additional compensation. The Contractor shall be deemed to have waived any claim for additional compensation, and does hereby so waive any such claim.

e. Contract time extensions will be granted as provided in this paragraph C-6; however, the Contractor is advised that weather-related time extensions will be granted only if conditions are such that it is impossible to perform any productive work. The Contractor shall make every effort to protect the work from adverse weather and shall minimize delays and time extensions by taking mitigated measures such as pumping of surface water, utilizing equipment best suited for adverse weather, etc.

C-7 Termination for Reasons Other Than Delay

a. If the Contractor should be adjudged bankrupt, or if he should make a general assignment for the benefit of his creditors, or if a receiver should be appointed for the Contractor on account of his insolvency and not be discharged within ten (10) days after his appointment, or if the Contractor should fail to make prompt payment to subcontractors or for material or labor, or should persistently disregard laws, ordinances, or the instructions of the Engineer, or otherwise be guilty of a substantial violation of any provisions of the Contract, then the District, upon the certification of the Engineer that sufficient cause exists to justify such action, may without prejudice to any other right or remedy, and after giving the Contractor ten (10) days written notice, terminate the employment of the Contractor and take possession of the premises and of all equipment, materials, tools, and other facilities thereon and finish the work by whatever method the District may deem expedient. In such case the Contractor shall not be entitled to receive any further payment until the work is finished. If upon completion of the work the total cost to the District, including attorney's fees, in connection therewith shall be less than the amount which would have been paid if the work had been completed by the Contractor in accordance with the terms of the Contract, then said difference shall be paid to the Contractor in the same manner as the final payment under the Contract. If the expense, including attorney's fees, incurred by the District on account of termination of employment of the Contractor and subsequent completion of the work by the District by whatever method the District may deem expedient shall exceed said amount which the Contractor would otherwise have been paid, the Contractor and his sureties shall be liable to the District for the full amount of such excess expense.

b. In addition to its rights under Paragraph C-7, Subsection (a) hereof, if at any time before completion of the work under the Contract it shall be determined by the District that reasons beyond the control of the parties hereto render it impossible or against the interests of the District to complete the work, or if the work shall be stopped by an injunction of a court of competent jurisdiction or by order of any competent authority, the District may, upon ten days written notice to the Contractor, discontinue the work, and terminate the Contract. Upon service of such

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 until such time or times as the Engineer may direct. The Contractor shall have no claim for damages for such discontinuance or termination, nor any claim for anticipated profits on the work thus dispensed with, nor any other claim except (1) for the work actually performed up to the time of complete discontinuance, including any Extra Work ordered by the Engineer to be done, and (2) for any liquidated damages due hereunder in accordance with the provisions relating to Suspension of Work.

C-8 Authority of the Engineer

a. The Engineer shall give all orders, lines, grades, and directions contemplated under the Contract. The Engineer may determine the adequacy of the Contractor's methods, tools, plant, equipment, and appurtenances and he shall determine in all cases the quantity, quality, acceptability, and fitness of the several kinds of work and materials which are to be paid for. The Engineer shall have the authority to determine all questions in relation to said work and the construction thereof and decide in all cases questions which may arise relative to the fulfillment of this Contract on the part of the Contractor. The Engineer shall also have the authority to reject all work and materials which do not conform to the Contract and to stop the work when necessary to prevent its improper execution. Should any discrepancy appear or any misunderstanding arise as to the import of anything contained in the Specifications or Drawings, the matter shall be referred to the Engineer, who shall decide the same in accordance with the true intent and meaning. Any differences or conflicts which may arise between the Contractor and other contractors of the District in regard to their work will be adjusted and determined by the Engineer. All instructions, rulings, and decisions of the Engineer shall be made promptly and in writing, if so requested, and they shall be final and binding.

b. If at any time the Contractor's work force, tools, plant or equipment appear to the Engineer to be insufficient, inefficient or inappropriate to secure the required quality of work or the proper rate of progress, the Engineer may order the Contractor to increase their efficiency, improve their character, to augment their number or to substitute other personnel, new tools, plant, or equipment, as the case may be, and the Contractor shall comply with such order.

c. The undertaking of inspections by the Engineer or the giving of instructions as herein authorized shall not be construed as supervision of the actual construction or make the Engineer or the District responsible for providing a safe place for the performance of work by the Contractor, subcontractor, or suppliers; or for access, visits, use, work, travel or occupancy by any person.

C-9 Changes

a. If the Engineer finds it impracticable to comply strictly with these Specifications, he may prescribe a modification of requirements or of methods of work; and for such purposes the Engineer may at any time during the life of the Contract, by written order, make such changes as he shall find necessary in the design, line, grade, form, locations, plan, or material of any part of the work or equipment hereinafter specified, or in the quantity or character of the work or equipment to be furnished. If such changes increase or diminish the quantity or amount of the work to be done, they shall not constitute the basis for a claim for damages or anticipated profits on 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 will make reasonable allowance therefore, which action shall be binding upon both parties.

b. In the event a change is ordered, 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. If such unit price has not been established in the Contract, then the cost of such changes shall be determined as hereinafter provided with respect to extra work.

c. The consent of the Contractor's sureties shall not be required for any change or extra work, and the liability under the Contractor's bonds shall be increased or decreased accordingly, without notice to the sureties.

C-10 Extra Work

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 to classification under the unit price items named in the Bidding Schedule and are not included in any item for which a lump sum is bid, the Contractor shall do and perform such work and furnish such materials and equipment. Such labor, materials and/or equipment will be classed as extra work and shall be ordered in writing before such work is started. No extra work will be paid for unless ordered in writing. Extra work and material will ordinarily be paid for at a lump sum or unit price agreed on in writing by the Engineer and the Contractor prior to the time when the Engineer ordered the extra work to be done. The performance of any extra work or the furnishing of any extra material which, in the judgment of the Engineer, is of like character to and susceptible to classification under the unit price items of the Contract as specified shall, if the order of the Engineer shall so provide, be paid for at the unit price named for such work in the Bidding Schedule. Whenever, in the judgment of the Engineer, such extra work or such extra material, as the case may be, is not of like character to and susceptible to classification under the unit price items of the Contract as specified, and it is impracticable because of the nature of the work, or for any other reason, to fix the price before order for the extra work shall be issued, the Contractor shall be entitled to the sum of the following costs of doing the extra work:

a. **Direct Labor Costs** – Charges for cost of all of the labor furnished and used by the Contractor shall be made for manual classifications up to and including general foreman. It will not include charges for Assistant Superintendents, Superintendents, Office Personnel, Timekeepers, and Maintenance Mechanics. The time charges to extra work shall be subject to the daily approval of the Engineer and evidence of such daily approval shall be submitted with the billing. Labor rates used to calculate the costs shall be those basic wages including current employer contributions for fringe benefits and including applicable subsistence and travel allowances, all as actually paid to workers under collective bargaining agreements, or as a regular practice of the employer. No time or charges will be allowed except when the employees are actually engaged in the proper, efficient and diligent performance or completion of the extra work as authorized. Overtime shall not be worked without prior approval by the Engineer.

b. **Equipment Costs** – Charges for the rental and operation of the equipment furnished and used by the Contractor shall be made for all prime construction and automotive equipment. It shall not include charges for listed equipment or major tools with a new cost of five-hundred dollars ($500) or less. Equipment time charges shall be subject to the daily approval of the Engineer and evidence of such daily approval submitted with the billing. The equipment rental and operation rates used shall be those agreed upon by the Engineer and Contractor prior to commencement of the extra work and shall include an approved allowance for depreciation. No time or charges will be allowed except when equipment is actually being used for the proper and efficient performance or completion of the extra work as authorized.

c. **Material Costs** – Charges for the cost of materials furnished by the Contractor shall be made, providing such furnishing was specifically authorized in the extra work order and the actual use verified by the Engineer. Charges shall be net cost to the Contractor delivered at the job, including all applicable sales taxes, and vendor's invoice must accompany the billing along with verification of use of such materials by the Engineer.

d. **Tools, Supplies, Overhead, Supervision, and Profit** – A charge for major tools, supplies, overhead, supervision and profit will be allowed for the following items, as defined above, in the following amounts: fifteen percent (15%) for direct labor costs, fifteen percent (15%) for equipment costs, and fifteen percent (15%) for material costs. These markups shall apply only to the Contractor or subcontractor which actually performs the extra work. If a subcontractor performs the extra work, the Contractor may mark up the subcontractor's costs by five percent (5%) only. Only a single five percent markup will be allowed on the subcontractor's work, regardless of the number of subcontractors between the subcontractor which actually performs the work and the Contractor.

C-11 Right-of-Way – Construction Roads

a. The right of way for the work to be constructed under these Specifications will be provided by the District. Nothing herein contained, however, and nothing marked on the Drawings, shall be interpreted as giving the Contractor exclusive occupancy of the territory provided. When two or more contracts are being executed at one time on the same or adjacent land in such a manner that work on one contract may interfere with that on another, the Engineer shall decide which contractor shall cease work, and which shall continue, or whether the work on both contracts shall progress at the same time, and in what manner. When the territory of one contract is the necessary or convenient means of access for the execution of another contract, such privilege of access or any other reasonable privilege may be granted by the Engineer to the Contractor so desiring, to the extent, amount, in the manner, and at the time permitted. No such decision as to the method or time of conducting the work or the use of territory shall be the basis of any claim for delay or damage.

b. Lands to be furnished by the District for construction operations will be specifically shown on the Drawings or provided for in the Special Conditions. Should the Contractor find it necessary to use additional land for his purposes during the construction of the work, he shall provide for the use of such lands at his own expense. A copy of each written agreement between the Contractor and affected landholder(s) for the use of additional lands shall be filed with the Engineer prior to the use of land.

c. The Contractor shall construct and maintain all roads necessary to reach the various parts of the work and for the transportation thereto of construction material and personnel. The cost of constructing and maintaining such roads shall be borne by the Contractor.

C-12 Notice and Service Thereof

Any notice required or given under the contract shall be in writing, be dated, and signed by the party giving such notice or his duly authorized representative, and be served as follows:

a. If to the District, by personal delivery or by deposit in the United States mail;

b. If to the Contractor, by personal delivery to the Contractor or to his authorized representative at the site of the project or by deposit in the United States mail;

c. If to the surety or any other person, by personal delivery to said surety or other person or by deposit in the United States mail;

d. All mailed notices shall be in sealed envelopes, shall be sent by certified mail with postage prepaid, and shall be addressed to the addresses in the Contract Documents or such substitute addresses which a party designates in writing and serves as set forth herein; and,

e. Any notice served in accordance with this Section C-12, shall be deemed received by the addressee seventy-two (72) hours after deposited, postage prepaid, in the United States mail.

Nothing herein contained shall be deemed to preclude or render inoperative the service of any notice, letter, or other communication upon the Contractor personally.

C-13 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 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, and where it may be desired to give instructions or directions, they may be given by the Engineer and they 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 said instructions or directions are given.

C-14 Construction Program

To insure completion of the work within the time limit specified, and to assist the District in the scheduling of other work, Contractor shall submit to the Engineer within fourteen (14) calendar days after he receives the Notice to Proceed, a detailed schedule showing the proposed dates of beginning and completion of all significant items of work under the Contract. If the actual progress of the work varies materially from the proposed program, or if the Contractor proposes to change the program for any reason, he shall submit to the Engineer the revised construction program which he proposes to follow. The proposed original and revised program shall be adequate, in the opinion of the Engineer, to meet the requirements for completion of the work as herein set forth. If, in the opinion of the Engineer, the Contractor's proposed program or the actual progress of the work is insufficient to meet the specified requirements, Contractor shall take such steps as are necessary to accomplish the required progress and completion.

The schedule shall be prepared in Critical Path Method (CPM) format.

The CPM schedule shall include at a minimum the following: (1) identification of the basic tasks or activities that must be performed to complete the project; (2) estimation of the duration of the specific activities; and (3) a determination of the logical flow of the work, which includes a determination of which activities must be completed before the subsequent ones can commence.

The schedule shall reflect completion of all work under the contract within the specified times and in accordance with the Contract Documents, including the Specifications.

C-15 Survey Requirements

No horizontal and/or vertical control information is included in the Contract Drawings. The Contractor shall field measure the existing facilities and determine dimensions prior to manufacturing and constructing the new facilities. Moreover, the Contractor shall verify the vertical and horizontal location of all project components where a new facility and an existing facility will tie-in prior to fabrication and construction of the Work. If adjustments need to be made to fit the field conditions, notify the Engineer immediately.

The Contractor shall ensure that all contract Work is constructed within the rights-of-way acquired by the District. Based upon the above-specified information, the Contractor shall develop and make all other detailed surveys as required for Contract construction. No separate payment will be made for survey Work and the cost of all such Work shall be borne by the Contractor.

C-16 Specifications and Drawings

Drawings furnished herewith are for bidding purposes. The Engineer will furnish the Contractor, free of charge, all copies of working Drawings and Specifications reasonably necessary for the execution of the work. The Contractor shall have no claim for excusable delay on account of the failure of the Engineer to deliver necessary Drawings or Specifications unless the Engineer shall have failed to deliver the same within two (2) weeks after receipt of written demand therefor from the Contractor.

The Contractor shall keep one (1) copy of all current Drawings and Specifications relating to the work, in good order, available to the Engineer and his representatives convenient to the working site.

If the Contractor, in the course of the work, finds any discrepancy between the Drawings and the physical condition of the locality, or any errors or omissions in the drawings, or in the layout as given by points and instructions, it shall be his duty to inform the Engineer in writing, and the Engineer will promptly verify the same. Any work done after such discovery, until authorized, will be done at the Contractor's risk. All Drawings, Specifications, and copies thereof furnished by the Engineer shall not be reused on other work and, with the exception of the signed Contract sets, are to be returned to him, on request, at the completion of the work.

C-17 Inspection of Work

a. The County Inspector, State Inspector, Engineer, District, and their representatives shall at all times have access to the work wherever it is in preparation or progress, and the Contractor shall provide safe and convenient facilities for such access and for inspection. If the Specifications, the Engineer's instructions, laws, ordinances, or any public authority require any material, equipment or work to be specially tested or approved, the Contractor shall give the Engineer timely notice of its readiness for inspection, and if the inspection is by an authority other than the

Engineer, of the time fixed for inspection. Inspections by the Engineer will be made promptly and, where practicable, at the source of supply.

b. Work performed without inspection may be required to be removed and replaced under proper inspection and the entire cost of removal and replacing, including the cost of District-furnished materials used in the work, shall be borne by the Contractor, regardless of whether or not the work exposed is found to be defective. Examination of questioned work may be ordered by the Engineer and, if so ordered, the work must be uncovered by Contractor. If such work is found to be in accordance with the Contract Documents, the District will pay the cost of reexamination and replacement. If such work is found to be not in accordance with the Contract Documents, Contractor shall pay such cost, unless he shall show that the defect in the work was caused by another contractor, and in that event the District will assume responsibility for such costs.

c. The inspection of the work shall not relieve the Contractor of his obligation to fulfill the Contract as herein prescribed, or in any way alter the standard of performance provided by Contractor, and defective work shall be made good and unusable materials may be rejected, notwithstanding that such work and materials have been previously overlooked by the Engineer and accepted or estimated for payment. If the work or any part thereof shall be found defective, Contractor shall, within ten (10) calendar days, make good such defect in a manner satisfactory to the Engineer. If the Contractor shall fail or neglect to make ordered repairs of defective work or to remove the condemned materials from the work within ten (10) calendar days after direction by the Engineer in writing, the District may make the ordered repairs, or remove the condemned materials, and deduct the cost thereof from any moneys due the Contractor.

d. The Contractor shall furnish promptly, without additional charge, all facilities, labor and materials reasonably needed by the Engineer for performing all inspection and tests. Contractor shall be charged with any additional cost of inspection when material and workmanship are not ready at the time specified by the Contractor for its inspection.

C-18 Conditions Affecting Work

The Contractor shall be responsible for ascertaining the nature and location of the work, and the general and local conditions which can affect the work or the cost thereof. Any failure by the Contractor to do so will not relieve him from responsibility for successfully performing the work without additional expense to the District. Except as expressly provided to the contrary in the Contract, the Contractor assumes all risk with respect to unforeseen difficulties which may be encountered in performance of the work, including without limiting the generality of the foregoing, obstacles, obstructions or adverse ground water conditions in or along the line of work and variance of the quality or quantity of surface and subsurface materials from that which was assumed.

C-19 Compliance with Laws – Permits – Taxes

The Contractor is an independent contractor and shall, at his sole cost and expense, comply with all laws, rules, ordinances and regulations of all governing bodies having jurisdiction over the work, obtain all necessary permits and licenses therefor, pay all manufacturers' taxes, sales taxes, use taxes, processing taxes, and all Federal and State taxes, insurance and contributions for Social Security and Unemployment which are measured by wages, salaries or any remuneration paid to the Contractor's employees, whether levied under existing or subsequently enacted laws, rules, or regulations. The Contractor shall also pay all property tax assessments on materials or equipment used until acceptance by the District. Without limitation, materials furnished and performance by the Contractor hereunder shall comply with Safety Orders of the Division of Industrial Safety, State of California.

The Contractor, upon request, shall furnish evidence satisfactory to the Engineer and/or to the District that any or all of the foregoing obligations have been or are being fulfilled. The Contractor warrants to the District that he is licensed by all applicable governmental bodies to perform this Contract and will remain so licensed throughout the progress of the work, and that he has, and will have, throughout the progress of the work, the necessary experience, skill, and financial resources to enable him to perform this Contract.

C-20 Indemnification

a. The Contractor shall assume the defense of and indemnify and save harmless the State of California, the District and the Engineer and their respective directors, officers, employees and agents from any and all loss, damage, liability, claims or causes of action of every nature whatsoever for damage to or destruction of property, including the District's property, or for injury to or death of persons, including Contractor's employees, in any manner, including that alleged to have been caused by the negligence of the indemnitees or any of them, arising out of or incident to the performance of this Contract; provided, however, that the Contractor shall have no such obligation with respect to such of the foregoing as are actually caused by the sole negligence or willful misconduct of the indemnitees or any of them; and provided further, that the Contractor shall not be liable for damages resulting solely from error or omission in design which were not due to or contributed to by negligence or fault of the Contractor, his subcontractors, agents or employees.

b. The Contractor shall at all times preserve and protect the work installed and performed hereunder, and assume full responsibility for the condition thereof until final acceptance by the District. The Contractor shall be liable for any loss or damage to any work in place and to any materials on the job site which may be caused by the Contractor, his employees, agents or guests. Any such damage shall be immediately repaired by the Contractor, and, upon failure to do so, the District may remedy the same and deduct the cost thereof from any amount due or to become due the Contractor.

c. The Contractor shall assume the defense of and indemnify and save harmless the State of California, the District and the Engineer and their respective directors, officers, employees and agents, and the real property upon which the work called for by this Contract is being performed, against any and all liens, claims, demands and costs, including attorney's fees, for labor and material furnished to the Contractor or any of his subcontractors in connection with the performance of this Contract. In the event that the Contractor or any of his subcontractors shall fail to pay for any material or labor used in the performance of this Contract, or any lien is filed against the said property, or any claim is asserted or action filed on any Bond, by any person claiming to have furnished labor or materials to the Contractor or any of his subcontractors in connection with the performance of this Contract, the District shall be entitled, at its option, to pay for said material or labor, or discharge any such lien, or to pay or settle any such claim or action and to deduct the amount so paid, together with any and all costs and attorney's fees incurred by or on behalf of the District in connection with any such payment, discharge, or settlement, from amounts due or to become due the Contractor hereunder. The District may also deduct from any amounts due or to become due to the Contractor, any other amounts owing by the Contractor to the District, including the cost of any materials, labor, services, equipment or facilities supplied by the District as to which the Contractor has the obligation to supply the same hereunder. In the event that the balance which otherwise would be due the Contractor shall be insufficient to so reimburse the District, the Contractor shall pay the District any deficiency upon demand.

d. The Contractor shall pay all royalties and license fees. He shall, at his own cost, expense and risk, defend any and all suits or claims for infringement of any patent rights and shall save the District and its Directors, officers, employees and agents harmless from loss on account thereof; except that the District shall be responsible for all such loss when a particular manufacturer is specified by it, but if the Contractor has information that the process or article specified is or may be an infringement of a patent, he shall be responsible for such loss unless he promptly gives such information, in writing, to the Engineer.

C-21 Protection of Work Site, Existing Structures, Roadways, Utilities, Vegetation, and Private Property

a. The Contractor shall effectively secure and protect adjacent property and structures, livestock, crops and other vegetation.

b. The Contractor shall open fences on or crossing the right of way and install temporary gates of sound construction thereon so as to prevent the escape of livestock. Adjacent fence posts shall be adequately braced to prevent the sagging or slackening of the wire. Before such fences are opened, the Contractor shall notify the District or tenant of the property and, where practicable, the opening of the fences shall be in accordance with the wishes of said District or tenant. The Contractor shall be responsible that no loss or inconvenience shall accrue to the District or tenant by virtue of his fences having been opened or the gate not having

been either shut or attended at all times. Where special types of fences are encountered, the Contractor shall install temporary gates made of similar materials and of suitable quality to serve the purposes of the original fences. In all cases where the Contractor removes fences to obtain work room, he shall provide and install temporary fencing as required, and on completion of construction shall restore the original fence to the satisfaction of the Engineer. All cost of providing, maintaining and restoring gates and fencing shall be borne by the Contractor.

c. The Contractor shall use extreme care during construction to prevent damage from dust to crops and adjacent property. The Contractor, at his own expense, shall provide adequate dust control for the right of way and take other preventive measures as directed by the Engineer.

d. The Contractor shall be responsible for all damage to any property resulting from trespass by the Contractor or his employees in the course of their employment, whether such trespass was committed with or without the consent or knowledge of the Contractor.

e. The Contractor shall see that the work site is kept drained and free of all ground water.

f. The Contractor shall be responsible for any damage caused by drainage or water runoff from construction areas and from construction plant areas.

g. In the event of an emergency or unusual conditions endangering life, the work, or adjacent property, the Contractor may, without special instructions or authorization, act at his discretion to prevent or eliminate such danger. Should the Engineer deem an emergency condition to exist, the Contractor shall immediately do those things and take those steps ordered by the Engineer. The decision of the Engineer in this respect shall be final. Any claims for compensation made by the Contractor on account of emergency work shall be determined by agreement.

h. The Contractor shall be responsible for locating, removal, relocation and protection of all public and private utility facilities, including irrigation facilities, located on the site of the construction project and the Contractor shall not be entitled to any extension of time or claim for damages or extra compensation in connection therewith. Provided however, if and to the extent that existing main or trunk line public utility facilities are not identified in the Contract Documents, as between the Contractor and the District, the District will be responsible for the costs of locating, repairing damage not due to the failure of the Contractor to exercise reasonable care, and removing or relocating Public Utility Facilities not indicated in the plans and specifications with reasonable accuracy, and for equipment on the project necessarily idled during such work regarding said Public Utility Facilities, as the case may be, but the Contractor shall perform any such work in conformance with applicable provisions of Paragraphs C-9 and C-10 if so directed by the Engineer. The Contractor will not be assessed liquidated damages for delay in completion of the project, when such delay was caused by the failure of the public agency or the

District of the Public Utility Facilities to provide for removal or relocation of any Public Utility Facilities. If the Contractor, while performing the Contract work, discovers utility facilities not identified by the District in the Contract Documents, he or she shall immediately notify the Engineer in writing.

i. Subject to the provisions of Paragraph C-21, Subsection (h), where the work to be performed under the Contract crosses or otherwise interferes with existing streams, water courses, canals, farm ditches, pipelines, drainage channels, or water supplies, the Contractor shall provide for such water courses or pipelines and shall perform such construction during the progress of work so that no damage will result to either public or private interests, and the Contractor shall be liable for all damage that may result from failure to so provide during the progress of the work.

C-22 Workers and Wages

a. **Character of Workers** – Only qualified, careful and efficient workers shall be employed. When required in writing by the Engineer, the Contractor or any subcontractor shall remove from the work any person who is, in the opinion of the Engineer, incompetent, unfaithful, disorderly, or otherwise unsatisfactory, and shall not again employ such person on the work except with the consent of the Engineer. Such removal shall not be the basis for any claim for compensation or damages against the District, or any of its officers or agents.

b. **Convicts** – No convict labor shall be directly employed by the Contractor or any subcontractor in the performance of any work done under this Contract.

c. **Hours of Work** – Eight (8) hours of labor shall constitute a legal day's work upon all the work hereunder and the time of service of any worker employed by the Contractor or by any subcontractor under him shall be limited and restricted to eight (8) hours during any one (1) calendar day, except that work performed by employees in excess of eight (8) hours per day and forty (40) hours in any one (1) calendar week will be permitted upon compensation for all hours worked in excess of said limitations at not less than one and one-half times the basic rate of pay or as otherwise may be required by applicable law. The Contractor and all subcontractors under him shall keep record of hours worked as required by Section 1812 of the California Labor Code. As required by Section 1813 of the California Labor Code, the Contractor shall forfeit as a penalty to Rosamond Community Services District twenty-five dollars ($25) for each worker employed in the execution of the Contract by him or by and 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 (1) calendar week in violation of the provision of this subsection.

d. **Compliance with State Requirements for Employment of Apprentices** – The Contractor's attention is directed to Section 1777.5 of the California Labor Code; provisions of said section pertaining to employment of registered apprentices are hereby incorporated by reference into these Specifications. As applicable, the Contractor or any Subcontractor employed by him in the performance of Contract

Work shall take such actions as necessary to comply with provisions of said Section 1777.5.

e. **Wage Rates** – Bids shall be made in accordance with the prevailing rate of per diem wages for this locality and project as determined by the Director of Industrial Relations pursuant to Labor Code Section 1770 et seq.

The Project is subject to Compliance monitoring and enforcement by the Department of Industrial Relations. Pursuant to Article 2 (commencing at Section 1770), of the California Labor Code, the Director of the State of California, Department of Industrial Relations has ascertained the generally prevailing rate of per diem wages and the generally prevailing rates for legal holiday and overtime work in the locality in which the work is to be performed, for each craft or type of worker needed to execute the Contract. The Contractor and all Subcontractors under him shall pay not less than said specified rates to all workers employed in the execution of the Contract, a copy of which wage rate schedule is on file at the office of the District and by this reference incorporated herein. The Contractor shall post a copy of said documents at each job site. As required by Section 1775 of the California Labor Code, the Contractor shall, as a penalty to the District, forfeit an amount determined by the Labor Commissioner, not more than fifty dollars ($50), for each calendar day, or portion thereof, for each worker paid less than the specified prevailing rates for work done under the Contract by him or by any subcontractor under him. The Contractor and all subcontractors under him shall keep records of wages paid as required by Section 1776 of the California Labor Code. The Contract and each Subcontractor shall furnish the record specified in section 1776 of the California Labor Code to the Labor Commission in the manner required by section 1171.4 of the California Labor Code. The Contractor and each Subcontractor shall pay travel and subsistence payments to each worker needed to execute the Work required by the Contract, as such travel and subsistence payments are defined in the applicable collective bargaining agreements filed in accordance with Section 1773.8 of the California Labor Code. The labor rates determined by the Department of Industrial Relations are set forth in a schedule located at the District office, and is available to any interested party upon request.

Prevailing wage schedules for Kern County are also available from the Department of Industrial Relations-Division of Labor Statistics & Research via the internet at www.dir.ca.gov.

f. **Worker's Compensation Insurance** – In accordance with the provisions of Section 3700 of the California Labor Code, every Contractor shall secure the payment of compensation to his employees. Contractor prior to commencing work shall sign and file with the District a certification as follows: "I am 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 I will comply with such provisions before commencing the performance of the work of this Contract."

g. **Labor Discrimination** – The Contractor's attention is directed to Section 1735 of the California Labor Code. The Contractor agrees to comply with provisions of said section that read as follows:

"No discrimination shall be made in the employment of persons upon public works because of the race, religious creed, color, national origin, ancestry, physical handicap, mental condition, marital status or sex of such persons, except as provided in Section 12940 of the Government Code, and every contractor for public works violating this section is subject to all the penalties imposed for a violation of this chapter."

The Contractor's attention is further directed to Section 1777.6 of the California Labor Code, and the Contractor agrees to ensure Compliance with the provisions of said section which provide as follows:

"It shall be unlawful for an employer or a labor union to refuse to accept otherwise qualified employees as registered apprentices on any public works, on the ground of the race, religious creed, color, national origin, ancestry, sex or age, except as provided in Section 3077, of such employee."

C-23 Clean-up

During the progress of the work, the Contractor shall maintain the site and related structures and equipment in a clean, orderly condition and free from unsightly accumulation of rubbish. Upon completion of the work and before the final estimate is submitted, the Contractor shall at his own cost and expense remove from the vicinity of the work all plants, buildings, rubbish, unused work materials, concrete forms, and temporary bridging and other like material, belonging to him or used under his direction during construction. In the event of his failure to do so, the same may be removed by the District after ten (10) calendar days' notice to the Contractor at the expense of the Contractor. Where the construction has crossed yards or driveways, the yards and driveways shall be restored by the Contractor to the complete satisfaction of the Engineer at the Contractor's expense.

C-24 Safety

a. The Contractor shall be solely and completely responsible for the conditions of the job site, including safety of all persons and property during performance of the work. This requirement shall apply continuously and not be limited to normal working hours. Safety provisions shall conform to all applicable Federal, State, County and local laws, ordinances, and codes, and to the rules and regulations established by Cal-OSHA, and to other rules of law applicable to the work.

b. The duty of the Engineer to conduct construction review of the Contractor's performance and the undertaking of inspections by the Engineer or the giving of instructions as authorized herein is not intended to include review of the adequacy of the Contractor's safety measures in, on, or near the construction site and shall not be construed as supervision of the actual construction nor make the Engineer or

the District responsible for providing a safe place for the performance of work by the Contractor, subcontractors, or suppliers; or for access, visits, use, work, travel or occupancy by any person.

C-25 Accidents

The Contractor shall provide, at the site, such equipment and medical facilities as are necessary to supply first aid service to anyone who may be injured in connection with the work. The Contractor must promptly report in writing to the Engineer all accidents whatsoever arising out of, or in connection with the performance of the work, whether on or adjacent to the site, which cause death, personal injury, or property damage, giving full details and statements of witnesses. In addition, if death or serious injury or serious damage is caused, the accident shall be reported immediately by telephone or messenger to the Engineer. If any claim is made by anyone against the Contractor or any subcontractor on account of any accident, the Contractor shall promptly report the facts in writing to the Engineer, giving full details of the claim.

C-26 Guarantee

In addition to warranties, representations and guarantees stated elsewhere in the Contract and in addition to any warranties implied by law, the Contractor unconditionally guarantees all Contractor furnished materials and workmanship furnished hereunder, and agrees to replace at his sole cost and expense, and to the satisfaction of the Engineer and the District, any and all materials which may be defective or improperly installed, whether such defects of material and installation are of patent or latent nature.

C-27 Payments to Contractor

a. **Schedule of Values–** Within fourteen (14) calendar days after receiving the Notice to Proceed, the Contractor shall submit a detailed Schedule of Values to the Engineer for approval. The Schedule of Values shall be used as a basis for determining progress payments on a lump sum contract or any designated lump sum bid item. The Schedule of Values shall be a schedule of cost loaded construction activities equal, in total, to the lump sum bid and shall be in such form and sufficient detail to correctly represent a reasonable apportionment of the lump sum.

Each lump sum bid item on the Bid Schedule must be broken down separately. The breakdown of each lump sum bid item must cover the cost of construction required by the Contract Drawings and Contract Documents for that item. The sum of the values for the construction activities, within a bid item, must equal the total bid amount for that item. The breakdown shall include subcontract amounts which shall not deviate from the amounts submitted in the Proposal Bidding Schedule. The Contractor shall provide certification from the Subcontractors certifying the subcontract amounts.

b. **Progress Estimates** – For each calendar month of Contract work, the Engineer will prepare a progress estimate of all work performed under the Contract up to and

including the given day of each such work month specified under Section D of these Specifications. Within the first ten (10) days of each succeeding calendar month, the Engineer will make in writing and certify to the District, an estimate which in his opinion is a fair approximation of the value of all work under the Contract, including any amounts due the Contractor for extra work or pursuant to approved claims for extra cost to the given day of the preceding month specified under Section D. In arriving at the value of the work done, the Engineer will give consideration to the value of major items which have been delivered to the job site for incorporation in the work and for which payment in full has been made by the Contractor. Consideration will not be given to preparatory work done or other materials on hand.

c. Progress Payments –

1. An Application for Payment for each calendar month of Contract Work (but not more often than once a month), shall be submitted by the Contractor to Engineer for review covering the Work completed as of the date of the Application for Payment and accompanied by all supporting documentation as is required by the Contract Documents.

2. Contractor may apply for payment for materials and equipment to be used in the Work but not yet incorporated therein, which have been delivered to, and are suitably stored, at the Site. The application shall be accompanied by data satisfactory to District to establish District's title to such materials and equipment or otherwise protect District's interest, and shall be subject to approval by Engineer. Payment for such materials and equipment will not include any amount for Contractor's overhead or profit, or relieve Contractor of its obligation to protect and install such materials and equipment in accordance with the Contract Documents, or to restore damaged or defective Work involving such materials and equipment.

3. Beginning with the second Application for Payment, each Application for Payment shall be submitted with all release forms confirming that all previous progress payments received on account of the Work have been applied on account to discharge Contractor’s legitimate obligations associated with prior Applications for Payment.

4. The District will pay the Contractor ninety percent (90%) of the amount of each progress estimate on or before the last day of the month following the month for which the estimate was made. Ten percent (10%) of the amount of each estimate shall be retained by the District until final completion and acceptance of all work under the Contract. The District may elect to pay more than ninety percent (90%) of the amount of any progress estimate upon recommendation of the Engineer. However, such payment shall not constitute a waiver of the District’s right to retain ten percent (10%) of subsequent progress payments. No partial payment or estimate shall constitute an acceptance of the work or any portion thereof.

5. The provisions pertaining to the withholding of specified percentages of the Contract price, may, at the Contractor's request and expense, be satisfied by depositing with the District or State or Federally chartered bank as escrow agent, securities equivalent to the amount to be withheld. Securities eligible for investment include those listed in California Government Code Section 16430 and bank and savings and loan certificates of deposit.

d. Review of Applications

1. Engineer will, within five (10) days after receipt of each Application for Payment, either prepare a recommendation of payment and present to the District or return the Application of Payment to Contractor indicating in writing Engineer's reasons for refusing to recommend payment. If the Application for Payment has been returned to the Contractor, the Contractor may make the necessary corrections and resubmit the Application.

2. Engineer's recommendation of any payment requested in an Application for Payment will represent by Engineer to District, that:

   a) the Work has progressed to the point indicated; and

   b) the quality of the Work is generally in accordance with the Contract Documents.

3. Engineer may refuse to recommend the whole or any part of any payment for any of the following reasons:

   (1) any claims are filed against Contractor by District, Engineer, or third parties, or if reasonable evidence indicates the probability that such claims will be filed;

   (2) Contractor is in default of any Contract condition;

   (3) the Work is defective, or completed Work has been damaged, which will require that the Work be corrected or replace;

   (4) District has been required to correct defective Work or complete Work; or

   (5) the Contractor has failed to provide the required waivers and releases.

e. Payment Becomes Due –

a) Partial payments will be made as the Work progresses and following the District's monthly Board meeting, or as soon thereafter as practical.

b) The Contractor is hereby notified that because of the need for payments to be reviewed by the District's Board of Directors and because the Board only regularly meets once a month, delays of as much as one hundred twenty (120) days may occur in Contractor's receipt of payment for progress pay estimates and the final pay estimate. The Contractor is urged to process his request for payment in a timely manner to minimize payment delays. The Contractor agrees that such a delay shall not entitle Contractor to any remedy provided for in the Contract Documents or law.

f. Reduction in Payment –

a) The District may refuse to make payment of the full amount recommended by Engineer because:

(1) claims have been made against District on account of Contractor's performance;

(2) stop notices or liens have been filed in connection with the Work;

(3) there are other items entitling the District to a set-off against the amount recommended;

(4) failure of the Contractor to make payment properly to Subcontractors or for material or labor;

(5) a reasonable doubt that the Contract can be completed for the balance then unpaid;

(6) damage to another Contractor, Subcontractor, Supplier, or Individual;

(7) failure of the Contractor to keep his Work progressing in accordance with the time schedule; or

(8) Where Work on unit price items is substantially complete but lack clean-up and/or correction ordered by the Engineer.

b) If District refuses to make payment of the full amount recommended by Engineer, District will give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action and promptly pay Contractor any amount remaining after deduction of the amount so withheld. District shall promptly pay Contractor the amount so withheld, or any adjustment thereto agreed to by District and Contractor, when Contractor corrects to District's satisfaction the reasons for such action.

g. Substantial Completion and Final Review

1. When the Work has been completed and ready for its intended use, Contractor shall notify District and Engineer in writing that the Work is Substantially Complete and request that Engineer issue a certificate of Substantial Completion, which will be in the form of a letter.

2. When the Work has been Substantially Completed and the Contractor so notifies the Engineer in writing, the Engineer and Contractor will jointly make a Semi-Final Inspection and may prepare a Punch List. As a result of this inspection, the Engineer may determine that (l) the Work is not sufficiently complete to warrant a Semi-Final Inspection or the preparation of a Final Punch List, (2) the Work is sufficiently complete for the Engineer to prepare a Final Punch List but certain incomplete or Defective Work prohibits use of the Work for its intended purpose and therefore, the Work is not Substantially Complete, or (3) that the Work is Substantially Complete and usable for its intended purpose and the Engineer can prepare a Final Punch List. In preceding cases 1 and 2, the Contractor shall continue the Work and call for a second Semi-Final Inspection when the Work is ready. In case (3), the Engineer will prepare a Final Punch List and a notice of Substantial Completion which shall establish the date of Substantial Completion and shall state the time agreed to by the District and the Contractor (not to exceed 30 days) in which the Contractor shall complete all Work ready for Final Inspection. The date of Substantial Completion shall be revised if necessary such that it is no more than 30 days prior to the actual date of Final Completion. The Engineer shall attach a copy of the Final Punch List to the notice of Substantial Completion. If the Contractor does not achieve Substantial Completion on the second attempt, it shall reimburse the District the cost of the Engineer's services for additional inspections.

3. When the Contractor has completed or corrected all the items on the Engineer's Final Punch List, the Contractor shall give the Engineer written notice that the Work is ready for Final Inspection and acceptance and the Engineer shall make a Final Inspection. If the Engineer finds the Work is not fully complete, it shall notify the Contractor of items still requiring completion or correction. The Contractor shall immediately correct these

deficiencies and call for a re-inspection. When the Engineer finds to the best of the Engineer's knowledge, information and belief, and on the basis of the Engineer's observations and inspections, the Work is acceptable and fully complete in accordance with the Contract Documents, the Engineer will recommend that the District issue and file a Notice of Completion, designating Final Completion, and accept the Work in accordance with the terms and conditions of the Contract Documents. The Notice of Completion will be file once the Final Completion has been achieved.

4. The District shall file the Notice of Completion with the Kern County recorder's office within 10 days of acceptance of the Work and Final Completion. This will be the date when the Contractor is relieved from responsibility to protect the Work.

5. Contractor is herein put on notice and acknowledges that the date of the filing of the Notice of Completion is the date by which any liquidated damages will be computed for the Work as a whole and that the District is under no duty to place the Contractor on notice that Liquidated Damages are about to run, or have begun to run.

h. Partial Utilization

1. Prior to Substantial Completion of all the Work, District may use or occupy any Substantially Completed part of the Work which District and Engineer agree constitutes a separately functioning and usable part of the Work that can be used by District for its intended purpose without significant interference with Contractor's performance of the remainder of the Work.

2. When provided for in the Contract Documents or agreed to in writing by the District and the Contractor, the District may notify the Contractor and begin using a portion of the Work even though the overall Work is not Substantially Complete. The Contractor, the District and the Engineer shall agree on and document responsibilities for security, operation, safety, maintenance, utilities, insurance, warranties and guarantees for that portion of the Work being used by the District. The District, the Contractor and the Engineer shall inspect such portion of the Work and shall prepare a list of Work to be completed or corrected before final acceptance. The District's use of any portion of the Work shall not constitute final acceptance of that portion of the Work prior to Final Completion and acceptance of the Work as a whole. Provided, however, the warranty for such Work will commence upon Substantial Completion for that portion of the Work that is Substantially Complete. The District shall allow the Contractor reasonable access to complete or correct Work in areas being used by the District. Partial beneficial occupancy shall not relieve the Contractor of liquidated damages unless the Contract Documents expressly provide for and identify

the portion of Work that may be considered Substantially Complete before the remaining portions of the Work.

i. Final Payment

1. Application for Payment

(1) After Contractor has, in the opinion of Engineer, satisfactorily addressed all items in the Final Punch List and has delivered, in accordance with the Contract Documents, all operation and maintenance manuals, warranties, record drawings, schedules, guarantees, bonds, certificates or other evidence of insurance certificates of inspection, marked-up record documents etc. and other documents, Contractor may make application for final payment following the procedure for progress payments.

(2) The final Application for Payment shall be accompanied (except as previously delivered) by:

(1) all documentation called for in the Contract Documents;

(2) consent of the surety, if any, to final payment;

(3) a list of all claims against District that Contractor believes are unsettled; and

(4) complete and legally effective releases or waivers (satisfactory to District) of all lien rights arising out of or liens filed in connection with the Work.

2. Engineer's Review of Application and Acceptance

a) If, on the basis of Engineer's observation of the Work during construction and Final Inspection, and Engineer's review of the final Application for Payment and accompanying documentation as required by the Contract Documents, Engineer is satisfied that the Work has been completed and Contractor's other obligations under the Contract Documents have been fulfilled, Engineer will, within five (5) days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of payment and present the Application for Payment to District for payment. At the same time Engineer will also give written notice to District and Contractor that the Work is acceptable. Otherwise, Engineer will return the Application for Payment to Contractor, indicating in writing the reasons for refusing to recommend final payment, in which case Contractor shall make the necessary corrections and resubmit the Application for Payment.

b) Neither the acceptance of the Work by the District nor the payment of all or part of the sum due the Contractor hereunder shall constitute a waiver by the District of any claim which the District may have against the Contractor or surety under this Contract or otherwise.

3. Payment Becomes Due

Final payment shall not be due until one hundred twenty (120) days after either the Notice of Completion has been recorded, in Compliance with the Code of Civil Procedure of the State of California, or after such time as the Contractor has submitted all documents required in Paragraph C-28i and has addressed all items in the Final Punch List, whichever is later. The Contractor is hereby notified that because of the need for payments to be reviewed by the District's Board of Directors and because the Board only regularly meets once a month, delays of as much as one hundred twenty (120) days may occur in his receipt of payment for progress pay estimates and the final pay estimate. The Contractor is urged to process his request for payment in a timely manner to minimize payment delays. The Contractor agrees that such a delay shall not entitle Contractor to any remedy provided for in the Contract Documents or law.

j. Right of District to Withhold Payments – In addition to all other rights and remedies of the District hereunder and by virtue of law, the District may withhold or nullify the whole or any part of any partial or final payment to such extent as may reasonably be necessary to protect the District from loss on account of:

1. Defective work not remedied, irrespective of when any such work is found to be defective;

2. Claims or liens filed or reasonable evidence indicating probable filing of claims or liens;

3. Failure of the Contractor to make payments properly for labor, materials, equipment, or other facilities, or to subcontractors;

4. A reasonable doubt that the work can be completed for the balance then unearned;

5. A reasonable doubt that the Contractor will complete the work within the agreed time limits;

6. Costs to the District resulting from failure of the Contractor to complete the work within the proper time;

7. Damage to work or property.

At the request and expense of the Contractor securities equivalent to any amount withheld by District to ensure the Contractor's performance under the Contract

shall be deposited with the District as substitute security, or, at the Contractor's request, with a state or federally chartered bank in California as the escrow agent.

Whenever the District shall, in accordance herewith, withhold any monies otherwise due the Contractor, written notice of the amount withheld and the reasons therefor will be given the Contractor. After the Contractor has corrected the enumerated deficiencies the District shall promptly pay to the Contractor the amount so withheld. When monies are withheld to protect the District against claims or liens of mechanics, materialmen, subcontractors, etc., the District may at its discretion permit the Contractor to deliver a surety bond in terms and amount satisfactory to the District, indemnifying the District against any loss or expense, and upon acceptance thereof by the District, the District shall release to the Contractor monies so withheld.

C- 28 **Contract Closeout**

Prior to submitting the Final Application for Payment and issuance of the Final Payment, as described in Paragraph C-28i, the Contractor must complete the Work described below.

a. **Cleaning** –Throughout the period of construction, the Contractor shall keep the Site free and clean of all rubbish and debris, and shall promptly remove from the Site, or from property adjacent to the Site, all unused and rejected materials, surplus earth, concrete, plaster, and debris, excepting select material which may be required for refilling or grading. Contractor shall provide its own trash bins and containers for disposal of all material.

b. **Final Site Clean-Up** – Upon completion of the Work, and prior to final acceptance, the Contractor shall remove from the vicinity of the Work all surplus material, and equipment belonging to him or used under his direction during construction.

c. **Waste Disposal** – The Contractor shall provide trash bin (dumpster) for use. The Contractor shall dispose of surplus materials, waste products, demolition materials, and debris. The Contractor shall transport and dispose of waste materials in accordance with applicable laws and regulations.

d. **Project Record Documents** – The Contractor shall maintain at the Site, available to the District and Engineer, one copy of the Contract Documents, Plans, Shop Drawings, Change Orders, and other modifications in good order and marked to record all changes made during construction. These foregoing documents shall be delivered to the Engineer upon completion of the Work and will be known as Project Record Documents. Project Record Documents shall be reviewed during progress meetings to ascertain that all changes have been recorded. Contractor shall store Project Record Documents separately from documents used for construction.

e. **Touch-Up and Repair** – The Contractor shall touch-up or repair finished surfaces on structures, equipment, fixtures, or installations that have been damaged prior to final acceptance. Surfaces on which such touch-up or repair cannot be successfully

accomplished shall be completely refinished or in the case of hardware and similar small items, the item shall be replaced. Such items shall include, but not be limited to, the following:

1. Road surfaces (paved and unpaved)

2. Structure concrete surfaces

3. Equipment exposed surfaces

4. Piping exposed surfaces

f. **Final Equipment Check** – After test operation and before final acceptance, each piece of machinery shall be lubricated and all components and couplings checked for proper alignment and adjustment.

Submit written certification that Contract Documents have been reviewed, Work has been inspected, and that Work is complete in accordance with Contract Documents and ready for Engineer's and District's final review.

Provide submittals to District that are required by governing or other authorities.

Submit final Application for Payment identifying total adjusted Contract Sum, previous payments, and sum remaining due.

g. **Warranties**

1. Provide Manufacture's Equipment Warranties as required by these Specifications.

2. Execute and assemble documents from Subcontractors, Suppliers, and manufacturers.

3. Provide Table of Contents and assemble in binder with durable plastic cover.

4. Submit prior to final Application for Payment.

5. For items of Work delayed beyond date of Substantial Completion, provide updated submittal within ten (10) days after acceptance, listing date of acceptance as start of warranty period.

h. **Record Drawings –** Refer to Section D-35.

i. **Operation and Maintenance (O&M) Manuals**

1. Provide four (4) original O&M manuals and one (1) electronic copy (in pdf) to the Engineer prior to final Application for Payment. All O&M manuals

shall be provided in a three-ring binder, with tabs and an index describing the contents of the binder. One binder containing the O&M manual for each piece of equipment shall be furnished and be included in a separate binder. All O&M manual copies whose original pages are color shall be provided in color. The binder cover sheet shall include at a minimum: (1) the name of the project; (2) the contents of the binder; (3) the District's name; (4) the Date; and (5) the volume number (i.e. Vol. 1 of 2 etc.). One hardcopy of the O&M manual shall be provided to the Engineer and District for review prior to reproducing all four sets. Once the sample copy has been approved, the Contractor may proceed with preparing the four original sets.

2. Operation and maintenance instructions shall include, at a minimum, the below listed following data for each item of mechanical, electrical, and instrumentation equipment. All equipment manufacturers shall be made aware of these requirements and all associated costs shall be included in the costs for furnishing the equipment or system.

   a) All information provided as part of the Shop Drawings.

   b) All information required as part of the Specifications.

   c) Manufacturer's O&M manual customized for equipment provided. Cross out equipment not provided.

   d) Bill of material listing every component of equipment listed by make and part number. An insufficient bill of materials shall result in O&M manual submittal rejection.

   e) An itemized list of all data provided.

   f) Name and location of the manufacturer, the manufacturer's local representative, the nearest supplier, and spare parts warehouse.

   g) Equipment function, normal operating characteristics, and limiting conditions.

   h) Recommended maintenance procedures during storage of equipment prior to installation and after installation but prior to start-up.

   i) Recommended installation, adjustment, start-up, calibration, and troubleshooting procedures.

   j) Recommended lubrication, lubrication intervals, and an estimate of yearly quantity needed.

k) Recommended step-by-step procedures for all modes of operation. Operating instructions for startup, routine and normal operation, regulation and control, shutdown, and emergency conditions. Instructions shall include keystrokes and procedures required for adjusting control set points for equipment operation.

l) Complete internal and interconnect wiring diagrams of actual installation.

m) Equipment maintenance.

n) Test data and performance curves, where applicable.

o) Recommended preventive maintenance procedures and schedule.

p) Complete parts lists (bill of materials), by generic title and identification number (part number), with exploded views of each assembly.

1) Every component shall be listed on the bill of material with its corresponding part number.

2) A recommended spare parts list shall include generic title and identification numbers (part numbers).

q) Recommended spare parts and any special tools required.

r) Disassembly, overhaul, and reassembly instructions.

s) Factory and field test results (if applicable).

t) Manufacturer's contact information and local certified service representative's contact information.

3. Following completion of an item, instructions and procedures shall be modified by the Contractor to reflect field changes. In addition, the O&M manuals shall contain reproducible prints of the Contract record wiring diagrams, schematics, and installation drawings required. Information not applicable to equipment installed in the Work shall be excluded.

4. Individual O&M manuals shall be broken into sections and indexed. Under each section there shall be a description of the operation and maintenance, and installation instructions of each item. Sections shall be labeled and each item shall be sub-labeled. No acceptance of equipment will be made until the individual manual has been approved. Contractor's copy of each individual O&M manual shall be available at the site of the Work for use by

field personnel and the Engineer during start-up and testing of the equipment.

C-29 Satisfaction of Liens

If any liens or claims remain unsatisfied after final payment to the Contractor, the Contractor shall pay or refund to the District any money that the latter may be compelled to pay to discharge such liens and costs together with reasonable attorney's fees incurred by the District in enforcing the Contractor's obligations hereunder.

C-30 Claims Against the District and Payment of Attorneys' Fees

In the event that any litigation of any nature between the District and the Contractor becomes necessary to enforce or interpret all or any portion of this Contract, it is mutually agreed that the prevailing party therein shall receive from the other, in addition to such sums as may be reduced to judgment, an amount sufficient to reimburse such prevailing party for reasonable attorney's fees and litigation costs paid or owing as a result of such litigation.

C-31 Waiver of Interest in Certain Situations

The District shall have no obligation to pay and the Contractor hereby waives the right to recover interest with regard to monies, which the District is required to withhold by reason of judgment, order, statute or judicial process.

C-32 Assignments of Antitrust Actions

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

In submitting a bid to a public purchasing body, the bidder offers and agrees that if the bid is accepted, it will assign to the purchasing body all rights, title, and interest in and to all causes of action it may have under Section 4 of the Clayton Act (Chapter 2 [commencing with Section 16700] of Part 2 of Division 7 of the Business and Professions Code), arising from purchases of goods, services, or materials by the bidder for sale to the purchasing body pursuant to the bid. Such assignment shall be made and become effective at the time the purchasing body tenders final payment to the bidder.

C-33 Notice of Latent or Hazardous Conditions

Where the contract specifications require digging trenches or excavating deeper than four (4) feet below the surface, the Contractor shall promptly, and before the following conditions are disturbed, notify the District, in writing, of any:

a. Material that the Contractor believes may be material that is hazardous waste that is required to be removed to a Class I, Class II, or Class III disposal site in accordance with provisions of existing law;

b. Subsurface or latent physical conditions at the site differing from those indicated in the plans and specifications;

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

Upon receipt of written notice by the Contractor of such conditions, the District shall promptly investigate the conditions. If the District finds that the conditions do materially so differ, or do involve hazardous waste, and cause a decrease or increase in the Contractor's cost of, or the time required for, performance of any part of the work, the District will issue a change order under the procedures described in the Contract.

In the event a dispute arises between the District and the Contractor as to whether the conditions materially differ, or involve hazardous waste, or cause decrease or increase in the cost of or time required for performance of any part of the work, the Contractor shall not be excused from any scheduled completion date provided for by the Contract, and Contractor shall retain any and all rights provided either under the Contract or by law which pertain to the resolution of disputes and protests between the District and the Contractor.

C-34 Claims

Claims by the Contractor shall be in writing and include the documents necessary to substantiate the claim. Claims must be filed with the District on or before the date of final payment. Nothing herein is intended to extend the time limit or supersede notice requirements otherwise provided by the Contract for the filing of claims.

For claims of less than fifty-thousand dollars ($50,000), the District will respond in writing to any written claim within forty-five (45) days of receipt of the claim, or may request, in writing, within thirty (30) days of receipt of the claim any additional documentation supporting the claim or relating to defenses to the claim or claims the District may have against the Contractor. If additional information is thereafter required, it shall be requested and provided pursuant to this subdivision, upon mutual agreement of the District and the Contractor. The District's written response to the claim, as further documented, shall be submitted to the Contractor within fifteen (15) days after receipt of the further

documentation or within a period of time no greater than that taken by the Contractor in producing the additional information, whichever is greater.

For Claims greater than or equal to fifty thousand dollars ($50,000) and less than or equal to three hundred seventy-five thousand dollars ($375,000), the District will respond in writing to all written claims within sixty (60) days of receipt of the claim, or may request, in writing, within thirty (30) days of receipt of the claim, any additional documentation supporting the claim or relating to defenses to the claim or claims the District may have against the Contractor. If additional information is thereafter required, it shall be requested and provided pursuant to this subdivision, upon mutual agreement of the District and Contractor. The District's written response to the claim, as further documented, will be submitted to the Contractor within thirty (30) days after receipt of the further documentation, or within a period of time no greater than that taken by the claimant in producing the additional information or request documentation, whichever is greater.

If the Contractor disputes the District's written response, or the District fails to respond within the time prescribed, the Contractor may so notify the District, in writing, either within fifteen (15) days of receipt of the District's response or within fifteen (15) days of the District's failure to respond within the time prescribed, respectively, and demand an informal conference to meet and confer for settlement of the issues in dispute. Upon a demand, the District will schedule a meet and confer conference within thirty (30) days for settlement of the dispute.

If following the meet and confer conference the claim or any portion remains in dispute, the Contractor may file a claim and may be filed in the appropriate state court.

The court shall submit the matter to non-binding mediation. The parties are to select a mediator within fifteen (15) days of submittal to mediation, and the mediation must be commenced within thirty (30) days of the submittal to mediation.

If either party objects to the arbitrator's award, the matter can then go to trial de novo in the trial court. Any party who after receiving an arbitration award requests a trial de novo but does not obtain a more favorable judgment shall, in addition to payment of costs and fees as provided by applicable law, pay the attorney's fees of the other party arising out of the trial de novo.

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SECTION D – SPECIAL CONDITIONS

D-1 The Requirement

It is required that the project be constructed in accordance with the Contract Documents, as defined in the General Conditions. The work is to be performed in Kern County, within the vicinity of Rosamond, California.

D-2 State Special Provisions

a. **General**

1. These special provisions shall apply to all Work performed on the Contract by the contractor's own organization and with the assistance of workers under the contractor's immediate superintendence and to all work performed on the contract by piecework, station work, or by subcontract.

2. Except as otherwise provided for in each section, the contractor shall insert in each subcontract all of the stipulations contained in these special provisions, and further require their inclusion in any lower tier subcontract or purchase order that may in turn be made. The special provisions shall not be incorporated by reference in any case. The prime contractor shall be responsible for compliance by any Subcontractor or lower tier Subcontractor with these special provisions.

3. A breach of any of the stipulations contained in these special provisions shall be sufficient grounds for termination of the Contract.

b. **Americans with Disabilities Act –** Contractor and its Subcontractors shall comply with the Americans with Disabilities Act (ADA) of 1990, (42 U.S.C., 12101 *et seq*.), which prohibits discrimination on the basis of disability, as well as applicable regulations and guidelines issued pursuant to the ADA.

c. **Child Support Compliance**

The contractor acknowledges in accordance with Public Contract Code 7110, that:

1. The Contractor recognizes the importance of child and family support obligations and shall fully comply with all applicable state and federal laws relating to child and family support enforcement, including, but not limited to, disclosure of information and compliance with earnings assignment orders, as provided in Chapter 8 (commencing with section 5200) of Part 5 of Division 9 of the Family Code; and

2. The Contractor, to the best of its knowledge is fully complying with the earnings assignment orders of all employees and is providing the names of

all new employees to the New Hire Registry maintained by the California Employment Development Department.

d. **Drug-Free Workplace Certification**

1. Certification of Compliance: By signing this Contract, the Contractor and its Subcontractors hereby certify, under penalty of perjury under the laws of State of California, with the requirements of the Drug-Free Workplace Act of 1990 (Government Code 8350 *et seq*.) and have or will provide a drug-free workplace by taking the following actions:

a) Publish a statement notifying employees, contractors, and subcontractors that unlawful manufacture, distribution, dispensation, possession, or use of a controlled substance is prohibited and specifying actions to be taken against employees, contractors, or subcontractors for violations, as required by Government Code Section 8355(a).

b) Establish a Drug-Free Awareness Program, as required by Government Code Section 8355(b) to inform employees, contractors, or subcontractors about all of the following:

1) The dangers of drug abuse in the workplace;

2) Grantee's policy of maintaining a drug-free workplace;

3) Any available counseling, rehabilitation, and employee assistance programs; and

4) Penalties that may be imposed upon employees, contractors, and subcontractors for drug abuse violations.

c) Provide as required by Government Code Sections 8355(c), that every employee, contractor, and/or subcontractor who works under this project:

1) Has read the drug-free policy statement above; and

2) Will agree to abide by terms of this condition of employment, contract or subcontract.

e. **Nondiscrimination**

1. During the performance of this Project, the Contractors, its Subcontractors and Suppliers shall not unlawfully discriminate, harass, or allow harassment against any employee or applicant for employment because of sex, race, color, ancestry, religious creed, national origin, physical disability (including HIV and AIDS), mental disability, medical condition (cancer),

age (over 40), marital status, and denial of family care leave. Contractors, its Subcontractors and Suppliers shall ensure that the evaluation and treatment of their employees and applicants for employment are free from such discrimination and harassment. Contractors, its Subcontractors and Suppliers shall comply with the provisions of the Fair Employment and Housing Act (Government Code Section 12990 (a-f) *et seq*.) and the applicable regulations promulgated there under (California Code of Regulations, Title 2, Section 7285 *et seq*.). The applicable regulations of the Fair Employment and Housing Commission implementing Government Code Section 12990 (a-f), set forth in Chapter 5 of Division 4 of Title 2 of the California Code of Regulations, are incorporated by reference and made a part hereof as if set forth in full. Contractors, its Subcontractors and Suppliers shall give written notice of their obligations under this clause to labor organizations with which they have a collective bargaining or other agreement. Contractors shall include the nondiscrimination and compliance provisions of this clause in all contracts to perform work under the project.

f. **Permits, Licenses, Approvals, and Legal Obligations**

1. Contractor shall be responsible for obtaining any and all permits, licenses, and approvals required for performing its obligations under this Project.

2. Without limiting the foregoing, Contractor shall keep informed of and take all measures necessary to ensure compliance with California Labor Code requirements, including but not limited to Section 1720 *et seq*. of the California Labor Code regarding public works, limitations on use of volunteer labor (California Labor Code Section 1720.4), labor compliance programs (California Labor Code Section 1771.5), and payment of prevailing wages for work done under this project.

g. **Labor Compliance Monitoring**

1. Pursuant to the requirements set forth by SB854, **All** contractors must furnish electronic certified payroll records to the Labor Commissioner, Department of Industrial Relations (DIR) using the "eCPR Data System". Additionally, the District will have a Labor Compliance Program (LCP) to monitor and enforce prevailing wage requirements. In this regard, by submission of this bid or the execution of this contract, or subcontract as appropriate, the Contractor, and Subcontractors, as appropriate, agrees to provide any and all information the District may need to be in compliance.

2. The LCP will be implemented by a separate independent representative of the State that will strictly be focused on enforcing labor compliance. Type of monitoring activities will include but not be limited to the following: a) onsite inspections; b) visual monitoring of construction activities; c) interviews with field personnel; d) verification of Contractors and Subcontractors State License Board licensing and Workers Compensation

Insurance; e) review and confirmation of monthly submittal/accuracy of electronic certified payroll reports; f) inspection of time records and other source documents maintained by the Contractor and Subcontractors; and g) verification of compliance with LC 226 and other laws enforced by the Labor Commissioner.

3. The Contractor and its Subcontractors will be required to register online with the Department of Industrial Relations Compliance Monitoring at the following website: https://efiling.dir.ca.gov/PWCR/. Once registered the Contractor and its Subcontractor's will have two options within the eCPR system to submit CPRs:

    a) Using the manual iForm and/or
    b) Uploading via xml.

4. The Contractor and its Subcontractors will be required to submit all of their Certified Payroll Records (CPR) electronically to the Labor Commissioner and the District using the Department of Industrial Relations eCPR system- at least monthly, or more frequently if required.

5. The eCPR system will a) flag any violations by verifying all electronic certified payroll data against the applicable prevailing wage rates; and b) provide the District and the public to view redacted versions of the CPR's.

6. Review of eCPR's- Payrolls will be reviewed to verify the following:

    a. All appropriate data elements under Labor Code Section 1776 (a) are reported;
    b. Certifications have been completed and signed per LC Section 1776 (b); and
    c. Prevailing wages were reported as paid for each classification as required under LC Section 1771.

7. The LCP will confirm the accuracy of Certified Payroll Reports by a) corroborating the information in the payroll reports through independent sources such as job site inspections, audits and other legal and reasonable methods; and b) inspection for other DLSE laws and regulations including valid Worker's Compensation Insurance, Accurate Deductions Statements, valid CSLB Licenses and DLSE required Employer Postings.

8. In the event of non-, the District may withhold payment due to delinquent, inadequate, or untimely submission of CPR's. Additionally, if the DIR identifies any non-, there may be some civil wage and penalty assessments and BOFE citations that may be imposed by the regulating agencies.

9. The Contractor shall be responsible for monitoring the payment of prevailing wages by its Subcontractors by periodic review of the CPR's. If

the Contractor becomes aware of non-compliance, the Contractor shall take corrective measures to rectify the non-compliance.

10. The Contractor shall be responsible for posting a DIR-produced poster and displaying it at the job site. The poster will inform the public that the work falls under the regulations of the DIR. Posters are available at the Division of Labor Standards Enforcement District offices, by emailing the DIR at PublicWorks@dir.ca.gov or are available online.

11. The Contractor is directed to the following website for additional information regarding the eCPR monitoring program: http://www.dir.ca.gov/Public-Works/Certified-Payroll-Reporting.html. Not all of the eCPR requirements have been presented herein and it is the Contractor's responsibility to become informed about the eCPR requirements.

D-3 Description of Work

The principal components of Work to be performed under these Specifications includes the following:

a. **Schedule A, General Items**: Mobilization/demobilization, preparation and Compliance with Storm Water Pollution Prevention Plan (SWPPP) and dust control plan (PM-10), implementation of traffic control plan, and development of cost-loaded critical path method (CPM) schedule.

b. **Schedule B, Water Systems:** Construction of water systems including furnishing and installing 8-inch and 10-inch diameter AWWA C900 PVC water main pipe, 2-inch Schedule 80 PVC water pipe, 6-inch diameter AWWA C200 steel water main pipe, combination air valve assemblies, butterfly valve assemblies, pressure reducing valve assemblies, meter assemblies, backflow prevention assemblies, sampling stations, pipe supports, trust blocks, pipe joint restraints, and all necessary appurtenances. Work includes hydrostatic pressure testing and disinfection of water pipelines constructed. Work also includes sheeting, shoring, and bracing as needed for water main installation, potholing of existing utilities, connections of new water mains to existing water mains and water systems, site restoration, asphalt pavement restoration, and demolition of existing wells, tanks, and existing facilities.

D-4 Beginning and Completion of Work

Unless otherwise ordered by the Engineer, as hereinafter provided, the Contractor shall begin the work within twenty (20) calendar days after issuance of the Notice to Proceed. The Contractor shall complete all specified work in one hundred and eighty (180) days of Notice to Proceed.

a. **Contractor Notifications**

1. Schedule

a) The Contractor shall submit a schedule per the requirements of paragraph C-14 of the General Conditions. The schedule shall contain sufficient detail to allow the District and the Engineer to schedule personnel.

b) Work shall not commence until the schedule has been submitted and approved.

2. Regular Updates

a) After receiving the Notice to Proceed, the Contractor is expected to notify the Engineer daily of the progress of work and any scheduling changes.

b) The Contractor shall notify the Engineer 24 hours prior to periods when the Engineer is to be present as identified in each of the items identified in the technical specifications, of this document. Failure to notify the Engineer in a timely manner may cause delays in the work, which shall not impact the District's cost. Failure to notify the Engineer when they are to observe the work may cause the Contractor to repeat the work in the presence of the Engineer at no additional cost to the District.

D-5 Liquidated Damages for Delays

It will be impractical or extremely difficult to fix actual damages to the District which may result from any delays in completion of the work beyond the completion milestone time periods agreed upon. It is, therefore, stipulated and agreed that if all of the work is not completed on or before the expiration of the respective completion milestones time or times specified in Paragraph D-4, or within such extensions of time as may be granted, District may retain the sum of two-thousand five-hundred dollars ($2500) each day thereafter, Sundays and holidays included, that work remains uncompleted, which sum is agreed upon as the proper measure of liquidated damages which District will sustain per day by failure of the Contractor to complete the work within the times stipulated, and this sum is not to be construed in any sense a penalty or forfeiture.

D-6 Qualifications of Bidders

The Contractor's attention is directed to Paragraph B-3 which requires that, in addition to certifying to financial ability to perform Contract work, each bidder shall submit a statement verifying his experience in performing work comparable to that required under this Contract. Bids will be considered only from general contractors who can demonstrate a record of experience satisfactory to the District. Under "Information Required of Bidder," each bidder shall submit with his proposal a listing of at least three projects

constructed under the supervision of his organization during the past five (5) years involving work of size and complexity comparable to that to be installed under these Contract Specifications. In conformance with Paragraph B-12, it is further required that the bidder shall perform with his own organization, work equivalent to at least sixty percent (60%) of the total Contract price. The cost of Contractor-furnished materials installed by labor carried on the bidder's own payroll may be included in the above required sixty percent (60%).

No contractor or subcontractor may be listed on a proposal (if submitted on or after April 1, 2015) unless registered with the Department of Industrial Relations pursuant to Labor Code section 1725.5 [with limited exceptions from this requirement for bid purposes only under Labor Code section 1771.1(a)].

No contractor or subcontractor may be awarded the contract for the project (if awarded on or after April 1, 2015) unless registered with the Department of Industrial Relations pursuant to Labor Code section 1725.5.

All contractors and subcontractors participating in this Project must not be debarred, suspended, or otherwise excluded from or ineligible for participation in State Water Board programs. It is the responsibility of each contractor submitting a bid to ensure they and their subcontractors meet these eligibility requirements throughout the duration of the project.

D-7 Materials

a. **Materials Furnished by the Contractor** – Unless otherwise specified, the Contractor shall provide and pay for all materials, labor, water, tools, equipment, lights, power, fuel, transportation and other facilities necessary for the execution and completion of the work. All materials shall be new and both workmanship and materials shall be of a good quality. The Contractor shall, if required, furnish satisfactory evidence as to the kind and quality of materials, including the furnishing of written manufacturers' certifications of compliance with applicable designated governing reference specifications.

b. **Materials Furnished by the District** – No Materials are expected to be furnished by the District.

c. **Equipment and Materials to be Furnished as Listed** – Each bidder shall submit with his proposal under "Information Required of Bidder" a listing of the names of manufacturers and model numbers or types of listed items of Contractor-furnished equipment and materials and said equipment and materials shall be furnished without change or deviation from the listing unless a change or deviation is approved in writing by the Engineer.

D-8 Submittals

a. **Schedule of Submittals** - Within (10) calendar days after the effective date of the Notice to Proceed, the Contractor shall submit a completed submittal schedule and list of products for all items requiring the Engineer's review and approval as follows:

1. Submittals, including description of the item and name of manufacturer, trade name, and model number.

2. Specification section reference.

3. Intended submission/resubmission dates.

4. Order release date.

5. Lead time to delivery/anticipated delivery date(s).

6. Highlight any items that require expedited review to meet the project schedule.

These schedules shall be presented in a form acceptable to the Engineer in both electronic and hardcopy and shall be updated. Identify all submittals that are required by the Contract Documents and determine the date on which each submittal will be submitted in conformance with the schedule submitted.

b. **Technical Submittals – General**

1. Each submittal shall contain material pertaining to no more than one equipment or material item, and shall have the specification section and applicable paragraph number clearly identified. Each submittal shall be sequentially numbered starting with the first one delivered. Re-submittals shall include the number of the original submittal plus the suffix ".1" for the first re-submittal, ".2" for the second re-submittal, etc. (e.g. submittal 3.0, 3.1, 3.2, etc.) Submittals not conforming to these requirements will be rejected.

2. Designation of Work "by others," if shown on Shop Drawings, shall mean that the Work will be the responsibility of the Contractor rather than the Subcontractor or Supplier who has prepared the Shop Drawings.

3. Submittals shall be submitted at least 30 calendar days before the specified installation date. Submittals will be acted upon by the Engineer as promptly as possible, and returned to the contractor not later than the time allowed for in Paragraph D-8c.1 below. The Contractor shall provide in his Construction Schedule the time for this review. If the Contractor is required by the Engineer to resubmit data, then the time required for the Contractor to prepare and resubmit such data, and the required time for Engineer review, shall not be a cause for delay in Contract completion or a cause for an extension of Contract time delay shall be assigned solely to the Contractor.

4. Additional costs of the Engineer's review beyond the second submission shall be borne by the Contractor. This applies to all submittals including Shop Drawings.

5. After a submittal has been reviewed and accepted, no changes or substitutions in that submittal will be allowed.

6. Shop Drawings and submittals will be reviewed for general conformance with the Plans and Specifications. The intent of the review is to determine if the Contractor is submitting materials and equipment which are in general conformance with the Contract Documents. Detailed review of dimensions, sizes, space requirements, coordination with other equipment, and other construction details is not performed. Engineer's review of submittals shall not relieve Contractor from responsibility for errors, omissions, or deviations, nor responsibility for compliance with the Contract Documents. The Contractor shall indicate on the submittal transmittal form any deviation, the reasons, and how the submittal deviates from the Contract requirements.

7. Any requirement for samples will be given in the Contract Documents. Samples shall be submitted by the Contractor for review. All samples submitted for review shall be certified by the Contractor to be correct and in conformance with the Contract Documents. For samples found not acceptable, further samples shall be submitted not later than 7 days after date of transmittal by Engineer of comments on prior submittal. Samples that have been reviewed and found to be acceptable may, at the Engineer's option, be returned to the Contractor for incorporation into the Work.

8. Any requirement for certificates will be given in the Contract Documents. Four copies of each such certificate shall be submitted by the Contractor. For certificates found not acceptable, further certificates shall be submitted not later than 7 days after date of transmittal by Engineer of comments on prior submittal.

c. **Submittal Procedures**

1. The Contractor shall submit to the Engineer for his review **one (1) electronic copy in pdf format** of each submittal (Shop Drawings, electrical diagrams, and catalog cuts for fabricated items and manufactured items furnished under this Contract, etc.). Shop Drawings shall be submitted in sufficient time to allow the Engineer not less than fifteen (15) calendar days for examining the Shop Drawings.

2. Unless otherwise specified, submittals shall be delivered to:

Richard Sanchez
GEI Consultants, Inc.
35 N. Lake Avenue, Suite 220,
Pasadena, CA 91101
T: (916) 631-4579
M: (916) 350-1769
Email: RSanchez@geiconsultants.com

3. The Contractor shall prepare and maintain an accurate submittal log for the duration of the project. The log shall contain a listing of submittals and shall include the following information for each listed item:

   a) Specification section reference

   b) Projected submission date

   c) Actual submission date

   d) Projected need date for approval of the submittal

   e) Actual return date from the Engineer

   f) Notation of the Engineer's response

   g) Notation if resubmittal or record copy is required

4. A separate letter of transmittal, in a form acceptable to the Engineer, shall be used to transmit submittals for each specific item or class of material or equipment. A sample letter of transmittal has been provided at the end of this Section.

5. Submittal of multiple items using a single letter of transmittal will be permitted only when the items taken together constitute a manufacturer's package or are so functionally related that expediency indicates review of the group or package as a whole. If multiple submittal items are transmitted under one transmittal letter, then the Contractor shall tab each individual submittal item in the package and provide a table of contents at the beginning of the submittal package.

6. The letter of transmittal for each submittal shall show the transmittal number, date of transmittal, project title, construction contract number, specifications section or drawing number to which the submittal pertains, brief description of the material or equipment submitted, and the company name or the originator of the submittal. Material descriptions shall include the following: type, size, trade name, manufacturer’s/supplier’s name, and other appropriate summarizing information. Submittal letters for Shop Drawing descriptions shall include the complete list of drawings/sheet numbers that are included in

the submittal package. Each letter of transmittal shall be clearly marked to indicate the cases when the material is being submitted as a variation.

7. The transmittal number shall be indicated on every page of each copy of each submittal, and shall correspond to the number given in the letter of transmittal. Only the first sheet of a bound set of originally published or printed brochures or catalogs shall be numbered.

    a) Submittals shall be consecutively numbered beginning with the number 1.

    b) Multiple-page submittals (more than 25 pages) shall be collated into sets, and each set shall be put in a folder or bound before transmittal to the Engineer.

    c) When material or equipment is resubmitted for any reason, a new letter of transmittal shall have the original submittal number followed by a decimal and a number corresponding to the number of resubmittal. An example is 50.2, where 50 is the submittal number and 2 is the number of times submittal 50 has been resubmitted. The letter of transmittal shall indicate that it is a resubmittal.

8. Shop Drawings shall be accurate and complete, and shall contain all required information, including satisfactory identification of items in relation to the Plans and Specifications.

9. Shop Drawings shall be submitted only by the Contractor, who shall indicate by a signed stamp on the Shop Drawings, or other approved means, that Contractor has checked and approved the Shop Drawings, and that the Work shown is in accordance with Contract requirements and has been checked for dimensions and relationship with Work of all other trades involved. Incomplete Shop Drawings and Shop Drawings that have not been checked by the Contractor will be returned to the Contractor for resubmission in the proper form.

10. After review by the Engineer, the appropriate number of submittals will be returned to the Contractor appropriately marked. If major changes or corrections are necessary, the Shop Drawing shall be rejected and returned to the Contractor with the need for such changes or corrections indicated. The Contractor shall correct and resubmit rejected Shop Drawings in the same manner and quantity as specified for the original submittal. If changes are made by the Contractor (in addition to those requested by the Engineer) on the resubmitted Shop Drawings, such changes shall be clearly explained in a transmittal letter accompanying the resubmitted Shop Drawings.

11. The review of Shop Drawings and catalog cuts by the Engineer shall not relieve the Contractor from responsibility for correctness of dimensions, fabrication details, coordination with other Work, space requirements, or for deviations from the Plans or Specifications, unless the Contractor has called attention to such deviations in writing by a letter accompanying the Shop Drawings and the Engineer approves the change or deviation in writing at the time of submission; nor shall review by the Engineer relieve the Contractor from the responsibility for errors in the Shop Drawings.

12. The Contractor agrees that Shop Drawing submittals processed by the Engineer do not become Contract Documents and are not Change Orders; that the purpose of the Shop Drawing review is to establish a reporting procedure and to permit the Engineer to monitor the Contractor's progress and understanding of the design.

13. Submittals of substitutions, changes, and deviations shall be in accordance with this section and may be permitted subject to the following requirements:

    a) The proposed substitution, change, or deviation is conspicuously marked on the Shop Drawings or data.

    b) The corresponding line item on the letter of transmittal is conspicuously marked as a variation.

    c) Proof shall be provided of the comparative quality and suitability of alternative equipment or materials for proposed substitutions. Description, information, performance data, and other information as may be required by the Engineer shall be submitted showing the equality of the materials or equipment offered to those specified.

    d) A written explanation of the necessity for the proposed change or deviation shall be indicated in the Letter of Transmittal.

    e) The Engineer will be the sole judge as to the comparative quality and suitability of alternative equipment or materials, and his decision will be final.

    f) A sample substitution request form has been provided at the end of this Section.

d. **Shop Drawing Requirements**

1. General: Shop Drawings shall include catalog cuts, information schematic diagrams, and other submittals for both shop and field-fabricated items. The Contractor shall submit, as applicable, the following for all prefabricated or manufactured structural items, material, and equipment.

2. For structures, submit all shop, setting, equipment, miscellaneous iron and reinforcement drawings and schedules necessary for construction. The foregoing shall include detailed "pour drawings" which shall show the sequence of concrete placement, and the type, quantity and location of all embedment items (sleeves, anchor bolts, etc.).

3. For exposed and buried pipelines, submit a detailed layout of the pipeline with details of bends and fabricated specials, and furnish any other details necessary.

4. For electrical submittals, submit detailed information to show power supply requirements, MCC and control panel elevations, wiring diagrams, control and protection schematics, shop test data, operation and maintenance procedures, outline drawings, and manufacturer's recommendation of the interface/interlock among the equipment.

5. For mechanical equipment submit all data pertinent to the installation and maintenance of the equipment including Shop Drawings, anchorage requirements, manufacturer's recommended installation procedure, detailed installation drawings, performance data, test data and curves, operation and maintenance manuals, and other details necessary.

6. For architectural fabrication submit all data pertinent to the installation of the fabrications, including Shop Drawings, manufacturer's recommended installation procedure, detailed installation drawings, and other details necessary for operation and maintenance.

7. Installation or placing drawings for equipment, drives, and bases, include dimensions, size and location of connections to other Work, and weight of equipment.

8. Supporting calculations for equipment and associated supports, or hangers required or specified to be designed by equipment manufacturers. Include seismic restraint information and details.

9. Complete manufacturer's specifications, including materials description and paint system.

10. Seismic design calculations and restraint details for equipment and piping supports.

11. Samples of finish colors for selection.

e. **Review by Engineer**

1. One copy of each submittal will be returned to the Contractor marked with one of the following notations:

a) No Exceptions Taken

b) Make Corrections Noted

c) Revise and Resubmit

d) Rejected – Resubmit

Returned copies of submittals marked with either notation (a) or (b) authorize the Contractor to proceed with the fabrication, installation or construction, or any combination thereof, covered by such returned drawings, provided that such fabrication, installation or construction shall be subject to the comments, if any, shown on such returned copies. Although fabrication may proceed on a notation (b), Contractor shall incorporate the comments, resubmit, and obtain notation (a) before release for shipment can be granted.

Returned copies of submittals marked with notation (c) shall be corrected as necessary and revised drawings shall be submitted in the same manner as before. Returned copies of drawings marked with notation (c) shall be resubmitted not later than ten (10) calendar days after date of transmittal by Engineer of such copies of such drawings.

Returned copies of submittals marked with notation (d) are found not acceptable. Submittals shall be corrected as necessary and be resubmitted in its entirety in the same manner as before. Returned copies of drawings marked with notation (d) shall be resubmitted not later than 7 calendar days after date of transmittal by Engineer of such copies of such drawings.

2. Engineer will review with reasonable promptness Contractor's submittals, but Engineer's review will be only for conformance with the design concept of the Project and for compliance with the information given in the Contract Documents. The Engineer’s review shall not extend to means, methods, techniques, sequences or procedures of construction, except where a specific means, method, technique, sequence or procedure of construction is indicated in or required by the Contract Documents, or to safety precautions or programs incident thereto. Contractor shall make corrections required by Engineer.

Neither the Engineer’s review or failure to review Contractor’s submittals, nor the Engineer’s authorization for Work to proceed, shall relieve Contractor of any of its obligations to meet all the requirements of the Contract, or relieve Contractor of the responsibility for the correctness of any items submitted, including full compliance with the Contract Documents, and the performance of the Work in a safe and satisfactory manner. Contractor shall, at his expense, make any changes in the design

which are necessary to make the Work conform to the provisions and intent of the Contract.

f. **Requests for Information**

1. Requests for information about the Contract Documents shall be directed by Contractor to Engineer using a Request for Information (RFI) form. Such requests will not be accepted by the Engineer from a Subcontractor or Supplier.

2. A separate RFI form shall be used for each specific item for which information is required. Requests for information for more than one item using a single RFI form will be permitted only when the items are so functionally related that expediency indicates review of the group of items as a whole.

3. The Engineer will reply to the Contractor's request for information within seven (7) regular working days following receipt by the Engineer.

D-9 Temporary Use of Facilities

Subject to the approval of the District, the Contractor will be permitted to make temporary use of any District-owned land available in the vicinity of a Contract work site for construction work sites or storage areas and all such areas shall be returned to a neat and presentable condition as approved by the Engineer, upon termination of such usage.

D-10 Trade Names or Approved Equals

a. Where shown in the Contract Documents, or whenever materials or other items are specified using the trade name or the name of a particular Supplier, the specification is intended to establish the type, function, appearance, craftsmanship and quality required.

1. ***"Or-Equal" Items:*** A proposed item of material or equipment will be considered functionally equal to an item so named if:

a) it is at least equal in materials of construction, quality, durability, appearance, strength, craftsmanship and design characteristics;

b) it will reliably perform at least equally and achieve the results imposed by the design concept;

c) it has a proven record of performance and availability of responsive service; and

d) if approved and incorporated into the Work:

1) there will be no increase in cost to the District or increase in Contract Times; and

2) It will conform substantially to the detailed requirements of the item named in the Contract Documents.

2. **Substitute Items**

a) If in the opinion of the Engineer an item of material or equipment does not qualify as an "or-equal" item, it will be considered a proposed substitute item. Below is a description of the steps that the Contractor must follow when submitting requests for substitution.

b) Contractor shall submit sufficient information to the Engineer to allow the Engineer to determine that the item of material or equipment proposed is essentially equivalent to that named and an acceptable substitute. Requests for substitutions of material or proposed equipment will not be accepted by the Engineer unless it is submitted by the Contractor. Subcontractors or Suppliers shall not submit such requests.

c) The Contractor shall submit a request to the Engineer requesting review of a proposed substitute item of material or equipment that Contractor seeks to furnish or use. The written request:

1) shall demonstrate that the proposed substitute item will:

(a) perform adequately,

(b) be similar in substance to that specified, and

(c) be suited to the same use as that specified;

2) will state:

(a) whether the use of such proposed substitute item require any changes in Contract price or Contract Time; and

(b) whether or not use of the proposed substitute item in the Work will require a change in any of the Contract Documents;

3) and shall contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item.

4) Contractor shall submit a Substitution Request Form as provided by the Engineer when requesting any substitutions.

The form must be filled out entirely. A copy of this form can be found at the end of this section.

D-11 Storage of Supplies, Materials, Equipment, Etc.

The Contractor shall obtain the prior approval of the District or Engineer for any area or space required for Contractor's storage during construction operations. Materials, equipment, etc., shall not be piled or stored in any location which shall interfere with the conduct of normal functions and shall not constitute a hazard to persons or property. Any required safety precautions such as signs, danger signals, lanterns, barricades, etc., shall be installed by the Contractor during construction operations.

D-12 Construction Surveys

a. Surveys for the project to be coordinated by the Contractor.

D-13 Working Area

As specified under Paragraph C-11, the District will provide the necessary right-of-way for construction of the facilities covered by these Contract Documents. In particular, refer to Appendix D, for details of available access routes to the Project Site.

D-14 Deleted Section – Not in Use

D-15 Responsibility for Repair of Facilities

All existing District facilities or other public or private facilities, including but not limited to pipelines, structures, telephone or power cables, roadways and driveways and embankments disturbed by the Contract construction shall be repaired and replaced to match existing. In addition, the Contractor shall be responsible for any settlement damage to such facilities or adjoining areas, for a period of one (1) year after District acceptance of such repaired facilities.

D-16 Relief from Duty of Protecting Work

The Contractor's responsibility for protection of, and liability for, damage to the work shall be as stated in the Contract Documents. However, the District may issue written permission to relieve the Contractor of the duty of maintaining and protecting portions of the Contract work which have been completed in all respects in accordance with applicable requirements of these Specifications. Relief from the duty of maintaining and protecting any portion of the Contract work shall not release the Contractor from his obligations under Paragraph C-21 of the General Conditions.

D-17 Guarantee and Maintenance Warranties

a. In addition to any other warranties, representations and guarantees stated elsewhere in the Contract and any warranties implied by law, the Contractor guarantees the

work for a period of one (1) year after the date of acceptance of the work by the District.

The Contractor shall repair or remove and replace any and all such work, together with any other work which may be displaced in so doing, that is found to be defective in workmanship and/or materials within said one (1) year period, without expense whatsoever to the District, ordinary wear and tear and unusual abuse or neglect excepted. In the event of a failure to comply with the above-mentioned conditions within seven (7) days after being notified in writing, the District is hereby authorized to proceed to have the defects remedied and made good at the expense of the Contractor who hereby agrees to pay the cost and charges therefor immediately on demand. Such action by the District will not relieve the Contractor of the guarantees required by this article or elsewhere in the Contract Documents.

The performance bond and the payment bond shall continue in full force and effect for the duration of the guarantee period.

If, in the opinion of the District, defective work creates a dangerous condition or requires immediate correction or attention to prevent further loss to the District or to prevent interruption of operations of the District, the District will attempt to give the notice required by this article. If the Contractor cannot be contacted or does not comply with the District's request for correction within a reasonable time as determined by the District, the District may, notwithstanding the provisions of this article, proceed to make such correction or provide such attention; the costs of such correction or attention shall be charged against the Contractor. Such action by the District will not relieve the Contractor of the guarantees required by this article or elsewhere in the Contract Documents.

No guarantee, whether provided in this part or elsewhere in the Contract, shall in any way limit the guarantee of any items for which a longer guarantee is specified, or any items for which a manufacturer or supplier gives a guarantee for a longer period. The Contractor agrees to act as co-guarantor with such manufacturer or supplier, and the Contractor shall furnish the District with all appropriate guarantee or warranty certificates upon completion of the project. No guarantee period, whether provided in this provision or elsewhere, shall in any way limit the liability of the Contractor or his sureties or insurers under the indemnity.

b. The obligations of the Contractor under this paragraph shall be enforceable against his surety or sureties for the Performance Bond under this contract, and for one (1) year after final acceptance of all work under the contract. Prior to final payment under the contract, the Contractor shall furnish a maintenance warranty bond in the penal sum of five percent (5%) of the total original contract price, to assure performance of the Contractor's obligations under this paragraph after the expiration of the obligation under the Performance Bond, for the remainder of the maintenance warranty period.

The maintenance warranty bond or the extended Performance Bond shall contain a clause specifically incorporating the requirements of this paragraph by reference or otherwise.

c. The cost of furnishing the maintenance warranty bond shall be included in the prices bid in the schedule for other items of work.

d. The District's remedies, whether provided in this part or elsewhere in the Contract, shall be in addition to any other available legal and equitable remedies.

D-18 Progress Estimates

In conformance with Paragraph C-27, within the first ten (10) days of each calendar month, the Engineer will prepare a progress estimate of all work performed under the Contract up to and including the twenty-eighth (28th) day of the preceding month. Any statement for material on hand or extra work must be submitted by said twenty-eighth (28th) day if payment is to be included for that month.

In computing partial payment for materials furnished by the Contractor, payment will be made at the unit price state din the Proposal Bidding Schedule in accordance with the following:

a. Fifty percent (50%) of said unit price upon manufacture and delivery to the project site; and

b. Fifty percent (50%) of said unit price upon installation.

Before materials will be included for partial payment, the Contractor shall submit evidence satisfactory to the Engineer that payment has been made in full for work and material incorporated therein, that title therein has been vested in the Contractor, and that no lien or encumbrance is attached to said items; and the Contractor agrees not to encumber or permit the encumbrance thereof.

D-19 Cooperation with Others

At all times the Contractor shall extend full cooperation to all others performing work authorized by the District within or adjacent to Contract work areas including all landholders performing necessary private work. The Contractor shall not commit or permit any act which will interfere with the performance of work by any other contractor or by District employees. The Contractor shall have no claim for damages on account of interference. Exact methods of coordination of work involving the Contractor and others will be as determined by the Engineer, whose decision will be final.

D-20 Fire Protection

The Contractor shall use all precautions to prevent fires and shall provide adequate facilities and equipment for extinguishing fires at no cost to the District. Waste disposal by burning will not be allowed at any time.

D-21 Site Safety Plan

The Contractor shall submit a site safety plan for review prior to the commencement of work.

D-22 Claims for Extra Cost

If the Contractor claims that any instructions by Drawings or otherwise that are issued after the Notice to Proceed involve extra cost under this Contract, he shall give the Engineer written notice thereof within ten (10) calendar days after the receipt of such instructions. No such claim shall be valid unless so made.

D-23 Survey Requirements

The Contractor shall field measure the existing facilities and determine dimensions prior to manufacturing and constructing the new facilities. Moreover, the Contractor shall verify the vertical and horizontal location of all project components where a new facility and an existing facility will tie-in prior to fabrication and construction of the Work. If adjustments need to be made to fit the field conditions, notify the Engineer immediately.

The Contractor shall ensure that all contract Work is constructed within the rights-of-way acquired by the District. Based upon the above-specified information, the Contractor shall develop and make all other detailed surveys as required for Contract construction. No separate payment will be made for survey Work and the cost of all such Work shall be borne by the Contractor.

D-24 Verification of Existing Dimensions and Ground Profiles

Layout dimensions shown on the Drawings are subject to change to meet field conditions and/or based upon the final in-place location of Contractor-furnished and installed facilities, as determined by Engineer. It shall be the responsibility of the Contractor to verify all pertinent dimensions, to affect satisfactory fitting of all existing facilities with new Contract materials and equipment.

D-25 Quality Control

All items specified under these Specifications and the Proposal Bidding Schedule shall be of the sizes, shapes and materials as specified herein. All materials shall be new, free from defects impairing strength, durability and appearance, shall be of the best commercial quality for the purposes specified and made with structural properties to withstand all stresses and strains to which they normally will be subjected. Items furnished, unless otherwise specified, shall be standard, approved products of recognized manufacturers and fabricated in accordance with the best shop methods. All incidental items and accessories not specified herein, but which are required to fully carry out the specified intent of the work, shall be furnished without additional cost. If required, welding shall be in accordance with the latest revision of the Standard Code for Arc and Gas Welding in Building Construction as issued by the AWS. All welding shall be performed by certified welders

qualified under the standard qualification procedures of the AWS. At all times, the manufacturer shall provide and maintain adequate inspection and quality control procedures for all items or work, whether manufactured or fabricated in manufacturer's plant or elsewhere. In order to insure that all items of work meet material quality and performance requirements of these Specifications, if so directed by the Engineer, for those items of work manufactured or fabricated elsewhere than his plant, the manufacturer shall furnish written certification that adequate supervision, inspection and quality control procedures have been provided.

D-26 Right to Operate Unsatisfactory Equipment

If, following installation of any equipment or facilities furnished by the Contractor, defects requiring correction by the Contractor are found, the District shall have the right to operate such unsatisfactory equipment and make reasonable use thereof until the equipment can be shut down for correction of defects without injury to the District.

D-27 Damage to Growing Crops

Contractor shall have the right to make temporary use of the working area, and in this regard, to remove or cut back any vegetation growing within the working area; provided that the Contractor shall make every reasonable effort to minimize damage to growing crops within the working area and if, in the judgment of the Engineer, Contractor shall have at any time caused unwarranted damage to such crops, the District may deduct from payments due the Contractor pursuant to these Specifications the appraised value of crops judged by the Engineer to have been unnecessarily damaged. Nothing in this paragraph shall be construed as relieving the Contractor from his obligations under Paragraph C-21 or other provisions of the Specifications. Specifically, the District reserves the right to have its agents or designees prune or remove from and replace in the working area trees or other plantings for the purpose of minimizing damages. No permanent crop shall be disturbed or removed without prior approval of the Engineer. The Contractor shall attempt to schedule construction to minimize damage and loss of crops.

D-28 Crossing of Existing Creeks, Reservoirs, and Ponds

The Contractor shall repair and replace all existing embankments, dikes, and/or levees for existing canals, creeks, sumps, reservoirs, and ponds that are disturbed during the Contract work. Suitable earth materials for affected dikes and levees shall be placed and compacted. No separate payment, unless specified, will be made for repair and replacement of existing dikes and levees, including compaction thereof.

D-29 Deleted Section – Not in Use

D-30 Prevention of Water Pollution and Air Pollution

The Contractor shall prepare and submit to the Engineer a Storm Water Pollution Prevention Plan (SWPPP) within 10 calendar days after the Notice to Proceed is issued. The SWPPP shall include at a minimum the following BMPs:

a. Establish an erosion control perimeter around active construction and contractor layout areas including silt fencing, jute netting, straw waddles, or other appropriate measures to control sediment from leaving the construction area.

b. Stockpiled soils shall be watered, covered, or otherwise managed to prevent loss due to water and wind erosion.

c. Install containment measures at fueling stations and at fuel and chemical storage sites.

d. Employ good house-keeping measures including clearing construction debris and waste materials at the end of each day.

The Contractor shall maintain a copy of SWPPP onsite at all times and shall abide by the SWPPP throughout the duration of the Project. It will be the Contractor's responsibility to 1) obtain, on behalf of the District, a Construction Storm Water Permit from the State Water Resources Control Board online via their website; 2) submit all the reports to maintain compliance; and 3) close out the Permit upon completion of the Work. Additionally, the Contractor shall take measures as necessary to effect water pollution control. Construction operations shall be so conducted as to prevent discharge of wastes and pollutants into surface waters and underground water sources. Such water pollution control measures shall be directed toward eliminating discharge, or averting accidental spillage, of such industrial and domestic wastes as oils, gasses, fuels, sewage, toxic materials, and other substances which may be hazardous to public health and welfare or harmful to fish and wildlife. The Contractor shall be responsible for compliance with the applicable State and local regulations for prevention and abatement of pollution of surface and underground water. The Contractor's pollution control methods shall be subject to approval of the Engineer. The District shall have the right to require the Contractor, at his expense, to initiate and maintain such pollution control measures as deemed necessary to eliminate pollution of water caused by, or resulting from the contractor's operation. No separate payment will be made for prevention of water pollution, the costs for all work and materials required under this paragraph shall be borne by the Contractor.

The Contractor shall prepare and submit to the Engineer and all appropriate parties, a Site dust control and PM-10 Dust Management Plan within 10 calendar days after the Notice to Proceed is issued. The Contractor shall maintain a copy of said plan onsite at all times. The Contractor shall take measures as necessary to effect air pollution control. Construction operations shall be so conducted as to prevent generation of fugitive dust and dispersion of pollutants into the air. Such air pollution control measures shall be directed toward eliminating particulates and potentially toxic or harmful materials from becoming airborne and polluting the air, as these airborne substances may be harmful to public health and/or harmful to wildlife. The Contractor shall be responsible for compliance with the applicable State, regional, Air Pollution Control District (APCD) and local regulations for prevention and abatement of pollution of the air and any associated reporting requirements. The Contractor's pollution control methods shall be subject to approval of the Engineer as well as applicable governmental entities with regulative power over air quality. The District shall have the right to require the Contractor, at his expense, to initiate and maintain such pollution control measures as deemed necessary to eliminate pollution of air (and/or

nuisance or fugitive dust) caused by, or resulting from the contractor's operation. No separate payment will be made for prevention of air pollution, the costs for all work and materials required under this paragraph shall be borne by the Contractor.

D-31 Landscape Preservation

a. **General** – The Contractor shall exercise care to preserve the natural landscape and shall conduct his construction operations so as to prevent any unnecessary destruction, scarring, or defacing of the natural surroundings in the vicinity of the work. Except where clearing is required for permanent works, for approved construction roads and for excavation operations, all trees, native shrubbery, and vegetation shall be preserved and shall be protected from damage which may be caused by the Contractor's construction operations and equipment. No special reseeding or replanting will be required under these Specifications; however, on completion of the work, and in addition to the applicable requirements of the Specifications relative to site clean-up operations, all work areas shall be smoothed and graded in a manner to conform to the natural appearance of the landscape. Where unnecessary destruction, scarring, damage, or defacing may occur as a result of the Contractor's operations, the same shall be repaired, replanted, reseeded, or otherwise corrected at the Contractor's expense.

b. **Construction Roads** – The location, alignment, and grade of construction roads shall be subject to approval of the Engineer. When no longer required by the Contractor, construction roads shall be made impassable to vehicular traffic and the surfaces shall be scarified and left in a condition which will facilitate natural revegetation.

c. **Contractor's Campsite** – The Contractor's camp, shop, office, and yard area shall be located and arranged in a manner to preserve trees and vegetations to the maximum practicable extent. On abandonment, all camp, storage, and construction buildings, including concrete footings and slabs, and all construction materials and debris shall be removed from the site. The camp area shall be left in a neat and natural appearing condition.

d. **Costs** – No separate payment will be made for work or materials specified under "Landscape Preservations," all costs therefore shall be borne by the Contractor.

D-32 Valley Fever – Notices to Employees

A special biological problem of the Project area is the presence of tiny organisms living in the soil which can cause Valley Fever (coccidioidomycosis) in humans. As is typical of many desert areas in the southwestern United States, Valley Fever is endemic to the Antelope Valley. Although everyone living in the valley has some contact with the disease-causing organisms, the illness is especially hazardous to those whose work brings them into close contact with the soil, as for example, agricultural and construction workers. The Contractor and all his subcontractors shall advise all their employees, in writing, of the

dangers of Valley Fever, and of precautions which can be taken such as wearing dust masks while working under dusty conditions.

D-33 Special Environmental Requirements

a. Cultural Resources Requirements

1. The Contractor shall immediately stop work and provide an oral notification to the Engineer of the discovery of any and all antiquities or other objects of cultural, historic, or scientific interest. Objects under consideration include, but are not limited to, historic or prehistoric ruins, human remains, or artifacts discovered as the result of activities under this Contract. The Contractor shall cease activity, stabilize, and protect such discoveries until authorized to proceed by the Engineer.

2. The Contractor shall immediately stop work and provide an oral notification to the Engineer of the discovery of human remains. The Contractor shall cease activity, stabilize, and protect such discoveries until authorized to proceed by the Engineer.

b. Environmental Requirements- In addition to all other applicable provisions of these Specifications, the Contractor shall:

3. Restrict all construction activity within the Contract work area to daylight hours, unless otherwise approved by the Engineer;

4. All excavated, steep-walled holes or trenches in excess of two feet in depth shall be covered at the close of each working day by plywood or similar materials, or provided with one or more escape ramps not to be greater than 1000'. Trenches shall also be inspected for entrapped wildlife each morning prior to onset of construction and immediately prior to the end of each working day. Before such holes or trenches are filled, they shall be thoroughly inspected for entrapped animals by a designated inspector or qualified biologist. Any animals so discovered shall be allowed to escape before construction activities resume, or removed from the trench or hole by a qualified biologist;

5. Inspect all Contract pipe, culverts or similar structures with a diameter of four inches or greater that are stored within the Contract work area for one or more overnight periods for animals before moving, installing or capping the pipe. If animals are discovered inside the pipe, that section of pipe will not be moved, except as directed by the project biologist, or until the animals have escaped;

6. Dispose of all food-related trash in closed containers and regularly remove the trash from the worksite;

7. Contractor to report to the Engineer immediately if during the course of construction, an animal is found dead, injured or entrapped. In the case of entrapped animals, escape ramps or structures shall be installed by the Contractor to allow the animal to escape;

8. Contractor to report to the Engineer if an animal nest or den has been encountered during the course of Construction. Excavation shall cease until appropriate consultations are completed with the project biologist. Destruction of animal nests or dens is prohibited;

9. If required, Contractor to post signs and/or fencing around the work sites to restrict access of vehicles and equipment unrelated to site operations;

10. Contractor to ensure that all project-related vehicle traffic will be restricted to established roads, construction areas, storage areas, and staging and parking areas. Off-road traffic outside of designated project areas is prohibited;

11. Observe a speed limit of twenty miles per hour within the Contract work area and on access roads in the vicinity of endangered species habitat;

12. The use of rodenticides and herbicides on the sites is prohibited;

13. No firearms are allowed on the project site;

14. No pets are permitted on the project site;

15. Immediately clean up all spills of hazardous materials (oil, grease and other potentially toxic materials);

16. Upon completion of the project, all areas subject to temporary ground disturbances, including storage and staging areas, temporary roads, pipeline corridors, etc. shall be recontoured if necessary, and revegetated to promote restoration of the area to pre-project conditions; and

17. Boundaries of approved work areas shall be clearly delineated by stakes, flagging, and/or rope or cord to minimize inadvertent degradation or loss of adjacent wildlife habitats during facility construction.

D-34 Special Construction Conditions

a. **Groundwater Conditions** – The Contractor shall have full responsibility for evaluation of available data, including logs of exploration, and development of any necessary additional information on groundwater condition at construction site(s) and for draining and dewatering the sites of any groundwater or surface water during execution and completion of the contract work.

b. **Existing Uses of Lands and Roads** – In addition to all other applicable provisions of these Specifications, the Contractor shall:

1. Effectively secure and protect adjacent property, structures, livestock, crops and other vegetation;

2. Exercise extreme care during construction to prevent damage from dust to crops and adjacent property; be responsible for all damage to any property resulting from trespass by the Contractor or his employees in the course of their employment, whether such trespass was committed with or without the consent or knowledge of the Contractor;

3. See that the work site is kept drained and free of all surface and ground water;

4. Be responsible for any damage caused by drainage or water runoff from construction areas and from construction plant areas;

5. Maintain all existing roadways, roadway traffic, and irrigation or other water utilities and utility crossings, in an adequate and safe manner to meet all existing service requirements and shall not interfere with any roadway or utility system without prior written permission of the District/operator thereof, and only for any time period permitted by said District/operator.

6. Provide for all water courses, ditches and pipelines and perform the construction work so that no damage will result to either public or private interests, and be liable for all damage that may result from failure to so provide during the progress of the work.

D-35 Record Drawings

a. The Contractor shall maintain one record set of Drawings at the Site. On these, it shall mark all project conditions, locations, configurations, and any other changes or deviations which may vary from the information represented on the original Contract Drawings, including buried or concealed construction and utility features which are revealed during the course of construction. Special attention shall be given to recording the horizontal and vertical location of all buried utilities that differ from the locations indicated, or which were not indicated on the Contract Drawings. Said record drawings shall be supplemented by any detailed sketches as necessary or directed to fully indicate the Work as actually constructed. These master record drawings of the Contractor's representation of as-built conditions, including all revisions made necessary by addenda and change orders shall be maintained up-to-date during the progress of the Work. Red ink shall be used for alterations and notes. Notes shall identify relevant Change Orders by number and date.

b. Copies of the record drawings shall be submitted on upon completion of all Work.

c. In the case of those drawings which depict the detail requirement for equipment to be assembled and wired in the factory, such as motor control centers and the like, the record drawings shall be updated by indicating those portions which are superseded by change order drawings or final Shop Drawings, and by including appropriate reference information describing the change orders by number and the Shop Drawings by manufacturer, drawing, and revision numbers.

d. Record drawings shall be accessible to the Engineer at all times during the construction period.

e. Final payment will not be acted upon until the record drawings have been prepared and delivered to the Engineer. Said up-to-date record drawings shall be in the form of a set of prints with carefully plotted information overlaid.

f. Prior to final acceptance of the Work, the Contractor shall finalize and deliver a complete set of record drawings to the Engineer for transmittal to the District, conforming to the construction records of the Contractor. This set of drawings shall consist of corrected Drawings showing the reported location of the Work. The information submitted by the Contractor and incorporated by the Engineer into the record drawings will be assumed to be correct, and the Contractor shall be responsible for the accuracy of such information, and for any errors or omissions which may appear on the record drawings as a result.

D. 36 Special Controls

a. **Traffic Control** – Contractor shall conduct his work to interfere as little as possible with public travel, whether vehicular or pedestrian. Whenever it is necessary to cross, obstruct, or close roads, driveways and walks, whether public or private, Contractor shall provide and maintain suitable and safe bridges, detours, or other temporary expedients for the accommodation of public and private travel, and shall give reasonable notice to Districts of private drives before interfering with them. Such maintenance of traffic will not be required when Contractor has obtained written permission from the District and tenant of private property involved, to obstruct traffic at the designated point.

Where required by the authority having jurisdiction thereover that traffic be maintained over any construction Work in or around a public street, road, or highway, and the traffic cannot be maintained on the alignment of the original roadbed or pavement, Contractor shall, at his own expense, construct and maintain a detour around the construction Work. Each detour shall include all necessary barricades, guardrails, approaches, lights, signals, signs, and other devices and precautions necessary for protection of the Work and safety of the public.

b. **Surface and Storm Water Control** – The Contractor shall divert or otherwise control surface water and waters flowing from existing projects or structures from coming onto its Work areas. The method of diversions or control shall be adequate to ensure the safety of stored materials and of personnel using these areas.

Following completion of Work under the Contract, ditches, dikes, or other ground alterations made by the Contractor shall be removed and the ground surfaces shall be returned to their former condition, or as near as practicable, in the Engineer's opinion. Surface and storm water that enters the Contractor's Work area shall be controlled, treated, and disposed in a lawful manner.

c. **Dust Control** – The Contractor shall provide effective measures to prevent operations from producing dust in amounts damaging to personnel, property, District plant operations, plants, or animals, and to prevent causing a nuisance to persons living or occupying buildings in the vicinity.

Areas used by the Contractor for construction roads or other purposes in connection with the Work shall be given an approved dust inhibiting surface treatment to avoid production of dust. This surface condition shall be continuously maintained during the entire construction period. The Contractor's construction facilities shall be operated in a manner ensuring minimum dust production.

Trucks transporting soil, or cement, or debris shall be covered or moistened with water to suppress the dispersion of dust.

d. **Light Abatement** – The Contractor shall exercise special care to direct floodlights to shine downward at an angle less than horizontal. These floodlights shall also be shielded to avoid a nuisance to the surrounding areas. No lighting shall include a residence in its direct beam. The Contractor shall correct lighting nuisance whenever it occurs.

e. **Air Pollution Control** – The Contractor shall not discharge smoke, dust, or other air contaminants into the atmosphere in a quantity that exceeds the legal limit.

The Contractor shall maintain equipment in proper mechanical adjustment to minimize the volume of exhaust emissions.

f. **Noise Control** – The Contractor shall conduct operations to abate noise wherever possible and to minimize noise where complete abatement is not possible.

To limit noise, construction vehicle equipment shall be kept in proper working order for the duration of the construction activities.

To reduce temporary construction related noise impacts, the following BMP’s shall be implemented at a minimum by the construction contractor:

1. Place all stationary construction equipment so that emitted noise is directed away from sensitive receptors nearest the project site.

2. Locate equipment staging in areas that will create the greatest possible distance between construction-related noise sources and noise-sensitive receptors nearest the project site during all project construction.

3. Ensure proper maintenance and working order of equipment and vehicles, and that all construction equipment is equipped with manufacturers approved mufflers and baffles.

Install sound-control devices in all construction and impact equipment, no less effective than those provided on the original equipment.

a. **Restoration of Improvements** – Upon completion of the Work, the Contractor shall reconstruct existing roads to a condition equivalent to that which existed before the start of Work.

b. **Security** – The Contractor shall prevent unauthorized personnel or vehicular entry into the project site.

The Contractor shall be responsible for providing security within the Site as the Contractor deems necessary for the protection of its own equipment, materials, or Work from vandalism or theft. District shall not be responsible for theft or damage to the Contractor's equipment, materials, or Work.

All staff working for or representing the Contractor, including Subcontractors, shall possess a valid California identification with a photograph of the staff member.

The Contractor shall provide the names of its lead persons, supervisors and all employees working on the project.

D-37 Products, Material and Equipment

a. **General** – The word "Products" as used in the Contract Documents, is defined to include purchased items for incorporation into the Work regardless of whether specifically purchased for the Project or taken from Contractor’s stock of previously purchased products. The word "Materials" is defined as products which must be substantially cut, shaped, worked, mixed, finished, refined, or otherwise fabricated, processed, installed, or applied to form Work. The word "Equipment" is defined as products with operational parts, regardless of whether motorized or manually operated, and particularly including products with service connections (wiring, piping, and other like items). Definitions in this Paragraph are not intended to negate the meaning of other terms used in the Contract Documents, including "specialties", "systems", "structure", "finishes", "accessories" "furnishings", “special construction", and similar terms, which are self-explanatory and have recognized meanings in the construction industry.

Neither "Products" nor "Materials" nor "Equipment" includes machinery and equipment used for preparation, fabrication, conveying, and erection of the Work.

b. **Product Delivery and Storage** – The Contractor shall deliver and store the Work in accordance with manufacturer’s written recommendations and by methods and means that will prevent damage, deterioration, and loss including theft.

c. **Transportation and Handling** – Products shall be transported by methods to avoid damage and shall be delivered in undamaged condition in manufacturer's unopened containers and packaging. The Contractor shall provide equipment and personnel to handle Products by methods to prevent soiling and damage. The Contractor shall provide additional protection during handling to prevent marring and otherwise damaging Products, packaging, and surrounding surfaces.

d. **Storage and Protection** – Products shall be stored in accordance with manufacturer's written instructions and with seals and labels intact and legible. Sensitive Products shall be stored in weather-tight climate controlled enclosures and temperature and humidity ranges shall be maintained within tolerances required by manufacturer's recommendations.

For exterior storage of Products, items shall be placed on sloped supports above ground. Products subject to deterioration shall be covered with impervious sheet covering and ventilation shall be provided to avoid condensation.

Storage shall be arranged to provide access for inspection. The Contractor shall periodically inspect to assure Products are undamaged and are maintained under required conditions.

Storage shall be arranged in a manner to provide access for maintenance of stored items and for inspection.

e. **Maintenance of Products in Storage –** Stored Products shall be periodically inspected on a scheduled basis. The Contractor shall maintain a log of inspections and shall make the log available on request. The Contractor shall comply with manufacturer's Product storage requirements and recommendations. The Contractor shall maintain manufacturer-required environmental conditions continuously. The Contractor shall ensure that surfaces of Products exposed to the elements are not adversely affected and that weathering of finishes does not occur. For mechanical and electrical equipment, the Contractor shall provide a copy of the manufacturer's service instructions with each item and the exterior of the package shall contain notice that instructions are included.

D-38 Project Meetings

a. **Pre-Construction Conference** – Upon receipt of the Notice to Proceed, or at an earlier time if mutually agreeable, the District will arrange a preconstruction conference to be attended by the Contractor, Contractor's superintendent, the District, the Engineer or his representative, and representatives of utilities, major Subcontractors, and others involved in the execution of the Work.

The purpose of this conference shall be to establish a working understanding between the parties and to discuss the Construction Schedule (Critical Path Method format required), Shop Drawing submittals and processing, applications for payment and their processing, and such other subjects as may be pertinent for the execution of the

Work.

b. **Progress Meetings**

1. The District may arrange and conduct progress meetings. These meetings shall be attended by the Engineer or his representative, Contractor, Contractor's superintendent and representatives of all Subcontractors, utilities, and others, that are active in the execution of the Work. The purpose of these meetings shall be to expedite the Work of any Subcontractor (if acceptable to the District) or other organization that is not up to schedule, resolve conflicts, and in general, coordinate and expedite the execution of the Work.

2. The agenda of progress meetings shall include review of progress and schedule, of payment request, and of the latest Construction Schedule update. To the maximum extent practicable, Contractor shall contact the District and Engineer at least twenty-four (24) hours in advance of the meetings regarding items the Contractor wishes to have added to the agenda.

3. Persons designated by the Contractor to attend and participate in project meetings shall have the authority to commit the Contractor to the resolution of problems as agreed upon in the project meetings.

4. A meeting will be held every week (unless the District determines otherwise) for the duration of the Project. The location of the meetings shall be determined by the District prior to the first meeting.

5. The Contractor shall designate persons to attend these meetings who are familiar with the Construction Schedule and with the current construction problems and activities and with the logic of the Work sequences used in preparing the schedule and the updates.

6. On the last working day of every week, Contractor shall submit to Engineer, Contractor’s plan of activities for the following two (2) weeks (a “two-week look-ahead schedule”). The plan of activities shall describe the activity and location of the activity. Failure to submit a two-week look-ahead schedule, shall subject the contractor to withholding of monthly progress payment for month that the schedule(s) was not submitted.

c. **Progress and Schedule Review**

1. The progress of the Work and the Construction Schedule shall be reviewed to verify:

   a) Actual start and finish dates of completed activities since the last progress meeting.

   b) Durations and progress of all activities not completed.

c) Reason, time, and cost data for Change Order Work that is to be incorporated into the Construction Schedule or payment request form.

d) Payment due to the Contractor based on percentage complete of items in the submitted payment request.

e) Reasons for, and duration of, required revisions in the Construction Schedule.

f) After each progress meeting, upon request the Contractor shall submit to the Engineer three (3) prints of the last accepted Construction Schedule, revised in accordance with the progress review.

g) If the progress meeting coincides with the beginning of the month when Applications for Payment are due, the Contractor shall have his copy of the payment request form and all other data required by the Contract Documents completed prior to the progress meeting. The Engineer will process Contractor's payment request after satisfactory review of the schedule update.

D-39 Specification Drawings

The location of the work, its general nature and extent, and the form and general dimensions of all appurtenant works are shown on the Specification Drawings to be attached to and made a part of these specifications.

Drawings applicable to the work described in the Contract Documents are located in the Appendices.

D-40 Underground Facilities

a. ***Shown or Indicated:*** The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or contiguous to the site is based on information and data furnished to District or Engineer by the Districts of such Underground Facilities, including District, or by others. Unless it is otherwise expressly provided in the Special Conditions:

1. District and Engineer shall not be responsible for the accuracy or completeness of any such information or data; and

2. The cost of all of the following will be included in the contract price, and Contractor shall have full responsibility for:

a) reviewing and checking all such information and data,

b) locating all Underground Facilities shown or indicated in the Contract Documents,

c) coordination of the Work with the Districts of such Underground Facilities, including District, during construction, and

d) the safety and protection of all such Underground Facilities and repairing any damage thereto resulting from the Work.

3. The Contractor shall expose and demarcate, prior to staking, earthwork, and excavation, all existing utilities and existing facilities which could be damaged by or conflict with the work. Two working days' notice shall be given to the Engineer prior to commencing this work. The Contractor shall contact Underground Service Alert (USA) North at 811 at least two working days prior to any excavation work to identify any buried utilities within the proposed excavation area. Full compensation for all costs involved in locating, verifying, protecting, exposing, and otherwise providing for utilities shall be included in the amounts bid for the various items of work, and no separate payment shall be made therefore.

4. **Protection** - The Contractor shall not interrupt the service function or disturb the supporting base of any Utility by disrupting any facility identified in the Plans and Specifications without authority from the District or order from the Engineer. Where protection of such facilities is required to ensure support of utilities, the Contractor shall, unless otherwise provided, furnish and place the necessary protection at the Contractor's expense. The Contractor shall develop and execute a work plan, subject to Engineer's approval to protect underground facilities. The Contractor shall be prepared at all times with labor, equipment, and materials to make repair on damaged mains or Utility facilities. The Contractor shall immediately notify the Engineer and the Utility district if he disturbs, disconnects or damages any Utility. The Contractor shall bear the costs of repair or replacement of any Utility facility described with reasonable accuracy in the Plans and Specifications which is damaged by the Contractor. No extra compensation will be made for the repair of any services or mains damaged by the Contractor, nor for any damage incurred if the neglect or failure of providing protective barriers, lights and other devises or means required to protect such existing utilities or facilities described with reasonable accuracy in the Plans and Specifications.

5. **Relocation** - When the Plans or Specifications provide for the Contractor to alter, relocate or reconstruct a Utility, or landowner facility (pipeline, fence, etc.) all costs for such work shall be absorbed in the Contractor's Bid or paid for at the unit price indicated. Temporary or permanent relocation or alteration of utilities desired by the Contractor for the Contractor's own convenience shall be the Contractor's responsibility, and the Contractor shall make all arrangements and bear all costs. The Contractor may, for the Contractor's own convenience or to expedite the work, agree with the District of any Utility to disconnect and reconnect interfering service connections. The District shall not be involved in any such agreement, but

the Contractor shall give the District written notice of such an agreement upon its execution.

b. **Not Shown or Indicated**

1. If an Underground Facility is uncovered or revealed at or contiguous to the Site which was not shown or indicated, or not shown or indicated with reasonable accuracy in the Contract Documents, Contractor shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith, identify the District and the Engineer of such Underground Facility and give written notice to the District and Engineer. Engineer will promptly review the Underground Facility and determine the extent, if any, to which a change is required in the Contract Documents to reflect and document the consequences of the existence or location of the Underground Facility. During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.

2. If Engineer concludes that a change in the Contract Documents is required, a Work Change Directive or a Change Order will be issued to reflect and document such consequences. An equitable adjustment shall be made in the Contract Price or Contract Times, or both, to the extent that they are attributable to the existence or location of any Underground Facility that was not shown or indicated or not shown or indicated with reasonable accuracy in the Contract Documents and that Contractor did not know of and could not reasonably have been expected to be aware of or to have anticipated. If District and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment in Contract Price or Contract Times, District or Contractor may make a Claim therefore as provided in the contract specification.

3. Contractor shall develop and execute a work-plan, subject to Engineer's approval to protect underground facilities.

4. The Contractor shall expose, prior to staking and trenching, all existing utilities and existing facilities which may control proposed facility grades, and alignment. Two (2) working days' notice shall be given to the Engineer prior to commencing this work. Full compensation for all costs involved in locating, verifying, protecting, exposing, and otherwise providing for utilities shall be included in the amounts bid for the various items of work, and no separate payment shall be made therefore.

5. As specified in Government Code, Section 4215, the Contractor shall be compensated as Extra Work for the costs of locating, repairing damage not due to the failure of the Contractor to exercise reasonable care, and removing or relocating such utility facilities not indicated in the plans and specifications with reasonable accuracy, and for equipment on the project necessarily idled

during such work. As specified in Government Code, Section 4215, the contractor shall not be assessed liquidated damages for delay in completion of the project, when such delay was caused by the failure of the district or the district of the utility to provide for removal or relocation of such utility facilities.

c. **Protection** - The Contractor shall not interrupt the service function or disturb the supporting base of any Utility by disrupting any facility identified in the Plans and Specifications without authority from the District or order from the Engineer. Where protection of such facilities is required to ensure support of utilities, the Contractor shall, unless otherwise provided, furnish and place the necessary protection at the Contractor's expense.

The Contractor shall be prepared at all times with labor, equipment and materials to make repair on damaged mains or Utility facilities. The Contractor shall immediately notify the Engineer and the Utility district if he disturbs, disconnects or damages any Utility. The Contractor shall bear the costs of repair or replacement of any Utility facility described with reasonable accuracy in the Plans and Specifications that is damaged by the Contractor. No extra compensation will be made for the repair of any services or mains damaged by the Contractor, nor for any damage incurred if the neglect or failure of providing protective barriers, lights and other devices or means required to protect such existing utilities or facilities described with reasonable accuracy in the Plans and Specifications.

d. **Relocation** - When the Plans or Specifications provide for the Contractor to alter, relocate or reconstruct a Utility, or landowner facility (pipeline, fence, etc.) all costs for such work shall be absorbed in the Contractor's Bid or paid for at the unit price indicated. Temporary or permanent relocation or alteration of utilities desired by the Contractor for his own convenience shall be his responsibility, and he shall make all arrangements and bear all costs. The Contractor may, for his own convenience or to expedite the work, agree with the District of any Utility to disconnect and reconnect interfering service connections. The District shall not be involved in any such agreement.

D-41 Project Records

The Contractor must maintain and retain separate books, records and other material relative to the project. All such books, records and other material are subject at all reasonable times (at a minimum during normal business hours) to inspection, copying, and audit by the State Water Board, the Department of Finance, the California State Auditor, the Bureau of State Audits, or any authorized representatives of the aforementioned, including federal funding agencies and their auditors, if any. The Contractor must also allow for interviews during normal business hours of any employees who might reasonably have information related to such records.

****END OF SECTION****

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SUBSTITUTION REQUEST FORM

TO: GEI Consultants, Inc. 35 N. Lake Avenue, Suite 220, Pasadena, CA 91101.

PROJECT: Arsenic Regional Consolidation Project Phase 1A

We hereby submit for your consideration the following product instead of the specified item for the above project:

SECTION: PARAGRAPH: SPECIFIED ITEM:

Proposed Substitution: _____

Reason For Substitution: _____

Attach: 1) Complete technical data, including laboratory tests, if applicable.
2) Complete information on changes to Drawings and/or Specifications which proposed substitution will require for its proper installation.

Fill in Blanks Below:

A. Does the substitution affect dimensions on Drawings?

B. Will the undersigned pay for changes to the project design, including engineering and detailing costs caused by the requested substitution?

C. What affect does substitution have on other trades?

D. Differences between proposed substitution and specified item?

E. Manufacturer's guarantees of the proposed and specified items are:

____Same _____ Different (explain on attached sheet)

SUBSTITUTION REQUEST FORM

The undersigned states that the function, appearance and quality are equivalent or superior to the specified item. Changes from approved plans and specifications require approval from the Division of Financial Assistance and Division of Drinking Water (DDW) of the State Water Resources Control Board.

Submitted By:

Signature _____

Firm _____

Address _____

Date _____

Telephone _____

For Use by Design Consultant
Accepted Accepted as Noted Not Accepted Received Late By_____ _____ Date_____ Remarks_____ _____

LETTER OF TRANSMITTAL

SUBMITTAL NO.

CONTRACTOR:
ADDRESS:
PHONE:
FAX:

TO:

DATE: _____
CONTRACT NO:_____
PROJECT:

SPEC. NO:_____

WE ARE SUBMITTING THE ENCLOSED:

☐ SHOP DRAWINGS ☐ EQUIPMENT DATA ☐ MATERIAL DATA
☐ SAMPLES ☐ CERTIFICATES OF Compliance ☐ OTHER
☐ FOR YOUR: APPROVAL ☐ INFORMATION

PLEASE RETURN _____ COPIES FOR OUR RECORDS

ITEM NO.	DESCRIPTION OF ITEM	NO. OF COPIES	CONTRACT REFERENCE SPEC. SECTION OR DRAWING SHEET NO.	VARIATION

REMARKS: All deviations from the construction contract shall be explained in detail.

I certify that the above submitted items have been reviewed in detail and are correct and in strict conformance with the contract drawings and specifications except as otherwise stated.

NAME/SIGNATURE OF CONTRACTOR _____

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SECTION 01131

PROTECTED SPECIES

PART 1 GENERAL

1.01 SUMMARY

A. The Contractor shall be solely and completely responsible for providing protection for the protected species during performance of the work in accordance with this Section.

1.02 SUBMITTALS

A. NOT USED

1.03 PROTECTION OF MIGRATORY BIRDS

A. The Contractor will make every attempt to complete land-clearing activities during the September 1 through February 28 time frame to avoid the breeding season of migratory birds.

B. All vegetation scheduled to be disturbed outside the above timeframe that may contain active bird nests shall be surveyed by a trained biologist immediately prior (within 48 hours) to being disturbed.

C. If an active nest is discovered, vegetation clearing activities will not be allowed to proceed in the vicinity of the nest(s). No activities shall occur within an appropriate buffered distance from active nests until after the young birds have fledged from the nest.

D. A biologist will be provided to complete a preconstruction survey for burrowing owls 96 hours prior to construction in all suitable habitat that would be disturbed. The biologist shall possess a burrowing owl survey protocol training certificate issues by the AGFD. Upon completion of the surveys, the biologist will provide survey results to the Engineer.

1.04 PREVENT INTRODUCTION OF INVASIVE PLANTS

A. To prevent the introduction of invasive species seed, all construction equipment will be washed at the Contractor’s storage facility prior to entering the construction site.

B. To prevent invasive species seeds from leaving the site, the Contractor will inspect all construction equipment and remove all attached plant/vegetation debris prior to leaving the construction site.

C. At the direction of the Engineer, all disturbed soils that would not be landscaped or otherwise permanently stabilized by construction will be seeded by the Contractor using the species native to the project vicinity, at the direction of the Engineer.

1.05 MEASUREMENT AND PAYMENT

A. Payment:

1. Include in prices offered in the schedule for other items of work.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 01250

CONSTRUCTION PROGRAM

PART 1 GENERAL

1.01 SUMMARY

A. The Contractor shall be solely and completely responsible for the construction program during performance of the work in accordance with this Section.

1.02 REFERENCES

A. Associated General Contractors of America (AGC)

1. AGC Manual Construction Planning and Scheduling Manual, 2004

1.03 DEFINITIONS

A. Schedule: The Critical Path Method (CPM) of planning and scheduling a construction project where activities are arranged based on activity relationships and network calculations determine when activities can be performed and the critical path of the project.

B. Project Calendar: Cross reference of numerical work days with calendar days. The project calendar serves as the basis for the day/date conversion and assigns work days, rest days, and holidays.

C. Resources: Equipment, labor or crews, materials, subcontractors, fabricators, manufacturers, and consultants.

1.04 SUBMITTALS

A. Submit the following in accordance with Section 01300 - Submittals.

1. Furnish data on CD-ROM disc.

2. Furnish database files in format compatible with Primavera Project Planner P6 or Microsoft Project.

B. Representative Information:

1. Designation of authorized representative to coordinate with Engineer to develop and maintain Construction Program.

C. Baseline Schedule:

1. Include:

a. Construction Program database with activity and milestone data.

b. Definition of workday calendars.

c. Bar chart for project or bar charts for each subnetwork.

d. Activity report including all logic constraints.

e. RSN submittal register.

f. Table listing equipment, manpower, and material limitations used to produce baseline schedule. This listing may be independent of the schedule database.

D. Updated Schedule:

1. Include:

a. Construction Program database with updated activity and milestone data.

b. Definition of workday calendars.

c. Bar chart for project or bar charts for each subnetwork.

d. Narrative report specifically stating status of project in terms of total float.

1) If negative float exists, cite specific actions and conditions which caused the "behind schedule" condition and provide proposed course of action to complete the project within the specified delivery time.

2) List of Contractor-initiated changes to the current schedule stating the reason for the action taken and any unresolved issues relating to the Construction Program. Government reserves the right to reject Contractor-initiated changes to the current schedule which negatively impact any Government action which was initiated on the basis of the current schedule.

e. Updated Submittal Register.

E. Time Impact Analysis:

1. Include:

a. Construction Program database with proposed revised activity and milestone data.

b. Proposed revised schedule due to the change or delay with added, changed, or deleted activities highlighted.

c. Table comparing results of two mathematical analyses.

1.05 QUALIFICATIONS

A. Representative: Full-time, on site employee with minimum three years' experience in developing and maintaining construction schedules.

1.06 SCHEDULES AND TIME IMPACT ANALYSIS

A. Develop, maintain, and use approved Construction Program to plan, monitor, and evaluate, and report accomplishment of work.

B. Prepare Construction Program using Critical Path Method, under concepts and methods outlined in AGC Manual.

1. Use the Precedence Diagramming Method (PDM) in preparing the CPM networked schedule.

2. Prepare detailed activity network for accomplishing required work.

3. All activities except Award shall have predecessor activities and all activities except Contract Completion shall have successor activities.

4. Meet contract requirements; milestone(s) in accordance with Commencement, Prosecution, and Completion of Work.

5. Prepare schedule based on required sequence and interdependence of activities that are in compliance with specifications requirements.

6. Include work of subcontractors, Owner interfaces, and contract milestones.

7. Adjust Construction Program/Schedule for seasonal weather conditions and other activities that may impact regular work schedules.

8. Define activities to a level of detail resulting in their durations being no greater than 15 workdays or 20 shifts unless otherwise accepted by Engineer.

a. Durations for administrative activities (e.g., submittals and reviews, fabrication, manufacturing), or other specific activities identified in the contract will not be subject to the 15-workday or 20-shift limitation.

b. Include activities for Engineer reviews and approvals in accordance with Section 01300 - Submittals.

C. Failure to include any element of the work will not release Contractor from completing all required work under the contract.

D. Performance will be evaluated by the Engineer using CPM schedules.

E. Upon request, provide all information and data used to develop and maintain the Construction Program to the Engineer.

F. Include contract title, contract number, and Contractor's name on each sheet.

G. Include table of abbreviations used in the schedule, listed and defined alphabetically.

H. Use a computer software program to perform a mathematical analysis of the scheduling data.

1. Use only finish to start logic relationships between activities. Do not use negative lead or lag times.

2. Use durations in units of whole workdays.

3. Provide best estimate of time required to complete the activity considering the quantity of work and planned resources for the activity.

4. Equate durations of Engineer reviews and other identified actions to the maximum number of calendar days specified in their respective paragraphs.

5. Establish workday calendar(s) and use these in the mathematical analysis to translate the activity's workday duration into calendar dates.

I. Baseline Schedule:

1. Represents Contractor's as-planned approach to accomplishing the work. Do not include actual start dates, percent completes, or actual finish dates.

2. Include interim milestone dates, Owner interface dates, contract completion date, and other time constraints specified in the contract documents.

3. For each activity, display identification number, description, duration, early start date, early finish date, total float, and calendar identification.

J. Updated Schedule:

1. Meet monthly with Engineer at Engineer's project office to review progress made to the end date of the progress payment period.

   a. Establish dates that activities were started and completed and remaining duration for each activity started but not completed during the period.

   b. Discuss and mutually agree upon changes in logic and schedule.

   c. Update schedule and Construction Program database with mutually agreed upon changes.

2. Perform mathematical analysis on the updated database to determine current project status.

3. Following receipt of an executed contract modification, incorporate the activity data and logic relationships stipulated in the modification into the current schedule for inclusion in the next scheduled progress update.

K. Time Impact Evaluation:

1. The Engineer will use time impact evaluation to determine if a time extension or reduction to the contract milestone dates is justified.

2. Provide a time impact evaluation for any contract change, e.g., a change order, proposed modification, or value engineering proposal. Provide a time impact evaluation to support a claim or request for an equitable adjustment to the contract which involves a delay or accelerated schedule.

3. A time impact evaluation is applicable whether the Contractor's current schedule milestone dates are the same as, earlier, or later than, those required under the contract.

4. Changes, additions, or deletions to activities; activity durations; or activity time frames will not automatically mean that an extension or reduction of contract time is warranted or due the Contractor.

5. Time extensions for performance will be considered only to the extent that the Contractor's current scheduled milestone dates exceed the contract milestone dates.

6. For all activities directly affected by the change or delay, include the current and proposed items:

    a. Activity description.

    b. Type and quantities of major pieces of equipment, principal manpower, and pacing material.

    c. Activity duration.

    d. Earnings.

    e. A narrative containing the rationale used in developing the proposed logic relationships and activity data.

7. Float is not for the exclusive use by or benefit of either the Owner or the Contractor.

8. Prepare a single time impact evaluation for all modifications issued after Notice to Proceed (NTP) and prior to approval of the baseline schedule. Submit the time impact evaluation with the first progress update.

9. Perform time impact evaluations using data in the most recent approved schedule prior to change or delay event.

    a. Prepare proposed revised schedule and narrative description describing and highlighting where changes or delays will be included.

    b. Prepare table comparing the results of two mathematical analyses: One using current schedule data from the last approved schedule prior to event requiring evaluation, and one using proposed schedule data incorporating the changes or delays.

        1) Show contract milestones and activities whose periods of performance have shifted as a result of any change which affects production and/or manufacture schedules, material orders, construction seasons, and labor and/or equipment utilization.

        2) Base mathematical analyses on status of work and available float at the time the Owner directs or proposes a change to the work, the Contractor submits a value engineering proposal, or when a delay occurs.

1.07 REVIEW AND EVALUATION

A. Baseline Schedule:

1. Within 20 calendar days after receipt of baseline schedule:

a. The Engineer will accept or reject the proposed baseline schedule.

b. Upon request from the Engineer, meet with Engineer for a joint review of the proposed baseline schedule.

c. If schedule is rejected, revise and resubmit within 7 calendar days following the date of the rejection letter.

2. Do not proceed with onsite work, except mobilization and surveying, until baseline schedule has been approved by the Engineer.

B. Updated schedules:

1. The Engineer will require 7 calendar days after receipt of each monthly update to review and approve or reject the updated schedule.

2. If the updated schedule is rejected, revise and resubmit updated schedule within 7 calendar days following the date of the rejection letter.

1.08 FAILURE TO COMPLY

A. Failure to comply with the requirements of this section shall be grounds for a determination by the Owner that the Contractor is not prosecuting the work with sufficient diligence to ensure completion within the specified time.

B. The Owner may terminate the Contractor’s right to proceed with the work, or any separable part of it, in accordance with the default terms of this contract.

C. The Owner may withhold progress payments.

1.09 PROJECT MEETINGS

A. Preconstruction Conference

1. Prior to the commencement of work at the Site, a preconstruction conference will be held at a mutually agreed time and place. The conference shall be attended by the Contractor's Project Manager, its superintendent, and its Subcontractors as the Contractor deems appropriate. Other attendees will be:

a. Engineer.

b. Representatives of the Owner.

c. Governmental representatives as appropriate.

d. Others as requested by Contractor, Owner, or Engineer.

2. At the preconstruction conference, the Contractor shall submit the following items to the Engineer for review.

   a. A submittal register of shop drawings, samples, and proposed substitute ("or equal") submittals listed in the Bid.

   b. A list of all permits and licenses the Contractor shall obtain indicating the agency required to grant the permit, the expected date of submittal for the permit, and required date for receipt of the permit.

   c. A preliminary construction schedule, including monthly cash flow projection.

3. The purpose of the conference is to designate responsible personnel and establish a working relationship. Matters requiring coordination will be discussed and procedures for handling such matters established. The complete agenda will be furnished to the Contractor prior to the meeting date. However, the Contractor should be prepared to discuss all of the items listed below.

   a. Status of Contractor's insurance and bonds.

   b. Contractor's tentative schedules.

   c. Transmittal, review, and distribution of Contractor's submittals.

   d. Processing applications for payment.

   e. Maintaining record documents.

   f. Critical work sequencing.

   g. Field decisions and Change Orders.

   h. Use of Site, office and storage areas, security, housekeeping, and Owner's needs.

   i. Major equipment deliveries and priorities.

   j. Contractor's assignments for safety and first aid.

   k. Daily Report Form which the Engineer will furnish.

4. The Engineer will preside at the preconstruction conference and will arrange for keeping and distributing the minutes to all persons in attendance.

5. The Contractor and its Subcontractors should plan on the conference taking no less than 1 full working day. The first part of the conference will cover the items listed in paragraph 2, and the following will be spent on reviewing the Drawings and Specifications, in extensive detail, with the Engineer and the Owner.

1.10 PROGRESS MEETINGS

A. The Contractor shall schedule and hold regular on-Site progress meetings at least weekly and at other times as requested by Engineer or as required by progress of the work. The Contractor, Engineer, and all Subcontractors active on the Site shall attend each

meeting. Contractor may at its discretion request attendance by representatives of its Suppliers, manufacturers, and other Subcontractors.

B. The Engineer will preside at the progress meetings and will arrange for keeping and distributing the minutes. The purpose of the meetings is to review the progress of the work, maintain coordination of efforts, discuss changes in scheduling, and resolve other problems which may develop. During each meeting, the Contractor shall present any issues which may impact its progress with a view to resolve these issues expeditiously.

1.11 MEASUREMENT AND PAYMENT

A. Payment:

1. Developing Baseline Schedule: Include in lump sum price offered in the schedule for mobilization and preparatory work.

2. Management, Updating and Implementation of Construction Program: Include as an element of Contractor's overhead.

3. Project and Progress Meetings: Include as an element of Contractor's overhead.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

****END OF SECTION****

SECTION 01300

SUBMITTALS

PART 1 GENERAL

1.01 SUMMARY

A. The Contractor shall furnish all materials and perform all work required for furnishing submittals to the Engineer in accordance with this Section.

1.02 DEFINITIONS

A. Days: Calendar days.

B. Required Submittal Number (RSN): RSN identifies items to be submitted together as a complete submittal.

C. Submittal Types, as listed in Table 01300A – List of Submittals:

1. A – Approval:
    a. Owner approval is required.
    b. Approval however does not relieve the Contractor of the responsibility to perform the work in accordance with the contract documents.
2. I – Informational:
    a. Owner approval is not required.
    b. The Owner may return an Informational submittal or ask for additional information when an Informational submittal does not comply with the Specifications.

1.03 SUBMITTAL REQUIREMENTS

A. In case of conflict between requirements of this section and requirements included elsewhere in these specifications, requirements included elsewhere take precedence.

B. General:

1. Prepare in English.
2. Label with contract number and title, and RSN.
3. Measurement units: US Customary Units.

C. Drawings:

1. Minimum identification in title block:
    a. Contract number and title.
    b. Contractor's or supplier's title and drawing number.
    c. Date.
2. Allow space for review stamps.
3. Size: D size (22 inches by 34 inches).

4. Draw to scale with neat lettering using drafting equipment or computer drafting equipment.

5. Final drawings:

   a. AUTOCAD® format (.dwg) or Drawing Transfer Format (.dxf) on CD-ROM disc.

   b. Original D size (22 inches by 34 inches) plots.

   c. Show as-built changes, including revision dates, made during installation.

D. Product Data:

1. Mark manufacturer's data for commercial products or equipment, such as catalog cut sheets.

   a. Identify manufacturer's name, type, model, size, and characteristics.

   b. Illustrate that product or equipment meets requirements of specifications.

   c. Mark items to be furnished in a manner that will photocopy (no highlighter).

   d. Strike out items that do not apply.

E. Certifications:

1. Submittals requiring certification by a registered professional: Signed and sealed by registered professional.

2. Manufacturer’s certifications: Signed by authorized representative of manufacturer.

F. Manuals:

1. Copies: Bound and indexed.

2. Contents:

   a. Parts identification lists, lists of special tools, and accessories.

   b. Schematics and wiring diagrams.

   c. Detailed instructions for installing, operating, lubricating, and maintaining equipment.

   d. As-built drawings, photographs, and test records or reports if required by the specifications.

G. Photographs:

1. Prints: Professional quality 8-inch by 10-inch color for each listed view.

   a. Identify with adhesive labels on back.

      1) Include contract number, name of equipment and view title.

      2) Do not type directly on back of photograph.

2. Include negatives, or digital files on CD in .jpeg or similar format.

H. Samples and Color Selection Submittals:

1. Label with complete manufacturer's product and color identification.

2. Include type and quantity of materials specified in the referenced section in each "set" of samples.

3. Samples: Representative of product to be installed.

4. Color chips: Sample paint chips. Ink color reproductions are not acceptable.

5. Label each sample, sample kit, set of color chips, or color chart with contract number and title.

6. The Owner will select architectural color and pattern after product approval.

I. Warranties:

1. Provide in accordance with Section 01781 – Project Record Documents.

1.04 SUBMITTALS PROCEDURES

A. With each shop drawing submittal, an accompanying letter of transmittal shall be provided. Shop drawings for equipment shall show all installation dimensions and details for the specific items to be furnished. Catalog cuts or generic drawings will not be accepted. Drawings furnished to the Contractor by the Owner shall not be construed as shop or fabrication drawings.

B. All shop drawings submitted must bear the stamp of approval of the Contractor as evidence that the drawings have been checked by the Contractor. Any drawings submitted without this stamp of approval will not be considered and will be returned to the Contractor for proper resubmission.

C. If the shop drawings show variances from the requirements of the Contract because of standard shop practice or other reason, the Contractor shall make specific mention of such variation(s), including reasons therefor, in the accompanying letter of transmittal in order that, if acceptable, suitable action may be taken for proper adjustment; otherwise the Contractor will not be relieved of the responsibility for executing the work in accordance with the Contract Specifications and Specifications Drawings, even though such shop drawings have been reviewed by the Engineer.

D. Submit a complete electronic set in pdf format of required materials for each RSN as specified in "Submittals Required" column in Table 01300A - List of Submittals. A complete set includes all listed items for RSNs with multiple parts.

E. Include the following information in transmittal letters:

1. Contract number and title.

2. RSN for each attached submittal.

3. Responsible code.

4. Number of sets for each RSN.

5. Identify submittal as initial or resubmittal.

F. More than one RSN may be submitted under a transmittal letter, provided the responsible code is the same.

1.05 REVIEW OF SUBMITTALS

A. Time Required:

1. Shop and fabrication drawings for all items of work to be furnished and installed under this Contract shall be submitted at least thirty (30) calendar days before the specified installation date for the first scheduled shipment of materials and equipment.

2. Submittal review will require 28 days for review of each submittal or resubmittal, unless otherwise specified.

3. Time required for review of each submittal or resubmittal begins when complete sets of materials required for a particular RSN are received and extends through return mailing postmark date.

4. Notwithstanding the above provisions, the Contractor shall be responsible for obtaining proper fit and dimensions, and adequate strength to withstand specified dynamic and static loadings on materials and equipment furnished by him; the Engineer's review will apply only to the general arrangement of the materials or equipment. Fabrication or other work done prior to the Contractor's receipt of the reviewed shop and fabrication drawings will be done entirely at the Contractor's risk. No extension of time will be allowed because of delays caused by revisions to or resubmittals of shop drawings.

B. Time in Excess of Specified:

1. The Owner may extend the contract completion date to allow additional time for completing work affected by excess review time.

   a. The time extension will be to the extent that excess review time caused delay to the contract completion date.

   b. The time extension will not exceed the time used in excess of the specified number of days for review of submittals or resubmittals.

   c. Concurrent days of excess review time resulting from review of two or more separate submittals or resubmittals will be counted only once in extending the contract completion date.

2. No time extension will be allowed if the Contractor fails to make complete approval submittals in sequence and within time periods specified.

3. Adjustment for delay will be made only to the extent that:

   a. Approval was required under the contract, and

   b. Requests for approval were properly and timely submitted and were approved.

C. Return of Submittals:

1. One set of submittals required for approval will be returned either approved, approved subject to identified changes, or not approved.

2. Submittals not approved:

   a. Revise and resubmit for approval.

   b. Show changes and revisions with revision date.

   c. Describe reasons for significant changes in transmittal letter.

   d. Resubmit returned submittals within 28 days after receiving the comments, unless otherwise specified.

   e. Requirements for initial submittals apply to resubmittals.

3. Do not change designs without approval of the Owner and Engineer after approval drawings, documentation, and technical data have been approved.

4. The Owner will acknowledge Informational submittals.

a. Informational submittals will not be returned when they comply with the specifications.

b. Informational submittals that do not comply with the specifications may be returned for resubmittal or additional information may be requested.

1.06 MEASUREMENT AND PAYMENT

A. Cost:

1. Include in prices offered in the schedule for other items of work.

B. Progress Payments:

1. If submittals are not submitted in a timely manner, the Owner may retain appropriate amounts of applicable progress payments.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

Table 01300A - List of Submittals

RSN	Clause or Section Title	Submittals required	Due date or delivery time	Type
01250-1	Construction Program	Representative Information	Within 7 days after receipt of Notice of Award	I
01250-2	Construction Program	Baseline Schedule	Within 21 days after receipt of Notice to Proceed	I
01250-3	Construction Program	Updated Schedule	With monthly requests for progress payments.	A
01250-4	Construction Program	Time Impact Analysis	Within 28 days after the Engineer directs a contract change, with any proposal for a future modification, with any value engineering proposal, or with any request or claim for an equitable adjustment to the contract.	A
01335-1	Material Safety Data Sheets	Complete LHM and MSDS	At least 14 days before jobsite delivery of hazardous material	I
01335-2	Material Safety Data Sheets	Updated LHM and MSDS	At least 14 days before jobsite delivery of hazardous material not previously listed	I
01400-1	Quality Control and Quality Assurance	Quality Control Plan	Submitted and accepted before commencing onsite work	A
01400-2	Quality Control and Quality Assurance	Reports of Testing	Within 7 days after testing	A
01510-1	Temporary Utilities	Construction water diversion facility information	At least 28 days before beginning construction water diversion	A
01527-1	Safety and Health	Safety program	Submitted and accepted within 7 days after award and before commencing onsite mobilization. See section 3 of RSHS	A
01527-2	Safety and Health	Monthly accident summary report	First day of each month	I
01527-3	Safety and Health	Job hazard analysis	Before start of work warranted or identified as potentially hazardous	A
01527-4	Safety and Health	Fire protection plan	Within 30 calendar days after the receipt of the Notice to Proceed	A
01527-5	Safety and Health	Excavation safety plan for pipelines and structures	Not less than thirty (30) days before beginning excavation	A
01528-1	Contractor's Onsite Safety Personnel	Resumes	Prior to employment	I
01528-2	Contractor's Onsite Safety Personnel	Safety inspection reports	At least once each week	I
01529-1	First Aid	First Aid Facilities Plan	Submitted and approved before start of operations	A

RSN	Clause or Section Title	Submittals required	Due date or delivery time	Type
01550-1	Vehicular Access and Parking	Access roads and haul routes plan	At least 28 days before beginning use of access roads	A
01550-2	Vehicular Access and Parking	Preconstruction video and photo survey	At least 28 days before beginning onsite construction activities	I
01550-3	Vehicular Access and Parking	Post construction video and photo survey	Within 2 days after completing onsite construction activities	I
01555-1	Traffic Control	Traffic control plan	At least 28 days before affecting public traffic	A
01562-1	Environmental Controls	Air quality dust control plan	At least 35 days before start of onsite construction	A
01562-2	Environmental Controls	Authority to construct (ATC)/Permit to operate (PTO)	At least 35 days before start of onsite construction	A
01562-3	Environmental Controls	Equipment inventory	At least 35 days before start of onsite construction	A
01562-4	Environmental Controls	Air quality conformance	At least 35 days before start of onsite construction	A
01563-1	Water Pollution Control	Pollution prevention plan	At least 28 days before start of onsite construction work	A
01563-2	Water Pollution Control	Spill Prevention Control and Countermeasure Plan (SPCC)	At least 28 days before delivery or storage of oil	A
01568-1	Site Security	Security plan	At least 35 days before start of onsite construction	A
01568-2	Site Security	Information security plan	At least 35 days before start of onsite construction	A
01580-1	Project Identification Signage	Project Identification Sign “mock-up” and proposed materials.	Within 30 days after receipt of Notice to Proceed	A
01721-1	Surveying	Surveying plan	At least 35 days before beginning survey work	A
01721-2	Surveying	Resume	At least 35 days before beginning survey work; At least 35 days before personnel change	I
01721-3	Surveying	Accuracy check results	At least 14 days before beginning survey work	I
01721-4	Surveying	Completed and reduced survey notes	Within 2 days of completing and reducing notes	I
01721-5	Surveying	Original field survey books	Within 2 days of completing a book	I
01721-6	Surveying	Quantity survey notes and computations	Accompanying progress payment requests	I
01721-7	Surveying	Workday's survey notes	At conclusion of workday if requested by Owner	I
01725-1	Protection of Existing Installations	Plan for protecting existing installations	At least 28 days before commencing on site construction work	A

RSN	Clause or Section Title	Submittals required	Due date or delivery time	Type
01740-1	Cleaning	Plan for maintaining site	At least 35 days before start of onsite construction work	A
01740-2	Cleaning	Waste production and disposal records	Within 7 days of waste disposal	I
01740-3	Cleaning	Hazardous waste manifest	Within 7 days of hazardous waste disposal	I
01740-4	Cleaning	Environmental consultant resume	At least 35 days before beginning environmental assessment	I
01740-5	Cleaning	Environmental site assessment	Within 14 days of completion of work	I
01781-1	Project Record Documents	Progress as-built drawings	Within 14 days after construction of a particular structure or work is completed	I
01781-2	Project Record Documents	Final as-built drawings	Within 14 days of completion of work	I
01781-3	Project Record Documents	Warranties	Within 7 days of completion of each feature of work requiring warranty	I
02060-1	Site Preparation and Selective Demolition	As specified in Section 02060, Subsection 1.02.	In accordance with Section D-8 of the Special Conditions.	A
02140-1	Dewatering	As specified in Section 02140, Subsection 1.02.	In accordance with Section D-8 of the Special Conditions.	A
02150-1	Erosion Protection and Sediment Control	As specified in Section 02150, Subsection 1.03.	In accordance with Section D-8 of the Special Conditions.	A
02200-1	Earth Work	As specified in Section 02200, Subsection 1.04.	In accordance with Section D-8 of the Special Conditions.	A
02490-1	Precast Concrete Manholes and Vaults	As specified in Section 02490, Subsection 1.03.	In accordance with Section D-8 of the Special Conditions.	A
02730-1	Asphalt Concrete	As specified in Section 02730, Subsection 1.03.	In accordance with Section D-8 of the Special Conditions.	A
03310-1	Cast-in-Place Concrete	As specified in Section 03310, Subsection 1.03.	In accordance with Section D-8 of the Special Conditions.	A
03315-1	Cement-Based Non-Shrink Grout	As specified in Section 03315, Subsection 1.04.	In accordance with Section D-8 of the Special Conditions.	A
09900-1	Protective Field Coating	As specified in Section 09900, Subsection 1.05.	In accordance with Section D-8 of the Special Conditions.	A
15000-1	Piping – General	As specified in Section 15000, Subsection 1.05.	In accordance with Section D-8 of the Special Conditions.	A
15005-1	Pipeline Pressure and Leakage Testing	As specified in Section 15005, Subsection 1.03.	In accordance with Section D-8 of the Special Conditions.	A
15008-1	Disinfection of Water Distribution System	As specified in Section 15008, Subsection 1.03.	In accordance with Section D-8 of the Special Conditions.	A
15018-1	Polyvinyl Chloride (PVC) SCH 80 Pipe	As specified in Section 15018, Subsection 1.04.	In accordance with Section D-8 of the Special Conditions.	A
15025-1	Steel Pipe	As specified in Section 15025, Subsection 1.04.	In accordance with Section D-8 of the Special Conditions.	A

RSN	Clause or Section Title	Submittals required	Due date or delivery time	Type
15030-1	Polyvinyl Chloride (PVC) C900 Pressure Pipe	As specified in Section 15030, Subsection 1.04.	In accordance with Section D-8 of the Special Conditions.	A
15101-1	AWWA Butterfly Valves	As specified in Section 15101, Subsection 1.03.	In accordance with Section D-8 of the Special Conditions.	A
15108-1	Air Release and Combination Air Valves	As specified in Section 15108, Subsection 1.03.	In accordance with Section D-8 of the Special Conditions.	A
15112-1	Backflow Prevention Assemblies	As specified in Section 15112, Subsection 1.04.	In accordance with Section D-8 of the Special Conditions.	A
15119-1	Pressure Reducing Valves	As specified in Section 15119, Subsection 1.02.	In accordance with Section D-8 of the Special Conditions.	A
15180-1	Valve Operators	As specified in Section 15180, Subsection 1.03.	In accordance with Section D-8 of the Special Conditions.	A
15206-1	Gate Valves	As specified in Section 15206, Subsection 1.02.	In accordance with Section D-8 of the Special Conditions.	A

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SECTION 01335

MATERIAL SAFETY DATA SHEETS

PART 1 GENERAL

1.01 SUMMARY

A. The Contractor shall submit a List of Hazardous Materials (LHM) and Material Safety Data Sheets (MSDS) in accordance to this section.

1.02 DEFINITIONS

A. LHM: List of Hazardous Materials

B. MSDS: Material Safety Data Sheet.

1.03 SUBMITTALS

A. Submit the following in accordance with Section 01300 - Submittals.

B. Complete LHM and MSDS.

C. Updated LHM and MSDS:

1.04 DELIVERY

A. Do not deliver hazardous materials to jobsite which are not included on the original or previously updated LHM and MSDS before receipt of updated LHM and MSDS by the Engineer.

1.05 MEASUREMENT AND PAYMENT

A. Payment:

1. Include in prices offered in the schedule for other items of work.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

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SECTION 01400

QUALITY CONTROL AND QUALITY ASSURANCE

PART 1 GENERAL

1.01 SUMMARY

A. Specific quality control requirements for the work are indicated throughout the Contract Documents.

1. The requirements of this Section are primarily related to performance of the work beyond furnishing of manufactured products.

2. The terms quality control and quality assurance include inspection, sampling and testing, and associated requirements.

3. The Engineer will provide inspection as indicated below and in accordance with Article 8 of the General Conditions. However, the Contractor is ultimately responsible for the quality necessary to meet the contract requirements.

B. Unless otherwise indicated, all products, materials, and equipment shall be subject to inspection by the Engineer at the place of manufacture.

1. The presence of the Engineer at the place of manufacturer, however, shall not relieve the Contractor of the responsibility for providing products, materials, and equipment which comply with all requirements of the Contract Documents.

2. Compliance is a duty of the Contractor and said duty shall not be avoided by any act or omission on the part of the Engineer.

C. Unless otherwise indicated, all sampling and testing will be in accordance with the methods prescribed in the current standards of ASTM, as applicable to the class and nature of the article or materials considered; however, the Engineer reserves the right to use any generally-accepted system of sampling and testing which will assure that the quality of the workmanship is in full accord with the Contract Documents.

D. Any waiver by the Engineer of any specific testing or other quality assurance measures, whether or not such waiver is accompanied by a guarantee of substantial performance as a relief from the testing or other quality assurance requirements originally indicated, and whether or not such guarantee is accompanied by a performance bond to ensure execution of any necessary corrective or remedial work, shall not be construed as a waiver of any requirements of the Contract Documents.

E. Notwithstanding the existence of such waiver, the Engineer reserves the right to make independent investigations and tests, and failure of any portion of the work to meet any of the requirements of the Contract Documents, shall be reasonable cause for the Engineer to require the removal or correction and reconstruction of any such work in accordance with the General Conditions.

F. Inspection and testing laboratory service shall comply with the following:

1. Unless indicated otherwise by the Technical Specifications, the Engineer will perform inspection and testing for all earthwork and concrete. The testing

methods used and the frequency of the tests will be based on the requirements shown in Section 02200, Earthwork.

2. The Contractor shall cooperate with the Engineer and furnish samples of materials, design mix, equipment, tools, storage, and assistance as requested.

3. The Contractor shall notify Engineer 24 hours prior to the expected time for operations requiring inspection and laboratory testing services.

4. Retesting required because of non-conformance to requirements shall be performed by the Engineer. The Contractor shall bear all costs from such retesting.

5. For samples and tests required for Contractor's use, the Contractor shall make arrangements with an independent firm for payment and scheduling of testing.

6. The cost of sampling and testing for the Contractor's use shall be the Contractor's responsibility.

G. The Contractor shall inspect materials or equipment upon the arrival on the job site and immediately prior to installation and reject damaged and defective items.

H. The Contractor shall verify measurements and dimensions of the work, as an integral step of starting each installation.

I. Where installations include manufactured products, the Contractor shall comply with manufacturer's applicable instructions and recommendations for installation, to whatever extent these are more explicit or more stringent than applicable requirements indicated in Contract Documents.

1.02 SUBMITTALS

A. Submit the following in accordance with Section 01300 - Submittals.

B. Quality Control Plan:

1. Submit a quality control plan to the Engineer for review and approval prior to the commencement of work.

2. The plan should include, but not be limited to, detailed procedures, instructions or statements covering their organization, and facilities proposed to ensure that the work is carried out in accordance with the Contract Documents.

C. Reports of Testing:

1. Reports of testing, if the Contractor's responsibility, will be submitted to the Engineer in triplicate, indicating observations and results of tests and indicating compliance or non-compliance with Contract Documents.

1.03 MEASUREMENT AND PAYMENT

A. Payment:

1. Include in prices offered in the schedule for other items of work.

2. No direct payment will be made to the Contractor for providing quality control.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

****END OF SECTION****

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SECTION 01510

TEMPORARY UTILITIES

PART 1 GENERAL

1.01 SUMMARY

A. The Contractor shall make all necessary arrangements and shall provide all temporary electricity and water required for construction and testing.

1.02 REFERENCES

A. Institute of Electrical and Electronics Engineers (IEEE)

1. IEEE C2-2007 National Electrical Safety Code (NESC)7

1.03 SUBMITTALS

A. Submit the following in accordance with Section 01300 – Submittals.

B. Construction Water Diversion Facility Information

1. Location and capacity of diversion facility.

2. Points of withdrawal for construction water.

1.04 TEMPORARY ELECTRICITY

A. Pay all fees for electric power.

B. Provide generators, transmission lines, distribution circuits, transformers, and other electrical equipment and facilities required for obtaining power and distributing power to points of use.

C. Comply with IEEE C2 clearances and spacing for temporary communications and supply lines.

D. Remove temporary equipment and facilities upon completion of work under this contract.

1.05 TEMPORARY WATER

A. The Contractor shall provide, at his expense, means of conveying water to points of use. All costs and methods associated with obtaining and conveying construction water shall be the responsibility of the Contractor.

B. Remove temporary equipment and facilities upon completion of work under this contract.

1.06 MEASUREMENT AND PAYMENT

A. Payment:

1. Include in prices offered in the schedule for other items of work.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

****END OF SECTION****

SECTION 01527

SAFETY AND HEALTH

PART 1 GENERAL

1.01 SUMMARY

A. The Contractor shall be solely and completely responsible for the conditions of the job site, including safety of all persons and property during performance of the work.

1.02 REFERENCES

A. None.

1.03 SUBMITTALS

A. Submit the following in accordance with Section 01300 - Submittals.

B. Safety program:

1. Written safety program.

C. Monthly accident summary report.

D. Job hazard analysis.

E. Fire protection plan.

F. Excavation Safety Plan for Pipelines and Structures.

1. In accordance with Construction Safety Orders of OSHA, the Federal Safety Standards of the Department of Health, Education and Welfare.

1.04 PROJECT CONDITIONS

A. Provide and maintain a work environment and procedures that will:

1. Safeguard the public and Owner's personnel exposed to Contractor operations and activities.
2. Avoid interruptions of site operations and delays in project completion dates.
3. Control costs in contract performance.

B. Do not require persons employed in performance of this contract, including subcontracts, to work under conditions which are unsanitary, hazardous, or dangerous to the employee’s health or safety.

C. The Contractor is responsible for being cognizant of, and insuring compliance with, the requirements set forth above. Such responsibility shall apply to both Contractor’s and subcontractor’s operations.

D. When violations of the safety and health requirements contained in these specifications or standards referenced in subparagraph C are called to his attention by the Engineer or his authorized representatives, the Contractor shall immediately correct the condition to

which attention has been directed. Such notice either oral or written, when served on the Contractor or his representative(s), shall be deemed sufficient.

E. In the event the Contractor fails or refuses to promptly comply with the compliance directive issued under subparagraph D above, the Owner or its authorized representative may issue an order to stop all or any part of the work. When satisfactory corrective action is taken, an order to resume work will be issued. The Contractor shall not be entitled to any extension of time, nor to any claim for damage or to additional compensation by reason of either the directive or the stop order. Failure of the Owner or its representative to order discontinuance of any or all of the Contractor's operations shall not relieve the Contractor of his responsibility for the safety of personnel and property.

F. Maintain accurate record of and report to the Engineer the following occurrences during performance of this contract:

1. Death.
2. Occupational disease.
3. Traumatic injury to employees or the public.
4. Property damage in excess of $2,500.

G. Safety

1. The Contractor shall be solely and completely responsible for the conditions of the job site, including safety of all persons and property during performance of the work. This requirement shall apply continuously and not be limited to normal working hours.
2. Safety provisions shall conform to all applicable Federal, State, County and local laws, ordinances, and codes and to other rules of law applicable to the work.
3. During the performance of all work required under the Contract, the Contractor shall comply with the California Division of Occupational Safety and Health (Cal/OSHA) Standards.
4. The duty of the Engineer to conduct construction review of the Contractor’s performance and the undertaking of inspections by the Engineer or the giving of instructions as authorized herein is not intended to include review of the adequacy of the Contractor’s safety measures in, on, or near the construction site and shall not be construed as supervision of the actual construction nor make the Engineer or the Owner responsible for providing a safe place for the performance of work by the Contractor, subcontractors, or suppliers; or for access, visits, use, work, travel or occupancy by any person.

H. Accidents

1. The Contractor shall provide, at the site, such equipment and medical facilities as are necessary to supply first aid service to anyone who may be injured in connection with the work in accordance with Section 01529 – First Aid.
2. The Contractor must report no later than 24 hours in writing to the Engineer all accidents whatsoever arising out of, or in connection with the performance of the work, whether on or adjacent to the site, which cause death, personal injury, or property damage, giving full details and statements of witnesses.
3. In addition, if death or serious injury or serious damage are caused, the accident shall be reported immediately by telephone or messenger to the Engineer. If any claim is made by anyone against the Contractor or any subcontractor on account

of any accident, the Contractor shall promptly report the facts in writing to the Engineer, giving full details of the claim.

I. Notice of Latent or Hazardous Conditions

1. Where the contract specifications require digging trenches or excavating deeper than four (4) feet below the surface, the Contractor shall promptly, and before the following conditions are disturbed, notify the Owner, in writing, of any:

   a. Material that the Contractor believes may be material that is classified as hazardous waste that is required to be removed to a prescribed and regulated disposal site in accordance with provisions of existing law.

   b. Subsurface or latent physical conditions at the site differing from those indicated in the plans and specifications.

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

2. Upon receipt of written notice by the Contractor of such conditions, the Owner shall promptly investigate the conditions.

3. If the Owner finds that the conditions do materially so differ, or do involve hazardous waste, and cause a decrease or increase in the Contractor's cost of, or the time required for, performance of any part of the work, the Owner will issue a change order under the procedures described in the Contract.

4. In the event a dispute arises between the Owner and the Contractor as to whether the conditions materially differ, or involve hazardous waste, or cause decrease or increase in the cost of or time required for performance of any part of the work, the Contractor shall not be excused from any scheduled completion date provided for by the Contract, and Contractor shall retain any and all rights provided either under the Contract or by law which pertain to the resolution of disputes and protests between the Owner and the Contractor.

J. Fire Protection

1. The Contractor shall use all precautions to prevent fires and shall provide adequate facilities and equipment for extinguishing fires at no cost to the Owner.

2. Waste disposal by burning will not be allowed at any time.

3. Within thirty (30) calendar days after the receipt of the Notice to Proceed, the Contractor shall furnish to the Engineer for review a Fire Protection Plan.

K. Excavation Safety Plan for Pipelines and Structures

1. Not less than thirty (30) days before beginning excavation required under this Contract, the Contractor shall furnish to the Engineer for review working Drawings of his excavation safety plan.

2. Contractor shall not begin excavation until said plan has been reviewed by the Engineer.

3. The excavation safety plan for pipelines and structures shall include all of the Contractor's excavation operations, and working Drawings shall be a detailed plan showing the design or shoring, bracing, sloping or other provisions to be made for worker protection from the hazard of caving ground.

4. Plans varying from the shoring system standards established by either the Construction Safety Orders of OSHA or the Federal Safety Standards of the Department of Health, Education and Welfare, must be prepared by a registered civil or structural engineer registered in the State of California.

L. Safety of the Public

1. Keep roads subject to interference by the work open or provide and maintain suitable temporary passages through the work.

2. Provide, erect, and maintain all necessary barricades, suitable and sufficient flasher lights, flag persons, danger signals, and signs, and take all necessary precautions for the protection of the work and the safety of the public.

3. Protect roads closed to traffic by effective barricades. Place acceptable warning and detour signs. Illuminate all barricades and obstructions at night and keep all lights burning from sunset until sunrise.

4. No construction work along public or private roads may proceed until the Contractor has proper barricades, flasher lights, flag persons, signals, and signs in place at the construction site.

5. Specific signs, signals, barricades, and flag persons requirements shall be as required by the State of California Department of Transportation.

1.05 MEASUREMENT AND PAYMENT

A. Cost:

1. Include in prices offered in the schedule for other items of work.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

****END OF SECTION****

SECTION 01528

CONTRACTOR'S ONSITE SAFETY PERSONNEL

PART 1 GENERAL

1.01 SUMMARY

A. Prior to the start of construction, the Contractor shall employ a qualified and competent on-site safety engineer who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees.

1.02 SUBMITTALS

A. Submit the following in accordance with Section 01300 - Submittals.

B. The Contractor's Onsite Safety Representative's qualifications shall be submitted to the Engineer for review and approval prior to employment.

C. Resumes:

1. Contractor's Onsite Safety Representative.

D. Safety Inspection Reports:

1. Prepare and submit at least once a week.
2. Include a list of noted deficiencies, their abatement dates, and follow-up action for all jobsite activities.
3. Base inspection report on findings of jobsite walk-through with District or Engineer personnel.

1.03 QUALIFICATIONS

A. Contractor's Onsite Safety Representative:

1. Competent supervisory employee with minimum three years appropriate level of safety related training and experience.
2. Capable of identifying existing and predictable hazards in the surrounding or working conditions which are unsanitary, hazardous, or dangerous to employees.
3. Fully qualified by possession of a recognized degree, certificate, or professional standing; or by extensive knowledge, training, and experience has successfully demonstrated ability to solve or resolve problems relating to safety.
4. Safety representative requirements can be met by engaging full-time services of a safety consultant.

1.04 APPLICATION

A. Contractor's Onsite Safety Representative authorities, duties, and responsibilities:

1. Review and approve the Contractor's Safety Program prior to submittal.
2. Full-time job shall be safety and accident prevention. The safety representative shall not supervise or perform other work.

3. Empowered with sufficient line authority to effectively implement Contractor's Safety Program.
4. Before start of construction: Identify existing and predictable unsanitary, hazardous, or dangerous conditions.
5. Full authorization to correct unsafe acts on the spot.
6. Prepare and submit Job Hazard Analysis (JHA) in accordance with Section 01527 – Safety and Health.

a. Consult with a safety or health professional if necessary, and assess the workplace and work activities to determine if hazards are present or are likely to be present. Develop a written JHA if warranted by identified or potential hazards.

7. Oversee monitoring of excavations. Implement additional controls as required.
8. At least once each week:
    a. Conduct safety inspection of worksites, materials, and equipment.
    b. Prepare detailed safety inspection report listing noted deficiencies, their abatement dates, and follow up action.
9. Onsite during any and all construction activities.

1.05 QUALITY ASSURANCE

A. Contractor's Onsite Safety Representative:

1. The effectiveness of the Contractor's Onsite Safety Representative in prosecuting the safety program will be subject to continued review and approval by the Engineer.

B. Safety Program:

1. The effectiveness of the Contractor's Safety Program will be subject to continued review and approval by the Engineer.

1.06 MEASUREMENT AND PAYMENT

A. Payment:

1. Include in prices offered in the schedule for other items of work.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

****END OF SECTION****

SECTION 01529

FIRST AID

PART 1 GENERAL

1.01 SUMMARY

A. The Contractor shall establish onsite first-aid facilities in accordance with this Section.

1.02 REFERENCE

A. None.

1.03 SERVICE

A. Do not perform onsite work until first aid plans have been submitted, approved by the Engineer, and implemented on site.

1.04 SUBMITTALS

A. Submit the following in accordance with Section 01300 - Submittals.

B. First Aid Facilities Plan:

1. Describe facilities for providing medical attention for injured or disabled employees.

1.05 AVAILABILITY

A. Make facilities and services available for providing emergency aid to employees, subcontractor employees, and Owner and Engineer employees.

B. Provide services free of charge to Owner and Engineer employees injured on job.

1.06 MEASUREMENT AND PAYMENT

A. Payment:

1. Include in prices offered in the schedule for other items of work.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

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SECTION 01550

VEHICULAR ACCESS AND PARKING

PART 1 GENERAL

1.01 SUMMARY

A. The Contractor shall make its own investigation of the condition of available public and private roads and of clearances, restrictions, bridge load limits, and other limitations affecting transportation and ingress and egress to the site of the Work.

1.02 REGULATORY REQUIREMENTS

A. Meet requirements established by jurisdictional authority for use of existing roadways and haul routes; including seasonal or other limitations or restrictions, payment of excess size and weight fees, and posting of bonds conditioned upon repair of damage.

B. Comply with applicable regulations for haul routes over public highways, roads, or bridges.

1.03 SUBMITTALS

A. Submit the following in accordance with Section 01300 – Submittals.

B. Access Roads and Haul Routes Plan. Include, as a minimum, the following:

1. Plan for use of access and haul routes.
2. Provide haul patterns for earthwork and concrete lining activities.
3. Ingress and egress procedures for haul trucks.
4. Road conditions inspections and repairs.
5. Truck size limitations per jurisdictional authority.
6. Layout and details of all temporary roads, including earthwork.
7. On-site and off-site parking.

C. Preconstruction Video and Photo Survey.

1. Video and photographs of preconstruction conditions of roadways proposed for use for access to the jobsite.

D. Post Construction Video and Photo Survey.

1. Video and photographs of post construction conditions of roadways proposed for use for access to the jobsite.

1.04 SITE CONDITIONS

A. All work on the rights-of-way necessary for access to the site shall be performed by the Contractor.

B. Access roads include roadways to the site and within the work site area.

1.05 MEASUREMENT AND PAYMENT

A. Payment:

1. Include in prices offered in the schedule for other items of work, except as specified.

PART 2 PRODUCTS

2.01 MATERIALS

A. Materials to maintain and repair existing roadways, parking areas, and haul routes: In accordance with requirements of jurisdictional authority.

B. Materials to construct, maintain, and repair temporary roadways, parking areas, and haul routes: As approved by the Engineer.

C. Materials to maintain roadways and parking areas constructed under this contract and used by the Contractor for construction work: In accordance with specified requirements for construction of those roadways and parking areas.

PART 3 EXECUTION

3.01 EXAMINATION

A. Investigate condition of available public or private roads for clearances, restrictions, bridge-load limits, bond requirements, and other limitations that affect or may affect access and transportation operations to and from the jobsite.

B. Coordinate with the appropriate railroad company when working within the railroad right of way.

3.02 RECORDS

A. Perform preconstruction video and photo survey of surface conditions of roadways proposed for use for access to the jobsite.

1. DVD format.
2. Label:
    a. Contract number and title.
    b. Contractor’s name.
    c. Date the video is made.
    d. Preface video with this information.

B. Perform post construction video and photo survey of surface conditions of roadways proposed for use for access to the jobsite.

1. DVD format.
2. Label:
    a. Contract number and title.
    b. Contractor’s name.
    c. Date the video is made.

d. Preface video with this information.

C. Make camera movement speed for videos such that areas can be readily identified and located as approved by the Engineer.

D. The Engineer will be present during preconstruction video and photo survey and post construction video and photo survey.

3.03 ESTABLISHED ROADWAYS

A. Established roadways are available for the Contractor's use subject to existing restrictions and approval of the Engineer.

B. Designated existing onsite roadways and driveways may be used for construction traffic. Tracked vehicles are not allowed.

3.04 TEMPORARY ROADWAYS AND PARKING AREAS

A. Roadways:

1. Construct temporary all-weather surfaced roadways for access from public thoroughfares to serve construction area, of a width and load-bearing capacity to provide unimpeded traffic for construction purposes.

2. Construct temporary bridges or culverts at stream crossings or cross-drainage channels to allow for unimpeded surface drainage.

B. Construction Parking Areas:

1. Arrange for temporary parking areas at approved staging areas to accommodate use of construction personnel.

2. Provide additional offsite parking when site space is not adequate.

3. Locate as approved by the Engineer.

3.05 ROADWAYS CONSTRUCTED UNDER THE CONTRACT

A. Roadways constructed under these specifications will be available for the Contractor's use in accordance with requirements of this section.

B. Prior to acceptance, permanent roads may be used for construction traffic.

1. Avoid traffic loading beyond design capacity.

2. Steel tracked vehicles not allowed.

3. Rubber tracked vehicles are acceptable.

4. Contractor is responsible for damage caused by construction operations.

C. After completion, roadways constructed under the contract will be accepted by the Owner and Engineer and will be available for use by the public and by the Contractor in the Contractor's construction operations for the remaining work under the contract.

3.06 HAUL ROUTES

A. Perform work on rights-of-way established by the Owner as necessary to construct and maintain any haul roads, access roads, bridges, or drainage structures required for

establishment and use of haul routes for construction operations, except no new roads shall be constructed, or existing roads widened, without obtaining a temporary easement from the property owner, which must include all environmental and cultural clearances.

B. Use existing available public highways, roads, or bridges as haul routes subject to applicable local regulations.

C. Use established haul patterns in accordance with approved plan. Discuss any proposed changes in haul patterns with the Engineer before making any changes.

D. Minimize interference with or congestion of local traffic.

E. Provide barricades, flaggers, and other necessary precautions for safety of the public.

3.07 MAINTENANCE

A. Maintain roadways and haul routes in a sound, smooth condition.

B. Maintain roadbed, side slopes, structures, and surfacing of roads until completion and acceptance of all work under this contract. As approved by the Engineer, defer until latest practicable date within specified completion period, placement of surfacing on roads subject to heavy and deteriorating use by the Contractor's construction operations or equipment.

C. Maintain surfacing of gravel-surfaced roads in a smooth condition until completion and acceptance of all work under this contract.

3.08 REPAIR

A. Promptly repair ruts, broken pavement, potholes, low areas with standing water, and other deficiencies to maintain road surfacing and drainage in original or specified condition.

B. Return closed roads to original condition before reopening.

3.09 REMOVAL

A. Remove materials used to construct temporary roadways, parking areas, and haul routes prior to contract completion. Recycle salvageable materials as approved by the Engineer.

B. Remove temporary underground work and compacted materials to a depth of 2 feet, fill and regrade site as specified.

****END OF SECTION****

SECTION 01555

TRAFFIC CONTROL

PART 1 GENERAL

1.01 SUMMARY

A. The Contractor shall design, furnish, install, maintain, and operate all necessary facilities to provide traffic control for proper construction of the work.

1.02 REFERENCES

A. California Department of Transportation MUTCD, latest edition.

1.03 SUBMITTALS

A. Submit the following in accordance with Section 01300 - Submittals.

B. Traffic control plan.

1.04 MEASUREMENT AND PAYMENT

A. Payment:

1. Include in prices offered in the schedule for other items of work.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.01 TRAFFIC CONTROL

A. Meet requirements of MUTCD.

B. Provide cones, delineators, concrete safety barriers, barricades, flasher lights, danger signals, signs, and other temporary traffic control devices as required to protect work and public safety.

C. Provide flaggers and guards as required to prevent accidents and damage or injury to passing traffic.

D. Do not begin work along public or private roads until proper traffic control devices for warning, channeling, and protecting motorists are in place in accordance with approved traffic control plan.

E. Maintain traffic flow and conduct construction operations to minimize obstruction and inconvenience to public traffic.

F. Provide unobstructed, smooth, and dustless passageway for two lanes of traffic through construction operations.

G. Construct temporary access roads with two lanes of traffic between existing roadway and staging areas.

H. Maintain convenient access to roadways along line of work.

I. Protect roads closed to traffic with effective barricades and warning signs. Illuminate barricades and obstructions from sunset to sunrise.

J. Remove traffic control devices when no longer needed.

****END OF SECTION****

SECTION 01562

ENVIRONMENTAL CONTROLS

PART 1 GENERAL

1.01 SUMMARY

A. The Contractor shall be solely and completely responsible for providing environmental controls during performance of the work in accordance with this Section.

1.02 REFERENCES

A. None.

1.03 SUBMITTALS

A. Submit the following in accordance with Section 01300 - Submittals.

B. Air Quality Dust Control Plan:

C. Authority to Construct (ATC)/Permit to Operate (PTO):

1. For fixed or portable plant equipment operations for site produced concrete and soil cement.

D. Equipment Inventory:

1. All off-road equipment greater than 50 horsepower used for more than an aggregate of 40 hours or more during any portion of this project.
2. Include horsepower rating, engine production year, emission factors, and projected hours of use and fuel throughput for each piece of equipment.
3. Updated monthly.

E. Air Quality Conformance:

1. Calculations summing total emissions, showing daily, monthly, and annual totals.
2. Updated monthly.

1.04 REGULATORY REQUIREMENTS

A. Comply with Federal, State, and local laws and regulations.

B. The Engineer may stop any construction activity in violation of Federal, State, or local laws and additional expenses resulting from work stoppage will be responsibility of Contractor.

1.05 AIR QUALITY

A. The Contractor shall adhere to the appropriate Federal, State and local guidelines for levels of personal protective equipment (i.e. dust masks and protective eyewear to minimize contact with airborne dust) to be used by all persons entering or working in the project area.

B. The Contractor shall provide lined secondary containment any fuels stored in the project area

C. The Contractor shall use clearly marked above-ground containers provided with secondary containment for on on-site storage of fuel and lubricants.

D. The Contractor shall have any hazardous wastes properly containerized, labeled, and transported to a permitted disposal facility in accordance with Federal, state and local regulations.

1.06 DUST CONTROL

A. Provide dust control and abatement during construction in compliance with all local, State, and Federal laws.

B. For all construction within Kern County, the Contractor shall obtain an Encroachment Permit and Dust Control Permit.

C. All active construction areas, including on-site haul roads, staging areas, and storage piles, shall be effectively stabilized against dust emissions by applying water, chemical suppressants, and/or other reasonable measures.

D. Apply water and/or chemical suppressants on all unpaved haul roads that are not public roads. Speeds of less than 25 miles per hour shall be maintained on unpaved public roads that are used for construction haulage. Trucks hauling soil or sediment shall be covered.

E. Prevent, control, and abate dust pollution within construction limits and on rights-of-way provided by the Engineer or elsewhere during performance of work. Land disturbances shall be limited to areas needed for construction.

F. Provide labor, equipment, and materials, and use efficient methods wherever and whenever required to prevent dust nuisance or damage to persons, property, or activities, including, but not limited to, wildlife habitats, dwellings and residences, agricultural activities, recreational activities, traffic, and similar conditions.

G. Provide means for eliminating atmospheric discharges of dust during mixing, handling, and storing of cement, pozzolan, and concrete aggregate.

1.07 AIR POLLUTION CONTROL

A. Use methods and devices to prevent, control, and otherwise minimize atmospheric emissions or discharges of air contaminants.

B. Do not operate equipment and vehicles that show excessive exhaust gas emissions until corrective repairs or adjustments reduce such emissions to acceptable levels.

C. Burning of cleared materials, combustible construction materials, and rubbish shall be in accordance with Section 01740, Cleaning.

D. Reduce unnecessary engine idling.

1.08 NOISE CONTROL

A. Ensure exhaust systems on equipment are muffled in accordance with manufacturer's specifications.

B. Properly designed engine enclosures and intake silencers shall be used where appropriate and be in good working order.

C. Equipment shall be maintained on a regular basis. The purchase of new equipment shall be subject to new product noise emission standards.

D. Stationary equipment shall be located as far away from residences as possible.

E. For all construction within Kern County, construction shall comply with the Kern County Noise Ordinance. Construction activities shall be limited to the daytime hours specified in the ordinance.

F. Staging areas shall be located as far away from residences as possible.

1.09 LIGHT CONTROL

A. All site facilities shall be color treated with non-reflective materials to avoid off-site glare, except where safety is an issue.

B. Night lighting shall be directed downward and inward through use of standard light shields or hoods toward the area to be illuminated.

1.10 TEMPORARY POWER

A. When line power is available in accordance with Section 01510 – Temporary Utilities, the Contractor shall utilize this line power in lieu of generator power for fixed or portable plant equipment operations for site produced concrete and soil cement.

1.11 PRESERVATION OF HISTORICAL AND ARCHEOLOGICAL RESOURCES

A. Federal legislation provides for the protection and preservation of historic and prehistoric remains and artifacts (cultural resources), which might otherwise be lost due to disturbance of the terrain as a result of any construction project authorized or funded by a Federal Agency.

B. Should the Contractor, or any of the Contractor's employees, or parties operating or associated with the Contractor, in the performance of this contract discover evidence of a burial, human skeletal remains, or possible scientific, prehistorical, historical, or archeological data, immediately cease work at that location and notify the Engineer.

C. Exercise care so as not to disturb or damage burials, human skeletal remains, artifacts or fossils uncovered during excavation operations, and provide such cooperation and assistance as may be necessary to preserve the findings for removal or other disposition by the Engineer.

D. Any persons who, without permission, injures, destroys, excavates, appropriates, or removes any burial or human skeletal remains, historical or prehistorical artifact, object of antiquity, or archaeological resource on the public lands is subject to arrest and penalty of law.

E. The Contractor shall be principally responsible for all costs of mitigation and/or restoration related to the unauthorized actions of its employees as identified above. Contractor shall be required to pay for unauthorized damage and mitigation costs to cultural resources (historical and archeological resources) as a result of unauthorized activities that damage cultural resources.

F. Where appropriate by reason of discovery, the Engineer may order delays in the time of performance or changes in the work, or both. If such delays or changes are ordered, an equitable adjustment will be made in the contract in accordance with the applicable clauses of the contract.

G. The Contractor shall insert this paragraph (1.11) in all subcontracts which involve the performance of work on the terrain of the site and associated work areas.

1.12 MEASUREMENT AND PAYMENT

A. Cost:

1. Include in the prices offered in the schedule for other items of work, except as specified.

2. Costs for damages and work stoppage are the Contractor's responsibility.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

****END OF SECTION****

SECTION 01563

WATER POLLUTION CONTROL

PART 1 GENERAL

1.01 SUMMARY

A. The Contractor shall be solely and completely responsible for providing water pollution control during performance of the work in accordance with this Section.

1.02 REFERENCES

A. Code of Federal Regulations (CFR)

1. 40 CFR, Part 112 — Oil Pollution Prevention

B. Public Law

1. Sections 311 and 402 — Clean Water Act (Public Law 92-500, as amended)

1.03 SUBMITTALS

A. Submit the following in accordance with Section 01300 - Submittals.

B. Pollution Prevention Plan:

1. As required by the stormwater permit for discharges from construction sites.

C. Spill Prevention, Control, and Countermeasure (SPCC) Plan:

1. Submit when SPCC Plan is required.

a. Generally, SPCC Plan is required where location of construction site is such that oil and oil products from accidental spillage could reasonably be expected to enter into or upon navigable waters of the United States or adjoining shorelines, and aggregate on site oil storage capacity is over 1,320 gallons. Only containers with capacity of 55 gallons and greater are included in determining on site aggregate storage capacity.

2. Reviewed and certified by a registered professional engineer in accordance with 40 CFR, Part 112, as required by section 311 of the Clean Water Act (Public Law 92-500 as amended).

1.04 REGULATORY REQUIREMENTS

A. Construction Safety Standards:

1. Comply with all local, State and Federal requirements for sanitation and potable water.

B. Laws, Regulations, and Permits:

1. Perform construction operations to comply, and ensure subcontractors comply, with:

a. Applicable Federal, State, and local laws, orders, regulations, and Water Quality Standards concerning control and abatement of water pollution;

and terms and conditions of applicable permits issued by permit issuing authority.

b. If conflict occurs between Federal, State, and local laws, regulations, and requirements, the most stringent shall apply.

C. Contractor Violations:

1. If noncompliance should occur, immediately (verbally) report noncompliance to the Engineer. Submit specific information within 2 days.

2. Violation of applicable Federal, State, or local laws, orders, regulations, or Water Quality Standards may result in the Engineer stopping site activity until compliance is ensured.

3. The Contractor shall not be entitled to extension of time, claim for damage, or additional compensation by reason of such a work stoppage.

4. Corrective measures required to bring activities into compliance shall be at the Contractor's expense.

1.05 REQUIRED PERMITS

A. Wastewater Discharge Permit:

1. Permit:

a. Prior to discharging wastewater or other pollutants, secure a permit to discharge pollutants as required under section 402 of the Clean Water Act (Public Law 92-500 as amended).

2. Terms and Conditions: Comply with terms and conditions as stated in the permit.

3. Monitoring and Treatment:

a. Provide monitoring and water treatment, if necessary, to achieve compliance with permit conditions

b. Provide recordkeeping required of the section 402 permittee, as stated in the section 402 permit.

4. Sampling: Include sampling in monitoring required of the Contractor to meet section 402 requirements, as well as required laboratory tests to determine effluent characteristics.

5. Monitoring Results:

a. Provide monitoring results to the Engineer 2 weeks prior to submittal deadline to appropriate State and/or Environmental Protection Agency (EPA) Regional Administrator.

b. Send copies of all information transmitted to EPA and/or the State to the Engineer.

B. Stormwater Discharge Permit Associated With a Construction Site:

1. Notice of Intent (NOI):

a. Both the Bureau of Reclamation and the Contractor shall sign the NOI to obtain coverage under a stormwater general permit to control stormwater discharges from the construction site as required under section 402 of the Clean Water Act (Public Law 92-500, as amended).

2. Pollution Prevention Plan:

a. The Contractor shall prepare a Pollution Prevention Plan as required by the permit.

b. Comply with terms and conditions to obtain and maintain this stormwater discharge permit.

3. Monitoring and Water Treatment:

a. Provide monitoring and water treatment, if necessary, to achieve compliance with applicable Water Quality Standards.

b. Provide the recordkeeping required by the stormwater discharge permit associated with construction activity.

1.06 CONTRACTOR RESPONSIBILITIES

A. Permits:

1. Obtain necessary licenses and permits.

B. Monitoring:

1. Conduct monitoring in order to meet the requirements of the permits which may include:

a. Sampling,

b. Site inspections, and

c. Required laboratory tests to determine effluent characteristics.

C. Reporting Results:

1. The Contractor shall report required monitoring results to appropriate agencies. The section 402 wastewater discharge permit has specific reporting requirements for the permittee for noncompliance when effluent limitations are exceeded.

D. Recordkeeping:

1. Retain records and data required by permits.

1.07 MEASUREMENT AND PAYMENT

A. Payment:

1. Lump sum price offered in the schedule.

PART 2 PRODUCTS

2.01 MATERIALS

A. Straw bales, if used: Certified weed free.

B. Silt fences

C. Fiber rolls

D. Impermeable liner

PART 3 EXECUTION

3.01 POLLUTION CONTROLS

A. Control pollutants by use of sediment and erosion controls, wastewater and stormwater management controls, construction site management practices, and other controls including State and local control requirements.

B. Sediment and Erosion Controls:

1. Establish methods for controlling sediment and erosion which address vegetative practices, structural control, silt fences, straw dikes, sediment controls, and operator controls as appropriate.

2. Institute stormwater management measures as required, including velocity dissipators, and solid waste controls which address controls for building materials and offsite tracking of sediment.

C. Wastewater and Stormwater Management Controls:

1. Pollution prevention measures:

a. Use methods of dewatering, unwatering, excavating, or stockpiling earth and rock materials which include prevention measures to control silting and erosion, and which will intercept and settle any runoff of sediment-ladened waters.

b. Prevent wastewater from general construction activities such as drainwater collection, aggregate processing, concrete batching, drilling, grouting, or other construction operations, from entering flowing or dry watercourses without the use of approved turbidity control methods.

c. Divert stormwater runoff from upslope areas away from disturbed areas.

2. Turbidity prevention measures:

a. Use methods for prevention of excess turbidity which include, but are not restricted to, intercepting ditches, settling ponds, gravel filter entrapment dikes, flocculating processes, recirculation, combinations thereof, or other approved methods that are not harmful to aquatic life.

b. Wastewaters discharged into surface waters shall contain the least concentration of settleable material possible, and shall meet conditions of section 402, the National Pollutant Discharge Elimination System (NPDES) permit.

D. Construction Site Management:

1. Contractor construction operations:

a. Perform construction activities by methods that will prevent entrance, or accidental spillage, of solid matter, contaminants, debris, or other pollutants or wastes into streams, flowing or dry watercourses, lakes, wetlands, reservoirs, or underground water sources.

1) Pollutants and wastes include, but are not restricted to: refuse, garbage, cement, sanitary waste, industrial waste, hazardous materials, radioactive substances, oil and other petroleum products, aggregate processing tailings, mineral salts, and thermal pollution.

2. Stockpiled or deposited materials:

   a. Do not stockpile or deposit excavated materials or other construction materials, near or on, stream banks, lake shorelines, or other watercourse perimeters where they can be washed away by high water or storm runoff, or can in any way encroach upon the watercourse.

3. Petroleum product storage tanks management:

   a. Place oil or other petroleum product storage tanks at least 20 feet from streams, flowing or dry watercourses, lakes, wetlands, reservoirs, and any other water source.

   b. Do not use underground storage tanks.

   c. Construct storage area dikes at least 12 inches high or graded and sloped to permit safe containment of leaks and spills equal to storage tank capacity located in the area plus sufficient freeboard to contain the 25-year rainstorm.

      1) Line diked areas with an impermeable barrier at least 50 mils thick.

   d. Areas for refueling operations: Lined with impermeable barrier at least 10 mils thick covered with 2 to 4 inches of soil.

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SECTION 01568

SITE SECURITY

PART 1 GENERAL

1.01 SUMMARY

A. The Contractor shall furnish all materials and perform all work required for providing site security to protect work and existing facilities from unauthorized entry, theft, and vandalism in accordance with this Section.

1.02 SUBMITTALS

A. Submit the following in accordance with Section 01300 – Submittals.

B. Security Plan.

1. Project security plan to include details on efforts that will be undertaken to comply with the requirements of this Section. Plan shall include:
    a. Contractor's detail plan for construction site security.
    b. Areas to be secured and protected during non-work hours.
    c. Means for identification of all employees, subcontractors, supplier and visitors on-site.
    d. Delivery schedules for materials and equipment.
    e. Means for communication and coordination of all security action with Owner.
2. Security services for the project including their staffing schedule.
    a. Resume of each security guard including experience and training.
    b. Identify security level for all areas of the project to be provided with responsibilities and actions to be taken by guards.
    c. Security schedule for working and non-working period of time.
3. A sample of the photo identification badge that will be used on this project.

C. Information Security Plan.

1. Submit plan for release of information that is Project related by Contractor to media, public, or interested parties requiring Engineer review.

1.03 RESPONSIBILITIES

A. Protect work and existing facilities from unauthorized entry, theft, and vandalism. Avoid unrestricted access to work

B. Allow surveillance and inspection by Engineer's personnel as authorized by the Owner.

C. Maintain security and avoid compromise of any sensitive information caused by unauthorized disclosures or improper handling.

D. Protect work and existing facilities from unauthorized entry, theft, and vandalism.

E. Initiate an approved security program at job mobilization.

F. Maintain security throughout construction period until acceptance of work by the Owner or directed by the Owner to terminate security program.

G. Coordinate security program with Kern County Sheriff and other law enforcement agencies having jurisdiction in the Project vicinity.

H. Report all incidents and suspicious activity to the Owner.

1.04 CONSTRUCTION YARD AND SITE ENTRY CONTROL

A. Restrict entrance of personnel and vehicles into construction yard area.

B. Restrict entry to Project areas to authorized persons with proper identification.

C. Maintain a continuous log of subcontractors, suppliers, technical support, workmen and visitors and make available to Owner on request.

D. Coordinate access of Owner's personnel, equipment, and materials to jobsite and secured areas with Owner.

E. Vehicle access to the Project Site will be restricted to employees and authorized visitor's personal vehicles, tractors, cranes, and similar implements used directly in the performance of work, for delivery of materials/supplies, and for removal of waste and surplus material, and Law Enforcement vehicles as requested.

F. No employees or visitors except Law Enforcement vehicles shall be permitted access to the Project Site after normal working hours without prior written authorization from the Contractor's Responsible Manager. Notification of work during non-scheduled work hours shall be provided to the Engineer.

1.05 GUARD SERVICES

A. Employ a Security Guard service to patrol all areas of the site and to respond to emergency or unusual events that may occur within the geographic boundaries of the project.

1. The Security Guard service company shall be licensed in the State of California and individual Security Officers assigned to the Project shall have appropriate documentation to confirm that they have met all regulatory requirements and have current firearms proficiency.
2. The Security Guards shall be armed and have uniforms that clearly identify them as security personnel.
3. The Security Guards shall be present on the site twenty-four hours per day, seven days per week.
4. Provide four wheel drive transportation that will permit Security Guard travel and emergency response throughout the site.
5. Provide communications equipment to Security Guards for both on-site use and to contact off-site emergency response providers.
6. The Security Guards shall maintain logs to record daily activity and visitor information. The logs shall be available for inspection by the Engineer.

1.06 COORDINATION

A. Coordinate with Kern County Sheriff and other law enforcement agencies having jurisdiction in the Project vicinity regarding notification and disposition of security issues throughout construction.

B. Coordination may be in the form of participation at weekly coordination meetings, or other types of activities.

1.07 MEASUREMENT AND PAYMENT

A. Payment:

1. Payment: No separate payment will be made for site security. All cost for providing site security shall be included in other items of work.

PART 2 PRODUCTS

2.01 CHAIN LINK FENCING

A. In accordance with standard drawings.

B. Security lock system

PART 3 EXECUTION

3.01 FENCING

A. Erect chain link fencing around staging areas including Owner facilities. Access gates into the storage area shall remain locked when the area is unattended and during off-hours periods.

B. Remove chain link fencing when no longer required as determined by the Owner.

3.02 CONTROL OF KEYS AND LOCK COMBINATIONS

A. Key and lock combination control is essential for Project security. Do not allow keys to be duplicated or allow lock combinations to be divulged.

3.03 SIGNAGE

A. Post signs approved by the Owner around site area to indicate: AUTHORIZED PERSONNEL ONLY.

****END OF SECTION****

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SECTION 01569

TREE AND PLANT PROTECTION

PART 1 GENERAL

1.01 SUMMARY

A. The Contractor's construction facilities and operations, as well as those of persons or parties operating or associated with the Contractor, on the construction right-of-way shall preserve and protect trees and plants in accordance to the requirements of this section.

1.02 DEFINITION

A. The term "injury" shall include, without limitation, bruising, scarring, tearing, and breaking of roots, trunks, or branches.

1.03 SUMBITTALS

A. Not Used

1.04 MEASUREMENT AND PAYMENT

A. Payment:

1. Include in prices offered in the schedule for other items of work, except as specified.
2. Costs for repair or treatment of injured vegetation and replacement of trees or shrubs are the Contractor's responsibility.

PART 2 PRODUCTS

2.01 REPLACEMENT TREES AND SHRUBS

A. Species: Same as removed tree or shrub or other species approved by the Engineer.

B. Size: Same size as removed tree or shrub, or maximum practicable size that can be planted and sustained in the particular environment as approved by the Engineer.

PART 3 EXECUTION

3.01 PRESERVATION AND PROTECTION

A. Preserve natural landscape and preserve and protect existing vegetation not required or otherwise authorized to be removed.

1. Submit requests to remove vegetation not specifically required to be removed to the Engineer.

B. Conduct operations to prevent unnecessary destruction, scarring, or defacing of natural surroundings in the vicinity of the work.

C. Move crews and equipment within the designated rights-of-way and over routes provided for access to the work in a manner to prevent damage to existing undeveloped land or property.

D. Protect vegetation from damage or injury caused by construction operations, personnel, or equipment by the use of protective barriers or other methods approved by the Engineer.

E. Minimize, to the greatest extent practicable, clearings and cuts through vegetation. Irregularly shape authorized clearings and cuts to soften undesirable aesthetic impacts.

F. Restore construction roads to original contours and make impassable to vehicular traffic when construction roads are no longer required.

G. Upon completion of the work, and following removal of construction facilities and required cleanup, scarify and regrade land used for construction purposes and not required for the completed installation, as required, so that all surfaces are left in a condition that will facilitate natural revegetation, provide for proper drainage, and prevent erosion.

H. Do not use trees for anchorages except in emergency cases or as approved by the Engineer.

1. For such use, wrap the trunk with a sufficient thickness of approved protective material before any rope, cable, or wire is placed.

2. Submit requests to use trees for anchorage, except for emergencies. Include description of protective material.

I. Use safety ropes where tree climbing is necessary; do not use climbing spurs.

3.02 REPAIR, TREATMENT, OR REPLACEMENT

A. The Contractor is responsible for injuries to vegetation caused by Contractor operations, personnel, or equipment.

B. Employ the services of an experienced arborist or licensed tree surgeon to direct repair, treatment, and replacement of injured vegetation. Submit qualifications of experienced arborist or licensed tree surgeon to Engineer prior to employment.

C. Repair or treat injured vegetation without delay and as recommended by and under direction of an experienced arborist or licensed tree surgeon.

D. Remove and dispose of trees or shrubs not required or otherwise authorized to be removed that, in the opinion of the Engineer, are injured beyond saving.

E. Replace removed tree or shrub with tree or shrub approved by the Engineer.

****END OF SECTION****

SECTION 01580

PROJECT IDENTIFICATION SIGNAGE

PART 1 GENERAL

1.01 SUMMARY

A. This section describes the requirements for project identification signage.

B. Additional requirements for project identification signage are included in Attachment A of this section. Project identification signs shall be constructed in accordance with this standard.

C. Furnish all labor, materials, and equipment for project identification signage as specified herein.

D. Commercial advertising matter shall not be attached to or painted on the surfaces of the signs.

E. No signs, except those specified, shall be displayed, unless otherwise accepted by the Owner.

1.02 SUMBITTALS

A. Submit the following in accordance with Section 01300 – Submittals.

B. The Contractor shall submit the following for acceptance within 30 days of the Notice to Proceed:

1. Type of grade of materials
2. Layout, size, trim, framing, supports, and coatings
3. Size and style of lettering
4. Samples of colors

C. Prior to fabrication of the signs, submit a “mock-up” sample of the proposed sign(s), information, and graphics for review and acceptance by the Owner.

1.03 MEASUREMENT AND PAYMENT

A. Payment:

1. Include in prices offered in the schedule for Project Identification Signage.

PART 2 PRODUCTS

2.01 GENERAL

A. The structure and framing shall be allowed to be new or used, wood or metal, in sound condition, structurally adequate to work and suitable for specified finish. The sign surfaces shall be exterior softwood plywood with medium density overlay, standard large sizes to minimize joints; the thickness shall be as required by standards to span framing members and to provide even, smooth surface without waves or buckles. The rough hardware shall be galvanized.

B. The size of the signs and lettering shall be as specified herein. The sign colors for structure, framing, sign surfaces and graphics shall be uniform colors throughout the Project, shall comply with the requirements specified herein, and shall be as selected by the Owner.

C. The signs shall be painted signs, with painted lettering. Finishes and painting shall be exterior quality, adequate to resist weathering and fading for the duration of the Project. Use bulletin colors for graphics.

1. Signs can be wrapped if contractor can provide details and assurances that signs will be adequate to resist weathering and fading for the duration of the project.

2.02 CONSTRUCTION OF SIGNS

A. Use 3/4-inch exterior grade plywood or approved equal, unless shown otherwise.

B. Sign must be at least four feet tall by eight feet wide.

C. Use trim, mitered on all edges.

D. Design signs and supports to withstand 75 mile-per-hour wind.

E. Paint with exterior gloss-finish enamel.

F. Sign painter shall be a professional in the type of work required.

PART 3 EXECUTION

3.01 INSTALLATION AND MAINTENANCE

A. Location of signs shall be as shown or directed by Owner.

B. Provide the necessary mounting posts and hardware.

C. Maintain signs so they are clean, legible, and upright. Keep grass and weeds cut away from signs.

D. If required by progress of the work or Owner, sign(s) shall be relocated to other acceptable site(s).

E. Repair and repaint damaged structure, framing, and/or signs.

F. Contractor shall maintain the sign in good condition for the duration of construction.

G. Remove signs, framing, supports and foundations at completion of Project or when directed by Owner.

Attachment A to Section 01580
Additional requirements for Project Identification Signage

The sign must include and prominently display the following disclosure statement and color logos:

Disclosure statement
Funding for this project has been provided in full or in part under the Safe and Affordable Funding for Equity and Resiliency (SAFER) Drinking Water Program and Proposition 1 – the Water Quality, Supply, and Infrastructure Improvement Act of 2014 through an agreement with the State Water Resources Control Board.

Proposition 1 Logo
https://www.waterboards.ca.gov/images/prop_1_logo.jpg

California Water Boards Logo
https://www.waterboards.ca.gov/water_issues/programs/grants_loans/srf/docs/logos/waterboards_logo_high_res.jpg

California Climate Investments Logo
https://www.caclimateinvestments.ca.gov/s/CCI_Logos.zip

Hight quality versions of logos are available here:
https://www.waterboards.ca.gov/water_issues/programs/grants_loans/

****END OF SECTION****

SECTION 01600

PRODUCT REQUIREMENTS

PART 1 GENERAL

1.01 SUMMARY

A. The Contractor shall furnish all materials required for completion of the work except for materials specified as being furnished by the Owner.

1.02 REFERENCES

A. American Society of Mechanical Engineers (ASME)

1. ASME B1.1-2003 Unified Inch Screw Threads, UN and UNR Thread Form
2. ASME B1.20.1-1983(2006) Pipe Threads, General Purpose, Inch

1.03 DEFINITIONS

A. The words "material" or "materials" as used in these specifications to denote items furnished by the Contractor shall be construed to mean equipment, machinery, product, component, or any other item required to be incorporated in the work.

1.04 SUBMITTALS

A. Not Used

1.05 DELIVERY, STORAGE, AND HANDLING

A. Transport and handle manufactured products in accordance with manufacturer's instructions.

B. Store and protect manufactured products in accordance with manufacturer's instructions. Obtain instructions from the manufacturer before delivery of materials to jobsite. Maintain a copy of instructions at jobsite.

C. Remove and replace damaged items with new items.

D. Protect materials subject to adverse effects from moisture, sunlight, ultraviolet light, or weather during storage at jobsite.

E. Store curing compounds, sealants, adhesives, paints, coatings, sealers, joint compounds, grouts, and similar products at the temperature and environmental conditions recommended by manufacturer.

1.06 MEASUREMENT AND PAYMENT

A. Payment:

1. When a separate item which includes furnishing of a material is provided in the schedule, include cost of furnishing, hauling, storing, and handling in the price offered in the schedule for the item.

2. When a separate item is not provided in the schedule for furnishing a material, include cost of furnishing, hauling, storing, and handling in the price offered in the schedule for work for which the material is required.

PART 2 PRODUCTS

2.01 MATERIALS

A. Provide materials required for completion of work except Owner-furnished materials.

B. Provide type and quality described in these specifications.

C. Furnish new materials conforming to referenced standards unless otherwise specified.

D. Furnish new materials that are the most suitable grade for the purpose intended considering strength, ductility, durability, and best engineering practice.

E. For materials not covered by these or referenced specifications, furnish materials of standard commercial quality. Where types, grades, or other options offered in the reference specifications are not specified in these specifications, the material furnished will be acceptable if it is in accordance with any one of the types, grades, or options offered.

F. If materials to be used deviate from or are not covered by recognized specifications and standards, submit, for approval, justification for and exact nature of the deviation, and complete specifications for materials proposed for use.

G. Make parts accurately to standard gauge where possible.

1. Use unified screw threads conforming to ASME B1.1 or B1.20.1 for threads, including but not limited to those of bolts, nuts, screws, taps, pipes, and pipe fittings.

2. For internal connections only, the Contractor may deviate from ASME standards, provided a complete set of taps and dies are furnished as required to facilitate repair or replacement.

H. Permanently mark fasteners with a symbol identifying the manufacturer and with symbol(s) indicating grade, class, type, and other identifying marks in accordance with reference or applicable standard.

I. Materials, Contractor design, implementation work, and other requirements which are specified by reference to Federal Specifications, Federal Standards, or other standard specifications or codes shall be in compliance with the latest editions or revisions thereof in effect on the date bids are received, including any amendments or supplements. In the event of conflicting requirements between a referenced specification, standard, or code and these specifications, these specifications shall govern.

J. The references to materials, wherein manufacturer's products or brands are specified by "brand name or equal" purchase descriptions, are made as standards of comparison only as to type, design, character, or quality of the article required, and do not restrict bidders or the Contractor to the manufacturer's products or to the specific brands named.

K. Prove equality of materials and products to those referenced and provide all descriptive information, test results, and other evidence as may be necessary to prove the equality of materials or products which the Contractor offers as being equal to those referenced.

2.02 SUBSTITUTIONS

A. If materials required by these specifications become unavailable, because of the Owner priorities or other causes, substitute materials may be used.

B. Obtain written approval to use substitute materials from the Engineer. State in the request for approval the amount of the adjustment, if any, to be made in favor of the Owner.

C. The Engineer's determination as to whether substitution will be permitted and as to what substitute materials may be used shall be final and conclusive.

D. If approved substitute materials are of less value to the Owner or involve less cost to the Contractor than specified material, a contract adjustment will be made in favor of the Owner. Where the amount involved or the importance of substitution warrants, a deductive modification to the contract will be issued.

E. No payments in excess of prices offered in the schedule will be made because of substitution of one material for another or because of use of one alternate material in place of another.

2.03 WORKMANSHIP

A. Accurately manufacture and fabricate materials in accordance with best modern practice and requirements of these specifications, notwithstanding minor errors or omissions therein.

B. Use liberal factors of safety and adequate shock-absorbing features in designs, especially for parts subjected to variable stress or shock, including alternating or vibrating stress or shock.

C. Include provisions which prevent components from loosening for shock-absorbing features and parts subject to vibration.

2.04 SOURCE QUALITY ASSURANCE

A. Materials will be subject to inspection at any one or more of the following locations, as determined by the Engineer:

1. At place of production or manufacture.
2. At shipping point.
3. At jobsite.

B. To allow sufficient time to provide for inspection, submit at time of issuance, three copies of purchase orders, including drawings and other pertinent information, covering material on which inspection will be made as advised by the Engineer, or submit other evidence if such purchase orders are issued verbally or by letter.

C. Inspection of materials at any location specified above or waiving of inspection shall not be construed as being conclusive as to whether materials and equipment conform to contract requirements, nor shall the Contractor be relieved thereby of the responsibility for furnishing materials meeting the requirements of these specifications.

D. Acceptance of materials will be made only at the jobsite.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install products in accordance with manufacturer's recommendations unless otherwise specified.

3.02 FIELD QUALITY ASSURANCE

A. Final inspection and acceptance of materials will be made only at the jobsite after installation and testing.

****END OF SECTION****

SECTION 01721

SURVEYING

PART 1 GENERAL

1.01 SUMMARY

A. The Contractor shall perform all layout surveys required for the control and completion of the work, and all necessary surveys to compute quantities of work performed.

1.02 SUBMITTALS

A. Submit the following in accordance with Section 01300 - Submittals.

B. Surveying plan:

1. Describe work layout and survey methods.
2. Include surveying schedule.

C. Resume:

1. Engineer or licensed surveyor responsible for supervising and directing survey work for approval.

D. Accuracy check results:

1. Accuracy check of Owner-established primary control.
2. Accuracy check of Owner-established topographic information.

E. Completed and reduced survey notes:

1. Copy of completed and reduced survey notes for a survey or portion of survey.

F. Original field survey books.

G. Quantity survey notes and computations:

1. Copies required for progress payment. Include itemized statement for work covered by notes and computations.

H. Workday's survey notes:

1. Copies when requested by the Owner.

1.03 PRIMARY CONTROL

A. The Owner has established primary control to be used for establishing work lines and grades.

B. Primary control consists of bench marks and horizontal control points in work vicinity as indicated on drawings.

C. Verify all datums included on informational drawings. Verification of the vertical control shall be accomplished by running a line of levels through the benchmarks. Levels shall close within 0.05 feet times the square root of the length of the circuit in miles. If a

benchmark is found to be out of the acceptable tolerance in the course of surveying a level circuit, the circuit shall be closed before proceeding to the next benchmark. The work shall be accomplished in a series of circuits. This work must be accomplished with actual levels. Use of trigonometric levels, collection of benchmark elevations by GPS, or other such methods does not meet the intent of this paragraph therefore these methods are unacceptable.

D. Check and verify primary control. Advise the Engineer in writing that the points are acceptable or, if they are not acceptable, the reasons therefor. Resolve discrepancies with Engineer before beginning work.

E. The Owner has provided topographic survey. Check and verify topographic survey and resolve discrepancies with Engineer before beginning work.

F. Preserve and maintain primary control points until otherwise authorized. The Owner may reestablish damaged or destroyed primary control points and back charge reestablishment cost to the Contractor.

1.04 QUALITY ASSURANCE

A. The Engineer reserves the right to perform own surveys to check and verify the Contractor's surveys.

B. Immediately report any significant discrepancies found by the Contractor to the Engineer. Perform any additional surveys necessary to determine the cause of the discrepancy and submit their recommendations for correction. Corrective action shall be taken only with the written approval of the Engineer.

1.05 QUALIFICATIONS

A. Provide experienced construction surveyors under supervision and direction of a licensed surveyor, in the State of California, with minimum of 2 years experience in charge of construction surveys for construction similar in nature to that required by this contract.

B. Maintain sufficient qualified personnel to perform required surveying work.

C. If survey performance does not meet specifications requirements, the Owner has the authority to order Contractor to replace responsible person in charge of surveys. Prior to changing such responsible individual, qualifying experience resumes for the new individual shall be submitted for approval.

1.06 MEASUREMENT AND PAYMENT

A. Payment:

1. Include in prices offered in the schedule for items of work requiring surveying.

PART 2 PRODUCTS

2.01 SURVEYING MATERIALS AND EQUIPMENT

A. Provide materials and equipment required for surveying work, including, but not limited to, instruments, stakes, spikes, steel pins, templates, platforms, and tools.

B. Except as required to be incorporated in work or left in place, surveying materials and equipment will remain property of Contractor.

C. Instruments shall be accurate and shall be subject to rigid inspection for proper operations at least every two weeks of use.

D. Promptly replace, repair, or adjust defective instruments, as determined by the Engineer, to the satisfaction of the Engineer.

PART 3 EXECUTION

3.01 LAYOUT OF WORK SURVEYS

A. Establish lines and grades for work layout from Owner- established primary control points.

B. Establish measurements required for work execution to specified tolerances.

C. Provide stakes, markers, and other survey controls necessary to control, check, and guide construction.

D. An AutoCAD file containing line-work for the centerline, and work area limits will be provided to the Contractor for use to layout the work.

3.02 QUANTITY SURVEYS

A. Perform surveys and computations to determine quantities of work performed or placed during each progress payment period.

B. Perform surveys necessary for the Engineer to determine final quantities of work in place. Final payment quantities will be based on the survey data provided by the Contractor, and the design lines and grades. If requested by the Engineer, the Contractor shall provide an electronic copy of data used for quantity computations.

C. Perform quantity surveys in presence of the Engineer, unless specifically waived. Notify the Engineer at least 24 hours before performing a quantity survey.

D. All surveys performed for measurement of final quantities of work and material shall be subject to approval of the Engineer.

E. The Contractor shall make such surveys and computations as are necessary to determine the quantities of work performed or placed during each period for which a progress payment is to be made. Such quantities shall include excavation, embankment, and all other items included in the schedule for which payment is to be made. The Contractor shall furnish a copy of the quantity computations and an itemized statement for each progress payment period.

3.03 SURVEY REQUIREMENTS

A. Work Limit Station: 200-foot intervals (maximum spacing) and all changes in direction.

B. Alignment Staking: Each 50 feet on tangent and each 25 feet on curves.

C. Slope Staking: Each 50 feet on tangent and each 25 feet on curves, restake every 10 feet in elevation.

D. Structures: Stake out of structures and checkouts before and during construction.

E. Roads: Blue tops each 50 feet on tangent and each 25 feet on curves.

F. Cross-sections: Original, final, and intermediate as required, for structure sites and other locations as necessary for quantity surveys.

G. As-builts: As required for structures and other features of work.

H. Computer surface model. – The Contractor shall provide a triangulated irregular network (TIN) to the Engineer for use in determining all final earthwork quantities, unless the Contractor elects to accept the Engineer's computer surface model used during the design of the work. If the Contractor elects to develop its own surface model, the model must be developed prior to the start of any earthwork operations, and be submitted to the Engineer for review and approval. The surface model shall be developed from cross sections surveyed at maximum 100-foot intervals with such additional cross sections as necessary due to uneven terrain or by aerial mapping methods.

3.04 ACCURACY

A. Degree of Accuracy

1. Alignment of Tangents and Curves: Within 0.1 foot.
2. Structure Points: Set within 0.01 foot, except where installation or operation considerations require tighter tolerances. When formwork has been placed and is ready for concrete, the Contractor shall check the formwork for conformance with the drawings and to ensure that the forms are sufficiently within the tolerance limits for the completed work.
3. Blue Tops: Set within 0.01 foot for paved roads and 0.1 foot for gravel surfaced roads.
4. Cross-Section Points: Locate within 0.10 foot, horizontally and vertically.
5. Vertical Elevation Surveys: Close within 0.05 foot times the square root of the circuit length in miles.
6. Aerial Mapping shall meet National Mapping Standards for 2-foot contour intervals

3.05 FIELD RECORDS

A. Record original field notes, computations, and other surveying data in fieldbooks.

B. Record survey data in accordance with recognized professional surveying standards.

1. Notes or data not in accordance with standard formats will be rejected.
2. Illegible notes or data or erasures on any page of a fieldbook will be sufficient cause for rejection of part or all of fieldbook.
3. Corrections by ruling or lining out errors will be permitted.
4. Copied notes or data will not be permitted.
5. Rejection of part or all of a fieldbook may necessitate resurveying.

C. Notes may be collected on an electronic data collection device with prior approval of the Engineer.

1. Submit electronic files of notes in approved format.
2. Submit paper copies of notes.

****END OF SECTION****

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SECTION 01725

PROTECTION OF EXISTING INSTALLATIONS

PART 1 GENERAL

1.01 SUMMARY

A. In performing the required work, the Contractor shall take all necessary precautions to safeguard existing installations which are to remain in place.

1.02 SUBMITTALS

A. Submit the following in accordance with Section 01300 – Submittals:

B. Plan for protecting existing installations.

1.03 PROJECT CONDITIONS

A. Drawings included in these specifications show items of existing materials and equipment but may not show all equipment and materials existing at the jobsite.

B. Obtain the location of embedded conduit, pipe, cable, ground mat, and other buried items before performing any excavations in the existing installations and shall use proper methods for their protection during excavating and backfilling operations.

C. Protect adjacent installations when installing equipment and material.

D. Contractor is responsible for conducting Contractor's own investigations of each site prior to performing any work. Notify the Engineer of any materials or equipment found that has not been previously identified before starting work or during performance of work prior to disturbance.

1.04 MEASUREMENT AND PAYMENT

A. Payment:

1. Include in prices offered in the schedule for other items of work, except as specified.
2. Costs for repair of installations damaged by the Contractor's operations are the Contractor's responsibility.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.01 REPAIR

A. Repair, at Contractor's expense, damage to existing installations due to Contractor's operations or Contractor's failure to provide proper protection. At the Owner's option, damage may be repaired by the Owner, and the Contractor will be backcharged the repair costs.

3.02 PROTECTION

A. Provide protection for personnel and existing facilities from harm due to the Contractor's operations. Protection shall be subject to approval of the Engineer.

B. Arrange protective installations to permit operation of existing equipment and facilities by the Owner while work is in progress.

3.03 REMOVAL OF PROTECTIVE INSTALLATIONS

A. Remove protective installations after purpose has been served. Materials furnished by the Contractor to provide protection remain property of the Contractor.

****END OF SECTION****

SECTION 01726

PROTECTION OF EXISTING UTILITIES

PART 1 GENERAL

1.01 SUMMARY

A. Where the work to be performed under these specifications crosses or otherwise interferes with water, sewer, gas, or oil pipelines; buried cable; or other public or private utilities, the Contractor shall provide for such utilities, and shall perform such construction during the progress of the work so that no damage will result to either public or private interests.

1.02 REFERENCES

A. Institute of Electrical and Electronics Engineers (IEEE)

1. IEEE C2-2007 National Electrical Safety Code (NESC)

1.03 SUBMITTALS

A. Not Used.

1.04 PROJECT CONDITIONS

A. Drawings included in these specifications show existing utilities, but may not show all utilities existing at the jobsite.

B. Obtain location of buried conduit, pipe, cable, ground mat, and other buried items before excavating.

1.05 MEASUREMENT AND PAYMENT

A. Payment:

1. Include in prices offered in the schedule for other items of work.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.01 CLEARANCES

A. Clearances in accordance with IEEE C2 provided by Contractor:

1. Where existing overhead powerline or communication line crosses a feature of work to be constructed, the Contractor shall provide clearance at the crossing site between the line and the higher of (1) original ground; or (2) final elevation of constructed work.

2. Where existing buried powerline or communication line crosses a feature of work to be constructed, the Contractor shall provide clearance at the crossing site

between the line and the lower of (1) original ground; or (2) final elevation of constructed work.

B. Power line or communication line poles or other accessories lying within a feature of the work shall be relocated by the Contractor as shown on the Drawing.

3.02 CONSTRUCTION AT EXISTING UTILITIES

A. Obtain permission from the owner before any utility is taken out of service, and the Engineer advised thereof.

B. The Contractor shall be liable for all damage that may result from failure to provide for utilities during the progress of the work, all claims of whatsoever nature or kind arising out of or connected with damage to utilities encountered during construction; damages resulting from disruption of service; and injury to persons or damage to property resulting from the negligent, accidental, or intentional breaching of utilities.

C. If the Contractor does not maintain the existing utilities in such condition that no damage will result to either public or private interests, the Owner will cause the necessary repairs to be made and back charge the Contractor for such work.

D. Where construction of new structures or modifications of existing structures are required in order to continue a watercourse or utility in operation beyond the period of the contract, the Contractor shall notify the Engineer so that arrangements can be made with the owners for the construction or modifications required. When it is determined that such work is to be performed by the Contractor, and such items of work are not provided for in the schedule, the Contractor shall perform the necessary work in accordance with Article 8 of the General Conditions.

E. Where utilities are encountered, but are not shown on the drawings or otherwise provided for in these Specifications, all additional work required to be performed by the Contractor as a result of encountering the utilities shall be performed as extra work in accordance with Article C-10 of the General Conditions.

****END OF SECTION****

SECTION 01740

CLEANING

PART 1 GENERAL

1.01 SUMMARY

A. The Contract shall be responsible for keeping work and storage areas free from accumulations of waste materials and rubbish during construction and for the cleanup and disposal of waste materials and rubbish in accordance with this section.

1.02 REFERENCES

A. Code of Federal Regulations (CFR)

1. 40 CFR 261.3 Definition of Hazardous Waste
2. 49 CFR 171-179 Transportation - Hazardous Waste Regulations

1.03 DEFINITION

A. Hazardous waste: Defined as hazardous by 40 CFR 261.3; or by other Federal, State, or local laws or regulations.

1.04 SUBMITTALS

A. Submit the following in accordance with Section 01300 - Submittals.

B. Plan for maintaining site.

1. Plans for keeping work areas and storage areas free of waste materials and rubbish.

C. Waste production and disposal records.

D. Hazardous wastes manifest.

E. Environmental consultant resume:

1. Describe experience on similar project.

F. Environmental site assessment.

1.05 QUALIFICATIONS

A. Environmental consultant: Minimum 2 years' experience in conducting environmental site assessments for similar construction.

1.06 REGULATORY REQUIREMENTS

A. Comply with Federal, State, and local laws and regulations.

1.07 PROJECT CONDITIONS

A. Report waste materials discovered at jobsite to the Engineer.

1. Cease work in areas where waste may be hazardous until waste materials are investigated by the Owner.
2. If waste is hazardous, the Engineer may order delays in time of performance or changes in work, or both.
3. If such delays or changes are ordered, an equitable adjustment will be made in the contract in accordance with applicable clauses of the contract.

1.08 MEASUREMENT AND PAYMENT

A. Payment:

1. Include in prices offered in the schedule for other items of work except as specified.
2. Cost of environmental site assessments are the Contractor's responsibility.

B. In the event of the Contractor's failure to perform the work required by this Section, the work may be performed by the Owner and the cost thereof shall be deducted from monies due or to become due the Contractor. The Contractor's surety or sureties shall be liable for such payment until received by the Owner.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.01 PROGRESS CLEANING

A. Keep work and storage areas free from accumulations of waste materials and rubbish.

3.02 FINAL CLEANUP

A. Remove temporary plant facilities, buildings, concrete footings and slabs, rubbish, unused materials, concrete forms, and other similar materials which are not part of permanent work.

3.03 NONHAZARDOUS WASTE DISPOSAL

A. Waste materials including, but not restricted to, refuse, garbage, sanitary wastes, industrial wastes, and oil and other petroleum products, shall be disposed of by the Contractor.

B. Combustible waste materials: Dispose by removal from jobsite.

C. Noncombustible waste: Dispose by removal from jobsite.

D. Disposal by Removal:

1. Waste materials to be disposed of by removal from the construction area shall be removed prior to completion of the work under these specifications.
2. All materials removed shall become the property of the Contractor.
3. Waste materials shall be disposed of or recycled at a State approved disposal or recycle facility.

4. The Contractor shall make any necessary arrangements with private parties, and State and county officials pertinent to locations and regulations of such disposal or recycle facilities, and shall pay any fees or charges required for such disposition.

E. Do not burn waste materials.

F. Do not bury waste materials.

3.04 HAZARDOUS WASTE DISPOSAL

A. Materials or wastes, defined as hazardous by 40 CFR 261.3, or by other Federal, State, or local laws or regulations, used by the Contractor or discovered in work or storage areas, shall be containerized, labeled, and disposed of in accordance with these specifications and applicable Federal, State, and local laws and regulations.

B. Unknown waste materials that may be hazardous shall be tested, and the test results shall be submitted to the Engineer for review

C. Recycle hazardous waste whenever possible.

D. Dispose of hazardous waste materials at permitted treatment or disposal facilities.

E. Transport hazardous waste in accordance with 49 CFR 171-179.

3.05 RECORDS

A. Keep records of types and amounts of waste materials produced.

B. Keep records of waste material disposal.

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SECTION 01781

PROJECT RECORD DOCUMENTS

PART 1 GENERAL

1.01 SUMMARY

A. The Contractor shall furnish all materials and perform all work required for furnishing and delivering a complete set of record drawings and warranty documentation to the Engineer for transmittal to the District in accordance with this Section.

1.02 SUBMITTALS

A. Submit the following in accordance with Section 01300 - Submittals.

B. Progress As-built Drawings:

1. As-built drawings for a particular structure or feature of work.
2. Copies of As-built drawings maintained on site. Colored copies are not required.

C. Final As-built Drawings:

1. Certified marked sets upon completion of each feature of work.

D. Warranties.

1.03 RECORD DRAWINGS

A. Maintain 2 sets of full-size prints of contract drawings marked to show accurate and complete records of as-built conditions. Keep drawings at the jobsite and mark as work progresses.

1. Mark and dimension to show variations between actual construction and that indicated or specified in contract documents.
    a. Include buried or concealed construction and utilities.
    b. Include existing items, topographic features, and utility lines revealed during construction which differ from those shown on contract drawings.
2. Mark to define construction actually provided where choice of materials or methods is permitted in specifications, or where variations in scope or character of work from that of the original contract are authorized.

B. Use standard drafting practice to represent changes and include supplementary notes, legends, and details necessary to clearly portray as-built construction.

C. Mark as-built drawings in the following colors:

1. Red - Additions to original drawings.
2. Green - Deletions to original drawings.
3. Blue - Notations necessary for explanation of as-built markings.

D. Allow the District to review the drawings at all times.

E. Upon completion of work, sign marked prints as certified correct.

1.04 WARRANTIES

A. Provide warranties in accordance with this section.

B. Warranty of Construction

1. Submit data concerning warranty of construction, including the warranty period (dates), and warranty contacts with names, addresses, and telephone numbers. Also, post this data, under glass, at a location as directed by the Engineer.

C. Other Warranties

1. For other warranties, including those warranties for equipment specified by the Engineer on a brand name and model basis, provide the following:

2. Warranty List

a. Bound and indexed notebook containing written warranties obtained, required, or furnished under the contract. Prepare complete list of warranted products, equipment, materials, processes, and other warranted items. Fully execute and deliver this list to the Engineer prior to final acceptance of contract work. Provide the list in the following format:

Warranty list			
Specification Section	Warranted Item	Warranty Period Dates	Point of Contact

3. Equipment Warranty Tags

a. At installation, tag each warranted item with a durable, oil- and water-resistant tag approved by the Engineer.

1) Attach tag with copper wire and spray with a clear silicone waterproof coating.

2) Leave date of acceptance and inspector's signature blank until project is accepted.

3) Provide tags showing the following information:

WARRANTY TAG	
Type of Item	
Warranty Period	[Period] or [Form ___ To ____]
Contract No.	
Inspector's Signature	
Date Accepted	
Construction Contractor	
Name	
Address	
Telephone	
Warranty Contact	
Name	
Address	
Telephone	

1.05 MEASUREMENT AND PAYMENT

A. Payment:

1. Include in prices offered in the schedule for other items of work.
2. The District reserves right to withhold portion of progress payments until satisfactory acceptance of as-built drawings by the Engineer.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

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SECTION 02060

SITE PREPARATION AND SELECTIVE DEMOLITION

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:

1. Furnishing of all equipment, labor, materials, and incidentals, and performing all operations necessary for demolition of designated structures and removal of materials from site including, but not limited to: fencing, concrete, pumps, motors, electrical equipment, valves, and steel pipes.

2. Refer to items as scheduled at end of section as indicated.

3. All material in contact with potable water shall be **NSF 61 certified.**

B. Related Sections:

1. Section 02110 – Site Clearing.

2. Section 02150 – Erosion and Sediment Control.

3. Section 02200 – Earthwork.

4. Section 02523 – Temporary Facilities.

1.02 SUBMITTALS

A. Make submittals in accordance with Section 01300 – Submittals.

B. Shop Drawings: Indicate demolition and removal sequence and location of salvageable items; location and construction of barricades, fences, and temporary work.

C. Proposed Mud-Control and Noise-Control Measures: A plan shall be submitted for review by the Engineer that indicates the measures proposed for use, proposed locations, and proposed time frame for their operation. Contractor shall identify options if proposed measures are later determined to be inadequate.

D. Pre-demolition Photographs or Videotape: Before work begins, Contractor shall record on photographs and/or videotape existing conditions of adjoining construction and site improvements, including finish surfaces, staging areas, and access roads that might be misconstrued as damage caused by selective demolition operations. Pre-demolition Photographs or Videotape shall be submitted for review by the Engineer prior to start of site preparation and selective demolition.

E. Demolition and Disposal Plan: Before work begins, a written plan shall be submitted for review by the Engineer that indicates the procedures proposed to accomplish the work, including:

1. Provisions for safe conduct of the work, including procedures and methods to provide necessary supports, lateral bracing, and shoring, when required; careful removal and disposition of materials specified to be salvaged; protection of property which is to remain undisturbed; coordination with other work in progress; timely disconnection of utility services, when required; and dust and spill control. The procedures shall include

a detailed description of the methods and equipment to be used for each operation, and the sequence of operations.
2. Procedures for careful removal and disposition of materials specified to be salvaged, including coordination with other work in progress and a summary of proposed disposal facilities that will be used for each type of material.
3. A disconnection schedule for utility services, when required.
4. All disposal, reuse, or salvage of facilities must be approved by the District prior to the start of work.

1.03 PROJECT RECORD DOCUMENTS

A. Provide project record documents in conformance with Section 01781 – Project Record Documents.

B. Accurately record actual locations of capped utilities and subsurface obstructions.

1.04 REGULATORY REQUIREMENTS

A. Conform to applicable local, state, and national codes for demolition of structures, safety of adjacent structures, dust control, runoff control, and disposal.

B. Obtain required permits from authorities as specified in Special Conditions, Section D-2 – State Provisions, and also as specified in General Conditions, Section C-19 – Compliance with Laws – Taxes - Permits.

C. Notify Underground Service Alert (USA), 811, before starting work and comply with affected utility company requirements.

D. Do not close or obstruct roadways or trails without prior approval of governing agency or owner.

E. Do not disable or disrupt building or site fire, communication, or life safety systems without 3-work day prior written notice to the Engineer.

F. Conform to applicable regulatory procedures when discovering hazardous or contaminated materials.

1.05 SCHEDULING

A. Schedule work under provisions of the General Conditions, Section C-14 – Construction Program.

B. Describe demolition removal procedures and include in schedule.

C. Perform work in daylight hours.

D. Demolish designated structures and remove material after use is no longer required.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 EXAMINATION

A. Contractor shall survey existing conditions and correlate with requirements indicated to determine extent of selective clearing, debris removal, and demolition. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design

are encountered, Contractor shall investigate and measure the nature and extent of conflict and promptly submit a written report to the Engineer.

3.02 SITE PREPARATION

A. Provide, erect, and maintain temporary barriers and security devices at locations indicated by the Engineer.

B. Protect existing landscaping materials, appurtenances, structures, and other project facilities which are not to be demolished.

C. Prevent movement or settlement of adjacent structures. Provide bracing and shoring, when required.

D. Mark location of utilities, as required for safe completion of the work and as indicated in the project Plans and Specifications.

E. Monitor daily or more frequently as required and prevent movement of cofferdams as necessary to ensure stability throughout work period.

3.03 DEMOLITION REQUIREMENTS

A. Conduct demolition to minimize interference with adjacent structures and District operations.

B. As needed, Contractor may temporarily remove additional fencing to perform work. All temporarily removed fence shall be restored to original or greater condition prior to project closeout.

C. Except as authorized by the District, removal of trees and shrubs will not be permitted to complete the work.

D. In the event of damage to existing improvements not to be demolished, the Contractor shall be responsible for the cost of repairing or restoring all improvements to original or greater condition prior to project closeout.

E. Cease operations immediately if adjacent structures appear to be in danger. Notify Engineer immediately. Do not resume operations until directed.

F. Conduct operations with minimum interference to District access. Maintain egress and access at all times.

G. Obtain written permission from adjacent property owners when demolition equipment will traverse, infringe upon, or limit access to their property.

3.04 DEMOLITION

A. Disconnect, remove or cap, and identify designated utilities within demolition areas.

B. Backfill areas excavated, open pits, and holes caused as a result of demolition. Unless otherwise directed by the Engineer, fill each excavated area, open pit, or hole caused as a result of demolition as shown on the Drawings, or if not shown, with Suitable Native Fill as specified in Section 02200 – Earthwork. The fill shall be placed and compacted in accordance with the applicable provisions for the specific material type in accordance with Section 02200 – Earthwork.

C. Rough grade and compact areas affected by demolition to maintain site grades and contours.

D. Remove demolished material from site and dispose of offsite in accordance with all local, state and federal laws.

E. Do not burn or bury materials on site. Leave site in clean condition.

F. Remove temporary work.

G. Asphalt pavement or concrete to be removed shall be neatly saw-cut at the applicable transition location. All saw-cut locations and extents shall be agreed upon by the Contractor, Engineer, and the District prior to the start of work.

3.05 SCHEDULES

A. Items to be removed, stored, and protected for relocation:

1. Material suitable for use as backfill.

B. Items to remain and protect:

1. Fences and gates not designated to be removed or relocated.

2. Roadway and site landscaping not designated to be removed.

3. Signs not designated to be to be removed or relocated.

*****END OF SECTION*****

SECTION 02110

SITE CLEARING

PART 1 GENERAL

1.01 THE REQUIREMENT

A. The Work shall consist of furnishing all equipment, labor, materials, and incidentals, and performing all operations necessary to complete the following: clearing; grubbing; and removal and disposal of all vegetation and debris within the construction area, including all work within the limits of excavation, construction storage areas, and Contractor's field office.

1.02 SITE INSPECTION

A. Prior to mobilizing onto the project site, the Contractor shall perform a site visit and inspect the site conditions and review existing maps of the site, pipeline routes, and facilities delineating the District's property and right-of-way lines.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 PRIMARY SITE ACCESS

A. The Contractor access to the site shall be from the locations shown on the Drawings.

B. **Utility Interference:** Where existing utilities interfere with the Work of this section, the Work shall be stopped and the Engineer notified of interferences before proceeding with construction.

3.02 CLEARING, GRUBBING, STRIPPING AND DEMOLITION

A. All construction areas shall be cleared of grass and weeds to at least a depth of six inches and cleared of structures, pavement, sidewalks, concrete or masonry debris, trees, and any other objectionable material of any kind which would interfere with the performance or completion of the Work, create a hazard to safety, or impair the subsequent usefulness of the Work. Trees and other natural vegetation outside the actual lines of construction shall be protected from damage during construction, as directed by the Engineer.

B. The Contractor shall inspect the site as to the nature, location, size, and extent of vegetative material to be removed or preserved as specified herein. Unless otherwise shown or specified, native trees larger than three inches in diameter at the base shall not be removed without the Engineer's approval. The removal of any trees, shrubs, fences, or other improvements outside of rights-of-way as deemed necessary by the Contractor, shall be arranged with the District, and shall be removed and replaced, at no additional cost to the District.

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SECTION 02140

DEWATERING

PART 1 GENERAL

1.01 THE REQUIREMENT

A. The Contractor shall furnish all equipment, labor, materials, and incidentals, and perform all operations necessary to remove and dispose of all surface water and groundwater entering excavations, trenches and other parts of the Work.

B. Each excavation shall be kept dry until subgrade preparation is complete and continually thereafter until backfilling is complete and all field soil testing has been completed. Methods for control of surface water and for controlling the surface and groundwater levels shall be subject to approval of the Engineer.

1.02 CONTRACTOR SUBMITTALS

A. Submittals shall be furnished in accordance with Section 01300 – Submittals.

B. Prior to commencement of excavation, the Contractor shall submit a detailed plan and operation schedule for dewatering of excavations. The Contractor may be required to demonstrate the system proposed and to verify that adequate equipment, personnel, and materials are provided to dewater the excavations at all locations and times. The Contractor's dewatering plan is subject to review and approval by the Engineer.

1.03 QUALITY CONTROL

A. It shall be the sole responsibility of the Contractor to control the rate and effect of the dewatering in such a manner as to avoid all objectionable settlement and subsidence, or any other adverse effects.

B. All dewatering operations shall be adequate to assure the integrity of the finished project and shall be the responsibility of the Contractor.

C. Where critical structures or facilities exist immediately adjacent to areas of proposed dewatering, reference points shall be established and observed at frequent intervals to detect any settlement which may develop. The responsibility for conducting the dewatering operation in a manner which will protect adjacent structures and facilities rests solely with the Contractor. The cost of repairing any damage to adjacent structures and restoration of facilities shall be the responsibility of the Contractor.

PART 2 PRODUCTS

2.01 EQUIPMENT

A. Dewatering, where required, may include the use of cofferdams, well points, sump pumps, temporary pipelines for water disposal, rock or gravel placement, and other means. Standby pumping equipment shall be maintained on the jobsite.

PART 3 EXECUTION

3.01 GENERAL REQUIREMENTS

A. The Contractor shall provide all equipment necessary for dewatering. The Contractor shall have on hand, at all times, sufficient pumping equipment and machinery in good working condition and shall have available, at all times, competent workmen for the operation of the pumping equipment. Adequate standby equipment shall be kept available at all times to insure efficient dewatering and maintenance of dewatering operation during power failure.

B. All excavations for structures or trenches which extend down to or below groundwater shall be dewatered by lowering and keeping the groundwater level to a minimum of 12-inches beneath bottom of excavations at all times.

C. Surface runoff shall be diverted and prevented from entering excavations or trenches to the greatest extent possible without causing damage to adjacent property.

D. Dewatering shall at all times be conducted in such a manner as to preserve the undisturbed bearing capacity of the subgrade soils at proposed bottom of excavation.

E. If foundation soils are disturbed or loosened by the upward seepage of water or an uncontrolled flow of water, the affected areas shall be excavated and replaced with gravel or crushed aggregate pipeline embedment materials per Specification Section 02200 – Earthwork.

F. Flotation of the piping shall be prevented by the Contractor by maintaining a positive and continuous removal of water. The Contractor shall be fully responsible and liable for all damages which may result from failure to adequately keep excavations dewatered.

G. If well points or wells are used, they shall be adequately spaced to provide the necessary dewatering and shall be sand-packed and/or other means used to prevent pumping of fine sands or silts from the subsurface. A continual check by the Contractor shall be maintained to ensure that the subsurface soil is not being removed by the dewatering operation.

H. The Contractor shall dispose of water from the Work in a suitable manner without damage to adjacent property. Contractor shall obtain from the appropriate agencies and authorities, the dewatering and stormwater discharge permits required to remove and dispose of groundwater, surface water, and any other water used in the Contractor's operations. Permits shall be obtained prior to start of construction and submitted to Engineer for the project files.

****END OF SECTION****

SECTION 02150

EROSION PROTECTION AND SEDIMENT CONTROL

PART 1 GENERAL

1.01 SUMMARY

A. The work described in this specification includes furnishing all equipment, labor, materials, and incidentals, and performing all operations necessary for the following general items of work:

1. Design, installation, maintenance, and removal of erosion protection and sediment control measures.

1.02 DEFINITIONS

A. Sediment and Erosion Control Devices (including, but not limited to): silt fences, hay bales, sandbag or rock check dams, sediment ponds, sediment traps, or other devices approved by Engineer.

1.03 SUBMITTALS

A. Erosion Protection and Sediment Control Plan (EPSCP):

1. Conform to applicable permits and Laws and Regulations. Include, at a minimum, the following information:

a. Facilities, products, and procedures to meet the requirements of erosion protection and sediment control requirements of all applicable laws and regulations, required project permits, and requirements in these Specifications.

b. Facilities, products, and procedures for preventing the discharge of spent construction water from the project site.

c. Procedures and installation details for constructing all required erosion protection and sediment control facilities.

d. Procedures and schedule to inspect, maintain, monitor, and repair erosion protection and sediment control facilities.

e. Product data of proposed materials to be used to control erosion and sediment.

f. Drawings that clearly show erosion and sediment control measures to be used for each stage of construction.

g. Schedule of removal of sediment and erosion control devices.

1.04 REQUIREMENT

A. Provide materials and installation for erosion and sediment control in accordance with the requirements and provisions of applicable project permits, Kern County, the State of California, and additional requirements as stated herein.

PART 2 PRODUCTS

2.01 SILT BARRIERS

A. Including hay bales, silt fences, and other similar temporary soil sediment barriers for the purpose of intercepting and detaining sediment from disturbed areas during construction.

B. Firmly anchor silt barriers into the ground.

1. Silt Fences:

a. Fabric and posts suitable for sedimentation control application.

b. UV protected fabric.

2. Temporary Rock Check Dams - Construct using clean vehicle tracking rock.

PART 3 EXECUTION

3.01 PREPARATION

A. Identify required lines, levels, contours, and datums for the construction of erosion control facilities.

3.02 SEDIMENT AND EROSION CONTROL

A. Install sediment and erosion controls prior to:

1. Performing any excavation, grading or filling operations within the site, including establishment of staging and stockpile areas.

2. Performing any concrete demolition activities.

B. Maintain and repair sediment and erosion controls during course of construction.

3.03 SILT FENCES

A. Toe-in silt fences at least 6 inches to prevent silt-laden runoff water from running beneath the fence and over the ground surface.

3.04 HAY BALES

A. Toe-in hay bales at least 6 inches, and stack and stake in place.

B. Use at least 2 stakes per bale.

C. Tie wire to stakes to provide additional stability.

3.05 REMOVAL OF TEMPORARY FACILITIES

A. Do not remove erosion control facilities without written approval from Engineer.

B. All erosion control facilities will be the property of Contractor.

1. Remove and dispose offsite after all Work is complete.

C. Remove and dispose of sediments collected in the sediment control systems in accordance with Section 02523 – Temporary Facilities.

****END OF SECTION****

SECTION 02200

EARTHWORK

PART 1 GENERAL

1.01 THE REQUIREMENT

A. The Contractor shall provide all labor, materials, equipment, and incidentals, and perform all operations necessary to complete all earthwork as specified, shown on the Drawings, or as directed by the Engineer. Earthwork includes excavation, trenching, backfill, compaction, and all related Work.

1.02 APPLICABLE SECTIONS

A. The following specification sections are applicable:

1. Section 02060 – Site Preparation and Selective Demolition
2. Section 02110 – Site Clearing
3. Section 02140 – Dewatering
4. Section 02490 – Precast Manholes and Vaults
5. Section 15025 – Steel Pipe
6. Section 15030 – Polyvinyl Chloride (PVC) Pressure Pipe

1.03 REFERENCES

A. ASTM D 1557 – Test Method for Laboratory Compaction Characteristics of Soils Using Modified Effort (56,000 ft – lbf/ft3).

B. With reference to the terms and conditions of the construction standards for excavations set forth in OSHA "Safety and Health Regulations for Construction", Chapter XVII of Title 29, CFR, Part 1926, the Contractor shall employ a competent person and, when necessary, based on the regulations, a registered professional Engineer, to act upon all pertinent matters of the Work of this section.

C. ASTM D2922 – Standard Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)

D. ASTM D4254- Standard Test Methods for Minimum Index Density and Unit Weight of Soils and Calculation of Relative Density

E. ASTM D4914- Standard Test Methods for Density and Unit Weight of Soil and Rock in Place by the Sand Replacement Method in a Test Pit

F. ASTM D 1556 – Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method

1.04 SUBMITTALS

A. Submittals shall be furnished in accordance with Section 01300 – Submittals.

B. Contractor shall submit certification, gradations, and source content for onsite and import materials proposed to be used in Work. Sample sizes shall be as determined by testing laboratory.

C. At least 30 days before starting construction on the sheeting and shoring, if needed, the sheeting and shoring design Engineer shall complete and submit to Engineer the Protection System Design Certificate (Figure 1-02200) and the Contractor shall use the approved sheeting and shoring design. A separate certificate shall be submitted for each unique design. The certificate shall be signed and sealed by the registered professional Engineer that designed the protection system. The professional Engineer shall be licensed or registered in the state where the protection system is located.

PART 2 PRODUCTS

2.01 MATERIALS

A. **Filter Fabric**: Not Used.

B. SUITABLE BACKFILL, FILL, AND EMBANKMENT MATERIAL

1. All backfill, fill and embankment materials shall be clean earth, rock, or sand free from organic material.

2. Fill and backfill materials placed within 6-inches of structure or pipe shall be free of rocks or unbroken masses of earth having a dimension larger than 3-inches.

3. Suitable types of materials are as follows.

a. **Selected Backfill (Material 1):** Suitable Native Fill is material that meets the requirements above and is obtained from onsite excavation Work. Contractor is responsible for selectively separating, stockpiling, and transporting suitable native fill from excavations for use.

b. **Pipe Embedment (Material 2)**: Embedment material shall be of sand, gravel, or crushed aggregate and have a sand equivalent of not less than 30. All of said material shall pass a 1-1/2 inch screen and not more than 10 percent of said materials shall pass a No. 200 sieve. Embedment material shall be free from dust, clay, and trash.

c. **Aggregate Base (Material 3)**: Crushed rock aggregate base material of such nature that it can be compacted readily by watering and rolling to form a firm, stable base for pavements. At the option of the Contractor, the grading for either the 1-1/2-inch maximum size or 3/4-inch maximum size gradation shall be used. The sand equivalent value shall be not less than 22, and the material shall meet the following gradation requirements:

	Percentage Passing	
Sieve Size	1-1/2-inch Max. Gradation	3/4-inch Max. Gradation
2-inch	100	-
1-1/2-inch	90-100	-
1-inch	-	100
3/4-inch	50-85	90-100
No. 4	25-45	35-60
No. 30	10-25	10-30
No. 200	2-9	2-9

d. The Contractor shall utilize the table below for selecting the appropriate backfill. The backfill materials are defined in the table below. Flexible pipe refers to steel pipe, ductile iron pipe, and PVC pipe. Rigid pipe refers to Reinforced Concrete Pipe.

Location	**Backfill Material**
Pipe/Utility Trenches	
Foundation Stabilization Zone	Material 2, 1-1/2 Maximum Size
Bedding Zone (All Pipe Types)	Material 2
Pipe Zone (Flexible Pipe)	Material 2
Trench Zone	Material 1
Street Zone (Final Backfill)	Material 1
Street Zone (AB beneath AC Street)	Material 3
Structures	
Backfill beneath structures	Material 2

C. Controlled Low Strength Material (CLSM): Not used.

D. UNSUITABLE MATERIAL

1. Unsuitable material includes the following:

a. Topsoil;

b. Material including organic material;

c. Material that contains hazardous or designated waste materials.

2.02 MATERIALS TESTING

A. At his/her discretion, the Engineer may request that the Contractor supply samples for testing of any material used in the Work.

B. Particle size analysis of soils and aggregates will be performed using ASTM D 422 – Standard Test Method for Particle-Size Analysis of Soils.

C. Determination of sand equivalent value will be performed using ASTM D 2419 – Standard Test Method for Sand Equivalent Value of Soils and Fine Aggregate.

D. **Materials Testing**: Sampling and testing for quality assurance purposes will be performed by an independent material lab on the District's behalf and paid for by the District. Said quality assurance testing in no way relieves the Contractor of the quality control requirements stated under Special Conditions Section D-25 – Quality Control.

PART 3 EXECUTION

3.01 EXCAVATION

A. General

1. Excavation shall include the removal of all materials, including all obstructions of any type and size that would interfere with the proper execution and completion of the Work. Prior to excavation the entire construction site shall be cleared and grubbed per Section 02110 – Site Clearing. The Contractor shall furnish, place and maintain excavation supports and shoring that may be required for the excavation. It is the Contractor's responsibility to ensure adequate safety during all construction Work, including excavation.

2. The Contractor shall be responsible for removing or excluding water, including stormwater and groundwater, from all excavations. Water shall be removed and excluded until backfilling is complete and all field soil testing is complete. See Specification Section 02140 – Dewatering.

3. Excavations shall provide adequate working space and clearances for the Work to be performed therein and for installation and removal of concrete forms. In no case shall excavation faces be undercut for extended footings.

4. Subgrade surfaces shall be clean and free of loose material of any kind when concrete is placed thereon.

5. Except where exterior surfaces are specified to be damp-proofed, monolithic concrete manholes and other concrete structures or parts thereof, which do not have footings that extend beyond the outside face of exterior walls, may be placed directly against excavation faces without the use of outer forms, provided that such faces are neat and stable and also provided that a layer of polyethylene film is placed between the earth and the concrete.

6. **Classification of Excavated Materials**: No classification of excavated materials will be made for payment purposes. Excavation and trenching Work shall include the removal and subsequent handling of all materials excavated or otherwise removed in performance of the Work, regardless of the type, character, composition, or condition thereof.

7. **Blasting**: Blasting or other use of explosives for excavation will not be permitted.

B. Sheeting and Shoring

1. Except where banks are cut back on a stable slope, excavations for structures and trenches shall be supported with steel sheet piling and shoring as necessary to prevent caving or sliding.

2. Sheet piling or other excavation support systems shall be installed as necessary to limit the extent of excavations for deeper structures and to protect adjacent structures and facilities from damage due to excavation and subsequent construction. Contractor shall assume complete responsibility and shall install adequate protection systems for prevention of damage to existing facilities.

3. Sheeting, shoring and excavation support systems shall be designed by a professional Engineer registered in the state where the project is located.

4. Trench sheeting may be removed if the pipe strength is sufficient to carry trench loads based on trench width to the back of sheeting. Trench sheeting shall not be pulled after backfilling. Where trench sheeting is left in place, it shall not be braced against the pipe, but shall be supported in a manner which will preclude concentrated loads or horizontal thrusts on the pipe. Cross braces installed above the pipe to support sheeting may be removed after pipe embedment has been completed. Trench sheeting shall be removed unless otherwise permitted by Engineer. Trench sheeting will not be removed, if in the opinion of Engineer, removal of the sheeting will cause damage to the facility it is protecting. If left in place, the sheeting shall cut off 12 inches below finished grade. The design of the support system shall be such as to permit complete removal while maintaining safety and stability at all times.

C. Foundation Stabilization

1. Sub-grades for concrete structures and trench bottoms shall be firm, dense, and thoroughly compacted and consolidated; shall be free from mud and muck; and shall be sufficiently stable to remain firm and intact under the feet of the workers.

2. Sub-grades for concrete structures or trench bottoms which are otherwise solid, but which become mucky on top due to construction operations, shall be reinforced with crushed rock or gravel as specified for pipe embedment. The stabilizing material shall be placed in a manner that no voids remain in the pipe embedment. All excess pipe embedment with unfilled void space shall be removed. The finished elevation of stabilized subgrades shall not be above subgrade elevations indicated on the drawings.

D. Tolerances

1. All excavation and embankments shall be graded to provide uniform surfaces to the lines and grades shown on the Drawings, or as specified, or as directed by the Engineer. Tolerances for finished earth line and grade elevations and thicknesses shall be as given below.

2. All excavation or compacted embankment lines, including such lines for earthwork adjacent to concrete construction, shall have a tolerance of plus or minus 0.1 foot or be governed by concrete tolerances, whichever is more restrictive.

3.02 TRENCH EXCAVATION

A. The Contractor shall perform all necessary excavation for pipelines to the required lines, grades, and depths, all in conformance with these Specifications and details shown on the Drawings, or as directed by the Engineer.

B. No more trenches shall be opened in advance of pipe laying than is necessary to expedite the Work. No more than 500 feet of trench in any reach shall be open at any one time, nor shall more than a total of 1,000 feet of trench shall be open in the entire Contract Work area.

C. All trench excavation shall be open cut from the surface.

D. Alignment, Grade, and Minimum Cover:

1. The alignment and grade or elevation of the turnout structure and shall be fixed and determined from offset stakes. Vertical and horizontal alignment of pipe section, and the maximum joint deflection used in connection therewith, shall be in conformity with requirements of the section covering installation of pipe.

2. Where pipe grades or elevations are not definitely fixed by the contract drawings, trenches shall be excavated to a depth sufficient to provide a minimum depth of backfill cover over the top of the pipe of 36 inches over pipes below paved and graded roads. Greater pipe cover depths may be necessary on vertical curves or to provide adequate clearance beneath existing pipes, conduits, drains, drainage structures, or other. The minimum depth of backfill cover on all other areas not already mentioned shall be 36 inches over the top of the pipe. Measurement of pipe cover depth shall be made vertically from the outside top of pipe to finished ground or pavement surface elevation, except where future surface elevations are indicated on the drawings.

E. Maximum Trench Widths: Not used.

F. Minimum Trench Widths

1. Trenches shall be excavated to the minimum trench widths as shown on the Drawings. Trenches shall be excavated to a width which will provide adequate working space and sidewall clearances for proper pipe installation, jointing, and embedment.

2. Specified minimum sidewall clearances are not minimum average clearances but are minimum clear distances which will be required to the trench excavation or the trench protective system.

3. Cutting trench banks on slopes to reduce earth load to prevent sliding and caving shall be used only in areas where the increased trench width will not interfere with surface features or encroach on right-of-way limits.

G. Mechanical Excavation

1. The use of mechanical equipment will not be permitted in locations where its operation would cause damage to trees, buildings, culverts, or other existing property, utilities, or structures above or below ground. In all such locations, hand excavating methods shall be used.

2. Mechanical equipment used for trench excavation shall be of a type, design, and construction, and shall be so operated, that the rough trench excavation bottom elevation can be controlled, and that trench alignment is such that pipe, when accurately laid to specified alignment, will be centered in the trench with adequate sidewall clearance. Undercutting the trench sidewall to obtain sidewall clearance will not be permitted.

3. In locations where maximum trench widths are required for designated rigid conduits, mechanical equipment shall be operated so that uniform trench widths and vertical sidewalls are obtained at least from an elevation 12 inches [300 mm] above the top of the installed pipe to the bottom of the trench.

H. Cutting Concrete Surface Construction

1. Cuts in concrete lining shall be no larger than necessary to provide adequate working space for proper construction of aqueduct turnout structure. Cutting shall be started with a concrete saw in a manner which will provide a clean groove at least 1-1/2 inches [40 mm] deep along the perimeter of cuts for the structure.

I. Excavation below Pipe Sub-grade

1. Except where otherwise required, pipe trenches shall be excavated below the underside of the pipe, as indicated on the drawings, to provide for the installation of pipe embedment.

2. Bell holes shall provide adequate clearance for tools and methods used for installing pipe. No part of any bell or coupling shall be in contact with the trench bottom, trench walls, or pipe embedment when the pipe is jointed.

J. **Artificial Foundations in Trenches**: Subject to the determination of the Engineer, if any of the following conditions are encountered in pipe trench excavation, adjustments will be made in the Contract Price in accordance with the provisions of the General Conditions for required additional Work authorized or directed by the Engineer:

1. If the bottom of the pipe trench is in soft, unstable material, it shall be excavated below grade for the full width of the trench as directed and the below-grade excavation subsequently refilled with approved compacted pipe embedment materials.

2. If the pipe trench is excavated in rock, hardpan, or other similar hard and unyielding material, or has rocks or cobbles which, in the opinion of the Engineer, will be detrimental to the pipe, the bottom of the trench shall be over-excavated 6 inches below grade, and said over-excavation refilled with approved compacted pipe embedment material.

3. The Engineer's assessment of unstable or unsuitable material will not be made until the material has been properly dewatered. For the purpose of the assessment, "properly dewatered" shall be defined as the groundwater level being 3 feet below the pipe invert elevation. If, after dewatering and excavation of the trench, it is determined that the pipe trench is in soft, unstable material, it shall be excavated below grade as directed by the Engineer and the below-grade excavation subsequently refilled with approved compacted pipe embedment materials. Payment for authorized removal and replacement of soft, unstable material will be made in accordance with the provisions of the General Conditions.

4. If natural foundation or subgrade material is disturbed or loosened during the excavation process or otherwise, it shall be compacted to a degree satisfactory to the Engineer, or where directed, it shall be removed and replaced with approved material and compacted in accordance with requirements of this Section and details shown on the Drawings, all at no additional cost to the District. Any and all excess excavation or over-excavation performed by the Contractor for any purpose or reason, except as may be authorized in writing by the Engineer, and whether or not due to the fault of the Contractor, shall be at the expense of the Contractor. Fill and compacting of fill for such unauthorized excess excavation or over-excavation shall be placed and compacted by and at the expense of the Contractor. Insofar as practicable, material excavated shall be used for backfill; otherwise, it shall be wasted as directed. When water is encountered in the trench, it shall be removed by pumping or draining.

3.03 PIPE EMBEDMENT

A. Construct pipeline in accordance with AWWA C-605-21 Standard for Underground Installation of Polyvinyl Chloride (PVC) Pressure Pipe and Fittings for Water Pipeline Construction, (2021 or latest version thereof).

B. Embedment materials both below and above the bottom of the pipe, classes of embedment to be used, and placement and compaction of embedment materials shall conform to the requirements indicated on the Drawings and to the following supplementary requirements.

C. Embedment material shall contain no cinders, clay lumps, or other material which may cause pipe corrosion.

D. Placement and Compaction

1. Embedment materials containing five (5%) percent or less of material passing a No. 200 sieve may be compacted using vibration if the Contractor uses effective procedures that yield the specified compaction test results.

2. Embedment around pipelines that is mechanically compacted shall be compacted using light, hand-operated, vibratory compactors and rollers.

3. Embedment material shall be sand, gravel, or crushed aggregate having a sand equivalent of not less than 30. All of said material shall pass a 1-1/2 inch screen and not more than 10 percent of said materials shall pass a No. 200 sieve.

4. Embedment material shall be placed in a minimum of two layers with the first layer being placed loose to the spring line of the pipe.

5. Embedment material shall be spread and the surface graded to provide a uniform and continuous support beneath the pipe at all points between bell holes or pipe joints. It will be permissible to slightly disturb the finished subgrade surface by withdrawal of pipe slings or other lifting tackle.

6. After each pipe has been graded, aligned, and placed in final position on the bedding material, and shoved home, sufficient pipe embedment material shall be deposited and compacted under and around each side of the pipe and back of the bell or end thereof by shovel slicing or other suitable methods to hold the pipe in proper position and alignment during subsequent pipe jointing and embedment operations.

7. Embedment material shall be deposited and compacted uniformly and simultaneously on each side of the pipe to prevent lateral displacement.

8. Pipe embedment shall be compacted to the top of the pipe in all areas where compacted backfill is specified.

9. Unless otherwise specified or directed, a minimum relative density of 85 percent for cohesionless materials will be required. For cohesionless materials, the relative density shall be based on the following formula, wherein the maximum density is the highest dry unit weight of the soil (determined by test methods in conformance with ASTM D4253-91), the minimum density is the lowest dry unit weight of the soil (determined by test methods in conformance with ASTM D4254-91), and the in-place density is the dry unit weight of the soil in place (determined by test methods in conformance with ASTM D4914-89):

$$\textbf{Rel. Den. = (\%)}\ \frac{\text{max.den.x (in-place den.- min.den.)}}{\text{in-place den.x (max.den.-min.den.)}}\ \text{x } 100$$

10. Where maximum dry densities of embedment materials can be determined in accordance with ASTM D1557, the embedment material should be compacted to a minimum 90 percent of maximum dry density within 2 percent of the optimum moisture content based on ASTM D1557.

3.04 FINAL BACKFILL

A. Backfill shall not be dropped directly upon any structure or pipe. Backfill shall not be placed around or upon any structure until the concrete has attained sufficient strength to withstand the loads imposed as determined by the Contractor.

B. Backfill over pipelines that is mechanically compacted shall be compacted using light, hand-operated, vibratory compactors and rollers. After completion of at least two feet of compacted backfill over the top of pipeline, compaction equipment weighing no more than 8,000 pounds may be used to complete the trench backfill.

C. All backfill for concrete structures and trenches above pipe embedment shall conform to the following requirements.

D. Compacted Backfill:

1. Compacted backfill will be required as shown on the Drawings for the full depth of the excavation or pipe embedment.

2. Job Excavated Material (Selected Backfill): Job excavated material may be used for compacted backfill when the job excavated material is finely divided and free from debris, organic material, cinders, any corrosive material, and stones and earthen masses larger than 3 inches in greatest dimension. Masses of moist, stiff clay shall not be used. Job excavated materials shall be placed in uniform layers not exceeding 8 inches in uncompacted thickness. Each layer of material shall have the best possible moisture content for satisfactory compaction. The material in each layer shall be wetted or dried as needed and thoroughly mixed to ensure uniform moisture content and adequate compaction. Increased layer thickness may be permitted for non-cohesive material if Contractor demonstrates to the satisfaction of Engineer that the specified compacted density will be obtained. The method of compaction and the equipment used shall be appropriate for the material to be compacted and shall not transmit damaging shocks to the pipe. Job excavated material for compacted

backfill for steel pipe shall be compacted to 90 percent of maximum density at a moisture content within 2 percent of the optimum moisture content, as determined by ASTM D1557. Job excavated material for trench backfill shall be compacted to 90 percent of maximum density (95 percent when under road) at a moisture content within 2 percent of the optimum moisture content, as determined by ASTM D1557.

E. **Water-Settled Earth Backfill**: Settlement or Compliance of trench backfill using water jetting or ponding shall not be performed.

3.05 FIELD TESTING

A. **General**: Where soil material is required to be compacted to a percentage of maximum density, the maximum density at optimum moisture content will be determined in accordance with Method C of ASTM D 1557. Where cohesionless, free draining soil material is required to be compacted to a percentage of relative density, the calculation of relative density will be determined in accordance with ASTM D 4253 and D 4254. Field density in-place tests will be performed in accordance with ASTM D 1556 – Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method, ASTM D2922 – Standard Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth), or by such other means acceptable to the Engineer.

3.06 DRAINAGE MAINTENANCE

A. Trenches across roadways, driveways, walks, or other trafficways adjacent to drainage ditches or watercourses shall not be backfilled prior to completion of backfilling the trench on the upstream side of the trafficway, to prevent impounding water after the pipe has been laid. Bridges and other temporary structures required to maintain traffic across such unfilled trenches shall be constructed and maintained by Contractor. Backfilling shall be done so that water will not accumulate in unfilled or partially filled trenches. All material deposited in roadway ditches or other watercourses crossed by the line of trench shall be removed immediately after backfilling is completed, and the original section, grades, and contours of ditches or watercourses shall be restored. Surface drainage shall not be obstructed longer than necessary.

3.07 FINAL GRADING

A. After other outside Work has been finished, and backfilling and embankments completed and settled, all areas which are to be graded shall be brought to grade at the indicated elevations, slopes, and contours. All cuts, fills, embankments, and other areas which have been disturbed or damaged by construction operations shall be brought back up to original grade.

B. Use of graders or other power equipment will be permitted for final grading and dressing of slopes, provided the result is uniform and equivalent to manual methods. All surfaces shall be graded to secure effective drainage. Unless otherwise indicated, a slope of at least 1 percent shall be provided.

C. Final grades and surfaces shall be smooth, even, and free from clods and stones, weeds, brush, and other debris.

3.08 DISPOSAL OF EXCESS EXCAVATED MATERIALS

A. Broken concrete and other debris resulting from pavement or lining removal, excavated rock in excess of the amount permitted to be installed in trench backfill, debris encountered in excavation Work, and other similar waste materials shall be disposed of away from the site.

B. Excess earth from excavations may be distributed directly over the pipe trench to a maximum depth of 6 inches above the original ground surface elevation at and across the trench and sloping uniformly each way. Unless otherwise specified, all suitable materials removed in contract excavation, or as much thereof as required, may be used in the construction of embankments or for backfill. Material thus wasted shall be carefully finished with a drag, blade machine, or other suitable tool to a smooth, uniform surface without obstructing drainage at any point. The disposal of waste and excess excavated materials, including hauling, handling, grading, and surfacing, shall be a subsidiary obligation of Contractor and no separate payment will be made therefore.

3.09 SETTLEMENT

A. Contractor shall be responsible for all settlement of trench backfill which may occur within the correction period stipulated in Special Conditions Section D-17 – Guarantee and Maintenance Warranties.

B. Contractor shall make, or cause to be made, all repairs or replacements made necessary by settlement within 30 days after notice from Engineer or the District.

FIGURE 1-02200

PROTECTIVE SYSTEM
DESIGN CERTIFICATE

I undersigned engineer, hereby certify that the protection system for _____(trench location) has been designed by me and is in Compliance with the Contract Documents.

Name: _____ State of Registration: California

Signature: _____ P.E. Number _____

Date: _____

_____
(Seal)

****END OF SECTION****

SECTION 02490

PRECAST CONCRETE MANHOLES AND VAULTS

PART 1 GENERAL

1.01 SUMMARY

A. The Contractor shall provide precast concrete manholes and vaults, complete and in-place, in accordance with the Contract Documents.

1.02 SPECIFICATIONS, CODES AND STANDARDS

A. Commercial Standards

1.	ASTM A 48/48M-03	Gray Iron Castings (latest version thereof)
2.	ASTM C 150/15M-12	Portland Cement (latest version thereof)
3.	ASTM C 443-12	Joints for Circular Concrete Sewer and Culvert Pipe, Using Rubber Gaskets (latest version thereof)
4.	ASTM C 478-12	Precast Reinforced Concrete Manhole Sections (latest version thereof)
5.	ASTM C 923-08	Resilient Connectors Between Reinforced Concrete Manhole Structures, Pipes, and Laterals (latest version thereof)

1.03 SUBMITTALS

A. Submit the following in accordance with Section 01300 – Submittals.

B. Shop Drawings.

1. Show dimensions, locations, lifting inserts, reinforcement, and joints.

2. Structural design calculations for vaults, signed by a registered engineer in the State of California.

C. Manufacturer's Certification for Vaults.

1. Written certification that the vault complies with the requirements of this Section

1.04 QUALITY ASSURANCE

A. After installation, the Contractor shall demonstrate that manholes and vaults have been properly installed, level, with tight joints, at the correct elevations and orientations, and that the backfilling has been carried out in accordance with the Contract Documents.

1.05 MEASUREMENT AND PAYMENT

A. Payment:

1. Include in prices offered in the schedule for other items of work.

PART 2 PRODUCTS

2.01 MANHOLES

A. Provide precast manhole sections and conical sections conforming to ASTM C 478 and the requirements of this Section. Adjusting rings shall be standard items from the manufacturer of the manhole sections. Minimum wall thickness of rings shall be 4-inches if steel reinforced and 6-inches if not reinforced.

B. Axial length of sections shall be selected to provide the correct total height with the fewest joints.

C. Conical sections shall be designed to support cast iron frames and covers under an H-20 loading, unless indicated otherwise.

D. **Design Criteria:** Manhole walls, transitions, conical sections, and base shall be designed per ASTM C 478 for the depths indicated and the following:

1. AASHTO H-20 loading applied to the cover.

2. Unit weight of soil of 120 pcf located above all portions of the manhole.

3. Lateral soil pressure based on saturated soil producing 100 pcf acting on an empty manhole.

4. Internal fluid pressure based on unit weight of 63 pcf with manhole filled from invert to cover with no balancing external soil pressure.

5. Dead load of manhole sections fully supported by the base and transition.

6. Additional reinforcing steel in walls to transfer stresses at openings.

7. The minimum clear distance between the edges of any 2 wall penetrations shall be 12-inches or one-half of the diameter of the smaller penetration, whichever is greater.

E. Joints shall be sealed with O-ring gaskets conforming to ASTM C 443.

F. Concrete for base and channel formation shall be 4000 psi concrete conforming to Section 03310 – Cast-In-Place Concrete.

G. Barrel section to sewer pipe connections shall be sealed with resilient connectors complying with ASTM C 923. Mechanical devices shall be stainless steel.

H. Manhole steps shall be comprised of 1/2-inch grade 60 steel reinforcement rod encased in polypropylene copolymer plastic. Steps shall have tread width of 14-inches. Furnish test results demonstrating step capability to resist a pull out force of 2200 pounds. Provide PS2- PF Manhole Step by M.A. Industries, or equal.

I. Manhole Manufacturers, or Equal

1. Hanson Concrete Products, Inc.

2. Teichert Precast - Jensen Precast

3. Brooks Products, Inc.

2.02 FRAMES AND COVERS

A. Castings

1. Castings for manhole frames and covers shall be non-rocking and shall conform to the requirements of ASTM A 48, Class 30.

2. Unless otherwise indicated, cast iron covers and frames shall be heavy traffic type, 36 inches in diameter, with embossed lettering saying "Water".

3. Frame and cover shall be designed for H-20 traffic loading.

B. Castings Manufacturers, or Equal

1. Alhambra Foundry Co., Ltd.

2. Neenah Foundry Co.

3. Vulcan Foundry, Inc.

4. Brooks Products, Inc.

2.03 VAULTS

A. Provide precast vaults designed for the indicated applications and of the sizes indicated.

B. The minimum structural member thickness for vaults shall be 5-inches.

C. Cement shall be Type V Portland cement as specified in ASTM C 150. The minimum 28- day concrete compressive strength shall be 4,000 psi.

D. All reinforcing steel shall be embedded in the concrete with a minimum clear cover as recommended by ACI 318.

E. Design Loading:

1. Vaults in areas subject to vehicular traffic shall be designed for H-20 traffic loading.

2. Vaults in other areas shall be designed for a vertical live load of 300 psf.

3. Lateral loads on vaults in all areas shall be calculated from:

L = 90 h, plus surcharge of 240 psf in areas of vehicular traffic

Where L = loading in psf

h = depth of fill in feet

F. Where joints are designed in pre-cast concrete vaults, such joints shall be interlocking to secure proper alignment between members and prevent migration of soil through the joint.

G. Structural sections at joints shall be sized sufficiently to reinforce the section against localized distress during transportation and handling and against excess contact bearing pressures through the joint.

H. Where openings for access to the vault are required, the full clear space opening indicated shall be provided, without obstructions from brackets or supports.

I. For large openings where brackets or supports are designed to protrude into the opening for support of required covers, such brackets or supports shall be designed to be easily removed and replaced with a minimum of effort and without cutting or welding.

J. Covers for access openings shall be provided.

K. Frames for covers shall be fabricated from steel, galvanized after fabrication, and shall be integrally cast into the vault concrete sections.

L. All covers shall be tight fitting to prevent the entrance of dirt and debris.

M. Where edge seams are permitted, no gaps greater than 1/16-inch between edges will be accepted.

N. All covers, except round, heavy-weight, cast iron manhole covers, shall have securing mechanisms to hold the covers firmly in place against the effects of repetitious live loads such as pedestrian or vehicle traffic.

O. Where penetrations of the pre-cast concrete vault are required for piping, conduit, or ducts, such penetrations shall be accommodated through pre-cast openings or thin-wall knock-out sections.

P. All openings for penetrations shall be smooth and free of surface irregularities and without exposed steel reinforcing.

Q. Vaults need not be designed to resist thrust from piping passing through the vault.

R. Warning Signs

1. The entrance to every manhole and vault shall be fitted with a permanently affixed, plastic warning sign, located above and centered on the top step.

2. Sign Manufacturer, or Equal

a. W. H. Brady Company

b. Seton Nameplate Corporation

PART 3 EXECUTION

3.01 TRANSPORT AND HANDLING

A. Transport and handle Pre-cast concrete sections with care in accordance with the manufacturer’s written recommendations.

B. Where lifting devices are provided in pre-cast sections, such lifting devices shall be used as intended.

C. Where no lifting devices are provided, follow the manufacturer’s recommendations for lifting procedures to provide proper support during lifting.

3.02 INSTALLATION

A. Assembled and placed buried pre-cast concrete vaults in excavations on properly compacted soil foundations as indicated.

B. Set pre-cast concrete vaults to grade and orient vaults to provide the required dimensions and clearances from pipes and other structures.

C. Prior to backfilling, fill all cracks and voids in pre-cast concrete vaults with non-shrink grout or polyurethane sealant, or both.

D. Around pipe and conduit penetrations, seal openings with polyurethane sealant.

E. With the authorization of the Engineer, grout or a closed-cell flexible insulation may be used as filler material prior to placing a final bed of polyurethane sealant.

F. Steps shall be driven into tapered holes formed in the concrete by inserts from the step manufacturer or 1-inch holes drilled 3-3/4-inches deep into the manhole wall in the field.

G. No more than 6-1/8 inches of plastic arm, measured on the inside of the step, shall be exposed outside the concrete.

H. Steps shall be installed 12-inches on centers vertically, not more than 1/2 inch out of plumb. The top step shall be no more then 12-inches below the manhole cover.

****END OF SECTION****

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SECTION 02523

TEMPORARY FACILITIES

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:

1. Temporary facilities, utilities including but not limited to water, storage tanks, electrical power, drainage, sanitary facilities, lighting, and security.

B. MEASUREMENT AND PAYMENT

1. No price is fixed for Temporary Facilities in the bid proposal. The Contractor is to do the work or furnish materials and equipment to complete all the work as may be needed to provide temporary facilities.

2. The cost of providing such temporary facilities as needed to complete the work or furnishing materials or equipment not otherwise specified in the Special Provisions or Technical Specifications shall be included in the Lump Sum price as set forth in the Bid Schedule for the following items, and no additional compensation shall be paid thereof.

Item No. 1 Mobilization/Demobilization.

1.02 WATER

A. The Contractor shall arrange for construction water to be delivered to the site. There is no available water supply on site.

1.03 ELECTRICAL POWER

A. The Contractor shall provide, at his own expense, all electric power required for construction, testing, general and security lighting, and all other purposes whether supplied through temporary or permanent facilities. The Contractor shall provide his own generating equipment provided it meets the conditions of the California Air Resources Board.

B. When power cords are used at the site, the Contractor shall provide adequate job site electrical distribution facilities conforming to applicable codes and safety regulations.

1.04 DRAINAGE

A. Contractor shall prevent any equipment, and/or other fluids other than water from entering the on- or off-site drainage facilities.

1.05 SANITARY FACILITIES

A. The Contractor shall provide and maintain suitable chemical toilets or water closets (cleaned a minimum of twice a week) at the site or locations reviewed by the District's Representative. Upon completion of the contract work, the Contractor shall remove such toilets and disinfect the premises in the event of a spill or leakage.

1.06 LIGHTING

A. The Contractor shall provide temporary lighting in all work areas sufficient to maintain a lighting level during working hours not less than the lighting level required by California OSHA standards. When used, lighting shall be shielded so that adjacent property owners are not adversely impacted.

1.07 NUISANCE WATER

A. It is anticipated that nuisance water, such as drilling water, rainfall, groundwater or surface runoff may be encountered within the construction site during the period of construction under this contract. The Contractor shall at all times protect the work from damage by such waters and shall take all due measures to prevent delays in progress of work caused by such waters. The Contractor shall dispose of nuisance water at his own expense and without adverse effects upon the property or any other property.

1.08 WATER DISPOSAL

A. Water shall be hauled offsite by the Contractor.

1.09 SEDIMENT DISPOSAL

A. Any sediment collected in erosion and sedimentation control features shall be hauled offsite by Contractor.

1.10 NOISE ABATEMENT

A. If deemed necessary by District or District's Representative sound barriers and/or noise abatement will be required by the Contractor.

1.11 FENCES

A. Fences, Barricades, Warning Signs, and Lights.

1. When used, shall conform to CAL-OSHA regulations, other State of California and local codes, rules, regulations, and ordinances for protection of workers, public and private property, and provide, install and maintain barricades, warning devices and other protection required therefor.

2. Contractor shall provide temporary fencing, etc., as required to protect materials, equipment, livestock, and miscellaneous items from theft, vandalism, unauthorized access and/or harm.

PART 2 PRODUCTS

Not used

PART 3 EXECUTION

Not used

****END OF SECTION****

SECTION 02730

ASPHALT CONCRETE

PART 1 GENERAL

1.01 THE REQUIREMENT

A. The Contractor shall provide all labor, materials, equipment, and incidentals, and perform all operations necessary to complete all pavement removal and replacement as specified, shown on the Drawings, or as directed by the Engineer.

B. Pavement removal includes

1. Existing asphalt pavement removal by saw cutting and milling;

2. Full depth removal of existing pavement shall be per SSPWC Section 302-1.5.1; and

3. Material removal per Section 02060 – Site Preparation and Selective Demolition.

C. Pavement Replacement includes:

1. Replacement of asphalt concrete pavement

D. The Contractor shall comply with Caltrans Standards, SSPWC, and the modifications to SSPWC specified herein.

E. For projects located in the public right-of-way, the respective County's pavement specification, and/or approved encroachment permit requirements shall take precedence over the requirements specified herein.

1.02 APPLICABLE SECTIONS

A. The following specification sections are applicable:

1. Section 02060 – Site Preparation and Selective Demolition

2. Section 02110 – Site Clearing

3. Section 02140 – Dewatering

4. Section 02200 – Earthwork

5. Section 02490 – Precast Manholes and Vaults

6. Section 15025 – Steel Pipe

7. Section 15030 – Polyvinyl Chloride (PVC) Pressure Pipe

1.03 REFERENCES

A. Standard Specifications for Public Works Construction (SSPWC):

1. Standard Specifications for Public Works Construction.

2. Standard Plans for Public Works Construction.

B. State of California, Department of Transportation, Caltrans:

1. Standard Specifications.

2. Standard Plans.

1.04 SUBMITTALS

A. Submittals shall be furnished in accordance with Section 01300 – Submittals.

B. Pavement removal plan, including limits, and equipment.

C. Mix Design: Submit asphalt mix design data prepared within the last year by a certified laboratory acceptable to the District for each asphalt concrete material type used on the project.

D. Materials Quality: Submit materials certificates signed by material producer and Contractor, certifying that each material item complies with, or exceeds, specified requirements.

E. Materials Source: Submit materials certificates signed by material producer and Contractor, identifying material producer by name, location of material producing plant, and type of plant from which material will be produced and delivered.

F. Submit proposed pavement placement sequence and schedule

1.05 QUALITY ASSURANCE

A. Comply with Caltrans Standard Specifications.

B. Use workmen who are thoroughly trained and experienced in the work and who are completely familiar with the specified requirements and methods needed for proper performance of the work in this section.

C. Comply with applicable codes and regulations of governmental agencies having jurisdiction.

D. Rework any work not meeting the specified requirements, as determined by the Engineer, at no additional cost to the District.

E. Provide the necessary field survey to assure compliance with the lines and grades shown on the drawings. In the event the field survey controls are destroyed, the Contractor shall be responsible for the replacement and payment of any further field survey work without additional cost to the District.

F. Contractor will be responsible for testing in accordance with Section 02200 – Earthwork.

PART 2 PRODUCTS

2.01 CONSTRUCTION MATERIALS

A. Construction materials shall comply with all applicable sections of the following:

1. Standard Specifications for Public Works Construction (SSPWC), latest edition.

2. Standard Plans and Specifications of the Rosamond Community Services District, current edition.

3. Standard Specifications, State of California Department of Transportation (Caltrans), latest edition.

2.02 MATERIALS

A. Aggregate Base:

1. Supply aggregate base in compliance with Section 02200 – Earthwork, free of vegetable matter and all other deleterious substances, capable of being compacted readily under watering and rolling to form a firm and stable base for pavements.

2. Unless otherwise shown in the drawings, compacted thickness shall be a minimum of 6 inches.

B. Asphalt Concrete:

1. Use asphalt concrete that is Type B, 3/4-inch maximum, medium. Use asphalt binder that is Performance Grade, conforming to the provisions in Section 92, “Asphalt Binders”, of the Caltrans Standard Specifications. Use asphalt concrete that is in compliance with Caltrans Standard Specifications. The Contractor shall submit an asphalt mix design to the Engineer per Section 01300 – Submittals. The asphalt concrete mixture, composed of the aggregate proposed for use and the optimum amount of asphalt as determined by California Test 367, shall conform to the quality requirements of California Test 305, 306, and 366.

2. Unless otherwise shown on the drawings, provide a compacted thickness of 4 inches, minimum.

C. Paint Binder (Tack Coat):

1. The tack coat shall be diluted SS-1H Emulsion per Section 203-3 of the SSPWC.

D. Seal Coat:

1. Seal coat material shall be a plant-blended product composed of mineral aggregates uniformly distributed in a petroleum-base asphalt emulsion. The asphalt emulsion shall conform to Section 203-3 of the SSPWC, and shall be free of asbestos fibers or coal tar additives. Seal coat materials, undiluted except as noted, and shall conform to the SSPWC Section 203-9. In complying with the seal requirements, the seal shall have a minimum of 60 percent non-volatiles at the delivery from the supplier and 48 percent nonvolatiles at the point of seal material placement.

E. Striping:

1. Paint shall conform to Section 214-4 of the SSPWC. Paint color and type shall be as indicated on the drawings, or if not indicated, shall match as nearly as practical the existing conditions of the site.

PART 3 EXECUTION

3.01 CONSTRUCTION METHODS

A. Construction methods shall comply with all applicable sections of the Standard Specifications for Public Works Construction (SSPWC), latest edition, unless noted otherwise herein.

3.02 PAVEMENT REMOVAL

A. Public Safety:

1. The Contractor shall comply with all applicable, State, County, and City requirements for temporary closures of streets, parking lots, or other areas. The Contractor shall provide barriers, guards, light, signs, temporary bridges, flag persons and watch persons, advising the public of detours and construction hazards. The Contractor shall furnish and install, and upon completion of the work, promptly remove all signs and warning devices. The Contractor shall comply with all the public safety and signing requirements specified in the SSPWC, Section 7 and the California Manual on Uniform Traffic Control Devices, latest edition. Should two or more specifications be in conflict, the more restrictive of the two shall be followed.

B. Project Cleanliness:

1. The Contractor shall ensure that all areas of the site are kept clean of debris and construction materials outside of the region designated for storage and staging. Upon the conclusion of the project, the Contractor shall ensure that all curbs, sidewalks, cross gutters, decorative slab on grade, signs, landscaping drive approaches, etc., are returned to their preconstruction condition and/or new construction status having no marks or material coatings unless designated otherwise. The Contractor shall clean these areas if requested to do so by the Engineer prior to the final completion of the project.

C. Asphalt Concrete Pavement Cutting Requirements:

1. Asphalt concrete pavement shall initially be cut with a pavement cutter or other equipment at the limits of the excavation before the pavement is removed. After backfilling and compacting the excavation, asphalt concrete pavement shall be saw cut to a minimum depth of 4 inches at a point not less than 12 inches outside the limits of the excavation or the previous pavement cut, whichever is greater, and the additional pavement removed. If the cut is within 2 feet of an existing joint or curb and gutter, the asphalt concrete pavement shall be replaced to the joint or curb and gutter. Saw cut lines shall be parallel or perpendicular to the centerline of the road.

D. Disposal of Material:

1. All pavement and other improvements demolished shall be removed from the site and disposed of in a manner acceptable to agencies having jurisdiction over the work and to the Engineer.

3.03 SURFACE CONDITIONS

A. Examine the areas and conditions under which work of this section will be performed. Correct conditions detrimental to timely and proper completion of the work. Do not proceed until unsatisfactory conditions are corrected.

3.04 GRADE CONTROL

A. Maintain grades as shown on drawings. Exercise care to maintain the asphalt concrete paving elevations at the existing gutter, drive approaches, and ramps to insure water will not pond on or around them. Take care to maintain the asphalt concrete paving elevations at the gutters to insure that water will flow into the gutter and the water will not pond on the paving.

B. Bring all discrepancies to the immediate attention of the Engineer.

3.05 PAVEMENT REPLACEMENT

A. General:

1. Producing, hauling, placing, compacting, and finishing of asphalt concrete shall conform to Section 302-5 of the SSPWC.

B. Base Course, Final Course and Striping:

1. Base course paving shall be complete at all times to a point not to exceed 1,000 feet behind any working heading. Temporary striping shall be applied after the base course of asphalt concrete pavement has been placed, in the same configuration as the existing permanent striping, so that traffic can be returned to normal patterns. Temporary striping shall be maintained until permanent striping is applied.

3.06 PREPARATION OF SUBGRADE

A. After rough grading has been completed, the subgrade and/or aggregate base shall be loosened to a depth of at least 6 inches. The loosened material shall be worked to a finely divided condition and all rocks larger than three 3 inches in diameter shall be removed. The moisture content shall be brought to optimum by the addition of water, by the addition and blending of suitable material or by the drying of existing material. Subgrade for base material shall not vary by more than 0.04 foot from the specified grade and cross section limits. Variations within the above-specified tolerances shall be compensating so that the average grade and cross section limits are met.

B. The Contractor shall receive written approval of grade from the Engineer prior to proceeding with any subsequent work.

C. Grade approval shall be received for subgrade and base grade. The material shall then be compacted by approved equipment to 90 percent of laboratory maximum at or near optimum moisture as determined by ASTM D 1557, ASTM D 1556 and/or ASTM D 2922.

The subgrade must be firm and unyielding before the base and/or surface courses are placed.

D. Base material shall be compacted to 95 percent of laboratory maximum at or near optimum moisture as determined by ASTM D 1557, ASTM D 1556 and/or ASTM D 2922.

E. Asphalt placed on subgrade materials shall have subgrade compacted to 95 percent of laboratory maximum at or near optimum moisture as determined by ASTM D 1557, ASTM D 1556 and/or ASTM D 2922.

F. Final grade cross fall shall be a minimum 2 percent from the centerline of the roadway to the edge of the gutter lip, unless otherwise specified on the plans. The grade shall be finished to permit the final PCC gutter lip finish surface at 3/8 inch above said lip.

3.07 PLACING AGGREGATE BASE

A. Aggregate base shall be placed to the thickness shown on the plans or to match existing, whichever is greater. Aggregate base shall be compacted to 95 percent relative compaction and installed in maximum of 6-inch lifts in accordance with Section 301-2 of the SSPWC.

3.08 PLACING TACK COAT

A. Tack coat shall be applied at the rate of 0.05 gallons per square yard to the surfaces to receive finish pavement. Tack coat shall be applied to existing asphalt, metal, or concrete surfaces that will be in contact with new asphalt concrete paving.

3.09 PLACING ASPHALT CONCRETE MATERIAL

A. Asphalt paving shall be applied to the thickness shown on the plans, as listed above, or per the applicable permit. Asphalt paving shall be installed in accordance with Section 302-5 of the SSPWC.

B. Asphalt paving shall be compacted in accordance with Section 302-5 of the SSPWC.

C. Asphalt concrete shall be placed in lifts having a maximum of 4 inches. Work shall be performed in accordance with Section 302-5 of the SSPWC. A tack coat of SS-1h shall be placed between all lifts and on all vertical faces.

D. The new finish surface of asphalt concrete shall be 3/8 inch above PCC curbs and gutters.

E. The asphalt concrete mat paving machine shall have a vibratory plate in operation during all of the laydown operations. In the case that the plate is non-operational, the Contractor shall increase the thicknesses to include an additional 1/16 of an inch for each inch of asphalt concrete material placed.

F. Use of Warm Mix Asphalt Concrete will alter the minimum permissible arrival temperature at the time of rolling. The temperature of the Warm Mix Asphalt Concrete shall be greater than 250 degrees F at the time of placement.

3.10 SURFACE TOLERANCE

A. Finished grade shall not deviate more than 0.02 foot in elevation from the grade indicated on the drawings. Slopes shall not vary more than 1/8 inch in 10 feet from the slopes shown on the drawings.

3.11 INSPECTION AND TESTING

A. Conformity with Contract Documents:

1. Work and materials shall conform to the lines, grades, cross sections, dimensions and material requirements including tolerances, shown on the plans and as specified herein.

B. Advance Notice:

1. At least forty-eight (48) hours' advance notice shall be given when requesting inspection of work. No paving or concrete operations shall be permitted except in the presence of the Engineer.

C. Access for Inspection and Testing:

1. The Contractor and material producer shall, at all times, provide safe access for inspection of the work by the Engineer to any shops, production plants, or areas where materials or portions of the work are in progress. The Engineer shall be given assistance as necessary for performing tests, and shall be kept apprised of work schedules.

D. Materials Testing:

1. The Contractor will provide materials testing in accordance with the current published methods as specified and used by the following agencies:

a. American Society for Testing and Materials (ASTM).

b. American Association of State Highway and Transportation Officials (AASHTO).

c. Test Methods as developed by Materials and Research Department – California.

d. Department of Transportation – Division of Highways, Sacramento, California.

e. Testing of materials shall include, but not be limited to, material gradation, binder content, and compaction. In the event of a failed test, the Contractor shall be responsible to pay for all costs associated with retesting.

2. Asphalt paving shall be tested in accordance with Section 302-5 of the SSPWC.

E. Samples:

1. In general, samples for testing will be taken by the Contractor from material at the production plant and/or material delivered to the site of the work, and such

material should be available in ample time to allow for such testing. The District reserves the right to stipulate the number and location of the control tests, which will relate to ultimate acceptance of the work by the District.

2. The District reserves the right to take samples and perform independent testing for quality assurance purposes at any point throughout the contract. The Contractor shall provide material as directed and shall provide necessary assistance for sampling and testing.

F. Removal of Rejected and Unauthorized Work:

1. Work which has been rejected shall be remedied, or removed and replaced in an acceptable manner as determined by the Engineer. Any work done beyond the lines and grades shown on the plans or established by the District, or determined by the Engineer to not be of acceptable material quality, or of acceptable workmanship, or any work done without written authority shall be considered as rejected work. Upon order of the Engineer, work shall be remedied, removed, or replaced at no expense to the District.

G. Equipment:

1. The Contractor shall provide adequate and suitable equipment to meet the requirements of the contract documents.

****END OF SECTION****

SECTION 03310

CAST-IN-PLACE CONCRETE

PART 1 GENERAL

1.01 THE REQUIREMENT

A. The Contractor shall provide cast-in-place concrete, joints in concrete, reinforcement steel and appurtenant WORK, formwork, bracing, shoring, supports, and shall design and construct falsework, complete and in place, in accordance with the Contract Documents.

1.02 GOVERNING STANDARDS

A. All material in contact with potable water shall be **NSF 61 certified.**

1.03 CONTRACTOR SUBMITTALS

A. Furnish submittals in accordance with Section 01300 – Submittals.

B. All coatings products are required to comply with NSF/ANSI 61: Drinking Water System Components – Health Effects by most governmental agencies that regulate drinking water supplies. Developed by a team of scientists, industry experts and key industry stakeholders, for all water system components including:

- Protective barrier materials (cements, paints, coatings)
- Joining and sealing materials (gaskets, adhesives, lubricants)
- Mechanical devices (water meters, valves, filters)
- Pipes and related products (pipe, hose, fittings)
- Plumbing devices (faucets, drinking fountains)
- Non-metallic potable water materials

C. Shop Drawings

1. Detailed drawings of the falsework proposed to be used. Such drawings shall be in sufficient detail to indicate the general layout, sizes of members, anticipated stresses, grade of materials to be used in the falsework, and typical soil conditions.

2. Shop bending diagrams, placing lists, and drawings of reinforcing steel prior to fabrication.

3. Details of the concrete reinforcing steel and concrete inserts shall be submitted at the earliest possible date after receipt by the Contractor of the Notice to Proceed. Details of reinforcing steel for fabrication and erection shall conform to ACI 315 (latest version thereof) and the requirements herein. The shop bending diagrams shall show the actual lengths of bars, to the nearest inch measured to the intersection of the extensions (tangents for bars of circular cross section) of the outside surface. Include bar placement diagrams which clearly indicate the dimensions of each bar splice.

4. Where mechanical couplers are required or permitted to be used to splice reinforcing steel, submit manufacturer's literature which contains instructions and recommendations for installation for each type of coupler used; certified test reports which verify the load capacity of each type and size of coupler used; and Shop Drawings that show the location of each coupler with details of how they are to be installed in the formwork.

5. If reinforcement steel is spliced by welding at any location, submit mill test reports that contain the information necessary for the determination of the carbon equivalent per AWS D1.4 Structural Welding Code – Reinforcing Steel. The Contractor shall submit a written welding procedure for each type of weld for each size of bar which is to be spliced by welding; merely a statement that AWS procedures will be followed is not acceptable. The Contractor shall submit certifications of procedure qualifications for each welding procedure used and welder qualifications, for each welding procedure, and for each welder performing the WORK. Such qualifications shall be as specified in AWS D1.4 (latest version thereof).

6. Manufacturer's information demonstrating Compliance with requirements of the following:

    a. Bearing pads

    b. Neoprene sponge

    c. Preformed joint filler

    d. Backing rod

    e. Elastomeric joint sealant

    f. Bond breaker

    g. Slip dowels

    h. PVC tubing

    i. Form ties and related accessories

    j. Form gaskets

    k. Form release agent

    l. List of form materials and locations of use

    m. Mill tests for cement

    n. Admixture certification. Chloride ion content shall be included.

    o. Aggregate gradation test results and certification

    p. Aggregate reactivity test results and certification

    q. Materials and methods for curing

7. Placement drawings showing the location and type of joints for each structure.

D Mix Designs: Prior to beginning the WORK, submit preliminary concrete mix designs which shall show the proportions and gradations of materials proposed for each class and type of concrete. The mix designs shall be checked by an independent testing laboratory acceptable to the Engineer. Costs related to such checking shall be the Contractor's responsibility. When a water reducing admixture is to be used, the Contractor shall furnish mix designs for concrete both with and without the admixture.

E Delivery Tickets: Where ready-mix concrete is used, the Contractor shall furnish certified delivery tickets at the time of delivery of each load of concrete. Each ticket shall show the state certified equipment used for measuring, and the total quantities, by weight, of cement, sand, each class of aggregate, admixtures, the amounts of water in the aggregate, added at the batching plant, and the amount allowed to be added at the Site for the specific design mix. In addition, each certificate shall state the mix number, total yield in cubic yards, and the time of day to the nearest minute, corresponding to the time when the batch was dispatched, when it left the plant, when it arrived at the Site, when unloading began, and when unloading was finished.

1.04 QUALITY ASSURANCE

A. Testing of Reinforcing Steel

1. If requested by the Engineer, the Contractor shall furnish samples from each heat of reinforcing steel in a quantity adequate for testing. Costs of initial tests will be paid by the DISTRICT. Costs of additional tests, if material fails initial tests, shall be the Contractor's responsibility.

2. If requested by the Engineer, the Contractor shall furnish samples of each type of welded splice used in the WORK in a quantity and of dimensions adequate for testing. At the discretion of the Engineer, radiographic testing of direct butt welded splices will be performed. The Contractor shall provide assistance necessary to facilitate testing. The Contractor shall repair any weld that fails to meet the requirements of AWS D1.4 (latest version thereof). The costs of testing will be paid by the DISTRICT; but the costs of tests that fail to meet requirements shall be the Contractor's responsibility.

B. Testing of Materials

1. Tests on component materials and for compressive strength of concrete will be performed as indicated herein. Tests for determining slump will be in accordance with the requirements of ASTM C 143 - Standard Test Method for Slump of Hydraulic Cement Concrete (latest version thereof).

2. Testing for aggregate shall include sand equivalence, reactivity, organic impurities, abrasion resistance, and soundness in accordance with ASTM C 33 - Concrete Aggregates (latest version thereof).

3. The cost of laboratory tests on cement, aggregates, and concrete, will be paid by the DISTRICT. However, the Contractor shall pay the cost of any additional tests and investigations on WORK that does not meet the Specifications. The laboratory will meet or exceed the requirements of ASTM C 1077 - Standard Practice for Laboratories Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Laboratory Evaluation (latest version thereof).

4. Concrete for testing shall be furnished by the Contractor at no cost to the DISTRICT, and the Contractor shall assist the Engineer in obtaining samples and disposal and cleanup of excess material.

C. Field Compression Tests

1. Compression test specimens shall be taken during construction from the first placement of each class of concrete herein and at intervals thereafter as selected by the Engineer to insure continued Compliance with these Specifications. Each set of test specimens will be a minimum of 4 cylinders.

2. Compression test specimens for concrete will be made in accordance with Section 9.2 of ASTM C 31 - Standard Practice for Making and Curing Concrete Test Specimens in the Field (latest version thereof). Specimens will be 6-inches diameter by 12-inches high cylinders.

3. Compression tests will be performed in accordance with ASTM C 39 - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens (latest version thereof). One test cylinder will be tested at 7 Days and 2 at 28 Days. The remaining cylinder will be held to verify test results, if needed.

D. Evaluation and Acceptance of Concrete

1. Evaluation and acceptance of the compressive strength of concrete will be according to the requirements of ACI 318 (latest version thereof) - Building Code Requirements for Reinforced Concrete, Chapter 5 "Concrete Quality", and as indicated herein.

2. If any concrete fails to meet these requirements, immediate corrective action shall be taken to increase the compressive strength for subsequent batches of the type of concrete affected.

3. Concrete that fails to meet the ACI requirements and these Specifications is subject to removal and replacement as part of the WORK.

E. Construction Tolerances: The Contractor shall set and maintain concrete forms and perform finishing operations so that the concrete is within the tolerances herein. Surface defects and irregularities are defined as finishes and are to be distinguished from tolerances. Tolerance is the permissible variation from lines, grades, or dimensions indicated. Where tolerances are not indicated, permissible deviations will be in accordance with ACI 117 - Standard Tolerance for Concrete Construction and Materials (latest version thereof).

1. The variation from required lines or grades shall not exceed 1/4-inch in 10-feet and there shall be no offsets or visible waviness in the finished surface.

PART 2 PRODUCTS

2.01 FORM AND FALSEWORK MATERIALS

A. Except as otherwise expressly accepted by the Engineer, lumber brought on the Site for use as forms, shoring, or bracing shall be new material.

B. Materials for concrete forms, formwork, and falsework shall conform to the following requirements:

1. Lumber shall be Douglas Fir or Southern Yellow Pine, construction grade or better, in conformance with U.S. Product Standard PS 20 - American Softwood Lumber Standard.

2. Plywood for concrete formwork shall be new, waterproof, synthetic resin bonded, exterior type Douglas Fir or Southern Yellow Pine plywood manufactured especially for concrete formwork and shall conform to the requirements of PS 1 - Construction and Industrial Plywood for Concrete Forms, Class I, and shall be edge sealed.

3. Form materials shall be metal, wood, plywood, or other material that will not adversely affect the concrete and will facilitate placement of concrete to the shape, form, line, and grade required. Metal forms shall be an approved type that will accomplish such results. Wood forms for surfaces to be painted shall be Medium Density Overlaid plywood, MDO Ext. Grade.

C. Unless otherwise indicated, exterior corners in concrete members shall be provided with 3/4-inch chamfers or be tooled to a 1/2-inch radius. Re-entrant corners in concrete members shall not have fillets unless otherwise indicated.

D. Forms and falsework to support the roof and floor slabs shall be designed for the total dead load, plus a live load of 50 psf (minimum). The minimum design load for combined dead and live loads shall be 100 psf.

2.02 FORM TIES

A. Form ties shall be provided with a plastic cone or other suitable means for forming a conical hole to insure that the form tie may be broken off back of the face of the concrete. The maximum diameter of removable cones for rod ties or other removable form-tie fasteners having a circular cross-section shall not exceed 1-1/2 inches; and such fasteners shall be such as to leave holes of regular shape for reaming. Form ties shall be **ST-4 Hex Head Snap Ties** by **MeadowBurke, Snap Ties** by **Dayton/Richmond**, or equal.

B. Removable taper ties may be used when approved by the Engineer. Taper ties shall be **Taper Ties** by **MeadowBurke, Taper Ties** by **Dayton/Richmond**, or equal.

2.03 REINFORCEMENT STEEL

A. General: Reinforcement steel for cast-in-place reinforced concrete construction shall conform to the following requirements:

1. Bar reinforcement shall conform to the requirements of ASTM A 615 - Deformed and Plain Billet-Steel Bars for Concrete Reinforcement, for Grade 60 Billet Steel Reinforcement, unless otherwise indicated.

2. Welded wire fabric reinforcement shall conform to the requirements of ASTM A 185 - Steel Welded Wire Fabric, Plain, for Concrete Reinforcement, and the details indicated. Welded wire fabric with longitudinal wire of W4 size wire and smaller shall be either furnished in flat sheets or in rolls with a core diameter of not less than 10-inches. Welded wire fabric with longitudinal wires larger than W4 size shall be furnished in flat sheets only.

3. Spiral reinforcement shall be cold-drawn steel wire conforming to the requirements of ASTM A 82 - Steel Wire, Plain, for Concrete Reinforcement.

B. Accessories

1. Accessories shall include necessary chairs, slab bolsters, concrete blocks, tie wires, dips, supports, spacers, and other devices to position reinforcement during concrete placement. Bar supports shall meet the requirements of the CRSI Manual of Standard Practice including special requirements for supporting epoxy coated reinforcing bars. Wire bar supports shall be CRSI Class 1 for maximum protection with a 1/8-inch minimum thickness of plastic coating which extends at least 1/2-inch from the concrete surface. Plastic shall be gray in color.

2. Concrete blocks (dobies) used to support and position reinforcement steel shall have the same or higher compressive strength than required for the concrete in which they are located. Where concrete blocks are used on concrete surfaces exposed to view, the color and texture of the concrete blocks shall match that required for the finished surface. Wire ties shall be embedded in concrete block bar supports.

C. Epoxy coating for reinforcing and accessories, where indicated, shall conform to ASTM A 775 - Epoxy Coated Reinforcing Steel Bars (latest version thereof).

2.04 MECHANICAL COUPLERS

A. Mechanical couplers shall be provided where indicated and where approved by the Engineer. Couplers shall develop a tensile strength that exceeds 125 percent of the yield strength of the reinforcing bars being spliced at each splice.

2.05 WELDED SPLICES

A. Welded splices shall be provided where indicated and where approved by the Engineer. Welded splices of reinforcement steel shall develop a tensile strength exceeding 125 percent of the yield strength of the reinforcing bars that are connected.

B. Materials required to perform the welded splices to the requirements of AWS D1.4 (latest version thereof) shall be provided.

2.06 CONCRETE MATERIALS

A. Materials shall be delivered, stored, and handled so as to prevent damage by water or breakage. Only one brand of cement shall be used. Cement reclaimed from cleaning bags or leaking containers shall not be used. Cement shall be used in the sequence of receipt of shipments.

B. Materials for the WORK shall comply with the requirements of Sections 201, 203, and 204 of ACI 301- Structural Concrete for Buildings, as applicable (latest version thereof).

C. Storage of materials shall conform to the requirements of Section 205 of ACI 301 (latest version thereof).

D. Materials for concrete shall conform to the following requirements:

1. Cement shall be Portland cement conforming to ASTM C 150 (latest version thereof) –Type II or Type V or to ASTM C 595 (latest version thereof) – Type IL.

2. Where Portland cement plus a pozzolan is used the pozzolan shall not constitute more than 20% by weight of the total cementitious materials. Pozzolan shall meet

the requirements of ANSI/ASTM C618 for Class N or F with the following additional requirements:

a. The maximum percentage of sulfur trioxide shall be 4.0 percent for Class F.

b. The maximum percentage loss on ignition shall be 8.0 percent for Class N and 2.5 percent for Class F.

c. The pozzolanic activity index with lime shall be determined using 2-inch cubes and the minimum strength at seven (7) days shall be 900 pounds per square inch.

d. Unless the Contractor selects aggregates that are not potentially alkali-reactive, pozzolan shall be tested for reduction of mortar expansion at fourteen (14) days as specified for Class N pozzolan under the optional physical requirements in Table 2A of ANSI/ASTM C618. However, the cement used in the test shall be low-alkali. For the pozzolan to be acceptable, it shall result in an expansion reduction of zero percent or greater when compared to the control test.

e. Pozzolan shall not decrease the sulfate resistance of concrete. Before a Class N pozzolan is used, it shall be shown by test and experience not to detract from the sulfate resistance. Before a Class F pozzolan is used, it shall be shown to have an "R" factor of less than 2.5, determined in accordance with ASTM C114 (latest version thereof).

3. Water shall be potable, clean, and free from objectionable quantities of silty organic matter, alkali, salts, and other impurities. The water shall be considered potable, for the purposes of this Section only, if it meets the requirements of the local governmental agencies. Agricultural water with high total dissolved solids (over 1000 mg/l TDS) shall not be used.

4. Aggregates shall be obtained from pits acceptable to the Engineer, shall be non-reactive, and shall conform to ASTM C 33 (latest version thereof). Maximum size of coarse aggregate shall be as indicated. Lightweight sand for fine aggregate will not be permitted. Sand shall not exceed 40% of the total aggregates.

5. Ready-mix concrete shall conform to the requirements of ASTM C 94 - Ready-Mixed Concrete.

6. Air-entraining agent meeting the requirements of ASTM C 260 – Air Entraining Admixtures for Concrete (latest version thereof) shall be used. Sufficient air-entraining agent shall be used to provide a total air content of 3 to 5 percent. Concrete floors to receive a dry-shake floor hardener shall have an air content not to exceed 3 percent. The DISTRICT reserves the right, at any time, to sample and test the air-entraining agent. The air-entraining agent shall be added to the batch in a portion of the mixing water. The solution shall be batched by means of a mechanical batcher capable of accurate measurement. Air content shall be tested at the point of placement. Air entraining agent shall be **Micro-Air** by **Master Builders, Daravair** by **Grace Construction Products, Sika AEA-15** by **Sika Corporation,** or equal.

7. Admixtures: Admixtures may be added at the Contractor's option to control the set, affect water reduction, and increase workability. In either case, the addition

of an admixture shall be at the Contractor's expense. The use of an admixture shall be subject to acceptance by the Engineer. Concrete containing an admixture shall be first placed at a location determined by the Engineer. If the use of an admixture is producing an inferior end result, the Contractor shall discontinue use of the admixture. Admixtures shall conform to the requirements of ASTM C 494 - Chemical Admixtures for Concrete (latest version thereof). The required quantity of cement shall be used in the mix regardless of whether or not an admixture is used. Admixtures shall contain no free chloride ions, shall be non-toxic after 30 Days, and shall be compatible with and made by the same manufacturer as the air entraining admixture.

a. Concrete shall not contain more than one water-reducing admixture. Concrete containing an admixture shall be first placed at a location determined by the Engineer.

b. Set controlling admixture may be either with or without water-reducing properties. Where the air temperature at the time of placement is expected to be consistently over 80 degrees F, a set retarding admixture such as **Sika Corporation Plastocrete 161MR, Master Builder Pozzolith, Dartard 17** by **Grace Construction Products,** or equal shall be used. Where the air temperature at the time of placement is expected to be consistently under 40 degrees, a set accelerating admixture such as **Sika Corporation Plastocrete 161 FL, Polarset** by **Grace Construction Products,** or equal shall be used.

c. Normal range water reducer shall conform to ASTM C 494 (latest version thereof), Type A. It shall be **WRDA 79** by **Grace Construction Products, Plastocrete 161** by **Sika Corporation,** or equal. The quantity of admixture used and the method of mixing shall be in accordance with the manufacturer's instructions and recommendations.

8. Calcium Chloride: Calcium chloride will not be permitted in concrete.

2.07 CURING MATERIALS

A. Materials for curing concrete shall conform to the following requirements and ASTM C 309 - Liquid Membrane-Forming Compounds for Curing Concrete (latest version thereof):

1. Curing compounds shall be white-pigmented and resin-based. Sodium silicate compounds shall not be allowed. Concrete curing compound shall be **Kurez VOX White Pigmented** by **Euclid Chemical Company, Cure R-2** by **L&M Construction Chemicals, 1200-White** by **W.R. Meadows,** or equal. When curing compound must be removed for finishes or grouting, curing compounds shall be **Kurez DR VOX** by **Euclid Chemical Company, Masterkure-100W** by **ChemRex MBT, L&M Cure R** by **L&M Construction Chemicals, 1100-Clear** by **WR Meadows,** or equal. Curing compounds shall meet local VOC requirements.

2. Polyethylene sheet for use as concrete curing blanket shall be white and shall have a nominal thickness of 6-mils. The loss of moisture when determined in accordance with the requirements of ASTM C 156 - Standard Test Method for Water Retention by Concrete Curing Materials, shall not exceed 0.055 grams per square centimeter of surface.

3. Evaporation retardant shall be a material such as **Confilm** by **ChemRex MBT, Eucobar** by **Euclid Chemical Company, E-CON** by **L&M Construction Chemicals, Inc.,** or equal.

2.08 JOINT MATERIALS

A. Materials for joints in concrete shall conform to the following requirements:

1. All material in contact with potable water shall be **NSF 61 certified.**

2. Joint filler material shall be of the preformed non-extruding type joint filler constructed of cellular neoprene sponge rubber or polyurethane of firm texture. Bituminous fiber type will not be permitted. Non-extruding and resilient-type preformed expansion joint fillers shall conform to the requirements and tests set forth in ASTM D 1752 - Preformed Sponge Rubber and Cork Expansion Joint Fillers for Concrete Paving and Structural Construction; for Type I, except as otherwise indicated.

3. Elastomeric joint sealer shall be a two component, self-leveling, polyurethane or polysulfide sealant conforming to Federal Specification TT-S-227E, Class A, Type I, and ASTM C 920, Type M, Class 25, Grade P such as **Products Research & Chemical Corp. "RC-2SL" or Bostik "Chem-Calk 550" or a** one component, self-leveling, polyurethane or polysulfide sealant conforming to Federal Specification TT-S-230C, Class A, Type I, and ASTM C 920, Type S, Class 25, Grade P such as **Products Research & Chemical Corp. "6006" or Mameco "Vulkem 45."**

4. Mastic joint sealer shall be a material that does not contain evaporating solvents; that will tenaciously adhere to concrete surfaces; that will remain permanently resilient and pliable; that will not be affected by continuous presence of water and will not in any way contaminate potable water; and that will effectively seal the joints against moisture infiltration even when the joints are subject to movement due to expansion and contraction. The sealer shall be composed of special asphalts or similar materials blended with lubricating and plasticizing agents to form a tough, durable mastic substance containing no volatile oils or lubricants and shall be capable of meeting the test requirements set forth hereinafter, if testing is required by the Engineer.

2.09 MISCELLANEOUS MATERIALS

A. Dampproofing agent shall be an asphalt emulsion such as **Hydrocide 600** by **ChemRex Sonneborn**, **Emulsified Asphalt** by **Euclid Chemical Company**, **Sealmastic** by **W. R. Meadows Inc.,** or equal.

B. Epoxy adhesives shall be the following products:

1. For bonding freshly-mixed, plastic concrete to hardened concrete, **Sikadur 32 Hi-Mod Epoxy Adhesive** by **Sika Corporation**, **Concresive Liquid (LPL)** by **Chem Rex MBT**; **BurkEpoxy MV** by **Burke** by **Edoco**, or equal.

2. For bonding hardened concrete or masonry to steel, **Sikadur 31 Hi-Mod Gel** by **Sika Corporation**, **BurkEpoxy NS** by **Burke** by **Edoco**, **Concresive Paste (LPL)** by **Chem Rex MBT**; or equal.

C. Epoxy grout for grouting reinforcing bars shall be specifically formulated for such application, for the moisture condition, application temperature, and orientation of the hole to be filled. Epoxy grout shall meet the requirements in Section 03315 – Cement-Based Non-Shrink Grout.

2.10 CONCRETE DESIGN REQUIREMENTS

A. General

1. Concrete shall be composed of cement, admixtures, aggregates, and water of the qualities indicated. In general, the mix shall be designed to produce a concrete capable of being deposited so as to obtain maximum density and minimum shrinkage, and where deposited in forms, to have good Compliance properties and maximum smoothness of surface. The proportions shall be changed whenever necessary or desirable to meet the required results at no additional cost to the DISTRICT. Mix changes shall be subject to review by the Engineer.

2. The Contractor is cautioned that the limiting parameters below are **NOT** a mix design. Admixtures may be required to achieve workability required by the Contractor's construction methods and aggregates. The Contractor is responsible for providing concrete with the required workability.

B. Water-Cement Ratio and Compressive Strength: The minimum compressive strength and cement content of concrete shall be not less than the following tabulation.

Type of Work	Class of Concrete Min 28-Day Compressive Strength, psi	Max Size Aggregate in	Cement Content Per cu yd, lbs	Max W/C Ratio (by weight)
Structural concrete	4,000	1	564 to 600	0.46
Sitework concrete	3,000	1	470 (min)	0.50
Lean concrete	2,000	1	376 (min)	0.60

2.11 CONSISTENCY

A. Consistency of the concrete in successive batches shall be determined by slump tests in accordance with ASTM C 143 (latest version thereof). The slumps shall be as follows:

Part of Work	Slump (in)
All concrete unless indicated otherwise	3-inches plus or minus 1-inch
Ductbank and pipe encasement	5-inches plus or minus 1-inch

2.12 MEASUREMENT OF CEMENT AND AGGREGATE

A. The amount of cement and of each separate size of aggregate entering into each batch of concrete shall be determined by direct weighing equipment furnished by the Contractor and acceptable to the Engineer; provided that, where batches are so proportioned as to contain an integral number of conventional sacks of cement and the cement is delivered at the mixer in the original unbroken sacks, the weight of the cement contained in each sack may be taken without weighing as 94 pounds.

2.13 MEASUREMENT OF WATER

A. The quantity of water entering the mixer shall be measured by a suitable water meter or other measuring device of a type acceptable to the Engineer and capable of measuring the water in variable amounts within a tolerance of one percent.

2.14 READY-MIXED CONCRETE

A. At the Contractor's option, ready-mixed concrete may be used if it meets the requirements as to materials, batching, mixing, transporting, placing, the supplementary requirements as required herein, and is in accordance with ASTM C 94 (latest version thereof).

B. Ready-mixed concrete shall be delivered to the WORK, and discharge shall be completed within one hour after the addition of the cement to the aggregates or before the drum has been revolved 250 revolutions, whichever comes first. In hot weather, under conditions contributing to quick stiffening of the concrete, or when the temperature of the concrete is 85 degrees F or above, the time between the introduction of the cement to the aggregates and discharge shall not exceed 60 minutes.

C. Truck mixers shall be equipped with electrically-actuated counters by which the number of revolutions of the drum or blades may be readily verified. The counter shall be of the resettable, recording type, and shall be mounted in the driver's cab. The counter shall be actuated at the time of starting the mixer at mixing speed.

D. Each batch of concrete shall be mixed in a truck mixer for not less than 70 revolutions of the drum or blades at the rate of rotation designated by the manufacturer of equipment. Additional mixing, if any, shall be at the speed designated by the manufacturer of the equipment as agitating speed. Materials including mixing water shall be in the mixer drum before actuating the revolution counter for determining the number of revolutions of mixing.

E. Each batch of ready-mixed concrete delivered to the WORK shall be accompanied by a delivery ticket furnished to the Engineer in accordance with the requirements above.

F. The use of non-agitating equipment for transporting ready-mixed concrete will not be permitted. Combination truck and trailer equipment for transporting ready-mixed concrete will not be permitted. The quality and quantity of materials used in ready-mixed concrete and in batch aggregates shall be subject to continuous inspection at the batching plant by the Engineer.

2.15 MINOR CONCRETE

A. Requirements for the following items shall be as specified in the Standard Details of the Project Drawings for Minor Concrete:

1. Curbs and Gutters
2. Cross Drain
3. Sidewalk
4. Chain Link Fencing
5. Other items as designated by Engineer

PART 3 EXECUTION

3.01 GENERAL FORMWORK REQUIREMENTS

A. Forms to confine the concrete and shape it to the required lines shall be used wherever necessary. The Contractor shall assume full responsibility for the adequate design of forms, and any forms that are unsafe or inadequate in any respect shall promptly be removed from the WORK and replaced. A sufficient number of forms of each kind shall be available to permit the required rate of progress to be maintained. The design and inspection of concrete forms, falsework, and shoring shall comply with applicable local, state and federal regulations. Design, construction, maintenance, preparation, and removal of forms shall be in accordance with ACI 347 - Guide to Formwork for Concrete (latest version thereof) and the requirements herein.

B. Forms shall be true in every respect to the required shape and size, shall conform to the established alignment and grade, and shall be of sufficient strength and rigidity to maintain their position and shape under the loads and operations incident to placing and vibrating the concrete.

3.02 CONSTRUCTION

A. Vertical Surfaces: Vertical surfaces of concrete members shall be formed, except where placement of the concrete against the ground is indicated. Not less than 1-inch of concrete shall be added to the indicated thickness of a concrete member where concrete is permitted to be placed against trimmed ground in lieu of forms. Permission to do this on other concrete members will be granted only for members of comparatively limited height and where the character of the ground is such that it can be trimmed to the required lines and will stand securely without caving or sloughing until the concrete has been placed.

B. Construction Joints: Concrete construction joints will not be permitted at locations other than those indicated, except as may be acceptable to the Engineer. When a second lift is placed on hardened concrete, special precautions shall be taken in the way of the number, location, and tightening of ties at the top of the old lift and bottom of the new to prevent any unsatisfactory effect whatsoever on the concrete. Pipe stubs and anchor bolts shall be set in the forms where required.

C. Form Ties:

1. Embedded Ties: Wire ties for holding forms will not be permitted. No form-tying device or part thereof, other than metal, shall be left embedded in the concrete. Ties shall not be removed in such manner as to leave a hole extending through the interior of the concrete members. The use of snap-ties which cause spalling of the concrete upon form stripping or tie removal will not be permitted. If steel panel forms are used, rubber grommets shall be provided where the ties pass through the form in order to prevent loss of cement paste. Where metal rods extending through the concrete are used to support or to strengthen forms, the rods shall remain embedded and shall terminate not less than 1-inch back from the formed face or faces of the concrete.

2. Removable Ties: Where taper ties are approved for use, after the taper tie is removed, the hole shall be thoroughly cleaned and roughened for bond. A precast neoprene or polyurethane tapered plug shall be located at the wall centerline. The hole shall be completely filled with non-shrink or regular cement grout. Exposed faces of walls shall have at least the outer 2-inches of the exposed face filled with a cement grout which shall match the color and texture of the surrounding wall surface.

3.03 REUSE OF FORMS

A. Forms may be reused only if in good condition and only if acceptable to the Engineer. Light sanding between uses will be required wherever necessary to obtain uniform surface texture on exposed concrete surfaces. Exposed concrete surfaces are defined as surfaces which are permanently exposed to view.

3.04 REMOVAL OF FORMS

A. Careful procedures for the removal of forms shall be strictly followed, and this WORK shall be done with care so as to avoid injury to the concrete. No heavy loading on green concrete will be permitted. Members which must support their own weight shall not have their forms removed until they have attained at least 75 percent of the 28-Day strength of the concrete. Forms for vertical walls and columns shall remain in place at least 48 hours after the concrete has been placed. Forms for parts of the WORK not specifically mentioned herein shall remain in place for periods of time as recommended in ACI 347 (latest version thereof).

3.05 GENERAL REINFORCEMENT REQUIREMENTS

A. Reinforcement steel, welded wire fabric, couplers, and other appurtenances shall be fabricated, and placed in accordance with the requirements of the Building Code and the supplementary requirements indicated herein.

3.06 FABRICATION

A. General

1. Reinforcement steel shall be accurately formed to the dimensions and shapes indicated, and the fabricating details shall be prepared in accordance with ACI 315 (latest version thereof) and ACI 318 (latest version thereof), except as modified by the Drawings.

2. The Contractor shall fabricate reinforcement bars for structures in accordance with bending diagrams, placing lists, and placing drawings. Said drawings, diagrams, and lists shall be prepared by the Contractor.

3. Unless otherwise indicated, dowels shall match the size and spacing of the spliced bar.

B. Bending or Straightening: Reinforcement shall not be straightened or rebent in a manner that will injure the material. Bars shall be bent or straight as indicated. Do not use bends different from the bends indicated. Bars shall be bent cold unless otherwise permitted by the Engineer. No bars partially embedded in concrete shall be field-bent except as indicated or specifically permitted by the Engineer.

3.07 PLACING

A. Reinforcement steel shall be accurately positioned as indicated and shall be supported and wired together to prevent displacement, using annealed iron wire ties or suitable clips at intersections. Reinforcement steel shall be supported by concrete, plastic or metal supports, spacers or metal hangers that are strong and rigid enough to prevent any displacement of the reinforcement steel. Where concrete is to be placed on the ground, supporting concrete blocks (or dobies) shall be used in sufficient numbers to support the bars without settlement, but in no case shall such support be continuous. Concrete blocks used to support reinforcement steel shall be tied to the steel with wire ties which are embedded in the blocks. For concrete over formwork, the Contractor shall provide concrete, metal, plastic, or other acceptable bar chairs and spacers.

B. The portions of accessories in contact with the formwork shall be made of concrete, plastic, or steel coated with a 1/8-inch minimum thickness of plastic which extends at least 1/2-inch from the concrete surface. Plastic shall be gray in color.

C. Tie wires shall be bent away from the forms in order to provide the required concrete coverage.

D. Bars additional to those indicated which may be found necessary or desirable by the Contractor for the purpose of securing reinforcement in position shall be provided by the Contractor as part of the WORK.

E. Unless otherwise indicated, reinforcement placing tolerances shall be within the limits specified in Section 7.5 of ACI 318 (latest version thereof) except where in conflict with the requirements of the Building Code.

F. The minimum spacing requirements of ACI 318 (latest version thereof) shall be followed for reinforcing steel.

G. Welded wire fabric reinforcement placed over horizontal forms shall be supported on slab bolsters having gray, plastic-coated standard type legs. Slab bolsters shall be spaced not more than 30-inches on centers, shall extend continuously across the entire width of the reinforcing mat, and shall support the reinforcing mat in the plane indicated.

H. Welded wire fabric placed over the ground shall be supported on wired concrete blocks (dobies) spaced not more than 3-feet on centers in any direction. The construction practice of placing welded wire fabric on the ground and hooking into place in the freshly placed concrete shall not be used.

3.08 SPLICING

A. General: Reinforcement bar splices shall only be used at locations indicated. When it is necessary to splice reinforcement at points other than where indicated, the character of the splice shall be reviewed and accepted by the Engineer.

B. Splices of Reinforcement

1. The length of lap for reinforcement bars, unless otherwise indicated, shall be in accordance with ACI 318 (latest version thereof), Section 12.15.1 for a Class B splice.

2. Welded splices shall be performed in accordance with AWS D1.4 (latest version thereof).

3. Laps of welded wire fabric shall be in accordance with the ACI 318 (latest version thereof). Adjoining sheets shall be securely tied together with No. 14 tie wire, one tie for each 2 running feet. Wires shall be staggered and tied in such a manner that they cannot slip.

3.09 CLEANING AND PROTECTION

A. Reinforcement steel shall always be protected from conditions conductive to corrosion until concrete is placed around it.

B. The surfaces of reinforcement steel and other metalwork to be in contact with concrete shall be thoroughly cleaned of dirt, grease, loose scale and rust, grout, mortar, and other foreign substances immediately before the concrete is placed. Where there is delay in depositing concrete, reinforcing shall be reinspected and, if necessary recleaned.

3.10 PROPORTIONING AND MIXING

A. Proportioning: Proportioning of the concrete mix shall conform to the requirements of Chapter 3 "Proportioning" of ACI 301 (latest version thereof).

B. Mixing: Mixing of concrete shall conform to the requirements of Chapter 7 ACI 301 (latest version thereof).

C. Slump: Slumps shall be as indicated herein.

D. Retempering: Retempering of concrete or mortar which has partially hardened shall not be permitted.

3.11 PREPARATION OF SURFACES FOR CONCRETING

A. General: Earth surfaces shall be thoroughly wetted by sprinkling prior to the placing of any concrete, and these surfaces shall be kept moist by frequent sprinkling up to the time of placing concrete thereon. The surface shall be free from standing water, mud, and debris at the time of placing concrete.

B. Joints in Concrete: Concrete surfaces upon or against which concrete is to be placed, where the placement of the concrete has been stopped or interrupted so that, as determined by the Engineer, the new concrete cannot be incorporated integrally with that previously placed, are defined as construction joints. The surfaces of horizontal joints shall be given a compacted, roughened surface for good bonding. Except where the

Drawings call for joint surfaces to be coated, the joint surfaces shall be cleaned of laitance, loose or defective concrete, and foreign material, and be roughened to a minimum 1/4-inch amplitude. Such cleaning and roughening shall be accomplished by hydroblasting. Pools of water shall be removed from the surface of construction joints before the new concrete is placed.

C. Placing Interruptions: When placing of concrete is to be interrupted long enough for the concrete to take a set, the working face shall be given a shape by the use of forms or other means, that will secure proper union with subsequent WORK; provided that construction joints shall be made only where acceptable to the Engineer.

D. Embedded Items

1. No concrete shall be placed until formwork, installation of parts to be embedded, reinforcement steel, and preparation of surfaces involved in the placing have been completed and accepted by the Engineer at least 4 hours before placement of concrete. Surfaces of forms and embedded items that have become encrusted with dried grout from previous usage shall be cleaned before the surrounding or adjacent concrete is placed.

2. Reinforcement, anchor bolts, sleeves, inserts, and similar items shall be set and secured in the forms at locations indicated or by Shop Drawings and shall be acceptable to the Engineer before any concrete is placed. Accuracy of placement is the responsibility of the Contractor.

E. Casting New Concrete Against Old: Where concrete is to be cast against old concrete (defined as any concrete which is greater than 60 Days of age), the surface of the old concrete shall be thoroughly cleaned and roughened by hydroblasting (exposing aggregate) prior to the application of an epoxy bonding agent. Application shall be according to the bonding agent manufacturer's instructions and recommendations.

F. No concrete shall be placed in any structure until water entering the space to be filled with concrete has been properly cut off or has been diverted by pipes, or other means, and carried out of the forms, clear of the WORK. No concrete shall be deposited underwater nor shall the Contractor allow still water to rise on any concrete until the concrete has attained its initial set. Water shall not be permitted to flow over the surface of any concrete in such manner and at such velocity as will injure the surface finish of the concrete. Pumping or other necessary dewatering operations for removing ground water, if required, shall be subject to the review of the Engineer.

G. Corrosion Protection: Pipe, conduit, dowels, and other ferrous items required to be embedded in concrete construction shall be so positioned and supported prior to placement of concrete that there will be a minimum of 2-inches clearance between said items and any part of the concrete reinforcement. Securing such items in position by wiring or welding them to the reinforcement will not be permitted.

H. Openings for pipes, inserts for pipe hangers and brackets, and anchors shall, where practicable, be provided for during the placing of concrete.

I. Anchor bolts shall be accurately set and shall be maintained in position by templates while being embedded in concrete.

3.12 HANDLING, TRANSPORTING, AND PLACING

A. General: Placing of concrete shall conform to the applicable requirements of Chapter 8 of ACI 301 (latest version thereof) and the requirements of this Section. No aluminum materials shall be used in conveying any concrete.

B. Non-Conforming WORK or Materials: Concrete which during or before placing is found not to conform to the requirements indicated herein shall be rejected and immediately removed from the WORK. Concrete which is not placed in accordance with these Specifications or which is of inferior quality shall be removed and replaced.

C. Unauthorized Placement: No concrete shall be placed except in the presence of a duly authorized representative of the Engineer. The Contractor shall notify the Engineer in writing at least 24 hours in advance of placement of any concrete.

D. Placement in Wall and Column Forms

1. Concrete shall not be dropped through reinforcement steel or into any deep form nor shall concrete be placed in any form in such a manner as to leave accumulation of mortar on the form surfaces above the placed concrete. In such cases, some means such as the use of hoppers and, if necessary, vertical ducts of canvas, rubber, or metal shall be used for placing concrete in the forms in a manner that it may reach the place of final deposit without separation. In no case shall the free fall of concrete exceed 4-feet in walls and 8-feet in columns below the ends of ducts, chutes, or buggies. Concrete shall be uniformly distributed during the process of depositing and in no case after depositing shall any portion be displaced in the forms more than 6-feet in horizontal direction. Concrete in wall forms shall be deposited in uniform horizontal layers not deeper than 2-feet; and care shall be taken to avoid inclined layers or inclined construction joints except where such are required for sloping members. Each layer shall be placed while the previous layer is still plastic. The rate of placing concrete in wall forms shall not exceed 5-feet of vertical rise per hour. Sufficient illumination shall be provided in the interior of forms so that the concrete at the places of deposit is visible from the deck or runway.

2. The surface of the concrete shall be level whenever a run of concrete is stopped. To insure a level, straight joint on the exposed surface of walls, a wood strip at least 3/4-inch thick shall be tacked to the forms on these surfaces. The concrete shall be carried about 1/2-inch above the underside of the strip. About one hour after the concrete is placed, the strip shall be removed and any irregularities in the edge formed by the strip shall be leveled with a trowel, and laitance shall be removed.

E. Conveyor Belts and Chutes: Ends of chutes, hopper gates, and other points of concrete discharge throughout the Contractor's conveying, hoisting, and placing system shall be so designed and arranged that concrete passing from them will not fall separated into whatever receptacle immediately receives it. Conveyor belts, if used, shall be of a type acceptable to the Engineer. Chutes longer than 50-feet will not be permitted. Minimum slopes of chutes shall be such that concrete of the required consistency will readily flow in them. If a conveyor belt is used, it shall be wiped clean by a device operated in such a manner that none of the mortar adhering to the belt will be wasted. Conveyor belts and chutes shall be covered.

F. Temperature of Concrete: The temperature of concrete when it is being placed shall be not more than 90 degrees F nor less than 40 degrees F in moderate weather, and not less than 50 degrees F in weather during which the mean daily temperature drops below 40 degrees F. Concrete ingredients shall not be heated to a temperature higher than that necessary to keep the temperature of the mixed concrete, as placed, from falling below the required minimum temperature. If concrete is placed when the weather is such that the temperature of the concrete would exceed 90 degrees F, the Contractor shall employ effective means, such as precooling of aggregates and mixing water, using ice, or placing at night, as necessary to maintain the temperature of the concrete, as it is placed, below 90 degrees F. The Contractor shall be entitled to no additional compensation on account of the foregoing requirements.

G. Cold Weather Placement

1. Placement of concrete shall conform to ACI - 306.1 - Cold Weather Concreting (latest version thereof), and the following.

2. Earth foundations shall be free from frost or ice when concrete is placed upon or against them.

3. Maintain the concrete temperature above 50 degrees F for at least 72-hours after placement.

3.13 PUMPING OF CONCRETE

A. General: If the pumped concrete does not produce satisfactory end results, the Contractor shall discontinue the pumping operation and proceed with the placing of concrete using conventional methods.

B. Pumping Equipment

1. The pumping equipment shall have 2 cylinders and be designed to operate with one cylinder only in case the other one is not functioning. In lieu of this requirement, the Contractor may have a standby pump on the Site during pumping.

2. The minimum diameter of the hose conduits shall be in accordance with ACI 304.2R - Placing Concrete by Pumping Methods (latest version thereof).

3. Pumping equipment and hose conduits that are not functioning properly, shall be replaced.

4. Aluminum conduits for conveying the concrete shall not be permitted.

3.14 TAMPING AND VIBRATING

A. As concrete is placed in the forms or in excavations, it shall be thoroughly settled and compacted, throughout the entire depth of the layer which is being consolidated, into a dense, homogeneous mass, filling all corners and angles, thoroughly embedding the reinforcement, eliminating rock pockets, and bringing only a slight excess of water to the exposed surface of concrete. Vibrators shall be high speed power vibrators (8000 to 12,000 rpm) of an immersion type in sufficient number and with at least one standby unit as required.

B. Concrete in walls shall be internally vibrated and at the same time rammed, stirred, or worked with suitable appliances, tamping bars, shovels, or forked tools until it completely fills the forms or excavations and closes snugly against all surfaces. Subsequent layers of concrete shall not be placed until the layers previously placed have been worked thoroughly. Vibrators shall be provided in sufficient numbers, with standby units as required, to accomplish the required results within 15 minutes after concrete of the prescribed consistency is placed in the forms. The vibrating head shall not contact the surfaces of the forms. Care shall be taken not to vibrate concrete excessively or to work it in any manner that causes segregation of its constituents.

3.15 FINISHING CONCRETE SURFACES

A. General: Surfaces shall be free from fins, bulges, ridges, offsets, honeycombing, or roughness of any kind, and shall present a finished, smooth, continuous hard surface. Allowable deviations from plumb or level and from the alignment, profiles, and dimensions indicated are defined as tolerances and are indicated above. These tolerances are to be distinguished from irregularities in finish as described herein. Aluminum finishing tools shall not be used.

B. Formed Surfaces: No treatment is required after form removal except for curing, repair of defective concrete, and treatment of surface defects.

C. Surface holes larger than [1/2]-inch in diameter or deeper than [1/4]-inch are defined as surface defects in basins and exposed walls.

D. Unformed Surfaces: After proper and adequate vibration and tamping, unformed top surfaces of slabs, floors, walls, and curbs shall be brought to a uniform surface with suitable tools. Whenever the air temperature exceeds 85 degrees F or the wind speed exceeds 25 mph at the time of placement, the concrete shall be treated as follows. Immediately after the concrete has been screeded, it shall be treated with a liquid evaporation retardant. The retardant shall be used again after each WORK operation as necessary to prevent drying shrinkage cracks. The classes of finish for unformed concrete surfaces are designated and defined as follows:

1. Finish U1 - Sufficient leveling and screeding to produce an even, uniform surface with surface irregularities not to exceed 3/8-inch. No further special finish is required.

2. Finish U2 - After sufficient stiffening of the screeded concrete, surfaces shall be float finished with wood or metal floats or with a finishing machine using float blades. Excessive floating of surfaces while the concrete is plastic and dusting of dry cement and sand on the concrete surface to absorb excess moisture will not be permitted. Floating shall be the minimum necessary to produce a surface that is free from screed marks and is uniform in texture. Surface irregularities shall not exceed 1/4-inch. Joints and edges shall be tooled where indicated or as determined by the Engineer.

3. Finish U3 - After the Finish U2 surface has hardened sufficiently to prevent excess of fine material from being drawn to the surface, steel troweling shall be performed with firm pressure such as will flatten the sandy texture of the floated surface and produce a dense, uniform surface free from blemishes, ripples, and trowel marks. The finish shall be smooth and free of irregularities.

4. Finish U4 - Trowel the Finish U3 surface to remove local depressions or high points. In addition, the surface shall be given a light broom finish with brooming

perpendicular to drainage unless otherwise indicated. The resulting surface shall be rough enough to provide a nonskid finish.

E. Unformed surfaces shall be finished according to the following schedule:

UNFORMED SURFACE FINISH SCHEDULE	
Area	**Finish**
Grade slabs and foundations to be covered with concrete or fill material	U1
Floors to be covered with grouted tile or topping grout	U2
Slabs to be covered with built-up roofing	U2
Interior slabs and floors to receive architectural finish	U3
Slabs	U4
Top surface of walls	U3

3.16 CURING AND DAMPPROOFING

A. **General:** Concrete shall be cured for not less than 7 Days after placing, in accordance with the methods indicated below for the different parts of the WORK.

Surface to be Cured or Dampproofed	Method
Unstripped forms	1
Construction joints between footings and walls, and between floor slab and columns	2
Encasement and ductbank concrete and thrust blocks	3
Concrete surfaces not specifically provided for elsewhere in this Paragraph	4
Buried slabs and backfilled walls	5

B. **Method 1:** Wooden forms shall be wetted immediately after concrete has been placed and shall be kept wet with water until removal. If steel forms are used, the exposed concrete surfaces shall be kept continuously wet until the forms are removed. If forms are removed within 7 Days of placing the concrete, curing shall be continued in accordance with Method 4 below.

C. **Method 2:** The surface shall be covered with burlap mats which shall be kept wet with water for the duration of the curing period, until the concrete in the walls has been placed. No curing compound shall be applied to surfaces cured under Method 2.

D. **Method 3:** The surface shall be covered with moist earth not less than 4 hours nor more than 24 hours after the concrete is placed. Earthwork operations that may damage the concrete shall not begin until at least 7 Days after placement of concrete.

E. **Method 4:** The surface shall be sprayed with a liquid curing compound.

1. It shall be applied in accordance with the manufacturer's printed instructions at a maximum coverage rate of 200 square feet per gallon and in such a manner as to cover the surface with a uniform film that will seal thoroughly.

2. Where the curing compound method is used, care shall be exercised to avoid damage to the seal during the 7 Day curing period. If the seal is damaged or broken before the expiration of the curing period, the break shall be repaired immediately by the application of additional curing compound over the damaged portion.

3. Wherever curing compound has been applied by mistake to surfaces against which concrete subsequently is to be placed and to which it is to adhere, compound shall be entirely removed by wet sandblasting just prior to the placing of new concrete.

4. Curing compound shall be applied as soon as the concrete has hardened enough to prevent marring on unformed surfaces, and within 2 hours after removal of forms. Repairs required to be made to formed surfaces shall be made within the said 2 hour period; provided, however, that any such repairs which cannot be made within the said 2 hour period shall be delayed until after the curing compound has been applied. When repairs are to be made to an area on which curing compound has been applied, the area involved shall first be wet-sandblasted to remove the curing compound.

5. During the curing period, no traffic of any nature and no depositing of any materials, temporary or otherwise, shall be permitted on surfaces coated with curing compound. Foot traffic and the depositing of materials may be allowed after 3 Days if the surface is covered with 5/8-inch plywood placed over polyethylene sheets.

F. **Method 5:** This method applies to both buried slabs and walls to be backfilled.

1. The concrete shall be kept continuously wet by the application of water for a minimum period of at least 7 Days beginning immediately after the concrete has reached final set or forms have been removed.

2. Until the concrete surface is covered with the curing medium, the entire surface shall be kept damp by applying water through nozzles that atomize the flow so that the surface is not marred or washed.

3. Heavy curing mats shall be used as a curing medium to retain the moisture during the curing period. The curing medium shall be weighted or otherwise held substantially in contact with the concrete surface to prevent being dislodged by wind or any other causes. Edges shall be continuously held in place.

4. The curing blankets and concrete shall be kept continuously wet by the use of sprinklers or other means both during and after normal working hours.

5. Immediately after the application of water has terminated at the end of the curing period, the curing medium shall be removed, any dry spots shall be rewetted, and curing compound shall be immediately applied in accordance with Method 4 above.

6. The Contractor shall dispose of excess water from the curing operation to avoid damage to the WORK.

7. Dampproofing: The exterior surfaces of buried roof slabs and backfilled walls shall be dampproofed as follows.

   a. Immediately after completion of curing, the surface shall be sprayed with a dampproofing agent consisting of an asphalt emulsion. Application shall be in 2 coats. The first coat shall be diluted to one-half strength by the addition of water and shall be sprayed on so as to provide a maximum coverage rate of 100 square feet per gallon of dilute solution. The second coat shall consist of an application of the undiluted material and shall be sprayed on so as to provide a maximum coverage rate of 100 square feet per gallon. Dampproofing material shall be as indicated above.

   b. As soon as the material has taken an initial set, the entire area thus coated shall be coated with whitewash. Any formula for mixing the whitewash may be used if it produces a uniformly coated white surface and remains until placing of the backfill. If the whitewash fails to remain on the surface until the backfill is placed, the Contractor shall apply additional whitewash

G. The Contractor may submit alternate methods of curing which maintain the concrete in a continuously wet condition for acceptance by the Engineer.

3.17 PROTECTION

A. The Contractor shall protect concrete against injury until final acceptance.

B. Fresh concrete shall be protected from damage due to rain, hail, sleet, or snow. The Contractor shall provide such protection while the concrete is still plastic and whenever precipitation is imminent or occurring.

3.18 CURING IN COLD WEATHER

A. Water curing of concrete may be reduced to 6 Days during periods when the mean daily temperature in the vicinity of the Site is less than 40 degrees F; provided that, during the prescribed period of water curing, when temperatures are such that concrete surfaces may freeze, water curing shall be temporarily discontinued.

B. Concrete cured by an application of curing compound will require no additional protection from freezing if the protection at 50 degrees F for 72 hours is obtained by means of approved insulation in contact with the forms or concrete surfaces; otherwise, the concrete shall be protected against freezing temperatures for 72 hours immediately following 72 hours protection at 50 degrees F. Concrete cured by water shall be protected against freezing temperatures for 72 hours immediately following the 72 hours of protection at 50 degrees F.

C. Discontinuance of protection against freezing temperatures shall be such that the drop in temperature of any portion of the concrete will be gradual and will not exceed 40 degrees F in 24 hours. In the spring, when the mean daily temperature rises above 40 degrees F for more than 3 Days, 72 hour protection at a temperature not lower than 50 degrees F may be discontinued for as long as the mean daily temperature remains above 40 degrees F; provided, that the concrete shall be protected against freezing temperatures for not less than 48 hours after placement.

D. Where artificial heat is employed, special care shall be taken to prevent the concrete from drying. Use of unvented heaters will be permitted only when unformed surfaces of concrete adjacent to the heaters are protected for the first 24 hours from an excessive carbon dioxide atmosphere by application of curing compound; provided, that the use of curing compound for such surfaces is otherwise permitted by these Specifications.

3.19 TREATMENT OF SURFACE DEFECTS

A. As soon as forms are removed, exposed concrete surfaces shall be carefully examined and any irregularities shall be immediately rubbed or ground in a satisfactory manner in order to secure a smooth, uniform, and continuous surface. Plastering or coating of surfaces to be smoothed will not be permitted. No repairs shall be made until after inspection by the Engineer. In no case will extensive patching of honeycombed concrete be permitted. Concrete containing minor voids, holes, honeycombing, or similar depression defects shall be repaired as indicated below. Concrete containing extensive voids, holes, honeycombing, or similar depression defects, shall be completely removed and replaced. Repairs and replacements shall be performed promptly.

B. Defective surfaces to be repaired shall be cut back from trueline a minimum depth of 1/2-inch over the entire area. Feathered edges will not be permitted. Where chipping or cutting tools are not required in order to deepen the area properly, the surface shall be prepared for bonding by the removal of laitance or soft material, plus not less than 1/32-inch depth of the surface film from hard portions by means of an efficient sandblast. After cutting and sandblasting, the surface shall be wetted sufficiently in advance of shooting with shotcrete or with cement mortar so that while the repair material is being applied, the surfaces underneath will remain moist but not so wet as to overcome the suction upon which a good bond depends. The material used for repair shall consist of a mixture of one sack of cement to 3 cubic feet of sand. For exposed walls, the cement shall contain such a proportion of Atlas white Portland cement as is required to make the color of the patch match the color of the surrounding concrete.

C. Holes left by tie-rod cones shall be reamed with suitable toothed reamers so as to leave the surfaces of the holes clean and rough. These holes then shall be repaired in an approved manner with dry-packed cement grout. Holes left by form-tying devices having a rectangular cross-section, and other imperfections having a depth greater than their least surface dimension, shall not be reamed but shall be repaired in an approved manner with dry-packed cement grout.

D. Repairs shall be built up and shaped in such a manner that the completed WORK will conform to the requirements of this Section as applicable, using approved methods which will not disturb the bond, cause sagging, or cause horizontal fractures. Surfaces of repairs shall receive the same kind and amount of curing treatment as required for the concrete in the repaired section.

3.20 CARE AND REPAIR OF CONCRETE

A. The Contractor shall protect concrete against injury or damage from excessive heat, lack of moisture, overstress, or any other cause until final acceptance. Particular care shall be taken to prevent the drying of concrete and to avoid roughening or otherwise damaging the surface. Any concrete found to be damaged, or which may have been originally defective, which becomes defective at any time prior to the final acceptance of the completed WORK, which departs from the established line or grade, or which, for any other reason, does not conform to the requirements of the Contract Documents, shall be satisfactorily repaired or removed and replaced with acceptable concrete

3.21 PLACEMENT OF MINOR CONCRETE

A. Concrete placement requirements for the following items shall be as specified in Standard Details of Project Drawings for Minor Concrete:

1. Curbs and Gutters
2. Cross Drain
3. Sidewalk
4. Chain Link Fencing
5. Other items as designated by Engineer

****END OF SECTION****

SECTION 03315

CEMENT-BASED NON-SHRINK GROUT

PART 1 GENERAL

1.01 SUMMARY

A. The Contractor shall provide cement-based non-shrink grout, complete and in place, in accordance with the Contract Documents. Where the words “non-settling grout”, non-settling grouting mortar”, “non-shrink grout”, or “grout” are used on the Drawings or elsewhere in these Specifications, it shall mean cement-based non-shrink as specified in this Section.

1.02 RELATED SECTIONS

A. Section 03310 – Cast-In-Place Concrete

1.03 REFERENCES

A. ASTM International (ASTM)

1.	ASTM C 150/C 150M-12	Portland Cement (latest version thereof)
2.	ASTM C 496/C 496M-11	Test Method for Splitting Tensile Strength of Cylindrical Concrete Specimens (latest version thereof)
3.	ASTM C 580-02	Test Method for Flexural Strength and Modulus of Elasticity of Chemical-Resistant Mortars, Grouts, Monolithic Surfacings, and Polymer Concretes (latest version thereof)
4.	ASTM C 827/C 827M-10	Test Method for Change in Height at Early Ages of Cylindrical Specimens of Cementitious Mixtures (latest version thereof)
5.	ASTM C 882/C 882M-12	Test Method for Bond Strength of Epoxy-Resin Systems Used with Concrete by Slant Shear (latest version thereof)
6.	ASTM C 1090-10	Test Method for Measuring Changes in Height of Cylindrical Specimens of Hydraulic-Cement Grout (latest version thereof)
7.	ASTM C 1107/C 1107M-11	Packaged Dry, Hydraulic-Cement Grout (Nonshrink) (latest version thereof)

1.04 SUBMITTALS

A. Packaged Cement-Based Non-Shrink Grout Data:

1. Manufacturer’s product data including certification that the product meets these Specifications.
2. Manufacturer’s literature containing instructions and recommendations on the mixing, handling, placement, curing and appropriate uses for each type of grout used in the Work, and location of use.

3. Manufacturer’s certification that its non-shrink grout does not contain aluminum, zinc, or magnesium powders as a method of expansion.
4. Manufacturer’s certification that grout contains no chlorides or other chemicals that cause corrosion.
5. Manufacturer’s certification that the non-shrink property of the grout is not based on gas production or gypsum expansion.

PART 2 PRODUCTS

2.01 PACKAGED CEMENT-BASED NON-SHRINK GROUT

A. Cement-based non-shrink grout shall be a prepackaged, inorganic, fluid, non-gas-liberating, non-metallic, cement type grout requiring only the addition of water. Cement from kilns burning metal-rich hazardous waste fuel shall not be used.

B. Manufacturer's instructions shall be printed on each bag or other container in which the materials are packaged. The specific formulation shall be that recommended by the manufacturer for the particular application.

C. Grout shall not contain chlorides or additives that may contribute to corrosion.

D. Grout shall be formulated to be used at any consistency from fluid to plastic.

E. Cement-based non-shrink grout shall have the following minimum properties when tested at a fluid consistency, at 28 Days:

1. Minimum 28 Day compressive strength of 5000 psi when mixed at a fluid consistency.
2. Minimum tensile splitting strength of 500 psi per ASTM C 496 (latest version thereof).
3. Minimum flexural strength of 1000 psi per ASTM C 580 (latest version thereof).
4. Minimum bond strength (concrete to grout) of 1900 psi per modified ASTM C 882 (latest version thereof).

F. Grout shall meet the requirements of ASTM C 1107, Grade B or C, when mixed to fluid, flowable and plastic consistencies.

G. Grout shall have a maximum early age height change of 4.0 percent expansion and shall have no shrinkage (0.0 percent) in accordance with ASTM C 827. The grout when tested shall not bleed or segregate at maximum allowed water.

H. Grout shall have no shrinkage (0.0 percent) and a maximum of 0.3 percent expansion in the hardened state when tested in accordance with ASTM C 1090.

I. Cement-Based Non-Shrink Grout shall be Five Star Grout by Five Star Products; High-Flow Grout by Euclid Chemical Company, or equal.

PART 3 EXECUTION

3.01 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Grout shall be stored in accordance with manufacturer's recommendations.

3.02 PREPARATION

A. Grout shall not be placed until base concrete or masonry has attained its design strength, unless authorized otherwise by the Engineer.

B. Clean and prepare base concrete surface to which the non-shrink grout will be bonded in accordance with the manufacturer's instructions or as directed by the Engineer. Concrete surfaces shall be saturated with water prior to placing cement based grout.

C. The finish of the grout surface shall match that of the adjacent concrete unless otherwise indicated.

D. Surfaces that will be in contact with grout shall be free of dirt, loose rust, oil, wax, grease, curing compounds, laitance, loose concrete, and other deleterious materials.

E. Shade the Work from sunlight for at least 24 hours before and 48 hours after grouting.

F. Contact the grout manufacturer's representative for assistance on hot and cold weather grouting techniques and precautions if applicable.

3.03 PLACING

A. Mixing, surface preparation, handling, placing, Compliance, curing, and other means of execution for prepackaged grouts shall be done according to the instructions and recommendations of the manufacturer.

B. Place grout to completely fill the spaces under and adjacent to the equipment and metalwork as shown on the Drawings.

C. Use forms where required to confine non-shrink grout.

D. Drilled anchors and Reinforcing Bars

1. In places of high temperature or fire hazard, anchor bolts shall be grouted in using cement based non-shrink grout.
2. Drilled anchors and reinforcing bars shall be installed in strict accordance with the manufacturer's instructions.
3. Holes shall be roughened with a brush on a power drill, and cleaned.
4. Drilled anchors shall not be installed until the concrete has reached the required 28- Day compressive strength.
5. Anchors shall not be loaded until the grout has reached its indicated strength in accordance with the manufacturer's instructions.
6. The Contractor shall identify position of reinforcing steel and other embedded items prior to drilling holes.
7. Care shall be exercised in coring and drilling to avoid damaging existing reinforcing or embedded items. Notify the Engineer if reinforcing steel or other embedded items are encountered during drilling.
8. Take precautions as necessary to avoid damaging prestressing tendons, electrical and communications conduit, and piping.
9. Holes shall be dry.

10. Unless otherwise indicated, embedment shall be sufficient to develop the ultimate tensile strength of the anchor or reinforcing bar per the manufacturer's ICC ES Evaluation Report but shall not be less than 16 diameters for threaded rod or 24 diameters for reinforcing or smooth bars.
11. When the bolt diameter is one-inch or less, the hole diameter should be a minimum of 2-inches.
12. When the bolt diameter is greater than one-inch, the hole diameter should be at least twice the bolt diameter.
13. Drilled holes shall be saturated with water for not less than 24 hours before installation of anchor/rod/rebar.
14. The non-shrink grout should be placed in the holes in a non-sag (trowelable) consistency.
15. The grout should be placed in the holes before the anchor and then the anchor inserted and vibrated to ensure proper coverage.

3.04 Compliance

A. Grout shall be placed in such a manner, for the consistency necessary for each application, to assure that the space to be grouted is completely filled.

3.05 CURING

A. Cure exposed surface of packaged cement-based non-shrink grout by the method recommended by the manufacturer.

B. Do not apply loads sooner than 72 hours after placement and only after grout has attained a compressive strength of at least 3000 psi.

****END OF SECTION****

SECTION 09900

PROTECTIVE FIELD COATINGS

PART 1 GENERAL

1.01 SUMMARY

A. The WORK of this section shall include furnishing and applying protective field coatings, complete and in place, in accordance with the Contract Documents.

B. All coatings products are required to comply with NSF/ANSI 61: Drinking Water System Components – Health Effects by most governmental agencies that regulate drinking water supplies. Developed by a team of scientists, industry experts and key industry stakeholders, for all water system components including:

- Protective barrier materials (cements, paints, coatings)
- Joining and sealing materials (gaskets, adhesives, lubricants)
- Mechanical devices (water meters, valves, filters)
- Pipes and related products (pipe, hose, fittings)
- Plumbing devices (faucets, drinking fountains)
- Non-metallic potable water materials

C. The following surfaces shall not be protective-coated:

1. Concrete, unless required by items on the concrete coating schedule below or the Drawings.
2. Stainless-steel.
3. Machined surfaces (intended for a registered fit).
4. Grease fittings.
5. Glass.
6. Equipment nameplates.
7. Ferrous metal to be galvanized.

D. The coating system schedules summarize the surfaces to be coated, the required surface preparation, and the coating systems to be applied.

E. Coating notes on the Drawings may be used to show or extend the limits of coating schedules, to show exceptions to the schedules, or to clarify or show details for application of the coating systems.

1.02 REFERENCES

A. ASTM International (ASTM)

1.	ASTM C 309-11	Liquid Membrane-Forming Compounds for Curing Concrete (latest version thereof)
2.	ASTM D 4259-88	Abrading Concrete (latest version thereof)
3.	ASTM D 4285-83	Indicating Oil or Water in Compressed Air (latest version thereof)

B. American Water Works Association (AWWA)

1.	AWWA C205	Cement-Mortar Protective Lining and Coating for Steel Water Pipe (latest version thereof)
2.	AWWA C 213	Fusion Fusion-Bonded Epoxy Coating for the Interior and Exterior of Steel Water Pipelines (latest version thereof)

C. The Society for Protective Coatings (SSPC)/NACE International (NACE)

1.	SSPC-PA1	Shop, Field, and Maintenance Painting of Steel
2.	SSPC-SP1-04	Solvent Cleaning
3.	SSPC-SP2	Hand Tool Cleaning
4.	SSPC-SP3-04	Power Tool Cleaning
5.	SSPC-SP5	White Metal Blast Cleaning
6.	SSPC-SP6/NACE 3-04	Commercial Blast Cleaning
7.	SSPC-SP7/NACE 4-04	Brush-Off Blast Cleaning
8.	SSPC-SP10/NACE 2-04	Near-White Blast Cleaning
9.	SSPC-VIS1-02	Guide and Reference Photographs for Steel Surfaces Prepared by Abrasive Blast Cleaning
10.	SSPC-VIS3-04	Visual Standard for Power- and Hand-Tool Cleaned Steel

1.03 DEFINITIONS

A. The term "paint," "coatings," or "finishes" as used herein, shall include surface treatments, emulsions, enamels, paints, epoxy resins, and all other protective coatings, excepting galvanizing or anodizing, whether used as a pretreatment, primer, intermediate coat, or finish coat.

B. The term "DFT" means minimum dry film thickness, without any negative tolerance.

1.04 QUALIFICATIONS

A. Coating Applicators Qualifications:

1. Possess a valid state license as required for performance of the painting and coating work called for in this specification.

2. List as a minimum, 5 references that show that the coating applicators have previous successful experience with the indicated or comparable coating systems.

3. Include the name, address, and the telephone number for the owner of each installation for which the painting subcontractor provided the protective coating.

1.05 SUBMITTALS

A. Coating Materials List:

1. Copies of a coating materials list showing the manufacturer and the coating number, keyed to the coating systems herein.

2. Submit prior to or at the time of submittal of samples.

B. Purchase orders. Include:

1. Supplier’s name, address, and phone number.

2. Purchase order number and date.

3. Manufacturer’s designated product name.

4. Batch number(s) for each material, except thinners.

5. Quantities ordered for each material, except thinners.

C. Paint Manufacturer’s Information. For each coating system to be used, include:

1. Paint Manufacturer's data sheet for each product proposed, including statements on the suitability of the material for the intended use.

2. Technical and performance information that demonstrates Compliance with the system performance and material requirements.

3. Paint Manufacturer's instructions and recommendations on surface preparation and application.

4. Colors available for each product (where applicable).

5. Compatibility of shop- and field-applied coatings (where applicable).

6. Material Safety Data Sheet for each product used.

1.06 DELIVERY, STORAGE, HANDLING

A. Deliver materials to jobsite in original, undamaged, unopened containers labeled with manufacturer’s name, designated product name, batch number, date of manufacture, and any special instructions.

B. Deliver materials in containers not larger than 5 gallons as packaged by manufacturer unless suitable equipment is provided at jobsite to handle and thoroughly mix materials in larger containers.

C. Store materials in well ventilated area.

D. Do not expose to direct sunlight during storage.

E. Comply with manufacturer’s storage instructions.

F. Do not use coating material which has exceeded manufacturer's specified storage stability period (shelf life).

PART 2 PRODUCTS

2.01 GENERAL

A. Suitability: Use suitable coating materials as recommended by the Manufacturer.

B. Compatibility:

1. In any coating system, use only compatible materials from a single Manufacturer in the work. Particular attention shall be directed to compatibility of primers and finish coats.

2. If necessary, apply a barrier coat between existing prime coat and subsequent field coats to ensure compatibility.

C. Containers: Seal coating materials in containers that plainly show the designated name, formula or specification number, batch number, color, date of manufacture, and name of manufacturer, all of which shall be plainly legible at the time of use.

D. Colors:

1. All colors and shades of colors of all coats of paint shall be as indicated or selected by the ENGINEER.

2. Each coat shall be of a slightly different shade, to facilitate inspection of surface coverage of each coat.

3. Finish colors shall be as selected from the manufacturer's standard color samples by the ENGINEER.

E. Substitute or "Or Equal" Products:

1. To establish equality, furnish satisfactory documentation from the manufacturer of the proposed substitute or "or equal" product that the material meets the indicated requirements and is equivalent or better in the following properties:

a. Quality

b. Durability

c. Resistance to abrasion and physical damage

d. Life expectancy

e. Ability to recoat in future

f. Solids content by volume

g. Dry film thickness per coat

h. Compatibility with other coatings

i. Suitability for the intended service

j. Resistance to chemical attack

k. Temperature limitations in service and during application

l. Type and quality of recommended undercoats and topcoats

m. Ease of application

n. Ease of repairing damaged areas

o. Stability of colors

2. Protective Coating Materials shall be standard products produced by recognized manufacturers who are regularly engaged in production of such materials for essentially identical service conditions.

3. Where requested, provide the ENGINEER with the names of not less than 10 successful applications of the proposed manufacturer's products that comply with these requirements.

4. If a proposed substitution requires changes in the Work, the Contractor shall bear all such costs involved.

2.02 INDUSTRIAL COATING SYSTEMS

A. Material Sources:

1. Each of the following manufacturers is capable of supplying many of the industrial coating materials indicated herein.

2. Where manufacturers and paint numbers are listed, it is to show the type and quality of coatings that are required. Proposed substitute materials will be considered as indicated above.

3. All industrial coating materials shall be materials that have a record of satisfactory performance in industrial plants, manufacturing facilities, and water and wastewater treatment plants.

4. Coating materials for coating system shall be the products of a single manufacturer.

5. Manufacturers:

a. Ameron

b. Carboline Coatings Company

c. Tnemec Company

d. Or approved equal

B. Materials:

1. Universal Primer – Tnemec “Series 27, Typoxy”, Carboline “Rustbound”, Ameron “Amercoat 385 Epoxy”.

2. High-Build Epoxy – Tnemec “Series N69, Hi-Build, Epoxoline II”, Carboline “Carboguard 890”, Ameron “Amercoat 385 Epoxy”.

3. Polyurethane – Tnemec “Series 1075, Endura-Shield II”, Carboline “Carbothane 134HG”, Ameron “Amercoat 450 H”.

4. Coal Tar – Tenemec “Series 46H-413, Hi-Build Tneme Tar”, Carboline “Bitumastic 300M”, Ameron “Amercoat 78HB Coal Tar Epoxy”.

C. System A – High-Build Epoxy with Polyurethane:

1. Base Coats:

a.) Apply 3 or more coats at 6 to 8 mils DFT, plus stripe coat.

b.) Total system DFT = 16 mils DFT.

c.) Shop coat DFT = 16 mils, Tnemec Series N69 Hi-Build Epoxoline II, or equal.

2. Field coat DFT = 16 mils, Tnemec Series N69 Hi-Build Epoxoline II, or equal.

3. Finish coats (one or more, DFT = 3 mils), Tnemec Series 1075, Endura Shiled II, or equal.

4. Total system DFT = minimum of total paint system of 19 mils.

D. System B – High-Build Epoxy with Polyurethane:

1. Shop coat DFT = 1 mil, Tnemec Series N69 Hi-Build Epoxoline II, or equal.

2. Field coat DFT = 4 mils, Tnemec Series 27 Typoxy, or equal.

3. Finish coats (one or more, DFT = 3 mils), Tnemec Series 1075, Endura Shiled II, or equal.

4. Total system DFT = minimum of total paint system of 8 mils.

E. System C – High-Build Epoxy:

1. Base Coats:

a.) Apply 3 or more coats at 6 to 8 mils DFT, plus stripe coat.

b.) Total system DFT = 16 mils DFT.

c.) Shop coat DFT = 16 mils, Tnemec Series N69 Hi-Build Epoxoline II, or equal.

2. Field coat DFT = 16 mils, Tnemec Series N69 Hi-Build Epoxoline II, or equal.

3. Finish coats (one or more, DFT = 3 mils), Tnemec Series 1075, Endura Shiled II, or equal.

4. Total system DFT = minimum of total paint system of 19 mils.

F. System D – Coal Tar Epoxy:

1. Finish coats (two or more, DFT = 8 mils each coat), Tnemec Series 46H-413, Hi-Build Tneme Tar, or equal.

2. Total system DFT = minimum of total paint system of 16 mils.

G. System E – Cement Mortar Coating:

1. Provide a 1-1/2-inch minimum thickness mortar coating reinforced with 3/4-inch galvanized welded wire fabric.

2. The cement mortar shall contain no less than 1 part Type V cement to 3 parts sand.

3. The cement mortar shall be cured by a curing compound meeting the requirements of "Liquid Membrane Forming Compounds for Curing Concrete," ASTM C 309, Type II, white pigmented, or by enclosure in an 8-mil-thick polyethylene sheet with all edges and joints lapped by at least 6 inches.

H. System F - Cement Mortar Lining:

1. For ductile iron fittings provide a **double** cement mortar lining to the interior of the fittings. Double thickness shall be as listed in AWWA C104 (latest version

thereof), Section 4.8. or as provided in these specifications' sections, whichever is thicker shall govern.

I. System G – Wax Tape Wrap:

1. For butterfly valves, all buried valves and ductile iron fittings as specified or indicated on the plans/drawings provide a single wax tape to the exterior of the valve or fittings. Tape manufacturer shall be Trenton Wax-Tape® #1 Non-firming Anticorrosion Wrap for Belowground Use or equal.

2. Wax Tape Specifications:

a.) Color Brown

b.) Thickness 70-90 mils

c.) Dielectric strength 236 volts/mil

d.) Application temperature 0-110°F

e.) Operating temperature -50-120°F

f.) Saturant pour point 115-125°F

PART 3 EXECUTION

3.01 MANUFACTURER'S SERVICES

A. The Contractor shall require the protective coating manufacturer to furnish a qualified technical representative to visit the project site for technical support as may be necessary to resolve field problems attributable or associated with the manufacturer's products.

B. For submerged and severe service coating systems, the Contractor shall require the paint manufacturer to furnish the following services:

1. The manufacturer's representative shall provide at least 6 hours of on-site instruction in the proper surface preparation, use, mixing, application, and curing of the coating systems.

2. The manufacturer's representative shall observe the start of surface preparation, mixing, and application of the coating materials for each coating system.

3.02 WORKMANSHIP

A. Use skilled craftsmen and experienced supervision on all Work.

B. Prepare coating in a workmanlike manner so as to produce an even film of uniform thickness.

C. Give special attention to edges, corners, crevices, and joints to ensure thorough cleaning and an adequate thickness of coating material.

D. The finished surfaces shall be free from runs, drops, ridges, waves, laps, brush marks, and variations in color, texture, and finish.

E. The hiding shall be so complete that the addition of another coat would not increase the hiding.

F. Give special attention to ensure that edges, corners, crevices, welds, and similar areas receive a film thickness equivalent to adjacent areas, and protect installations by the use of drop cloths or other precautionary measures.

G. Cleaned, repaired, and refinished all damage to surfaces resulting from the Work to original condition.

3.03 STORAGE, MIXING, AND THINNING OF MATERIALS

A. Manufacturer's Recommendations:

1. Unless otherwise indicated, strictly observe the coating manufacturer's printed recommendations and instructions for thinning, mixing, handling, applying, and protecting its coating materials, for preparation of surfaces for coating, and for all other procedures relative to coating.

B. Use all protective coating materials within the manufacturer's recommended shelf life.

C. Storage and Mixing:

1. Store coating materials under the conditions recommended by the Material Safety Data Sheets.
2. Thoroughly stir, strain, and keep coating materials at a uniform consistency during application.
3. Do not mix together coatings of different manufacturers.

3.04 PREPARATION FOR COATING

A. General:

1. Clean all surfaces to receive protective coatings as indicated prior to application of coatings.
2. Examine all surfaces to be coated, and correct all surface defects before application of any coating material.
3. Touch up and restore all marred or abraded spots on shop-primed and on factory-finished surfaces prior to any coating application.
4. Surfaces to be coated shall be dry and free of dirt, grease, oil and other contaminants.

B. Protect surfaces that are not to receive protective coatings during surface preparation, cleaning, and coating operations.

C. Remove, mask or otherwise protect all hardware, lighting fixtures, switchplates, machined surfaces, couplings, shafts, bearings, nameplates on machinery, and other surfaces not to be painted.

D. Provide drop cloths to prevent coating materials from falling on or marring adjacent surfaces.

E. Protect the working parts of all mechanical and electrical equipment from damage during surface preparation and coating operations.

F. Mask and protect openings in motors to prevent entry of coating or other materials.

G. Exercise care not to damage adjacent work during blast cleaning operations. Conduct spray painting under carefully controlled conditions. The Contractor shall be fully responsible for and shall promptly repair any and all damage to adjacent work or adjoining property occurring from blast cleaning or coating operations.

H. Coordinate cleaning and coating and protect painted surfaces so that dust and other contaminants from the cleaning process will not fall on wet, newly coated surfaces.

3.05 SURFACE PREPARATION STANDARDS

A. Solvent Cleaning (SSPC-SP1) - Removal of oil, grease, soil, salts, and other soluble contaminants by cleaning with solvent, vapor, alkali, emulsion, or steam.

B. Hand Tool Cleaning (SSPC-SP2) -Removal of loose rust, loose mill scale, loose paint, and other loose detrimental foreign matter, by hand chipping, scraping, sanding, and wire brushing.

C. Power Tool Cleaning (SSPC-SP3) - Removal of loose rust, loose mill scale, loose paint, and other loose detrimental foreign matter, by power tool chipping, descaling, sanding, wire brushing, and grinding.

D. White Metal Blast Cleaning (SSPC-SP5) - Removal of all visible rust, oil, grease, soil, dust, mill scale, paint, oxides, corrosion products and foreign matter by blast cleaning.

E. Commercial Blast Cleaning (SSPC-SP6) - Removal of all visible oil, grease, soil, dust, mill scale, rust, paint, oxides, corrosion products, and other foreign matter, except that staining shall be limited to no more than 33 percent of each unit area of surface.

F. Brush-Off Blast Cleaning (SSPC-SP7) - Removal of all visible oil, grease, soil, dust, loose mill scale, loose rust, and loose paint.

G. Near-White Blast Cleaning (SSPC-SP10) - Removal of all visible oil, grease, soil, dust, mill scale, rust, paint, oxides, corrosion products, and other foreign matter, except that staining shall be limited to no more than 5 percent of each unit area of surface area.

H. Joint Surface Preparation Standard NACE No. 6/SSPC-SP13 Surface Preparation of Concrete.

I. ASTM D4259 Standard Practice for Abrading Concrete.

3.06 METAL SURFACE PREPARATION (NON-GALVANIZED)

A. General:

1. The minimum abrasive blasting surface preparation shall be as indicated in the coating system schedules included at the end of this Section.
2. Where there is a conflict between these specifications and the coating manufacturer's printed recommendations for the intended service, the higher degree of cleaning shall apply.
3. At a minimum add 1 mil profile for atmospheric coating systems and a 2 mil profile for immersion service coating systems, unless otherwise specified by the coating manufacturer.

B. Workmanship for metal surface preparation shall be in conformance with the current SSPC Standards and this Section.

C. Compare prepared steel surfaces to the following visual reference photographs for allowable visible contaminants and stains:

1. SSPC-VIS1 – Guide and Reference Photographs for Steel Surfaces Prepared by Dry Abrasive Blast Cleaning.
2. SSPC-VIS3 – Guide and Reference Photographs for Steel Surfaces Prepared by Power and Hand Tool Cleaning.

D. Remove all oil, grease, welding fluxes, and other surface contaminants by solvent cleaning per SSPC-SP1 - Solvent Cleaning prior to blast-cleaning.

E. Round or chamfer all sharp edges and ground smooth all burrs, surface defects, and weld splatter prior to blast-cleaning.

F. Abrasives:

1. Select type and size of abrasive to produce a surface profile that meets the coating manufacturer's recommendation for the particular coating and service conditions.
2. Abrasives for submerged and severe service coating systems shall be clean, hard, sharp cutting crushed slag.
3. Do not use automated blasting systems for surfaces that will be in submerged service.
4. Do not use metal shot or grit for surfaces that will be in submerged service, even if subsequent abrasive blasting is planned to be one with hard, sharp cutting crushed slag.

G. Do not reuse the abrasive unless an automated blasting system is used for surfaces that will be in non-submerged service. For automated blasting systems, maintain clean oil-free abrasives. The abrasive mix shall include at least 50 percent grit.

H. Comply with the applicable federal, state, and local air pollution control regulations for blast-cleaning.

I. Supply compressed air for air blast cleaning at adequate pressure from well-maintained compressors equipped with oil and moisture separators that replace or clean separators if any moisture and oil is detected. Test compressed air in accordance with ASTM D4285.

J. Clean surfaces of all dust and residual particles of the cleaning operation by dry air blast cleaning, vacuuming, or another approved method prior to painting.

K. Vacuum, clean, and wipe with a tack cloth enclosed areas and other areas where dust settling is a problem.

L. Remove damaged or defective coating shall be removed by the specified blast cleaning to meet the clean surface requirements before recoating.

M. Protect surfaces of adjacent areas to be cleaned and coated. Clean surfaces in accordance with SSPC-SP6 or where abrasive blasting is impractical use SSPC-SP-11.

N. Shop-applied coatings of unknown composition shall be completely removed before the indicated coatings are applied. Valves, castings, ductile or cast iron pipe, and fabricated pipe or equipment shall be examined for the presence of shop-applied temporary

coatings. Temporary coatings shall be completely removed by solvent cleaning per SSPC-SP1 before the abrasive blast cleaning work has been started.

O. Solvent-clean shop-primed equipment in the field before finish coats are applied.

3.07 SHOP COATING REQUIREMENTS

A. Unless otherwise indicated, all items of equipment or parts of equipment that are not submerged in service shall be shop-primed and then finish-coated in the field after installation with the indicated or selected color.

B. The methods, materials, application equipment, and all other details of shop painting shall comply with this Section.

C. If the shop primer requires top-coating within a specified period of time, the equipment shall be finish-coated in the shop and then touch-up painted after installation.

D. Perform all surface preparation and coating work in the field for all items of equipment, or parts and surfaces of equipment that are submerged or inside an enclosed hydraulic structure when in service, with the exception of pumps and valves.

E. Shop Finished Coating:

1. For certain pieces of equipment, it may be undesirable or impractical to apply finish coatings in the field.
2. Such equipment may include engine generator sets, equipment such as electrical control panels, switchgear or main control boards, submerged parts of pumps, ferrous metal passages in valves, or other items where it is not possible to obtain the indicated quality in the field.
3. Such equipment shall be primed and finish-coated in the shop and touched up in the field with the identical material after installation.
4. The Contractor shall require the manufacturer of each such piece of equipment to certify as part of its Shop Drawings that the surface preparation is in accordance with these specifications.
5. Submit the coating material data sheet with the Shop Drawings for the equipment.

F. Manufacturer's Standard Coating System:

1. For certain small pieces of equipment, the manufacturer may have a standard coating system that is suitable for the intended service conditions.
2. In such cases, the final determination of suitability will be made during review of the shop drawing submittals.
3. Equipment of this type generally includes only indoor equipment such as instruments, small compressors, and chemical metering pumps.

G. Protect shop-painted surfaces during shipment and handling by suitable provisions including padding, blocking, and the use of canvas or nylon slings.

H. Do not expose primed surfaces to the weather for more than 2 months before being top-coated, or less time if recommended by the coating manufacturer.

I. Repair damage to shop-applied coatings in accordance with this Section and the coating manufacturer's printed instructions.

J. Make certain that the shop primers and field topcoats are compatible and meet the requirements of this Section. Submit copies of applicable coating manufacturer's data sheets with equipment Shop Drawings.

3.08 APPLICATION OF COATINGS

A. Apply protective coatings to steel substrates in accordance with SSPC-PA1 - Paint Application Specification No. 1.

B. Cleaned surfaces and all coats shall be inspected prior to each succeeding coat. The Contractor shall schedule such inspection with the ENGINEER in advance.

C. Paint blast-cleaned ferrous metal surfaces before any rusting or other deterioration of the surface occurs. Blast cleaning shall be limited to only those surfaces that can be coated in the same working day.

D. Apply coatings in accordance with the manufacturer's instructions and recommendations and this Section, whichever has the most stringent requirements.

E. Give special attention to edges, angles, weld seams, flanges, nuts and bolts, and other places where insufficient film thicknesses are likely to be present. Use stripe painting for these areas.

F. Give special attention to materials that will be joined so closely that proper surface preparation and application are not possible. Coat such contact surfaces prior to assembly or installation.

G. Apply finish coats, including touch-up and damage repair coats, in a manner that will present a uniform texture and color-matched appearance.

H. Do not apply coatings under the following conditions:

1. Minimum temperature of 50-degrees F and a maximum temperature of 90-degrees F.
2. Dust- or smoke-laden atmosphere.
3. Damp or humid weather.
4. When the substrate or air temperature is less than 5º F above dew point.
5. When air temperature is expected to drop below 50º F or less than 5º F above the dew point within 8 hours after application of coating.
6. When wind conditions are not calm.

I. Determine dew point by use of a sling psychrometer in conjunction with U.S. Dept. of Commerce, Weather Bureau psychometric tables.

J. Unburied steel piping shall be abrasive blast-cleaned and primed before installation.

K. Apply the finish coat on all work after all concrete, masonry, and equipment installation is complete and the work areas are clean and dust-free.

3.09 CURING OF COATINGS

A. Maintain curing conditions in accordance with the conditions recommended by the coating material manufacturer or by this Section, whichever is the most stringent, prior to placing the completed coating system into service.

B. In the case of enclosed areas, forced air ventilation, using heated air and dehumidification if necessary, may be required until the coatings have fully cured.

3.10 SHOP AND FIELD INSPECTION AND TESTING

A. General:

1. Give the ENGINEER a minimum of 3 days' advance notice of the start of any field surface preparation work or coating application work.
2. Give the ENGINEER a minimum of 7 days' advance notice of the start of any shop surface preparation work.

B. Perform work only in the presence of the ENGINEER, unless the ENGINEER has granted prior approval to perform such work in its absence.

C. Inspection by the ENGINEER or the waiver of inspection of any particular portion of the Work shall not relieve the Contractor of its responsibility to perform the work in accordance with these Specifications.

D. Erect and move scaffolding to locations where requested by the ENGINEER to facilitate inspection.

E. Furnish additional illumination to cover all areas to be inspected.

F. Inspection Devices:

1. Furnish, until final acceptance of such coatings, inspection devices in good working condition for the detection of holidays and measurement of dry-film thicknesses of protective coatings, using replica tape by method NACE RP0287 for surface profile measurements.
2. Dry-film thickness gages shall be made available for the ENGINEER's use at all times while coating is being done, until final acceptance of such coatings.
3. Furnish the services of a trained operator of the holiday detection devices until the final acceptance of such coatings.
4. Operate holiday detection devices only in the presence of the ENGINEER.

G. Holiday Testing:

1. Holiday test all coated ferrous surfaces inside a steel reservoir, other surfaces that will be submerged in water or other liquids, or surfaces that are enclosed in a vapor space in such structures, and surfaces coated with any of the submerged and severe service coating systems.
2. Mark and repair or recoat areas that contain holidays in accordance with the coating manufacturer's printed instructions and then retest.
    a. Coatings with Thickness Exceeding 20 Mils:

1) For surfaces having a total dry film coating thickness exceeding 20 mils, use a pulse-type holiday detector such as Tinker & Rasor Model AP-W, D.E. Stearns Co. Model 14/20, or equal.

2) Adjust the unit to operate at the voltage required to cause a spark jump across an air gap equal to twice the specified coating thickness.

b. Coatings with Thickness of 20 Mils or Less:

1) For surfaces having a total dry film coating thickness of 20 mils or less, use the Tinker & Rasor Model M1 non-destructive type holiday detector, K-D Bird Dog, or equal.

2) Operate the unit at less than 75 volts

3) For thicknesses between 10 and 20 mils, add a non-sudsing type wetting agent, such as Kodak Photo-Flo, or equal, to the water prior to wetting the detector sponge.

H. Film Thickness Testing:

1. Measure the dry film coating thickness on ferrous metals in accordance with the SSPC "Paint Application Specification No. 2" using a magnetic-type dry film thickness gage such as Mikrotest model FM, Elcometer model 111/1EZ, or equal.

2. Test each coat for the correct thickness.

3. Make no measurements until at least 8 hours after application of the coating.

4. On non-ferrous metals and other substrates, the coating thicknesses at the time of application using a wet film gage.

I. Surface Preparation

1. Evaluation of blast-cleaned surface preparation work will be based upon comparison of the blasted surfaces with the standard samples available from the NACE, using NACE Standards SSPC-VIS1 and SSPC-VIS3.

3.11 COATING SCHEDULE

A. Ferrous Metal – Not Galvanized: Below is a table showing schedule for painting and coatings.

Table 09900A – Coating Schedule

	Item	Surface Prep	Paint or Coating System
CS-1	All metalwork submerged or subjected to excessive moisture from spray or condensation including stop log guides, ladders, and trash racks, unless other protective coating is specified or shown on the Drawings.	N/A	All surfaces shall be hot-dip galvanized.
CS-2	Operating platforms, including structural steel, grating, checkered plate, and all nuts, bolts, and fasteners.	N/A	All surfaces shall be hot-dip galvanized.
CS-3	Handrails, ladders and ladder rungs, minor steel pipe, safety cable, and all nuts, bolts, and fasteners including anchor bolts.	N/A	All surfaces shall be hot-dip galvanized.
CS-4	Exclusive of Items CS-2 and CS-3 above, all other field fabricated structural work and miscellaneous metal work exposed to ordinary atmospheric exposure, including pipe supports, flange supports, pipe tie down straps and marker posts, unless galvanizing or other protective coating is specified or shown on the Drawings.	Solvent cleaning SSPC-SP1, followed by commercial blast cleaning SSPC-SP6	System A
CS-5	Exposed cast iron and steel valves, fittings and castings, not including brass.	Commercial blast cleaning SSPC-SP6	System B
CS-6	Exposed steel pipe (exterior), nonsubmerged.	Solvent cleaning SSPC-SP1, followed by commercial blast cleaning SSPC-SP6	System A
CS-7	Exposed steel pipe (exterior), submerged.	Solvent cleaning SSPC-SP1, followed by commercial blast cleaning SSPC-SP6	System A
CS-8	Buried steel pipe (exterior)	N/A	System E

B. Ferrous Metal – Galvanized: Hot-dipped galvanized or thermal spray-applied galvanized surfaces shall not have additional protective coatings.

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SECTION 15000

PIPING - GENERAL

PART 1 GENERAL

1.01 SCOPE

A. The CONTRACTOR shall provide the piping systems indicated, complete and operable, in accordance with the Contract Documents.

B. The provisions of this Section shall apply to piping sections in Divisions 02 and 15.

C. Potholing - To determine the locations and depths of existing underground utilities, the CONTRACTOR shall conduct exploratory excavations by potholing. Potholing shall be performed 30 days in advance of actual construction for each 1,000 linear feet of pipe to be installed, a soon as practical after issuance of the Notice to Proceed, and in any event, a sufficient time in advance of any excavation or construction in that area to avoid possible delay in the progress of work. Complete 30-day Pothole Report of potholing operations shall be submitted to the ENGINEER within 3 working days after completion of potholing, indicating dates of the operations, the northing and easting coordinates and invert elevation of the exposed utility or structure, identification of all existing pipelines discovered, and any additional discovered information or data pertinent to the construction.

D. All material in contact with potable water shall be **NSF 61 certified.**

1.02 RELATED SECTIONS

A. The Work of the following sections applies to the Work of this Section. Other sections, not referenced below, shall also apply to the extent required for proper performance of this Work.

1. Section 02060 – Site Preparation and Selective Demolition
2. Section 02110 – Site Clearing
3. Section 02140 – Dewatering
4. Section 02200 – Earthwork
5. Section 15005 – Pipeline Pressure and Leakage Testing
6. Section 15008 – Disinfecting of Water Distribution System
7. Section 15025 – Steel Pipe
8. Section 15030 – Polyvinyl Chloride (PVC) Pressure Pipe

1.03 REFERENCES

1. AWWA M11 (latest version thereof): Steel Water Pipe: A Guide for Design and Installation

2. NSF 61 Title 22 Guidelines

3. AWWA C605 (latest version thereof), Underground Installation of Polyvinyl (PVC) Pressure Pipe and Fittings for Water.

1.04 GENERAL

A. The civil drawings define the general layout, configuration, routing, method of support, pipe size, and pipe type. The civil drawings are **not** pipe construction or fabrication drawings. It is the CONTRACTOR's responsibility to develop the details necessary to design and construct mechanical piping systems to accommodate the specific equipment provided, and to provide spacers, adapters, and connectors for a complete and functional system.

1.05 CONTRACTOR SUBMITTALS

A. Furnish submittals in accordance with Section 01300 – Submittals.

B. **Shop Drawings:** Shop Drawings shall contain the following information:

1. Drawings: Layout drawings including necessary dimensions, details, pipe joints, fittings, specials, bolts and nuts, gaskets, valves, appurtenances, anchors, guides, and material lists. Fabrication drawings shall indicate spacers, adapters, connectors, fittings, and pipe supports to accommodate the equipment and valves in a complete and functional system.

2. Gasket Material: Submit gasket manufacturer's catalog indicating that the recommended product is suitable for each fluid service application.

3. Modular Seals for Pipe: Manufacturer's catalog sheet showing materials and installation procedures.

C. **Samples:** Performing and paying for sampling and testing as necessary for certifications are the CONTRACTOR's responsibility.

D. Certifications

1. Necessary certificates, test reports, and affidavits of compliance shall be obtained by the CONTRACTOR.

2. A certification from the pipe fabricator that each pipe will be manufactured subject to the fabricators or a recognized Quality Control Program. An outline of the program shall be submitted to the ENGINEER for review prior to the manufacture of any pipe.

PART 2 PRODUCTS

2.01 GENERAL

A. **Extent of Work:** Pipes, fittings, detectable underground warning tape and appurtenances shall be provided in accordance with the requirements of the applicable Sections of

Divisions 2 and 15 and as indicated. Materials in contact with potable water shall be listed as compliant with NSF Standard 61.

B. **Pipe Supports:** Pipes shall be adequately supported, restrained, and anchored as indicated.

C. **Lining:** Application, thickness, and curing of pipe lining shall be in accordance with the applicable Sections of Division 15, unless otherwise indicated.

D. **Coating:** Application, thickness, and curing of coating on buried pipe shall be in accordance with the applicable Sections of Division 2, unless otherwise indicated. Pipes above ground or in structures shall be coated in accordance with Section 09900 - Protective Field Coatings.

E. **Pressure Rating:** Piping systems shall be designed for the maximum expected pressure as defined in Section 15005 – Pipeline Pressure and Leakage Testing and Section 15008 – Disinfecting of Water Distribution System, or as indicated on the Piping Schedule, whichever is greater.

F. **Inspection:** Pipe shall be subject to inspection at the place of manufacture. During the manufacture, the ENGINEER shall be given access to areas where manufacturing is in progress and shall be permitted to make inspections necessary to confirm compliance with requirements.

G. **Tests:** Except where otherwise indicated, materials used in the manufacture of the pipe shall be tested in accordance with the applicable specifications and standards. Welds shall be tested as indicated. The CONTRACTOR shall be responsible for performing material tests.

H. **Welding Requirements:** Qualification of welding procedures used to fabricate pipe shall be in accordance with the provisions of AWS D1.1 - Structural Welding Code (latest version thereof). Welding procedures shall be submitted for the ENGINEER's review.

I. **Welder Qualifications:** Welding shall be done by skilled welders and welding operators who have adequate experience in the methods and materials to be used. Welders shall be qualified under the provisions of AWS D1.1 (latest version thereof) or the ASME Boiler and Pressure Vessel Code, Section 9, by an independent local, approved testing agency not more than 6 months prior to commencing WORK on the piping. Machines and electrodes similar to those used in the WORK shall be used in qualification tests. Qualification testing of welders and materials used during testing is part of the WORK.

2.02 PIPE FLANGES

A. **General:** Flanges shall have flat faces and shall be attached with bolt holes straddling the vertical axis of the pipe unless otherwise indicated. Attachment of the flanges to the pipe shall conform to the applicable requirements of AWWA C207 (latest version thereof). Flange faces shall be perpendicular to the axis of the adjoining pipe. Flanges for miscellaneous small diameter pipes shall be in accordance with the standards indicated for these pipes.

B. Pressure Ratings

1. 150 psi or less: Flanges shall conform to either AWWA C207 (latest version thereof) - Steel Pipe Flanges for Waterworks Service - Sizes 4 In. Through 144 In., Class D, or ASME B16.5 - Pipe Flanges and Flanged Fittings, 150 lb class.

2. 150 psi to 275 psi: Flanges shall conform to either AWWA C207 (latest version thereof), Class E or Class F, or ASME B16.5 150 lb class.

3. Selection based on test pressure: flanges shall not be exposed to test pressures greater than 125 percent of rated capacity. For higher test pressures, the next higher rated AWWA flange or an ANSI-rated flange shall be selected.

C. **Blind Flanges:** Blind flanges shall be in accordance with AWWA C207 (latest version thereof), or as indicated for miscellaneous small pipes. Blind flanges for pipe sizes 12-inches and greater shall be provided with lifting eyes in the form of welded or screwed eye bolts.

D. **Flange Coating:** Machined faces of metal blind flanges and pipe flanges shall be coated with a temporary rust-inhibitive coating to protect the metal until the installation is completed.

E. **Flange Bolts:** All-thread studs shall be used on valve flange connections where space restrictions preclude the use of regular bolts.

F. Flange Gaskets

1. Gaskets for flanged joints used in general water and wastewater service shall be full-faced type, with material and thickness in accordance with AWWA C207 (latest version thereof), suitable for temperatures to 700 degrees F, a pH of one to 11, and pressures to 1000 psig. Blind flanges shall have gaskets covering the entire inside face of the blind flange and shall be cemented to the blind flange. Ring gaskets shall not be permitted unless otherwise indicated. Flange gaskets shall be as manufactured by **John Crane, Style 2160, Garlock, Style 3000,** or equal**.**

2. Gaskets for flanged joints used in water with chloramines shall be **Gylon, Style 3500** as manufactured by **Garlock,** or equal.

2.03 THREADED INSULATING CONNECTIONS

A. **General:** Threaded insulating bushings, unions, or couplings, as appropriate, shall be used for joining threaded pipes of dissimilar metals and for piping systems where corrosion control and cathodic protection are involved.

B. **Materials:** Threaded insulating connections shall be of nylon, Teflon, polycarbonate, polyethylene, or other non-conductive materials, and shall have ratings and properties to suit the service and loading conditions.

2.04 MECHANICAL-TYPE COUPLINGS (GROOVED OR BANDED PIPE)

A. **General:** Cast mechanical-type couplings shall be provided where indicated. The couplings shall conform to the requirements of AWWA C606 (latest version thereof) - Grooved and Shouldered Joints. Gaskets for mechanical-type couplings shall be compatible with the piping service and fluid utilized, in accordance with the coupling manufacturer's recommendations. The wall thickness of grooved piping shall conform to the coupling manufacturer's recommendations to suit the highest expected pressure. To avoid stress on equipment, equipment connections with mechanical-type couplings shall have rigid grooved couplings or flexible type coupling with harness in sizes where rigid couplings are not available, unless thrust restraint is provided by other means. Mechanical type couplings shall be bonded. The CONTRACTOR shall have the coupling

manufacturer's service representative verify the correct choice and application of couplings and gaskets, and the workmanship, to assure a correct installation. To assure uniform and compatible piping components, grooved fittings, couplings, and valves shall be furnished by the same manufacturer as the coupling. Grooving tools shall be from the same manufacturer as the grooved components.

B. Manufacturers of couplings for steel pipe, or equal

1. **Gustin-Bacon (Aeroquip Corp.)** (banded or grooved)

2. **Victaulic Style 41 or 44** (banded, flexible)

3. **Victaulic Style 77** (grooved, flexible)

4. **Victaulic Style 07 or HP-70** (grooved, rigid)

C. Manufacturers of ductile iron pipe couplings, or equal

1. **Gustin-Bacon, (Aeroquip Corp.)**

2. **Victaulic Style 31** (flexible or rigid grooving)

Note: Ductile iron pipe couplings shall be furnished with flush seal gaskets.

2.05 SLEEVE-TYPE COUPLINGS

A. **General:** Sleeve-type couplings shall be provided where indicated. The CONTRACTOR will not be allowed to substitute a sleeve-split coupling for the sleeve coupling unless approved by the ENGINEER.

B. **Construction:** Sleeve couplings shall be in accordance with AWWA C219 (latest version thereof) - Standard for Bolted Sleeve-Type Couplings for Plain-End Pipe. Couplings shall be steel with steel bolts, without pipe stop. Couplings shall be of sizes to fit the pipe and fittings indicated. The middle ring shall be not less than 1/4-inch thick or at least the same wall thickness as the pipe to which the coupling is connected. If the strength of the middle ring material is less than the strength of the pipe material, the thickness of the middle ring shall be increased to have the same strength as the pipe. The coupling shall be either 5- or 7-inches long for sizes up to and including 30-inches and 10-inches long for sizes greater than 30-inches, for standard steel couplings, and 16-inches long for long-sleeve couplings. The followers shall be single-piece contoured mill sections welded and cold-expanded as required for the middle rings, and of sufficient strength to accommodate the number of bolts necessary to obtain adequate gasket pressures without excessive rolling. The shape of the follower shall be of such design as to provide positive confinement of the gasket. Buried sleeve-type couplings shall be epoxy-coated at the factory as indicated.

C. **Pipe Preparation:** Where indicated, the ends of the pipe shall be prepared for flexible steel couplings. Plain ends for use with couplings shall be smooth and round for a distance of 12-inches from the ends of the pipe, with outside diameter not more than 1/64-inch smaller than the nominal outside diameter of the pipe. The middle ring shall be tested by cold-expanding a minimum of one percent beyond the yield point, to proof-test the weld to the strength of the parent metal. The weld of the middle ring shall be subjected to air test for porosity.

D. Gaskets

1. Gaskets for sleeve-type couplings shall be rubber-compound material that will not deteriorate from age or exposure to air under normal storage or use conditions. Gaskets for wastewater and sewerage applications shall be Buna "N," Grade 60, or equivalent suitable elastomer. The rubber in the gasket shall meet the following specifications:

    a. Color - Jet Black

    b. Surface - Non-blooming

    c. Durometer Hardness - 74 plus and minus 5

    d. Tensile Strength - 1000 psi Minimum

    e. Elongation - 175 percent Minimum

2. The gaskets shall be immune to attack by impurities normally found in water or wastewater. Gaskets shall meet the requirements of ASTM D 2000 - Classification System for Rubber Products in Automotive Applications (latest version thereof), AA709Z, meeting Suffix B13 Grade 3, except as noted above. Where sleeve couplings are used in water containing chloramine or other fluids which attack rubber materials, gasket material shall be compatible with the piping service and fluid utilized.

3. Gasket materials used in water with chloramines shall be **Gylon Style 3500** by **Garlock** or equal.

E. **Piping Connection to Equipment:** Where piping connects to mechanical equipment such as pumps, the piping shall be brought to the equipment connection aligned and perpendicular to the axis of the flange or fitting for which the piping is to be connected. The piping shall not impose excessive stress to the equipment connection to cause misalignment of the equipment. The CONTRACTOR shall assign the responsibility to the equipment manufacturer to review the piping connection to the equipment and submit any modifications to the ENGINEER for review.

F. **Insulating Sleeve Couplings:** Where insulating couplings are required, both ends of the coupling shall have a wedge-shaped gasket which assembles over a sleeve of an insulating compound material compatible with the fluid service in order to obtain insulation of coupling metal parts from the pipe.

G. **Restrained Joints:** Sleeve-type couplings on pressure lines shall be harnessed unless thrust restraint is provided by other means. Harnesses shall be designed by the pipe manufacturer in accordance with Manual M11, or as indicated. Harness sets shall be designed for the maximum test pressure of the pipe in which they are installed. Where harness sets are installed near the suction and discharge of the pump, harness bolts shall have zero elongation to prevent misalignment of the pump imparted by the thrust within the piping system.

H. Manufacturers, or equal

1. **Dresser, Style 38**

2. **Ford Meter Box Co., Inc., Style FC1 or FC3**

3. **Smith-Blair, Style 411**

2.06 EXPANSION JOINTS

A. Piping subject to expansion and contraction shall be provided with sufficient means to compensate for such movement without exertion of undue forces to equipment or structures. This may be accomplished with expansion loops, bellow-type expansion joints, or sliding-type expansion joints. Expansion joints shall be flanged end, stainless steel, Monel, rubber, or other materials best suited for each individual service. The CONTRACTOR shall submit detailed calculations and manufacturer's Shop Drawings of proposed expansion joints, piping layouts, and anchors and guides, including information on materials, temperature, and pressure ratings.

2.07 PIPE THREADS

A. Pipe threads shall be in accordance with ASME B1.20.1 - Pipe Threads, General Purpose (inch), and be made up with Teflon tape unless otherwise indicated.

2.08 MODULAR MECHANICAL SEALS FOR PIPING PENETRATIONS

A. Where indicated and where required to prevent flow of water or air, the passages of piping through wall sleeves and cored openings shall be sealed with modular interlocking link mechanical closures. Individual links shall be constructed of EPDM rubber, be suitable for temperatures between minus 40 and plus 250 degrees F, and be shaped to fill the annular space between the outside of the pipe and the inside of the wall sleeve or cored opening. Links shall be assembled with type 316 stainless steel bolts and nuts to form a continuous rubber belt around the pipe. Pressure plates under each bolt and nut shall be fabricated of a corrosion-resistant composite material. After the seal assembly is positioned in the sleeve, tighten the bolts against the pressure plates to expand the rubber links and form the watertight seal. Sizing and installation of sleeves and assemblies shall be in accordance with the manufacturer's recommendations.

B. Manufacturers, or equal

1. **Thunderline Corporation, Link-Seal**

PART 3 EXECUTION

3.01 MATERIAL DELIVERY, STORAGE, AND PROTECTION

A. Piping materials, fittings, valves, and accessories shall be delivered in a clean and undamaged condition and stored off the ground for protection against oxidation caused by ground contact. Defective or damaged materials shall be replaced with new materials.

3.02 GENERAL

A. Piping, fittings, and appurtenances shall be installed in accordance with the requirements of applicable Sections of Division 2 and Division 15. Proprietary manufactured couplings shall be installed in accordance with the coupling manufacturer's recommendation.

B. Care shall be taken to insure that piping flanges, mechanical-type couplings, and sleeve-type couplings are properly installed as follows:

1. Gasket surfaces shall be carefully cleaned and inspected prior to making up the connection. Each gasket shall be centered properly on the contact surfaces.

2. Connections shall be installed to prevent inducing stress to the piping system or the equipment to which the piping is connected. Contact surfaces for flanges, couplings, and piping ends shall be aligned parallel, concentric, and square to each axis at the piping connections.

3. Bolts shall be initially hand-tightened with the piping connections properly aligned. Bolts shall be tightened with a torque wrench in a staggered sequence to the AISC recommended torque for the bolt material.

4. Groove ends shall be clean and free from indentations, projections, and roll marks in the area from the pipe end to the groove.

5. After installation, joints shall meet the indicated leakage rate. Flanges shall not be deformed nor cracked.

C. **Lined Piping Systems:** The lining manufacturer shall take full responsibility for the complete, final product and its application. Pipe ends and joints of lined pipes at screwed flanges shall be epoxy-coated to assure continuous protection.

D. **Core Drilling:** Where core drilling is required for pipes passing through existing concrete, core drilling locations shall be determined by radiograph of concrete construction to avoid damage to embedded raceways and reinforcing bars.

E. **Cleanup:** After completion of the WORK, cuttings, joining and wrapping materials, and other scattered debris shall be removed from the Site. The entire piping system shall be handed over in a clean and functional condition.

****END OF SECTION****

SECTION 15005

PIPELINE PRESSURE AND LEAKAGE TESTING

PART 1 GENERAL

1.01 SCOPE

A. This section covers field hydrostatic pressure and leakage testing of piping. The term "piping" shall be used in this section to refer to pipeline, or sections thereof.

1.02 REFERENCES

A. AWWA C605 (latest version thereof), Underground Installation of Polyvinyl (PVC) Pressure Pipe and Fittings for Water.

B. Standard Specifications for Public Works Construction (SSPWC), latest version thereof.

C. All material in contact with potable water shall be **NSF 61 certified.**

1.03 GENERAL

A. Unless otherwise specified, testing of piping shall be completed prior to final cleaning.

B. Contractor shall notify federal, state, and local regulatory agencies to determine if any special procedures or permits are required for disposal of water used for pressure and leakage testing and to identify acceptable locations for disposal of the water. All requirements and costs associated with notifications and obtaining any discharge permit or approvals shall be responsibility of Contractor.

C. Engineer or Engineer's representative shall be present during testing and shall be notified of the time and place of testing at least 5 days prior to commencement of the Work. All Work shall be performed to the satisfaction of Engineer.

D. Testing Schedule and Procedure: A testing schedule and test procedure shall be submitted to Engineer for review and acceptance not less than 21 days prior to commencement of testing. The schedule shall indicate the proposed time and sequence of testing of the piping. The testing procedure shall establish the limits of the piping to be tested, the positions of all valves during testing, the locations of temporary bulkheads, and all procedures to be followed in performing the testing.

E. Special Testing Requirements: Special testing requirements include the following:

1. Unless otherwise acceptable to Engineer, the general sequence of Work for each pipeline, or valved or bulkheaded section thereof, shall be as follows:

   a. Initial flushing and cleaning of pipeline.

   b. Filling pipeline: Maximum filling velocity shall not exceed 0.25 feet per second, calculated based on fill area of pipe.

   c. Hydrostatic pressure and leakage testing.

   d. Final cleaning and flushing.

2. Unless otherwise acceptable, during testing of the pipeline, all valves shall be in the open position.

3. Unless otherwise acceptable, temporary bulkheads shall be provided during testing.

4. A temporary pressure gauge shall be installed at each end of the limits of the pipeline to be tested.

5. The tests shall be conducted before connections are made to existing water lines, or to any portion of water lines installed under this Contract that have already been put into service. Test joint between concrete pipe and steel pipe, as approved by Engineer.

6. Unless otherwise, acceptable, upon completion of testing, connections made to facilities installed under this Contract, shall be visually inspected for leakage after placing the water line into service and before backfilling the connection.

F. **Water:** Water for testing shall be furnished as stipulated in Section 02523 – Temporary Facilities. As a conservation measure, the water shall be collected for reuse in subsequent testing. Following completion of testing, the water shall be disposed of in a manner acceptable to Engineer. Unless otherwise permitted, the water shall be kept out of the remainder of the piping.

PART 2 PRODUCTS

2.01 TEST EQUIPMENT

A. All necessary connections between the piping to be tested and the water source, together with pumping equipment, water meter, pressure gauges, and all other equipment, materials, and facilities required to perform the specified tests, shall be provided. All required flanges, valves, bulkheads, bracing, blocking, and other sectionalizing devices shall also be provided. All temporary sectionalizing devices shall be removed upon completion of testing. Vents shall be provided in test bulkheads where necessary to expel air from the piping to be tested.

B. Test pressures shall be applied by means of a force pump sized to produce and maintain the required pressure without interruption during the test.

C. Permanent gauge connections shall be installed at each location where test gauges are connected to the piping during the required tests. Drilling and tapping of pipe walls will not be permitted. Upon completion of testing, each gauge connection shall be fitted with a removable plug or cap acceptable to Engineer.

PART 3 EXECUTION

3.01 FILLING AND VENTING

A. Before filling the piping with water, care shall be taken to ensure that all air release valves and other venting devices are properly installed and in the open position. Hand-operated vent valves shall not be closed until an uninterrupted stream of water is flowing from each valve. The rate of filling the piping with water must not exceed the venting capacity of the installed air vent valves and devices.

3.02 BLOCKING AND BACKFILLING

A. Piping shall be adequately blocked, anchored, and supported before the test pressure is applied. Underground piping shall be tested before the joints are covered.

3.03 PRESSURE TESTING

A. After the piping to be tested has been filled with water, the test pressure shall be applied and maintained without interruption within plus or minus 5 psi of test pressure for 2 hours plus any additional time required for Engineer to examine all piping being tested and for Contractor to locate any defective joints and pipe materials. The test pressure shall be in accordance with the requirements specified below.

1. Pipeline Test Pressure

a. Piping shall be subjected to a hydrostatic test pressure of 150 psi.

b. The test pressure, expressed in feet [m] of water, to be applied at any point in the piping shall be equivalent to the arithmetic difference between the specified test pressure plane elevation and the elevation of the horizontal center line of the piping at the selected location. The value obtained shall be multiplied by 0.433 to obtain psi [9.806 to obtain kPa].

3.04 PIPELINE LEAKAGE TESTING

A. Allowable leakage shall be per SSPWC Section 306-8.9.2.3 – Allowable Leakage except as specified in these specifications.

B. Following completion of pressure testing and acceptance by Engineer, the pipeline piping shall be subjected to a leakage test. The duration of the leakage test shall be 2 hours plus the additional time required for Engineer to make an accurate determination of leakage.

C. **Leakage Test Pressure:** The hydrostatic pressure maintained during the leakage test shall be at least 75 percent, but not more than 100 percent, of the pressure specified for pressure testing of the piping and shall be maintained within plus or minus 5 psi [35 kPa] during the entire time that leakage measurements are being performed.

D. **Leakage Measurement:** Measurement of leakage shall not be attempted until all trapped air has been vented and a constant test pressure has been established. After the pressure has stabilized, piping leakage shall be measured with a suitable water meter installed in the pressure piping on the discharge side of the force pump.

E. No leakage is allowed for pipe with welded joints. If leaks are visible, repair defective pipe section and repeat leakage test.

3.05 TEST REPORT DOCUMENTATION

A. Test date.

B. Description and identification of piping tested.

C. Test fluid.

D. Test pressure.

1. Leaks (type, location).
2. Repair/replacement performed to remedy excessive leakage.

E. Signed by Contractor and Engineer to represent that test has been satisfactorily completed.

****END OF SECTION****

SECTION 15008

DISINFECTING OF WATER DISTRIBUTION SYSTEM

PART 1 GENERAL

1.01 SUMMARY

A. Section includes disinfection of potable water distribution system; and testing and reporting results.

B. Related Sections:

1. Section 15000 – Piping General
2. Section 15005 - Pipeline Pressure and Leakage Testing
3. Section 15025 - Steel Pipe
4. Section 15030 – Polyvinyl Chloride (PVC) Pressure Pipe

1.02 REFERENCES

A. American Water Works Association Standards (as provided below or latest version/s)

1. NSF 61 Title 22 Guidelines
2. AWWA B300 (latest version thereof) Hypochlorites.
3. AWWA B301 (latest version thereof) Liquid Chlorine.
4. AWWA C651 (latest version thereof) Disinfecting Water Mains.

1.03 SUBMITTALS

Product Data: Submit procedures, proposed chemicals, and treatment levels for review. All products used need to meet ANSI NSF 61 Standard for Drinking Water treatment chemical.

All material in contact with potable water shall be **NSF 61 certified.**

A. Test Reports: Indicate results comply with standards and include laboratory report.

B. Disinfection Report (Close out Submittal):

1. Document the reduced pressure principle assembly (RP) used to protect the distribution system while loading the new main, during flushing, and waiting for sample results.
2. Record field measurements to demonstrate the minimum disinfectant contact time was achieved.
3. Type and form of disinfectant used.

4. Date, time, and water temperature at start of disinfection and time of completion. Document field measurements (time, temperature, residual) at start and completion of disinfection.

5. Test locations. Minimum samples required every 1,000 linear feet and at every dead end.

6. Document that the minimum contact and residuals are measured for each sample point. Disinfectant contact time and chlorine residual. Required contact time will be dependent on temperature and disinfection method.

7. It is recommended that the Contractor measure the upstream distribution system residual to determine when adequate flushing is achieved. A chlorine residual that matches the upstream distribution system residual, is a good indicator that fresh water has been drawn into the new main area.

8. Documentation that best management practices were employed during flushing.

C. Bacteriological Report:

1. Date issued, project name, and testing laboratory name, address, telephone, chain of custody, quality assurance, and quality check. Minimum information for each sample point must include:

   a. Time and date of water sample collection.

   b. Name of person collecting samples.

   c. Sample point.

   d. Chlorine residual.

   e. Bacteriological samples to be analyzed by a state approved lab, certified for drinking water analysis.

2. Two consecutive days of samples are required.

3. Present / absent bacteriological tests (Total Coliform E. Coli and Heterotrophic Plate Count.)

4. All samples must conform to the minimum bacteriological standards: Absent for Total Coliform and E. Coli and HPC less than 500CFU/ml. Any sample point with a result that exceeds this standard must be repeated until two consecutive results comply with the standards.

5. Name and signature of person responsible for ensuring Compliance with AWWA C651 (latest version thereof).

D. Results will be reviewed before main is accepted. Certify water conforms to quality standards of Title 22 California Code of Regulations and the State Water Resources Control Board (SWRCB), suitable for human consumption.

1.04 QUALITY ASSURANCE

A. Perform Work in accordance with AWWA C651(latest version thereof).

B. Use appropriate field techniques.

C. Field equipment used to collect samples.

D. Prevent contaminants from entering main.

1.05 QUALIFICATIONS

A. Water Treatment Firm: Company specializing in disinfecting potable water systems specified in this section with minimum three years documented experience.

B. Testing Firm: Company specializing in testing and examining potable water systems, approved by the State of California. Samples must be analyzed by a state certified laboratory.

PART 2 PRODUCTS

2.01 DISINFECTION CHEMICALS

A. Chemicals: AWWA B300 (latest version thereof) Hypochlorite, AWWA B301 (latest version thereof) Liquid Chlorine.

PART 3 EXECUTION

3.01 EXAMINATION

A. Section D, Special Conditions, Verification of existing conditions before starting work.

B. Verify piping system has been cleaned, inspected, and pressure tested.

C. Perform scheduling and disinfecting activity with start-up, water pressure testing, adjusting and balancing, demonstration procedures, including coordination with related systems.

3.02 INSTALLATION

A. Install all piping in accordance with AWWA C900 (latest version thereof) PVC Pipe.

B. Provide and attach required equipment to perform the Work of this section.

C. Perform disinfection of water distribution system and pressure and leakage testing. Refer to Section 15005.

D. Introduce disinfection treatment into piping system.

E. Maintain disinfectant in system for a minimum of 24 hours per AWWA C651 (latest version thereof).

F. Unidirectional flush the new main using potable water to achieve to disinfect the new main.

G. The Contractor shall arrange for construction water to be delivered to the site. There is no available water supply on site.

3.03 FIELD QUALITY CONTROL

A. Disinfection, Flushing, and Sampling:

1. Disinfect pipeline installation in accordance with AWWA C651 (latest version thereof).

2. Upon completion of retention period required for disinfection, flush pipeline until chlorine concentration in water leaving pipeline is no higher than that generally prevailing in existing system or is acceptable for domestic use.

3. Legally dispose of chlorinated water. When chlorinated discharge may cause damage to environment, neutralize the chlorine residual using sodium thiosulfate prior to discharge or disposal.

4. After final flushing and before pipeline is connected to existing system, or placed in service, employ an approved independent testing laboratory to sample, test and certify water quality suitable for human consumption. Field inspector will be present to ensure standards are adhered to.

****END OF SECTION****

SECTION 15010

VALVE INSTALLATION

PART 1 GENERAL

1.01 SCOPE

A. This section covers the installation of new valves and operators purchased by Contractor as part of this WORK.

B. Cleaning, pressure and leakage testing shall be per Section 15005 – Pipeline Pressure and Leakage Testing.

C. Disinfection shall be per Section 15008 – Disinfecting of Water Distribution System.

D. The following specification sections are applicable to valves to be installed:

1. Section 15000 – Piping - General
2. Section 15025 - Steel Pipe
3. Section 15030 - Polyvinyl Chloride (PVC) Pressure Pipe
4. Section 15108 - Air Release and Combination Air Valves
5. Section 15101 - AWWA Butterfly Valves
6. Section 15180 - Valve Operators
7. Section 15206 - Gate Valve

1.02 GENERAL

A. Equipment installed under this section shall be erected and placed in proper operating condition in full conformity with Drawings, Specifications, engineering data, instructions, and recommendations of the equipment manufacturer, unless exceptions are noted by Engineer.

B. Coordination

1. When manufacturer's field services or installation check services are provided by the valve manufacturer, Contractor shall coordinate the services with the valve manufacturer. Contractor shall give Engineer written notice at least 30 days prior to the need for manufacturer's field services.

2. Flanged, push-on, and grooved connections to valves including the bolts, nuts, and gaskets are covered in the appropriate pipe specification section. Valve ends shall match piping.

3. All material in contact with potable water shall be **NSF 61 certified.**

PART 2 PRODUCTS – NOT APPLICABLE

PART 3 EXECUTION

3.01 INSPECTION

A. All valves and accessories shall be inspected for damage and cleanliness before being installed. Any material damaged or contaminated in handling on the job shall not be used unless it is repaired and re-cleaned to the original requirements by Contractor. Such material shall be segregated from the clean material and shall be inspected and approved by Engineer before its use.

3.02 INSTALLATION

A. General

1. Valves shall be installed with sufficient clearance for proper operation of any external mechanisms, and with sufficient clearance to dismantle the valve for in-place maintenance. Installation shall be in accordance with the valve manufacturer's recommendations.

2. Unless otherwise indicated on the Drawings or specified, all valves installed in horizontal runs of pipe having centerline elevations 4 feet 6 inches or less above the finish floor shall be installed with their operating stems vertical. Valves installed in horizontal runs of piping having centerline elevations between 4 feet 6 inches [1.3 m] and 6 feet 9 inches above the finish floor shall be installed with their operating stems horizontal. If adjacent piping prohibits this, the stems and operating handwheel shall be installed above the valve horizontal centerline as close to horizontal as possible. Valves installed in vertical runs of pipe shall have their operating stems oriented to facilitate the most practicable operation, as reviewed by Engineer.

B. **Installation Checks**: When specified in the valve sections, the valve manufacturer will provide installation checks. For installation checks, the manufacturer's field representative will inspect the valve installation immediately following installation by Contractor. The manufacturer's representatives will revisit the site as often as necessary to ensure installation satisfactory to Engineer.

C. AWWA Butterfly Valves

1. Butterfly valves shall be installed with the shaft horizontal unless otherwise necessary for proper operation or as acceptable to Engineer.

2. Whenever an operator/actuator must be removed to permit installation of a valve, the actuator shall be promptly reinstalled and shall be inspected and readjusted by a representative of the valve manufacturer.

3. See Section 15101 – AWWA Butterfly Valves.

D. **Check Valves**: Not used.

E. **Gate Valves**: See Section 15206 – Gate Valves.

F. **Backflow Prevention Assembly:** Per AWWA C511 (latest version thereof) Reduced-Pressure Principle Backflow Prevention Assembly. Install per DISTRICT Standards and

Section 15112 – Backflow Prevention Assemblies. Model Febco LF850 for sizes up to 10 inches. Cla-Val Co.;CMB Industries; Febco Div.; Grinnell Corp.; Mueller Co.; Hersey Products Div.; Watts Industries, Inc.; Water Products Div.; Zurn Industries, Inc.; Wilkins Div. for 8 inch and up.

G. **Plug Valves**: Not used.

H. **Resilient Seated Gate Valves**: Valves shall be handled and installed in accordance with the recommendations set forth in the Appendices to ANSI/AWWA C509 (latest version thereof) and AWWA C515 (latest version thereof) and with the recommendations of the manufacturer. Also see Section 15206 – Gate Valves.

I. **Air Release and Combination Air Valves**: The exhaust from each valve shall be piped to a suitable point acceptable to Engineer. Air release valve exhaust piping leading to a trapped floor drain shall terminate at least 6 inches [150 mm] above the floor.

J. **Hydrants**: See Section 13931 – Fire Hydrants.

K. **Valve Boxes**: Valve boxes shall be set plumb. Each valve box shall be placed directly over the valve it serves, with the top of the box brought flush with the finished grade. After each valve box is placed in proper position, earth fill shall be placed and thoroughly tamped around the box.

3.03 VALVE OPERATORS

A. Valve operators and accessories shall be installed in accordance with the equipment manufacturer's recommendations and Section 15180 – Valve Operators.

3.04 FIELD QUALITY CONTROL

A. **Field Testing**: After installation, all valves shall be tested in accordance with Section 15005 – Pipeline Pressure and Leakage Testing.

B. **Pressure Tests**: Pressure testing shall be in accordance with Section 15005 – Pipeline Pressure and Leakage Testing.

C. **Leakage Tests**: All valves shall be free from leaks. Each leak that is discovered within the correction period stipulated in the General Conditions shall be repaired by and at the expense of Contractor. This requirement applies whether pressure testing is required or not.

D. **Operational Tests**: All valves shall be tested to ensure proper operation of the manual operators. Each malfunctioning valve that is discovered within the correction period stipulated in the General Conditions shall be repaired by and at the expense of Contractor.

E. **Disinfection**: Disinfection testing shall be in accordance with Section 15008 – Disinfecting of Water Distribution System.

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SECTION 15018

POLYVINYL CHLORIDE (PVC) SCH 80 PIPE

PART 1 GENERAL

1.01 SCOPE

A. This section covers the furnishing and installation of 1/2 inch through 2 inch buried polyvinyl chloride (PVC) pressure pipe for potable water service. PVC pressure pipe shall be furnished complete with all fittings, jointing materials, detectable underground warning tape, anchors, blocking, encasement, and other necessary appurtenances.

B. Pipe shall be furnished where indicated on the Drawings.

1.02 APPLICABLE SECTIONS

A. The following specifications sections are applicable:

1. Section 02060 – Site Preparation and Selective Demolition
2. Section 02110 – Site Clearing
3. Section 02140 – Dewatering
4. Section 02200 – Earthwork
5. Section 15000 – Piping - General
6. Section 15005 – Pipeline Pressure and Leakage Testing
7. Section 15008 – Disinfecting of Water Distribution System

1.03 GOVERNING STANDRDS

A. Except as modified or supplemented herein, all PVC pipe 1/2-inches through 2-inches shall conform to the applicable requirements of ASTM D1785 (latest version thereof).

B. All material in contact with potable water shall be **NSF 61 certified**.

1.04 SUBMITTALS

A. Drawings and data shall be submitted in accordance with Section 01300 – Submittals.

B. Product Data:

1. Product data for pipe, fittings, flanges, gaskets, and bolting.
2. Proposed gasket material for each service. Submit document confirming gasket material selection is appropriate for fluid carried in system.

C. Shop Drawings:

1. Layout for PVC piping systems.

PART 2 PRODUCTS

2.01 PVC MATERIAL

A. Type I, Grade 1 conforming to ASTM D1784 and ASTM D1785.

2.02 PIPE

A. Schedule 80 PVC conforming to ASTM D1785.

2.03 FITTINGS

A. Schedule 80 PVC.

B. Threated joint type conforming to ASTM D2464.

C. Socket joint type conforming to ASTM D2467.

2.04 JOINTS

A. Provide socket type at all locations except unions, valves, and equipment with threated or flanged end connections.

B. Threaded connections are not acceptable for nominal piping size greater than 2 in.

2.05 FLANGES

A. PVC, 1-piece socket type, flat faced, conforming to ANSI 816.5 150 lb bolt hole drilling pattern.

2.06 GASKETS

A. Full-face, 1/8 in. thick flat type.

B. When mating flange has raised face, use flat ring gasket and provide filler gasket between outside diameter of raised face and flange outside diameter to protect flange from bolting moment.

C. Material compatible with fluid carried in system.

2.07 BOLTING

A. Type 316 Stainless Steel, ASTM A193, Grade BSM hex head bolts and ASTM A194, Grade 8M hex head nuts.

B. Bolts shall conform to ANSI B.1.20.1.

C. Provide washers same materials as bolts.

2.08 SOLVENT CEMENT

A. Join socket connections with PVC solvent cement conforming to ASTM D2564.

B. As recommended by pipe and fitting manufacturer to assure compatibility.

2.09 THREAD LUBRICANT

A. Use Teflon tape as lubricant for threated connections.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install products as shown on Drawings, and as specified in applicable piping system Specification section(s).

B. Install products in accordance with manufacturer's written instructions.

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SECTION 15025

STEEL PIPE

PART 1 GENERAL

1.01 SCOPE

A. This section covers designing, detailing, fabricating, delivering and installing AWWA C200 (latest version thereof) steel pipe, 6 inches in diameter and larger, together with fittings, specials, manholes, flanges, pipe supports and appurtenances, protective linings and coatings, hydrostatic shop testing, and nondestructive examination of shop welds for specials.

B. Steel pipe smaller than 6 inches in diameter, miscellaneous small piping, pipe supports, cathodic protection, hydrostatic field pressure and leakage tests, and cleaning and disinfection are covered in other sections.

C. Pipe trenching, bedding, and backfill are covered in Section 02200 – Earthwork.

D. Potholing - To determine the locations and depths of existing underground utilities, the CONTRACTOR shall conduct exploratory excavations by potholing. Potholing shall be performed 30 days in advance of actual construction for each 1,000 linear feet of pipe to be installed, a soon as practical after issuance of the Notice to Proceed, and in any event, a sufficient time in advance of any excavation or construction in that area to avoid possible delay in the progress of work. Complete 30-day Pothole Report of potholing operations shall be submitted to the ENGINEER within 3 working days after completion of potholing, indicating dates of the operations, the northing and easting coordinates and invert elevation of the exposed utility or structure, identification of all existing pipelines discovered, and any additional discovered information or data pertinent to the construction.

E. All manufacturing of the pipe, including fabrication of steel cylinders, application of protective linings and coatings, and fabrication of fittings, specials, or appurtenances shall be performed by one manufacturing company with a minimum of five years' experience manufacturing pipe of the type and size specified.

F. Steel piping shall be furnished and installed complete with all fittings, specials, jointing materials, appurtenances, and accessories indicated on the Drawings or otherwise required for proper installation and functioning of the piping.

1.02 APPLICABLE SECTIONS

A. The following specification sections are applicable:

1. Section 02060 – Site Preparation and Selective Demolition
2. Section 02110 – Site Clearing
3. Section 02140 – Dewatering
4. Section 02200 – Earthwork
5. Section 15000 – Piping - General

6. Section 15005 – Pipeline Pressure and Leakage Testing

7. Section 15008 – Disinfecting of Water Distribution System

8. Section 15030 – Polyvinyl Chloride (PVC) Pressure Pipe

1.03 GOVERNING STANDARDS

A. Except as modified or supplemented herein, all steel pipe, fittings, and specials shall conform to the applicable requirements of the following standards:

ANSI/AWWA Standards	Title
C200 (latest version thereof)	Steel Water Pipe 6 In. and Larger
C205 (latest version thereof)	Cement-Mortar Protective Lining and Coating for Steel Water Pipe – 4 inch and Larger - Shop Applied
C206 (latest version thereof)	Field Welding of Steel Water Pipe
C207 (latest version thereof)	Steel Pipe Flanges for Waterworks Service – Sizes 4 In. through 144 In.
C208 (latest version thereof)	Dimensions for Fabricated Steel Water Pipe Fittings
C219 (latest version thereof)	Bolted, Sleeve-Type Couplings For Plain-End Pipe
C602 (latest version thereof)	Cement-Mortar Lining of Water Pipelines in Place - 4 In. and Larger
C606 (latest version thereof)	Grooved And Shouldered Joints
ANSI Standard	
B18.2.1 (latest version thereof)	Square and Hex Bolts and Screws
ANSI/ASME Standards	
B1.1 (latest version thereof)	Unified Inch Screw Threads
B18.2.2 (latest version thereof)	Square and Hex Nuts
B36.10 (latest version thereof)	Welded and Seamless Wrought Steel Pipe

1.04 SUBMITTALS

A. Submit Shop Drawings, tabulated layout schedule and line layout diagrams for review before fabrication, showing the layout and details of the pipeline and all specials required as shown on the Drawings. The line layout diagrams shall be suitable for use in distributing material along the pipeline alignment and for laying the pipe. Diagrams shall show stations; laying lengths; sequence and direction of placement; invert elevations and grades; the degree of bevel and/or pull required; piece marks; steel pipe plate thickness; the location of steel pipe specials and fabricated bends; closure sections; insulating joints; nozzles and manholes. The numbers indicated on the drawings shall correspond with those painted on the pipe. Additional information shown shall include, but not be limited to, the following:

1. Pipe inside diameter after lining.
2. ASTM class or grade of steel.
3. Yield strength and design stress of steel.
4. Total coating thickness.
5. Thickness of mortar lining.
6. Joint details.
7. Coating materials (shop and field applied).
8. Test bulkheads.
9. Weld details.

B. Submit welding procedure specifications (WPS), procedure qualification records (PQR), and welder, welding operator and tack welder qualification test records for all shop and field welding in accordance with AWS D1.1 (latest version thereof), Section 5.

C. Submit certified copies of shop testing and inspection reports.

D. Submit Certificates of Compliance, obtained from the pipe fabricator, stating that all pipe, specials, flanges, coatings, and linings have been manufactured and tested in accordance with these Specifications. Certificates shall be submitted for the testing or manufacturing regardless of whether it was witnessed by the ENGINEER or not.

E. Submit Certificates of Compliance for items referenced to ASTM standards including, but not limited to, the following:

1. Steel plate for fabricated or mill pipe.
2. Steel weld fittings.
3. Gaskets.
4. Bolts, nuts and washers.
5. Submit Product Data and manufacturer's installation instructions for pipe coating products.

6. Submit pipe manufacturer's shipping and handling instructions.

F. Submit pipe manufacturer's shipping and handling instructions.

G. Submit a certified copy of mill test reports for each heat number of the steel used in the fabrication of the pipe. Mill test reports shall show the type of steel and the physical and chemical properties for each heat number of steel used in fabrication of the pipe.

H. Submit drawings of all steel pipe hangers, supports, anchorage, embeds, and all other information regarding installation of steel pipe. Submit design and details of pipe support and hold-down system to be used during concrete encasement of steel pipe.

I. Submit product data, material lists and shop drawings for manufactured products including, but not limited to, the following:

1. Mechanical couplings and shouldered couplings

2. Flanged coupling adapters

3. Coating products

4. Pipe sleeves

J. Submit a written statement from the gasket material manufacturer certifying that the gasket materials are compatible with the flanged joints specified herein and are suitable for the specified field test pressures and for use with chlorinated and chlorinated potable water.

K. Submit proposed field weld test procedures and test results.

L. Submit results of survey control for pipe layout.

1.05 FABRICATION, WELDING AND WELD INSPECTION REQUIREMENTS

A. General.

1. Design of details not otherwise shown, fabrication, assembly, inspection and testing of steel pipe shall be in accordance with AWWA C200 (latest version thereof). Where provisions of AWWA conflict with the provisions of the Specifications, the latter shall govern.

2. Field welding shall be performed in accordance with AWWA C206 (latest version thereof). Where provisions of AWWA conflict with the provisions of the Specifications, the latter shall govern.

B. Shop and Field Welding.

1. Use only welders, welding operators, tack welders, equipment, and welding procedures qualified in accordance with the standards specified herein.

2. Identify by name all qualified personnel. Qualification and requalification shall be at CONTRACTOR's expense.

3. As WORK progresses, the ENGINEER may require additional test specimens and no welder whose WORK is at any time found unsatisfactory shall remain

employed on the WORK regardless of the quality of his earlier test welds. Each hand weld specimen shall be plainly marked with the welder's identifying symbol.

C. Welder's qualifications.

1. Each welder shall be qualified in accordance with AWS D1.1 (latest version thereof) and as defined in ANSI/AWWA C200 (latest version thereof). All qualifications shall be in accordance with all-position pipe tests as defined in Section 5 of AWS D1.1 (latest version thereof). Any welder shall be retested and requalified when the welder's WORK creates a reasonable doubt as to proficiency. Test, when required, shall be conducted at no additional expense to the DISTRICT.

2. Submit qualification test records of the welder qualification where required in Specification sections. Qualification test records shall be submitted if welder is required to and has taken and passed the requalification test.

D. Examination of Shop Welds.

1. Requirements for shop hydrostatic testing are specified in Paragraph 2.13 of this Section.

2. Welding inspectors shall be qualified and currently certified as Certified Welding Inspectors (CWI) in accordance with AWS Standard for Qualification and Certification of Welding Inspectors (QCI). Only individuals so qualified shall be authorized to perform fabrication inspection and testing. Welding inspectors shall verify that fabrication welding is performed in accordance with the requirements of the Specifications.

3. Personnel performing radiographic tests shall be qualified and certified according to the requirements of SNT-TC-1A.

4. Perform nondestructive examination of all shop welds used to fabricate specials. Nondestructive examination of the shop welds listed below shall be performed in accordance with AWWA C200 (latest version thereof) and as specified.

a. All welds at special sections shall be examined using radiographic testing methods. In addition, welded collar plates used for nozzle and manhole attachments shall be air leakage tested.

b. All shop welds not meeting the specified requirements shall be repaired and retested until the specified requirements are met, at no additional cost to the DISTRICT.

E. **Examination of Field Welds**: Refer to Paragraph 3.11 of this Section.

F. **Storage and Handling**: Pipe, fittings, specials, and appurtenances shall at all times be handled and stored in a manner that will ensure installation in sound, undamaged condition.

PART 2 PRODUCTS

2.01 PIPE FABRICATION

A. Pipe Fabrication

1. Steel pipe shall be fabricated in accordance with AWWA C200 (latest version thereof). Steel pipe may be either fabricated pipe or mill type. In either case, all items shall be fabricated to the sizes, dimensions, and shapes indicated on the Drawings and as specified herein; Drawings indicate the nominal diameter.

2. The specified size of fabricated pipe, fittings, and specials shall be the nominal diameter stated on the contract drawings measured to the finished lining of the pipe.

3. The nominal diameter shall be the finished inside diameter to the cement mortar lining.

4. Except for seamless mill-type pipe, all piping shall be made from steel plates rolled into cylinders or sections thereof with the longitudinal seams butt-welded, or shall be spirally formed and butt-welded. There shall be not more than two longitudinal seams. Girth seams shall be butt-welded and shall be spaced not closer than 10 feet apart except in specials and fittings.

5. Steel pipe and special sections shall be lined and coated as specified herein.

6. All steel shall be fully killed and made to a fine austenitic grain size practice.

B. **Steel Coil and Plate for Fabricated Pipe**: Pipe, fittings and specials shall be fabricated from steel sheet coil or steel plate in accordance with any one of the following: ASTM A36 (latest version thereof); ASTM A570 (latest version thereof) Grade 36 or 40; or ASTM A572 (latest version thereof) Grade 42; having a minimum yield point of between 36,000 psi and 42,000 psi.

C. **Steel for Mill Pipe**: Mill pipe shall be produced from steel meeting the requirements of those ASTM Standards that are specified in AWWA C200 (latest version thereof) for mill pipe, provided that the minimum yield point of steel material is between 36,000 psi and 42,000 psi.

D. **Minimum Pipe Wall Thickness**: Steel pipe shall have the minimum wall thicknesses indicated on the Drawings.

E. **Fitting Dimensions**: The dimensions of steel pipe fittings shall be as indicated on the Drawings and as specified herein.

F. **Pipe Lengths**: Straight pipe sections shall be standard 40 foot lengths unless otherwise indicated on the Drawings or as required for making curves or field closures.

G. **Changes in Alignment**: In general, changes in horizontal and vertical alignment shall be made by asymmetrical joint assembly, beveled pipe, fabricated bends, or a combination of the above methods, as shown on the Drawings, as recommended by the pipe fabricator, and as reviewed and concurred by the ENGINEER.

H. **Long Radius Curves**: The laying of steel pipe on curved alignments by means of unsymmetrical closure of the spigot end into the bell end ("deflected joints") will be

permitted in accordance with the manufacturer's recommendations and the concurrence of the ENGINEER. Long radius curves shall be achieved with either "deflected joints" (0-1.49 degrees) or with beveled bells at the joint (1.50-4.00 degrees).

I. Design of Reinforcement for Fittings and Specials

1. The pipe manufacturer shall design and detail all fabricated bends, fittings, branch connections, reducers, and special sections, which shall be reinforced, or the pipe wall thickness shall be increased, so that the combined stresses due to internal pressure (circumferential and longitudinal) and bending will not exceed 67 percent of the yield strength of the pipe material. Design shall be in accordance with AWWA M11 (latest version thereof).

2. Whether or not indicated on the Drawings, reinforcements or additional wall thickness shall be provided as required to ensure that the combined stresses do not exceed the specified maximum. Unless otherwise indicated or specified, the internal pressure shall be the specified field test pressure shown on the Drawings for the piping adjacent to the item in question, and the dead load shall be equal to the pipe full of water.

3. In addition to the above, the design of reinforcement or wall thickness shall take into consideration an external load of W pounds per linear foot, where W - feet of cover x pipe OD in feet x 120 pcf, plus live and impact loads.

4. Wall thicknesses of reducing sections shall be not less than the thicknesses required for the larger ends.

5. Hand holes may be provided at CONTRACTOR's option for convenience.

J. **Joints**: Acceptable joints of the type indicated on the Drawings and as specified herein shall be provided for all pipe installations in the locations indicated or accepted by the ENGINEER. To facilitate installation, additional field-welded or mechanically coupled joints may be provided, but shall be kept to a minimum, and their locations shall be acceptable to the ENGINEER. Field-welded joints shall not be used in pipe smaller than 27 inches, except in locations where the interior coating can be satisfactorily repaired and inspected.

K. **Markings**: Clearly stencil on the inside of each pipe section, fitting, and special:

1. Service.

2. Wall thickness.

3. Minimum yield strength of the pipe material.

4. T (for field top) of the pipe for specials and pieces other than straight pipe.

5. Outside diameter, inches.

6. Name of manufacturer.

7. Date of manufacture.

8. Piece number correlating pipe to tabulated layout schedule and line layout diagrams.

9. Amount of bevel on beveled pipe.

2.02 MATERIALS

Flanged Joints	
Flanges	ANSI/AWWA C207 (latest version thereof), steel ring slip-on type, except where otherwise permitted or required.
Dimensions and Drilling	ANSI/AWWA C207 (latest version thereof), or as indicated on the Drawings.
Blind Flanges	ANSI/AWWA C207 (latest version thereof), unless otherwise indicated on the Drawings or specified; pressure ratings shall be the same as for flanges.
Gaskets	ANSI/AWWA C207 (latest version thereof), 1/8" thick, full face type. Gaskets for potable water service shall be certified as suitable for the test pressures specified, and for chlorinated and chloraminated potable water; a certificate of gasket suitability shall be submitted.
Insulated Flanges	
Flanges	As specified herein, except bolt holes shall be enlarged as needed to accept bolt insulating sleeves.
Insulation Kits	Contractor to submit for approval.
Flange Bolting	
Material	ASTM A193 (latest version thereof) Grade B8M, stainless steel.
Type	Bolt and nut; bolt-stud and two nuts permitted for 1 inch and larger.
Bolts and Bolt-Studs	
Length	Such that ends project 1/4 to 1/2 inch beyond surface of nuts.
Ends	Chamfered or rounded.
Threading	ANSI/ASME B1.1 (latest version thereof), coarse thread series, Class 2A fit. Bolt-studs may be threaded full length.
Bolt Head Dimensions	ANSI B18.2.1 (latest version thereof), regular pattern for square, heavy pattern for hexagonal.
Nuts	Hexagonal, ASTM A193 (latest version thereof) Grade 8M, stainless steel.
Dimensions	ANSI/ASME B18.2.2 (latest version thereof), heavy, semi-finished pattern.

Threading	ANSI/ASME B1.1 (latest version thereof), coarse thread series, Class 2B fit.
Washers	ASTM F436 (latest version thereof), galvanized
Mechanical Couplings	
General Requirements	Mechanical couplings shall be furnished in accordance with AWWA C219 (latest version thereof), with rated pressure that exceeds the field test pressure shown on the Drawings. Couplings shall feature carbon steel end rings and fasteners, elastomeric ring gaskets suitable for chlorinated water service, and shop-applied coating conforming to AWWA C213 (latest version thereof)
Insulating Type	Baker "Series 216", Dresser "Style 39", Smith-Blair "416"; without pipe stop; or equal.
Reducing Type	Baker "Series 220", Dresser "Style 62", Smith-Blair "413" and "415"; without pipe stop; or equal.
All Other Types	Baker "Series 200", Dresser "Style 38", Smith-Blair "411 Flexible Coupling"; without pipe stop; or equal.
Restrained Joints	Of the type indicated on the Drawings or as specified.
Lugs or Collars	ASTM A283 (latest version thereof), Grade B or C; or ASTM A36.
Tie Bolts	ASTM A193 (latest version thereof), Grade B7.
Threading	ANSI/ASME B1.1 (latest version thereof), Class 2A fit, coarse thread series for 7/8 inch and smaller, and 8-thread series for 1 inch larger.
Ends	Chamfered or rounded.
Nuts	Hexagonal, ASTM A194 (latest version thereof), Grade 2H or better.
Threading	As specified for tie bolts, except Class 2B fit.
Dimensions	ANSI/ASME B18.2.2 (latest version thereof), heavy, semifinished pattern.
Flat Washers	Hardened steel, ASTM A325 (latest version thereof).
Flanged Coupling Adapters	Dresser "Style 128", Smith-Blair "913"; or equal. Coupling adapters shall have an adequate rated pressure and be furnished with anchor studs of sufficient size and number to withstand the field test pressures shown on the Drawings.
Shouldered Couplings	In accordance with ANSI/AWWA C606 (latest version thereof); Victaulic Depend-O-Lok, FxF Type 2; or equal. Couplings furnished shall

	have rated pressures exceeding the field test pressures shown on the Drawings.
Small Branch Connections	
Pipe Nipples	Seamless black steel pipe, ASTM A53 (latest version thereof), Schedule 40.
Welding Fittings	
Threaded Outlets	Bonney "Thredolets", Porter "W-S Teelets", or Vogt "Weld Couplets".
Welded Outlets	Bonney "Weldolets", Porter "W-S Teelets", or Vogt "Weld Couplets".
Coatings and Linings	
Rust-Inhibitive Primer	Universal type; Ameron "Amercoat 180 Synthetic Resin Coating", Carboline "Kop-Coat 340 Gold Primer", or equal.
Rust-Preventive Compound	Houghton "Rust Veto 344", or equal.
Coal Tar Enamel	ANSI/AWWA C203 (latest version thereof).
Liquid Epoxy	ANSI/AWWA C210 (latest version thereof).
Wax Tape Wrap	AWWA C217 (latest version thereof), Synthetic fiber felt saturated with microcrystalline wax, plasticizers, and corrosion inhibitors. No. 1 wax tape as manufactured by TRENTON Corporation of Ann Arbor, Michigan, or approved equal. Primer coat of "Temcoat" manufactured by TRENTON Corporation; or approved equal. "Rock Shield" type material, "Guard Wrap" as manufactured by TRENTON Corporation; or approved equal.
Cement Mortar	ANSI/AWWA C205 (latest version thereof) and C602 (latest version thereof).
Cement	ASTM C150 (latest version thereof), Type II, low alkali.
Sand	ANSI/AWWA C205 (latest version thereof), Section 4.2.3, except sand for field-applied lining shall pass a No. 16 sieve.
Water	Water shall be free of organic materials and other impurities which might reduce the strength, durability or other quality of the cement mortar. Water shall have a pH of 7.0 to 9.0, a maximum chloride concentration of 500 mg/L (per Caltrans test method 422), and a maximum sulfate concentration of 500 mg/L (per Caltrans test method 417).

Epoxy Bonding Agent	ASTM C881 (latest version thereof), Type II, moisture insensitive and suitable for service conditions.
Latex Admixture	Euclid "Euco Flex-Con" or Sika "SikaLatex".
Medium Consistency Coal Tar	Carboline "Bitumastic Super Service Black" or Tnemec "46-465 H.B. Tnemecol".
Bituminous Filler for Wall Fittings	Plastic asphalt roof cement, asbestos-free; ASTM D4586 (latest version thereof), Type II.
Wall Penetration Seal	Thunderline Corporation "Link-Seal", insulating type with modular rubber sealing elements, nonmetallic pressure plates, and galvanized bolts and nuts.
Anchor Bolts	ASTM A307 (latest version thereof).

2.03 PIPE ENDS

A. **Field Joints**: Field joints shall be as shown on the Drawings and as specified herein. Field joints for the pipeline shall be single weld or double weld bell and spigot type as shown except where flanged joints are required for installation of line valves. Butt strap joints will be permitted for making field closures only.

B. Pipe Ends for Field Welding

1. Ends of pipe, fittings, and specials for joints butt-welded in the field shall have the ends beveled for butt welding in accordance with the governing standards.

2. Ends of pipe, fittings, and specials for field-welded lap joints, as shown on the Drawings, shall have the bell expanded by pressing (not rolling) to obtain the required shape and welding tolerances.

C. **Pipe Ends for Fitting with Flanges**: Ends to be fitted with slip-on flanges shall be prepared to accommodate the flanges in accordance with the governing standards. Pipe ends shall have the longitudinal or spiral welds of the pipe cylinder ground to plate surface for a distance sufficient to receive the flange. The flange after welding shall be perpendicular to the axis of the pipe, free of warp with faces smooth and true.

D. **Pipe Ends for Mechanical Couplings**: Ends to be joined by mechanical couplings shall be plain end type in accordance with the governing standard. In addition, pipe seam welds on ends to be joined by mechanical couplings shall be ground flush to permit slipping the coupling in at least one direction to clear the pipe joint.

E. **Pipe Ends for Shouldered Couplings**: Ends to be joined by shouldered couplings shall be of the type conforming to the governing standard and as recommended by the coupling manufacturer for the size and wall thickness of the pipe, fitting, or special being coupled, and for the maximum test or working pressure to which the couplings will be subjected.

F. **Pipe Ends for Flanged Coupling Adapters**: Ends to be fitted with flanged coupling adapters shall be plain end type in accordance with the governing standard for

mechanical couplings. Welds shall be ground flush to permit installation of the coupling, and holes shall be field drilled at the proper location for anchor studs.

G. **Pipe Ends for Connection to Dissimilar Pipe Materials**: Steel pipe connections to buried or submerged concrete pipe or cast iron or ductile iron pipe shall be made with insulated flanges.

2.04 SPECIALS

A. Except as modified herein, special sections shall conform to applicable sections of AWWA C200 (latest version thereof) and shall be fabricated as shown on the Drawings. Specials shall be fabricated from pipe meeting the requirements of this Section, and that has been previously hydrotested. Steel plate used for the fabrication of specials shall conform to the material specification for fabricated steel pipe or mill pipe.

2.05 SMALL BRANCH CONNECTIONS

A. Branch connections 2-1/2 inches and smaller shall be made with welding fittings with threaded outlets. Where the exact outlet size desired is in doubt, but is known to be less than 1 inch, a 1 inch outlet shall be provided and reducing bushings used as required.

B. Except as otherwise shown, branch connections sized 3 through 12 inches shall be made with pipe nipples or with welding fittings with welded outlets. Pipe nipples and welding fittings shall be welded to the pipe shell and reinforced as required to meet design and testing requirements.

C. Small branch connections shall be so located that they will not interfere with joints, supports, or other details, and shall be provided with caps or plugs to protect the threads during shipping and handling.

2.06 ACCESS MANWAYS

A. Access manways shall be provided in the locations indicated on the Drawings. Each access manway shall consist of a reinforced, flanged outlet with a gasketed, bolted-on blind flange cover with corp stop and two handles fabricated from 1-inch diameter steel rod.

B. At the option of the CONTRACTOR and subject to acceptance by the ENGINEER, reinforced or dished covers of lighter weight and equal strength may be provided.

C. An access manway marker post shall be furnished and installed adjacent to each buried access manhole as indicated on the Drawings.

2.07 DRAINS AND VENTS

A. In interior locations, drains and vents shall be provided at the locations and in the sizes indicated on the Drawings. Pipe used for drain and vent piping shall be ASTM A53, Schedule 40, black steel pipe. Drain valves shall be hose valves. Vent valves shall be resilient seat globe valves. Drain and vent valves shall comply with the requirements specified in Division 15.

2.08 FLANGED JOINTS

A. Flange faces shall be normal to the pipe axis. Angular deflection (layback) of the flange faces shall not exceed the allowable set forth in Section 4.3 of ANSI/AWWA C207 (latest

version thereof). All flanges shall be refaced after welding to the pipe, if necessary, to prevent distortion of connecting valve bodies from excessive flange bolt tightening and to prevent leakage at the joint.

B. Pipe lengths and dimensions and drillings of flanges shall be coordinated with the lengths and flanges for valves and other equipment to be installed in the piping. All mating flanges shall have the same diameter and drilling and shall be suitable for the pressures to which they will be subjected.

C. Flanges shall be of the slip-on type, except that welding-neck or slip-on flanges welded to short lengths of pipe may be used where installation of flanges in the field is permitted or required.

2.09 MECHANICAL COUPLINGS

A. The middle ring of each mechanical coupling shall have a thickness at least equal to the wall thickness shown on the Drawings for the pipe on which the coupling is to be used. The length of each middle ring shall be not less than 10 inches for 36 inch and larger pipe and not less than 7 inches for pipe smaller than 36 inches.

B. The interior and exterior surfaces of the middle rings of all mechanical couplings shall be coated with a fusion bonded epoxy powder coating meeting the requirements of AWWA C213 (latest version thereof), that is proposed by the manufacturer and accepted by the ENGINEER. Couplings shall be furnished with low alloy steel bolts, nuts and washers.

2.10 SHOULDERED COUPLINGS

A. Shouldered couplings shall be sized for proper installation on the pipe ends provided.

B. After fabrication, all housing clamps forming the coupling shall be cleaned and primed (as specified for the pipe) by the coupling manufacturer.

2.11 RESTRAINED JOINTS

A. Restrained joints shall be flanged, welded, flanged coupling adapters with anchor studs, or harnessed, as specified or indicated on the Drawings.

B. Where indicated on the Drawings, mechanically coupled joints shall be restrained with harness bolts and lugs or collars. Joint harnesses shall conform to the details indicated on the Drawings. Lugs or collars shall be shop welded to the pipe and coated as specified for the adjacent pipe.

2.12 PROTECTIVE COATINGS AND LININGS

A. All steel pipe, fittings, specials, wall fittings, and accessories shall be lined, coated, primed and painted, or wrapped as specified herein.

1. Type of Coating and Lining

a. Surface preparation shall be in accordance with the coating or lining manufacturer's instructions. Types of protective coating and lining shall be as follows:

Pipe Exterior Surfaces Underground, Including those Encased in Concrete	Cement mortar, ANSI/AWWA C205 (latest version thereof). The governing standards shall be as modified herein.
Pipe Interior Surfaces	Cement mortar - shop applied, ANSI/AWWA C205 (latest version thereof), or cement mortar - field applied, ANSI/ AWWA C602 (latest version thereof), as required. The governing standards shall be as modified herein.
Pipe Exterior Surfaces Above Ground and in Interior Locations, where shown	Shop-applied rust-inhibitive primer with shop coatings as dictated by Table 09900A – Coating Schedule found in Section 09900 - Protective Field Coatings.

2. **Shop-Applied Cement Mortar Lining**: Cement mortar lining shall be shop applied. Except as modified herein, shop-applied mortar linings shall comply with ANSI/AWWA C205 (latest version thereof).

   a. Minimum Thickness of Cement-Mortar Lining: The minimum lining thickness shall be as shown in Table 1 of AWWA C205 (latest version thereof).

   b. Specials: Wire fabric reinforcement shall be used in the lining of fittings and specials in accordance with Section 4.4.5 of ANSI/AWWA C205 (latest version thereof).

   c. Holdbacks at Joints: An uncoated holdback shall be left at each pipe end as shown on the Drawings to permit assembly and welding of the pipe joints.

3. **Shop-Applied Cement Mortar Coating**: Cement mortar coating shall be shop applied. Except as modified herein, shop-applied mortar coatings shall comply with ANSI/AWWA C205 (latest version thereof).

   a. Minimum Thickness of Cement-Mortar Lining: The minimum coating thickness for pipe 24-inch diameter and larger shall be 1-inch. The minimum coating thickness for pipe less than 24-inch diameter shall be ¾-inch.

   b. Holdbacks at Joints: An uncoated holdback shall be left at each pipe end as shown on the Drawings to permit assembly and welding of the pipe joints.

   c. Storage/Handling: The pipe coating shall be protected from damage during transportation and installation of the pipe, and any damaged portions of the coating shall be restored to a condition equal to that specified herein for the original WORK. Belt slings, placed so as to prevent deformation, shall be used for handling lined and coated pipe sections. In no event shall pipe be transported from the coating yard until after the exterior mortar coating has attained an age of 7 days.

4. Pipe Joints

a. Except as otherwise shown on the Drawings or modified herein, pipe at joints shall be coated as follows:

(1) At Couplings: Shop coating as specified for each type of coupling. Field coating as specified for ends of sections.

(2) Ends of Sections: Liquid epoxy

(3) Machined Surfaces and Flange Faces: Rust-preventive compound

2.13 SHOP INSPECTION AND TESTING

A. All materials and WORK shall be inspected and tested by the pipe manufacturer in accordance with ANSI/AWWA C200 (latest version thereof). All costs in connection with such inspection and testing shall be borne by the CONTRACTOR.

B. Copies of all test reports shall be submitted as set forth in the Submittals section.

C. The DISTRICT reserves the right to sample and test any pipe after delivery and to reject all pipe represented by any sample which fails to comply with the specified requirements.

1. District's Inspection at the Shop

a. If the DISTRICT elects to inspect any WORK or materials, as permitted under Section 5.1 of ANSI/AWWA C200 (latest version thereof), all costs in connection with the services of the DISTRICT's inspector will be paid for by the DISTRICT. Additional weld test specimens shall be furnished to the DISTRICT's inspector for testing by an independent testing laboratory whenever, in the judgment of the DISTRICT's inspector, a satisfactory weld is not being made. Test specimens shall also be furnished when the DISTRICT's inspector desires. The entire cost of obtaining, inspecting, and testing of such additional specimen plates, welds, or materials will be borne by the DISTRICT. If any specimen is found not to conform to the specified requirements, the materials represented by the specimen will be rejected. The expense of all subsequent tests due to failure of original specimens to comply with the specifications shall be the responsibility of the CONTRACTOR.

b. In addition to making or witnessing all specified tests and submitting any required reports to the ENGINEER and the DISTRICT, the DISTRICT's inspector will submit written reports to the CONTRACTOR concerning all materials rejected, noting the reason for each rejection.

c. Inspection by the DISTRICT's inspector, or failure to provide inspections, shall not relieve the CONTRACTOR of his responsibility to provide materials and to perform the WORK in accordance with the Contract Documents.

2. Shop Hydrostatic Testing

a. A shop hydrostatic test shall be performed on each length of steel pipe in accordance with AWWA C200 (latest version thereof), and as specified

herein. The test pressure shall be maintained for a period of sufficient length to allow thorough examination of the pipe section for defects. The test period shall be extended if requested by the DISTRICT to complete visual inspection.

b. Defects in welds shall be repaired and all repaired sections shall be retested hydrostatically. To make repairs, the pipe shall be removed from the testing machine and areas requiring repair shall be thoroughly dried before the required repair welding is performed.

c. Test Pressure: As specified in Section 5.2 of AWWA C200 (latest version thereof).

PART 3 EXECUTION

3.01 GENERAL

A. CONTRACTOR shall notify the DISTRICT not less than 24 hours in advance of the time of unloading or installation of pipe and appurtenances so that arrangements of inspection of the unloading or installation of the pipe and appurtenances may be made.

3.02 CARE AND HANDLING OF PIPE

A. Pipe bracing for shipping and handling (shipping struts):

B. After completion of linings and coatings, wood struts placed at right angles to each other shall be installed at each end of the pipe, and at intermediate points if necessary. The shipping struts shall be of a size sufficient to securely brace the pipe during shipping, and handling at the site. Struts shall be installed in a manner that will prevent damage to the lining, and shall have caps conforming to the curvature of the lining.

C. Prior to placing the pipe in the trench, the shipping struts shall be removed and replaced with stulls designed to meet installation requirements (installation stulls). Requirements for installation stulls are specified herein. The installation stulls shall be left in place until the bedding, backfilling, and compaction are completed satisfactorily. Stulls and bracing may be temporarily removed while the pipe is in the trench to perform field welding of pipe joints, in which case the stulls and bracing shall be reinstalled when the joint weld is finished and prior to placing backfill material.

D. Waterproof covers on ends of pipe shall remain in place and intact during storage of the pipe at the site of the WORK; any covers which are damaged shall be repaired.

E. All pipe and appurtenances shall be handled in accordance with the manufacturer's recommendations and instructions and as specified herein; in case of conflict, the more stringent requirements shall apply. At least two pipe slings, equally spaced along the pipe barrel, shall be used in the handling of pipe sections 20 feet or greater in length. Care shall be exercised to prevent damage to the pipe and coating system. Steel pipe shall only be handled with wide canvas or rubber covered slings. Bare cables, chain hooks, or metal bars shall not be allowed to come in contact with the coatings.

3.03 UNFIT OR REJECTED PIPE

A. All material will be inspected for defects and conformance to the Contract requirements prior to lowering into the trench. CONTRACTOR shall repair or replace any pipe section

or appurtenance that has been damaged during loading, transporting, unloading, or as a result of faulty support during transport or storage.

B. Any pipe or appurtenance, installed or not, determined by the DISTRICT to not meet the requirements of the Contract or otherwise found unfit shall be rejected, removed from the job site, and replaced by the CONTRACTOR without additional cost to the DISTRICT.

C. Excessive coating or lining damage, as determined by the DISTRICT, shall be a cause for rejection of the pipe or appurtenance as unfit.

3.04 PROTECTION AND CLEANING

A. The interior of all pipe and fittings shall be thoroughly cleaned of all foreign matter before being installed and shall be kept clean until the WORK has been accepted. Pipe shall not be damaged by the equipment and methods used for installation. The pipe shall be maintained in a clean condition during laying, jointing, bedding and backfilling operations.

3.05 PIPELINE INSTALLATION

A. Buried Piping – General

1. All trenching, embedment, and backfilling of buried piping shall conform to the requirements specified in Section 02200 – Earthwork; and the details indicated on the Drawings.

2. Whenever pipe laying is stopped, the open end of the line shall be sealed with a watertight plug. All water in the trench shall be removed prior to removing the plug.

3. Pipe embedment and backfilling shall closely follow the installation and jointing of steel pipe in the trench to prevent flotation of the pipe by water and longitudinal movement caused by thermal expansion or contraction of the pipe. Not more than 160 feet of restrained joint pipe shall ever be exposed ahead of the backfilling in any section of trench. The backfill adjacent to field joints may be temporarily omitted to provide adequate space for field coating the joints. Closure welds on restrained joint pipe shall be made during the cool part of the day.

B. **Line Layout Diagrams**: Detailed line layout diagrams shall be prepared and submitted for review. The points of intersection (P.I.'s) shown on the Drawings define the horizontal alignment and the centerline elevations define the vertical alignment of the pipe. Near the P.I.'s and the points of change in vertical alignment, the CONTRACTOR's line layout may depart from the defined alignment if such departure produces fabricating or installation economies.

C. Placing and Bracing of Pipeline Sections

1. Pipe sections shall be installed to the horizontal and vertical alignment shown on the drawings. Departure from the required horizontal and vertical alignment shall not exceed 0.15-foot unless otherwise accepted by the ENGINEER.

2. In general, pipe placement should proceed in the uphill direction with the bell end of the pipe located on the uphill end. Pipelines or runs intended to be straight shall be laid straight. Maximum joint openings and deflections shall be as recommended by the pipe manufacturer. Deflections up to 4 degrees may be

made by shop-mitering one end of one pipe. Deflections greater than 4 degrees shall be made by use of fabricated bends.

3. High points which allow air to collect in pipelines will not be permitted unless an air release valve is indicated on the Drawings at that location, or unless the CONTRACTOR installs an air release valve assembly at no additional cost to the DISTRICT.

4. Pipe Stulling

   a. Internal pipe stulls designed to meet installation requirements shall be installed in each pipe section before the pipe is placed in the trench. Installation stulls shall be of a size sufficient to securely brace the pipe during bedding and backfilling operations and shall have continuous head and sill timbers placed parallel to the longitudinal axis of the pipe, contoured to the pipe inside diameter. Stulls shall be installed in a manner that will prevent damage to the lining. Stulls shall be placed every 10 feet along the length of the pipe.

   b. Pipe which deviates from a true circle by more than one percent (1%) shall be laid with its larger diameter vertical, or shall be re-rounded by using the installation stulls to correct the vertical diameter where permitted by the ENGINEER.

   c. Stulls shall not be removed until after completion of all trench backfilling. Final inspection, repair, and checking of the interior lining shall be performed after the stulls have been removed.

5. Survey Control of Pipe Layout: CONTRACTOR shall survey the horizontal and vertical alignment of the pipe in place as the pipe installation progresses in order to show Compliance with the requirements of Paragraph 3-5.03 above. At least one horizontal alignment and elevation reading shall be taken for each 40 feet of pipe. Results shall be submitted to the ENGINEER.

D. Pipeline Field Joints

1. Pipeline field joints shall be made as shown on the Drawings

2. Welded Joints: Field welding of pipeline joints shall be performed in accordance with AWWA C206 (latest version thereof), and as shown on the Drawings. Prior to assembling a bell and spigot joint, metal spacers shall be placed against the inside shoulder of the bell to provide the proper spacing between the ends of the pipe. The thickness of the spacers shall be varied as necessary to keep the pipe from laying long or short.

3. Flanged Joints: Care shall be taken in bolting flanged joints to avoid restraint on the opposite end of the piece, which would prevent pressure from being evenly and uniformly applied upon the gasket. The pipe or fitting must be free to move in any direction during installation of bolts. Bolts shall be gradually tightened in a crisscross pattern, to ensure a uniform rate of gasket compression around the entire flange.

4. Insulated Flanged Joints: Insulated flanged joints shall be installed where indicated on the Drawings.

5. Joints Using Mechanical Couplings: All pipe to be connected with mechanical couplings shall be fabricated so that the space between pipe ends within the couplings at time of initial installation will not exceed the amount recommended by the coupling manufacturer, or as shown in Table 5 of AWWA C219 (latest version thereof), subject to the concurrence of the ENGINEER.

3.06 PROTECTIVE COATINGS AND LININGS

A. Field Coating and Repair

1. Entry into the pipeline for application of interior linings to unlined ends shall be from open ends or through access manways, except as otherwise permitted by the ENGINEER.

2. Field joints and repair of shop-applied exterior coatings and interior linings shall conform to the following:

For Field-Welded Joints

Cement Mortar Lining	Hold back lining from the joint as shown on the Drawings. Make field joints in accordance with Section 4.7.2 of ANSI/AWWA C205 (latest version thereof), as modified herein.
Cement Mortar Coating	Hold back coating from the joint as shown on the Drawings. Make field joints with cement mortar (grout) in accordance with Section 4.7.3 of ANSI/AWWA C205 (latest version thereof). Apply a layer of welded wire fabric around the pipe and tack-welded to the pipe exterior. Use impermeable bands or diapers to retain the grout without leakage.

For Flanged Joints

Buried Pipe	Extend cement mortar lining to ends of pipe. Apply AWWA C217 (latest version thereof) wax tape wrap to all remaining exposed flange, bolt and nut surfaces.
Pipe Exposed Inside Vaults	Extend cement mortar lining to ends of pipe. Shop prime and field paint all remaining exposed exterior pipe, flange, bolt and nut surfaces. Field painting is specified in Section 09900, PROTECTIVE FIELD COATINGS.

For Mechanically Coupled Joints

Cement Mortar Coating	Hold back coating from joints; paint exposed surfaces with 2.5 mil dry film thickness of Type B primer in accordance with ANSI/AWWA C203 (latest version thereof). Lining shall extend to end of pipe. Field coat exterior surfaces with 20 mil dry film

	thickness of medium consistency coal tar. Repair of lining at joints not required.
For Shouldered Coupled Joints	
Cement Mortar Coating	Hold back coating at joints; paint exposed surfaces with 2.5 mil dry film thickness of Type B primer in accordance with ANSI/AWWA C203 (latest version thereof). Lining shall extend to end of pipe. Field repair exterior surfaces with 20 mil dry film thickness of medium consistency coal tar. Repair of lining at joints not required.

3.07 MODIFICATIONS TO THE GOVERNING STANDARDS

A. Field Joints and Repair of Shop-Applied Cement Mortar Lining

1. Field joints at interior joint surfaces shall be done in accordance with Section 4.7.2 of ANSI/AWWA C205 (latest version thereof), except that an epoxy bonding agent and latex admixture shall be used in conjunction with the sand and cement mortar. The addition of lime or pozzolan will not be permitted.

2. The exposed steel shall be thoroughly cleaned and all grease shall be removed. A coat of epoxy bonding agent shall be applied over the area to be lined in accordance with the manufacturer's recommendations. A soupy mixture of cement and water shall be applied over the epoxy after it becomes tacky. Cement mortar to which the latex admixture has been added shall then be packed into the area to be patched and screeded off level with the adjacent cement mortar lining. The patched area shall be given an initial floating with a wood float, followed by a steel trowel finish.

3. Defective or damaged shop-applied cement mortar linings shall be removed, the surfaces cleaned, and the lining repaired per Section 4.4.6 of ANSI/AWWA C205 (latest version thereof), and as specified above for making field joints.

B. Field-Applied Cement Mortar Lining

1. Field-applied cement mortar linings, if used, shall comply with the requirements specified in ANSI/AWWA C602 (latest version thereof).

3.08 WALL SLEEVES

A. Unless otherwise noted, wall sleeves and wall penetration seals of the type indicated on the Drawings and as specified shall be provided where steel pipe passes through concrete or masonry walls. Where harness lugs are attached to wall sleeves, the sleeves shall be carefully aligned to permit installation of the tie rods.

3.09 PIPE SUPPORTS AND HANGERS, ENCASEMENTS, ANCHORAGE, BLOCKING AND SUPPORTS

A. Not Used.

3.10 CONNECTIONS WITH EXISTING PIPING

A. Connections between new WORK and existing piping shall be made with suitable fittings. Each connection with an existing pipe shall be made at a time and under conditions which will least interfere with service to customers, and as authorized by the DISTRICT.

B. Facilities shall be provided for dewatering and for disposal of the water removed from the dewatered lines and excavations without damage to adjacent property.

C. Special care shall be taken to prevent contamination when dewatering, cutting into, and making connections with potable water piping. Trench water, mud, or other contaminating substances shall not be permitted to enter the lines. The interior of all pipe, fittings, and valves installed in such connections shall be thoroughly cleaned and then swabbed with or dipped in a 200 mg/L chlorine solution.

3.11 FIELD TESTS AND INSPECTIONS

A. Inspection of Field Welds

1. The CONTRACTOR shall perform testing of field welds as follows:

   a. All bell and spigot lap welds and butt strap connections shall be tested by the CONTRACTOR using a soap solution test by smearing soap solution onto the weld and applying air in the annular gap. Bubbling of the soap layer will be indicative of a defective spot that shall be corrected. At the CONTRACTOR's option, field lap welds may be inspected by magnetic particle or dye penetration methods.

   b. CONTRACTOR may perform additional non-destructive tests on field welds at its option, as no additional cost to the DISTRICT.

2. The ENGINEER will perform visual inspections of all field welds, and any other appropriate nondestructive examination which may be needed, in order to determine CONTRACTOR's Compliance with the field welding requirements. Field weld test specimens shall be furnished to the ENGINEER for testing whenever, in the judgment of the ENGINEER, a satisfactory weld is not being made. Test specimens shall also be furnished when the ENGINEER desires. All costs for this testing will be paid by the DISTRICT. Field welds will be randomly inspected and tested by an independent testing laboratory as directed by ENGINEER. CONTRACTOR shall inform ENGINEER before welded joints are to be backfilled so that he joint may be inspected. CONTRACTOR shall assume all costs of exposing joints that were backfilled before inspection.

3. All defective welds shall be repaired and retested by the CONTRACTOR at no additional cost to the DISTRICT until they meet the specified requirements.

B. Pipeline Deflection Test

1. After completion of backfilling and before acceptance of the WORK, all pipe larger than 30 inches in diameter shall be tested for excessive deflection by measuring the actual inside vertical diameter. Deflection measurements will be made by ENGINEER. Pipe with diametral deflection exceeding 2 percent of the nominal inside diameter shall be uncovered and the bedding and backfill replaced as needed to prevent excessive deflection. After replacing bedding and backfill, the pipe shall be retested.

2. CONTRACTOR shall perform corrective measures at no additional cost to the DISTRICT if the deflection of any pipe section exceeds the limits specified.

3. In the event the measured deflection exceeds the maximum allowable specified above, the CONTRACTOR shall correct the deflection by removing the backfill from the respective pipe section and also for one-quarter length of both adjoining pipe sections down to at least the pipe bottom and then performing the backfill and compaction procedures in accordance with Section 02200, Earthwork to finished grade.

4. Stulls may be used to help re-round the pipe, provided that such stulls will not damage the pipe lining. Mechanical or pneumatic re-rounders will not be permitted.

C. Pipeline Field Hydrostatic and Leakage Test

1. After installation, steel piping shall be hydrostatically tested for defective workmanship and materials as specified in Section 15005, Pipeline Pressure and Leakage Testing.

2. All steel piping shall be watertight and free from leaks. Each leak which is discovered within the guarantee period stipulated in the General Conditions, shall be repaired by and at the expense of the CONTRACTOR.

****END OF SECTION****

SECTION 15030

POLYVINYL CHLORIDE (PVC) C900 PRESSURE PIPE

PART 1 GENERAL

1.01 SCOPE

A. This section covers the furnishing and installation of 4 inch through 16 inch buried polyvinyl chloride (PVC) pressure pipe for potable water service. PVC pressure pipe shall be furnished complete with all fittings, jointing materials, detectable underground warning tape, anchors, blocking, encasement, and other necessary appurtenances.

B. Pressure and leakage tests, cleaning, and disinfection, are covered in Section 15005 – Pipeline Pressure and Leakage Testing and Section 15008 – Disinfection. Pipe trenching, bedding, and backfill are covered in Section 02200 – Earthwork.

C. The following pipe may be permitted as an alternate to PVC pipe:

1. Steel Pipe as Specified by Section 15025 – Steel Pipe, **only where approved by the Engineer**

D. Potholing - To determine the locations and depths of existing underground utilities, the CONTRACTOR shall conduct exploratory excavations by potholing. Potholing shall be performed 30 days in advance of actual construction for each 1,000 linear feet of pipe to be installed, a soon as practical after issuance of the Notice to Proceed, and in any event, a sufficient time in advance of any excavation or construction in that area to avoid possible delay in the progress of work. Complete 30-day Pothole Report of potholing operations shall be submitted to the ENGINEER within 3 working days after completion of potholing, indicating dates of the operations, the northing and easting coordinates and invert elevation of the exposed utility or structure, identification of all existing pipelines discovered, and any additional discovered information or data pertinent to the construction.

E. Pipe shall be furnished where indicated on the drawings.

1.02 APPLICABLE SECTIONS

A. The following specification sections are applicable:

1. Section 02060 – Site Preparation and Selective Demolition
2. Section 02110 – Site Clearing
3. Section 02140 – Dewatering
4. Section 02200 – Earthwork
5. Section 15000 – Piping - General
6. Section 15005 – Pipeline Pressure and Leakage Testing
7. Section 15008 – Disinfecting of Water Distribution System

8. Section 15025 – Steel Pipe

1.03 GOVERNING STANDARDS

A. Except as modified or supplemented herein, all PVC pressure pipe 4-inches through 16-inches shall conform to the applicable requirements of ANSI/AWWA C900 (latest version thereof).

B. All material in contact with potable water shall be **NSF 61 certified.**

C. The supplementary information required in the governing standards is as follows:

Affidavit of Compliance	Required.
Plant Inspection	Not required.
Special Markings	Not required.
Special Preparation for Shipment	Not required.
Certification	Required.

1.04 SUBMITTALS

A. Drawings and data shall be submitted in accordance with Section 01300 – Submittals. Drawings and data shall include, but shall not be limited to, the following:

1. Gasket material.

2. Pipe length.

3. Affidavit of Compliance (ANSI/AWWA C900 (latest version thereof), Sec. 6.3)

4. Certification (ANSI/AWWA C900 (latest version thereof), Sec. 4.2.4)

1.05 DELIVERY, STORAGE, AND HANDLING

A. All equipment shall be suitably packaged to facilitate handling and to protect against damage during transit and storage. All equipment shall be boxed, crated, or otherwise completely enclosed and protected during shipment, handling, and storage. All equipment shall be protected from exposure to the elements and shall be kept dry at all times.

B. Before shipping each item of equipment shall be tagged or marked as identified in the delivery schedule or on the Shop Drawings. Complete packing lists and bills of material shall be included with each shipment.

C. Pipe, fittings, and accessories shall be handled in accordance with Chapter 6 of AWWA Manual M23 (latest version thereof), to ensure installation in sound, undamaged condition. Pipe shall not be stored uncovered in direct sunlight.

PART 2 PRODUCTS

2.01 DIMENSIONS

A. The dimension ratios (DRs: outside diameter to wall thickness) of PVC pressure pipe shall be as indicated on the drawings.

2.02 MATERIALS

A. **Pipe**: ANSI/AWWA C900 (latest version thereof); cast iron pipe OD, DR 18 (Class 235) and DR 14 (Class 305).

B. **Fittings**: Ductile iron; AWWA C110/ANSI 21.10 (latest version thereof) or AWWA C153/A21.53 (latest version thereof), 250 psi pressure rating.

C. **Joints**:

1. PVC to PVC: Stab-type with elastomeric gaskets per ANSI/AWWA C900 (latest version thereof). Gaskets of natural rubber will not be acceptable.

2. PVC to Ductile Iron: AWWA C110/ANSI 21.10 (latest version thereof), except gaskets shall be synthetic rubber. Natural rubber will not be acceptable.

D. **Restrained Joints**: ASTM F1674, EBAA Iron 2000 series (4 inch through 20 inch).

E. **Tapping Sleeves**: Stainless Steel, 250 psi pressure rating.

F. **Tapping Saddle:** Brass double strap service clamp, 200 psi pressure rating, Mueller BR2B Series Service Saddle Double Strap or approved equal.

G. **Polyethylene Encasement**: Tube or sheet, ANSI/AWWA C105/A21.5 (latest version thereof).

H. **Conductive Tracer**: Detection tape, 3 inches wide; aluminum foil core, 0.5 mil thick, encased in a protective inert plastic jacket; 5,000 psi min tensile strength; 2.5 lbs per inch per 1,000 feet min mass; color coded in accordance with APWA Uniform Color Code.

1. Allen Systems "Detectatape"

2. Lineguard "Type III"

3. or Reef Industries "Terra Tape D”

4. Detectable Underground Warning Tape – “Caution Buried Pipeline Below”

I. Manufacturing quality control shall be maintained by frequent, regularly scheduled sampling and testing. Testing shall comply with the governing standards.

2.03 SHOP COATING AND LINING

A. The interior lining and exterior coating of ductile iron fittings shall be per SSPWC Table 209-4.2.

PART 3 EXECUTION

3.01 INSPECTION

A. Pipe and fittings shall be carefully examined for cracks and other defects immediately before installation; spigot ends and bells shall be examined with particular care. All defective pipe and fittings shall be removed from the site of the work.

3.02 LAYING PIPE

A. Install all piping in accordance with AWWA Standard C605 (latest version thereof) and AWWA C900 (latest version thereof).

B. Pipe shall be protected from lateral displacement by pipe embedment material installed as specified in the Section 02200 – Earthwork. Pipe shall not be laid in water or other unsuitable conditions.

C. Pipe shall be laid with bell ends facing the direction of laying, except when reverse laying is specifically permitted by Engineer.

D. Foreign matter shall be prevented from entering the pipe during installation.

E. Whenever pipe laying is stopped, the open end of the line shall be sealed with a watertight plug. All water shall be removed from the trench prior to removing the plug.

F. A conductive tracer shall be buried above PVC pipe, not more than 18 inches below the ground surface.

G. Cleaning: The interior of all pipe and fittings shall be thoroughly cleaned before installation and shall be kept clean until the work has been accepted.

H. Alignment:

1. Piping shall be laid to the lines and grades indicated on the drawings. Pipelines or runs intended to be straight shall be laid straight. Deflections from a straight line or grade shall not exceed the maximum deflections specified by the manufacturer.

2. Unless otherwise specified or indicated on the drawings, and subject to acceptance by Engineer, either shorter pipe sections or fittings shall be installed as required to maintain the indicated alignment or grade.

3.03 CUTTING PIPE

A. Cutting shall comply with the pipe manufacturer's recommendations and with Chapter 7 of AWWA Manual M23 (latest version thereof). Cuts shall be smooth, straight, and at right angles to the pipe axis. After cutting, the end of the pipe shall be dressed to remove all roughness and sharp corners and shall be beveled in accordance with the manufacturer's instructions.

3.04 JOINTS

A. Joints shall be stab-type unless otherwise indicated on the drawings.

B. Stab Type Joints: Jointing shall conform to the instructions and recommendations of the pipe manufacturer. All surfaces for gasketed joints shall be lubricated immediately before the joint is completed. Gaskets and lubricants shall be supplied by the pipe manufacturer, shall be suitable for use in potable water, shall be compatible with the pipe materials, shall be stored in closed containers, and shall be kept clean. Each spigot shall be suitably beveled to facilitate assembly.

C. Mechanical Joints: Mechanical joints shall be carefully assembled in accordance with the manufacturer's recommendations. If effective sealing is not obtained, the joint shall be disassembled, thoroughly cleaned, and reassembled. Over-tightening of bolts to compensate for poor installation practice will not be permitted.

3.05 POLYETHYLENE ENCASEMENT

A. All ductile iron fittings, tapping saddles, tapping sleeves, valves, or other ductile iron accessories shall be provided with polyethylene tube or sheet protection installed in accordance with ANSI/AWWA C105/A21.5 (latest version thereof), Method A or C.

3.06 CONNECTIONS WITH EXISTING PIPE

A. Connections with existing pipes shall be made using fittings suitable for the conditions encountered. Each connection with an existing pipe shall be made at a time and under conditions which will least interfere with service to customers, and as authorized by the District. Facilities shall be provided for proper dewatering and for disposal of water removed from the dewatered lines and excavations without damage to adjacent property.

B. Special care shall be taken to prevent contamination of potable water lines when dewatering, cutting into, and making connections with existing pipe. No trench water, mud, or other contaminating substances shall be permitted to enter the lines. The interior of all pipe, fittings, and valves installed in such connections shall be thoroughly cleaned and then swabbed with, or dipped in, a 200 mg/L chlorine solution.

3.07 SERVICE CONNECTIONS

A. Tapping saddles or tapping sleeves shall be used for all service connections **2 inches and smaller.** Direct tapping of PVC pipe will not be permitted. Fittings shall be used for service connections larger than 2 inches.

3.08 CONCRETE ENCASEMENT

A. Concrete encasement shall be installed as indicated on the drawings. Concrete and reinforcing steel shall be as specified Section 03310 - Cast-in-Place Concrete. All pipe to be encased shall be suitably supported and blocked in proper position and shall be anchored against flotation.

3.09 RESTRAINED JOINTS

A. All bell-and-spigot or all-bell tees, Y-branches, bends deflecting 11-1/4 degrees or more, valves, and plugs which are installed in piping subjected to internal hydrostatic heads in excess of 30 feet shall be provided with suitable restraint.

B. Reaction blocking, anchorages, or other supports for fittings installed in fills or other unstable ground shall be provided as indicated by the drawings or as directed by Engineer.

C. All steel clamps, rods, bolts, and other metal accessories used in tapping saddles or reaction anchorages subject to submergence or in contact with earth or other fill material, and not encased in concrete, shall be protected from corrosion by two coats of medium consistency coal tar applied to clean, dry metal surfaces. The first coat shall be dry and hard before the second coat is applied.

3.10 PRESSURE AND LEAKAGE TESTS

A. After installation, PVC piping shall be hydrostatically tested for defective workmanship and materials as specified in Section 15005 – Pipeline Pressure and Leakage Testing.

3.11 LEAKAGE

A. All PVC piping shall be watertight and free from leaks. Each leak which is discovered within the period stipulated in the Special Conditions, Section D-17 – Guarantee and Maintenance Warranties, shall be repaired by and at the expense of Contractor.

3.12 DISINFECTION

After installation and cleaning, PVC piping shall be cleaned and disinfected as specified in Section 15008 – Disinfecting of Water Distribution System.

****END OF SECTION****

SECTION 15101

AWWA BUTTERFLY VALVES

PART 1 GENERAL

1.01 SCOPE

A. This section covers furnishing of AWWA butterfly valves for potable water service.

B. AWWA butterfly valves shall be furnished complete with operators and accessories as specified herein, and as specified in the Section 15180 – Valve Operators.

C. All material in contact with potable water shall be NSF 61 certified.

1.02 GENERAL

A. Equipment provided under this section shall be fabricated and assembled in full conformity with Drawings, Specifications, engineering data, instructions, and recommendations of the equipment manufacturer, unless exceptions are noted by ENGINEER.

B. Valves shall be furnished with all necessary parts and accessories indicated on the Drawings, specified, or otherwise required for a complete, properly operating installation and shall be the latest standard products of a manufacturer regularly engaged in the production of valves.

C. **Governing Standard**: Except as modified or supplemented herein, all butterfly valves and manual operators shall conform to the applicable requirements of ANSI/AWWA C504 (latest version thereof).

D. **Marking**: Supplementing the requirements of Section 6.1 of the governing standard, the country of origin of all castings and an identifying serial number shall be stamped on a corrosion-resistant plate attached to the valve body.

E. **Temporary Number Plates**: Not used.

F. **Pipeline Markers**: A buried butterfly valve marker post shall be furnished and installed adjacent to each buried butterfly valve as indicated on the drawings.

1.03 SUBMITTALS

A. Complete drawings, details, and specifications covering the valves and their appurtenances shall be submitted in accordance with the General Conditions section and as specified herein. Show dimensions, materials of construction by specification reference and grade, linings, and coatings. Included in the submittal shall be drawings by the valve manufacturer to indicate the position of the valve actuator and valve shaft.

B. Each drawing shall be identified with the valve number or name as specified in this section.

C. Certified copies of test results as required by Section 5 of the governing standard, with an affidavit of Compliance and manufacturer's proof-of-design per AWWA C504 (latest version thereof) as indicated in Section 6.3 of the governing standard, shall be submitted to ENGINEER before the valves are shipped.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Shipping, handling and storage shall be in accordance with the Products, Materials and Equipment section and as specified herein.

B. Care shall be taken in loading and transporting to prevent injury to the valves or coatings. Valves shall not be dropped. All valves will be examined upon delivery to project site by ENGINEER. Any damage to the valves coatings shall be repaired as acceptable to the ENGINEER at no additional cost.

C. Prior to shipping, the ends of all valves shall be acceptably covered to prevent entry of foreign material.

PART 2 PRODUCTS

2.01 ACCEPTABLE PRODUCTS

A. Butterfly valves shall be by the manufacturers listed below.

1. DeZurik
2. Pratt (Mueller)
3. M&H
4. Val-Matic
5. Rodney Hunt

2.02 MATERIALS

A. Except as modified or supplemented herein, materials used in the manufacture of butterfly valves shall conform to the requirements of the governing standard.

B. Acceptable shop coatings are listed below:

1. Epoxy

a. Interior lining and exterior finish coat per SSPWC Section 212-12 – Painting, Interior Lining, and Exterior Coating.

2. **Rust-Preventive Compound**: As recommended by manufacturer.

2.03 VALVE CONSTRUCTION

A. **Valve Bodies**: Valves shall be short-body type unless otherwise specified. The use of a stop or lug cast integrally with or mechanically secured to the body for the purpose of limiting disc travel by means of direct contact or interference with the valve disc (in either the open or closed position) will not be acceptable.

B. **Flanges**: Flanges shall be finished to true plane surfaces within a tolerance limit of 0.005 inch [125 µm]. The finished face shall be normal to the longitudinal valve axis within a maximum angular variation tolerance of 0.002 inch per foot (0.017 percent) of flange diameter.

C. **Mechanical Joint Ends**: Mechanical joint ends shall be either mechanical joint or push-on ends conforming to ANSI/AWWA C111/A21.11 (latest version thereof).

D. **Valve Shafts**

1. Valve shafts shall be fabricated of AISI Type 304 or 316 stainless steel. The use of shafts having a hexagonal cross section will not be acceptable. The connection between shaft and disc shall be in accordance with ANSI/AWWA C504 (latest version thereof).

2. The connection between the shaft and the disc shall be mechanically secured by means of solid, smooth sided, stainless steel or monel taper pins or dowel pins. Each taper pin or dowel pin shall extend through or shall wedge against the side of the shaft and shall be mechanically secured in place. The use of set screws, knurled or fluted dowel pins, expansion pins, roll pins, tension pins, spring pins, or other devices instead of the pins specified herein will not be acceptable.

E. Valve Seats

1. Acceptable seating surfaces mating with rubber are AISI Type 304 or 316 stainless steel, monel, or plasma-applied nickel-chrome overlay for all valves; bronze for 20 inch [500 mm] and smaller valves; and alloy cast iron for 20 inch [500 mm] and smaller manually operated valves.

2. Seats shall be located on the valve body. Valve seat configurations which rely on the mating pipe flange to hold the seat in position in the valve body will not be acceptable.

F. **Shaft Seals**: Shaft seals shall be of the chevron type.

G. **Thrust Bearings**: Each valve shall be provided with one or more thrust bearings in accordance with the governing standard. Thrust bearings which are directly exposed to line liquid and which consist of a metal bearing surface in rubbing contact with an opposing metal bearing surface will not be acceptable.

2.04 VALVE OPERATORS

A. Requirements for valve operators shall be as specified herein and as specified in Section 15180 – Valve Operators.

B. All 8 inch [200 mm] and larger valves shall have geared operators.

C. If valves with an AWWA class designation higher than specified are furnished, actuator torque capabilities shall be increased accordingly and be shall acceptable to ENGINEER.

D. Actuator Sizing

1. The valve manufacturer shall size the actuator in accordance with the governing standard and the valve manufacturer's requirements.

2. Unless otherwise indicated or specified, actuator torque requirements shall be based on a maximum differential pressure across the valve equal to the maximum pressure associated with the valve class and a maximum velocity through the valve of 16 feet per second [4.9 m/s].

3. Valves with operating stands shall have actuator torques increased by 25 percent. Actuator torques determined by the above requirements shall be increased by any safety factors required by paragraphs 4.3.8.3 and 4.3.8.7 of the governing standard or indicated or specified herein.

2.05 SHOP PAINTING

A. All interior and exterior ferrous metal surfaces, except finished surfaces, bearing surfaces, and stainless steel components, of valves and accessories shall be shop painted for corrosion protection. The valve manufacturer's standard coating will be acceptable, provided it is functionally equivalent to the specified coating and is compatible with the specified field painting.

B. Surfaces shall be painted as follows:

Unfinished Surfaces

Interior Surfaces	Epoxy.
Exterior Surfaces of Valves to be Buried or Installed in Manholes or Valve Vaults	Epoxy.
Exterior Surfaces of Valves to be Submerged	Epoxy.
Exterior Surfaces of All Other Valves	Universal primer.

Polished or Machined Surfaces

Flange Faces	Rust-preventive compound.
Other Surfaces	Epoxy.

C. Interior coatings shall comply with ANSI/AWWA C550 (latest version thereof) and shall be free of holidays. The total dry film thickness of shop-applied coatings shall be not less than:

Type of Coating	Minimum Dry Film Thickness (Interior)	Minimum Dry Film Thickness (Exterior)
Coal Tar Epoxy	16 mils	30 mils
Epoxy	16 mils	30 mils
Universal Primer	3 mils	3 mils

2.06 ACCESSORIES

A. Requirements for extension stems and stem guides, position indicators, floor boxes, operating stands, torque tubes, valve boxes, and extension bonnets shall be as indicated on the Drawings and as specified in the Valve operators section.

PART 3 EXECUTION

3.01 INSTALLATION

A. Valves will be installed in accordance with Section 15010 – Valve Installation.

B. Installation Check

1. An installation check by an authorize representative of the manufacturer is not required. An experienced, competent, and authorized representative of the manufacturer shall visit the site of the WORK and inspect, check, adjust if necessary, and approve the equipment installation. The representative shall be present when the equipment is placed in operation in accordance with Startup Requirements section, and shall revisit the job site as often as necessary until any problems are corrected and the equipment installation and operation are satisfactory in the opinion of ENGINEER.

2. The manufacturer's representative shall furnish a written report certifying that the equipment has been properly installed and lubricated; is in accurate alignment; is free from any undue stress imposed by connecting piping and appurtenances; and has been operated under full load conditions and that it has operated satisfactorily.

3. All costs for these services shall be included in the contract price.

****END OF SECTION****

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SECTION 15108

AIR RELEASE AND COMBINATION AIR VALVES

PART 1 GENERAL

1.01 SCOPE

A. This section covers furnishing air release valves, combination air valves, and air release and vacuum relief valves as required by the Work.

B. All material in contact with potable water shall be **NSF 61 certified**.

1.02 GENERAL

A. Equipment provided under this section shall be fabricated and assembled in full conformity with drawings, specifications, engineering data, instructions, and recommendations of the equipment manufacturer, unless exceptions are noted by Engineer.

B. Valves shall be furnished with all necessary parts and accessories indicated on the drawings, specified, or otherwise required for a complete, properly operating installation and shall be the latest standard products of a manufacturer regularly engaged in the production of valves.

C. **Governing Standard**: Except as modified or supplemented herein, all valves furnished under this section shall conform to the applicable performance requirements of AWWA C512 (latest version thereof).

1.03 SUBMITTALS

A. Complete assembly drawings, together with detailed specifications and data covering materials used and accessories forming a part of the valves furnished, shall be submitted in accordance with Section 01300 – Submittals.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Shipping, handling, and storage shall be in accordance with the Products, Materials and Equipment section and as specified herein.

B. Care shall be taken in loading and transporting to prevent injury to the valves or coatings. Valves shall not be dropped. All valves will be examined upon delivery to project site by Engineer. Any damage to the valves coatings shall be repaired as acceptable to the Engineer at no additional cost.

C. Prior to shipping, the ends of all valves shall be acceptably covered to prevent entry of foreign material.

PART 2 PRODUCTS

2.01 CONSTRUCTION

A. Air release valves with operating pressures of 150 psi or less shall be Apco/Valve and Primer "No. 200", GA Industries "Figure 920m", Multiplex "Crispin Type PL", ARI “No. S-050”, or Val-Matic "No. 38".

B. Provide non-corrodible #24 mesh screen on the discharge port.

C. Two Inch and smaller combination air valves shall be of the integral type with a valve assembly which functions as both an air and vacuum valve and an air release valve. The valves shall be Apco/Valve and Primer "Single Body Combination Air Valves" (No. 143C), Multiplex "Crispin Universal Air Release Valves", ARI “No. D-040”, Val-Matic "Combination Air Valves," or approve equal.

D. Three Inch and larger combination air valves shall consist of an air and vacuum valve with an externally mounted air release valve. The valves shall be Apco/Valve and Primer “Single Body Combination Air Valves” for 3 inch and "Custom Combination Air Valves" for 4 inch and larger, GA Industries "Figure 950 Kinetic Custom Combination Air Valves", Multiplex "Crispin Dual Air Valves", ARI “No. D-060-HF”, or Val-Matic "Dual Body Combination Air Valves".

E. Two Inch and smaller air release and vacuum relief valves for vertical diffusion vane pumps shall be of the kinetic energy type with a valve assembly which functions as both an air release and a vacuum relief valve. The exhaust from the valve shall be provided with a throttling device for field adjusting the air flow rate. The valves shall be Apco/Valve and Primer "Series 140DAT Air Valves for Vertical Turbine Pumps", GA Industries "Figure 933 Kinetic Air/Vacuum Valve", ARI “No. D-040”, or Multiplex "Crispin Deep Well Air Valve". The discharge from the valve shall be provided with a threaded NPT connection.

F. Three Inch and larger air release and vacuum relief valves for vertical diffusion vane pumps shall be of the kinetic energy type with a valve assembly which functions as both an air release and a vacuum relief valve. The valve shall be provided with a surge check valve on the valve inlet or outlet. The valves shall be Apco/Valve and Primer “Series 140DAT Air Valves for Vertical Turbine Pumps” for 3 inch and "Series 1900 Air Valves for Vertical Turbine Pumps" for 4 inch and larger, GA Industries "Figure 931 Slow-Closing Kinetic Air/Vacuum Valve", ARI “No. D-060-HF-NS”, or Multiplex "Crispin Air & Vacuum Valve with Surge Check Valve". The discharge from the valve shall be provided with a flanged connection.

2.02 MATERIALS

A. Except as modified or supplemented herein, materials of construction shall comply with the governing standard.

1. **Valve Trim**: Bronze or austenitic stainless steel or polymer materials.

2. **Float**: Austenitic stainless steel, polycarbonate, or foamed polypropylene.

3. **Shop Coatings**

a. Epoxy

(1) Carboline "Carboguard 891",

(2) Resicoat “RT R4”,

(3) or Tnemec "Series N140 Pota-Pox Plus."

b. Rust-Preventive Compound: As recommended by manufacturer

2.03 SHOP PAINTING

A. All interior and exterior ferrous metal surfaces, except stainless steel components, shall be shop painted for corrosion protection. The valve manufacturer's standard coating will be acceptable, provided it is functionally equivalent to the specified coating and is compatible with the specified field coating. Field painting is covered in Section 09900 – Protective Filed Coatings.

B. Surfaces shall be painted as indicated:

Interior Surfaces	NSF-61 Certified Epoxy.
Exterior Surfaces of Valves To Be Installed in Manholes or Valve Vaults	Coal tar epoxy.
Exterior Surfaces of All Other Valves	Universal primer.
Polished or Machined Surfaces	Rust-preventive compound.

C. Interior epoxy coatings shall comply with AWWA C550/NSF 61 (latest version thereof) and shall be free of holidays. The total dry film thickness of shop-applied coatings shall be not less than:

Type of Coating	Minimum Dry Film Thickness
Epoxy	10 mils [250 µm]
Universal Primer	3 mils [75 µm]

2.04 SHUTOFF VALVES

A. A shutoff valve shall be provided in the piping leading to each air release valve and combination air valve. Each 4 inch [100 mm] and larger combination air valve shall be provided with a shutoff valve between the air and vacuum valve and the air release valve.

PART 3 EXECUTION

3.01 INSTALLATION

A. Air release and combination air valves will be installed in accordance with Section 15010 – Valve Installation.

B. Provide non-corrodible #24 mesh screen on the discharge port.

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SECTION 15112

BACKFLOW PREVENTION ASSEMBLIES

PART 1 GENERAL

1.01 DESCRIPTION

A. This section includes materials, installation, and testing of reduced-pressure backflow prevention devices and check valve and double check valve assemblies.

1.02 REFERENCE STANDARDS

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

1. State of California Department of Health Services Division of Drinking Water and Environmental Management, Approved Backflow Prevention Assemblies for Service Isolation.

2. AWWA C510 (latest version thereof) – Double Check Valve Backflow-Prevention Assembly

3. AWWA C511 (latest version thereof) – Reduced-Pressure Principle Backflow-Prevention Assembly

4. AWWA M14 (latest version thereof) – Backflow Prevention and Cross-Connection Control: Recommended Practices

5. AWWA Publication – Cross Connection and Backflow Prevention

1.03 GENERAL DESIGN CONSIDERATION

A. The Design and construction of the backflow prevention assembly shall meet the requirements called for in this specification except that any modifications specifically shown on the Plans shall take precedence over these general standards.

B. The assembly shall include same size valves located on either side of the backflow prevention assemblies. Four test cocks shall be appropriately located on the assembly for testing and certification.

C. The nominal size of reduced-pressure principle detector assemblies shall be as shown on the Plans or as directed by the Fire Department of jurisdiction.

1.04 SUBMITTALS

A. Complete assembly drawings, including, but not limited to, fittings, piping, protective enclosure/vault, reinforced concrete pad, pipe support, together with detailed specifications and data covering materials used and accessories forming a part of the assembly furnished, shall be submitted in accordance with the Section 01300 – Submittals.

1.05 DELIVERY, STORAGE AND HANDLING

A. Backflow prevention assemblies shall be delivered and stored in accordance with AWWA C210 (latest version thereof), AWWA C213 (latest version thereof), and AWWA C550 (latest version thereof). The port openings shall be covered with plastic, cardboard, or wood while in transit and during storage in the field. These covers shall remain in place until the backflow assembly is ready to be installed. Backflow assemblies shall not be stored in contact with bare ground. Backflow assemblies shall not be stacked.

1.06 WARNING TAPE

A. Warning tape shall be installed for backflow prevention assemblies in accordance with Section 15000 – Piping – General.

PART 2 MATERIALS

2.01 BACKFLOW PREVENTION ASSEMBLIES

A. Backflow prevention assemblies shall be among those listed on the “List of Approved Backflow Prevention Assemblies” of the Foundation for Cross-Connection Control and Hydraulic Research” at the University of Southern California and shall be approved by the District.

B. Devices shall be provided by the contractor in various sizes as indicated on the drawings.

C. Backflow prevention device shall be of reduced pressure zone type where indicated on the drawings. Manufacturers/Models include Watts LF909-DOSY-FS or approved equal for reduced pressure zone backflow prevention assemblies.

D. Backflow prevention device shall be of reduced pressure detector type where indicated on the drawings. Manufacturers/Models include Watts 909RPDA-DOSY-GPM-FS or equal for reduced pressure detector backflow prevention assemblies.

2.02 CONCRETE

A. Concrete used for slabs and anchor or thrust blocks shall be in accordance with the Standard Specifications

PART 3 EXECUTION

3.01 INSTALLATION

A. Installation shall comply with the latest edition of the Uniform Plumbing Code, applicable local agency and District requirements.

B. Installation shall be as close to the meter as possible.

C. Backflow prevention assemblies shall be installed in accordance with the Drawings.

D. Water service and fire service shut-off valves will be secured closed during installation until an approved backflow prevention device is installed and tested in compliance with this specification.

E. Installation of backflow prevention assemblies shall conform to manufacturer’s instructions and recommendations.

3.02 WARNING TAPE

A. Warning tape shall be installed in accordance with Section 15000 – Piping – General.

3.03 CONCRETE

A. Concrete thrust or anchor blocks and slabs shall be installed in accordance with the Standard Specifications and the Plans. Thrust blocks shall be located at all unrestrained pipe fittings and shall bear against firm, undisturbed soil. The thrust blocks shall be centered on the fitting so that the bearing area is exactly opposite the resultant direction of the thrust. Thrust block concrete shall not hinder maintenance access to the valve operators. Prior to filling the pipeline with water, concrete thrust blocks shall cure for a minimum of three (3) days unless an approved accelerating admixture is used.

3.04 HYDROSTATIC TESTING

A. Backflow assemblies **shall not be hydrostatically tested** as part of or in conjunction with the pipeline to which they are connected.

3.05 TESTING

A. The District will inspect and initially test each backflow prevention assembly after inspection of its proper installation is complete.

B. Required maintenance of the backflow prevention device and appurtenances and annual testing of the device shall be the District's responsibility.

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SECTION 15119

PRESSURE REDUCING VALVES

PART 1 GENERAL

1.01 THE REQUIREMENT

A. The CONTRACTOR shall provide pressure reducing valves and appurtenances, complete and operable, in accordance with the Contract Documents.

B. The requirements of Section 15180 – Valve Operators apply to this Section.

1.02 CONTRACTOR SUBMITTALS

A. Complete drawings, details, and specifications covering the valves and their appurtenances shall be submitted in accordance with Section 01300 – Submittals and as specified herein. Show dimensions, materials of construction by specification reference and grade, linings, and coatings. Included in the submittal shall be drawings by the valve manufacturer to indicate the position of the valve actuator and valve shaft.

1.03 DELIVERY, STORAGE, AND HANDLING

A. Shipping, handling and storage shall be in accordance with the Products, Materials and Equipment section and as specified herein.

B. Care shall be taken in loading and transporting to prevent injury to the valves or coatings. Valves shall not be dropped. All valves will be examined upon delivery to project site by ENGINEER. Any damage to the valves coatings shall be repaired as acceptable to the ENGINEER at no additional cost.

C. Prior to shipping, the ends of all valves shall be acceptably covered to prevent entry of foreign material.

PART 2 PRODUCTS

2.01 PRESSURE REDUCING VALVES

A. Watts LF25AUB-Z3 or equal.

B. Furnish with end connections as specified or shown on Drawings:

1. Face and drill flange valves to ANSI 125/150-lb standard.

2. Mechanical Joint and Push-on Ends: AWWA C111.

3. Screwed Ends: NPT standard.

2.02 COATINGS

A. Coatings for valves shall be as recommended by manufacturer. A final field coating shall be applied to match connected piping.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install in accordance with manufacturer's written instructions and approved submittals.

****END OF SECTION****

SECTION 15180

VALVE OPERATORS

PART 1 GENERAL

1.01 SCOPE

A. This section covers furnishing manual valves operators and accessories as specified herein.

1.02 GENERAL

A. Equipment provided under this section shall be fabricated and assembled in full conformity with drawings, specifications, engineering data, instructions, and recommendations of the equipment manufacturer, unless exceptions are noted by Engineer.

B. Operators shall be furnished with all necessary parts and accessories indicated on the drawings, specified, or otherwise required for a complete, properly operating installation and shall be the latest standard products of a manufacturer regularly engaged in the production of operators.

C. All material in contact with potable water shall be **NSF 61 certified.**

D. **Governing Standards**

1. Except as modified or supplemented herein, all powered operators shall conform to applicable requirements of ANSI/AWWA C540 (latest version thereof).

2. Except as modified or supplemented herein, all manual operators for butterfly and eccentric plug valves shall conform to the applicable requirements of ANSI / AWWA C504 (latest version thereof).

3. Except as modified or supplemented herein, all manual operators for ball valves shall conform to the applicable requirements of ANSI/AWWA C507 (latest version thereof).

1.03 SUBMITTALS

A. Complete drawings, details, and specifications covering the operators and their appurtenances shall be submitted in accordance with Section 01300 – Submittals. Submittal drawings shall clearly indicate the country of origin of each operator and its components.

1.04 DELIVERY, STORAGE, AND HANDLING

A. All equipment shall be suitably packaged to facilitate handling and to protect against damage during transit and storage. All equipment shall be boxed, crated, or otherwise completely enclosed and protected during shipment, handling, and storage. All equipment shall be protected from exposure to the elements and shall be kept dry at all times.

B. Painted and coated surfaces shall be protected against impact, abrasion, discoloration, and other damage. Painted and coated surfaces which are damaged prior to acceptance of equipment shall be repainted to the satisfaction of Engineer.

C. Grease and lubricating oil shall be applied to all bearings and similar items.

D. Before shipping each item of equipment shall be tagged or marked as identified in the delivery schedule or on the Shop Drawings. Complete packing lists and bills of material shall be included with each shipment.

PART 2 PRODUCTS

2.01 PERFORMANCE AND DESIGN REQUIREMENTS

A. General

1. Operators and appurtenances shall be designed for the conditions and requirements as indicated in the respective valve sections.

2. Liberal factors of safety shall be used throughout the design, especially in the design of parts subject to intermittent or alternating stresses. In general, working stresses shall not exceed one-third of the yield point or one-fifth of the ultimate strength of each material.

B. Valve Operators

1. Each operator shall be designed to open or close the valve under all operating conditions. Operators shall be designed for the maximum pressure differential across the valve and maximum velocities through the valve where indicated in the respective valve schedules.

2. Valve operators shall be provided and adjusted by the valve manufacturer. Operator mounting arrangements and positions shall facilitate operation and maintenance and shall be determined by the valve manufacturer unless indicated otherwise on the drawings or directed by Engineer.

3. When valves are to be buried, submerged, or installed in vaults, the operators and accessories shall be sealed to prevent the entrance of water. The design water depth shall be as indicated in the respective valve schedules but not less than 20 feet.

2.02 MATERIALS

A. Except as modified or supplemented herein, materials used in the manufacture of operators shall conform to the requirements of ANSI/AWWA C504 (latest version thereof) and AWWA C540 (latest version thereof).

2.03 VALVE MANUAL OPERATORS

A. General

1. Manual operators of the types listed in the valve specifications or schedules shall be provided by the valve manufacturer.

2. Unless otherwise indicated or specified, each geared manual operator shall be equipped with an operating handwheel.

3. The direction of rotation of the wheel, wrench nut, or lever to open the valve shall be to the left (counterclockwise). Each valve body or operator shall have cast thereon the word "Open" and an arrow indicating the direction to open.

4. The housing of traveling-nut type operators shall be fitted with a removable cover which shall permit inspection and maintenance of the operating mechanism without removing the operator from the valve. Travel limiting devices shall be provided inside the operator for the open and closed positions. Travel limiting stop nuts or collars installed on the reach rod of traveling-nut type operating mechanisms shall be field adjustable and shall be locked in position by means of a removable roll pin, cotter pin, or other positive locking device. The use of stop nuts or adjustable shaft collars which rely on clamping force or setscrews to prevent rotation of the nut or collar on the reach rod will not be acceptable.

5. Each operator shall be designed so that shaft seal leakage cannot enter the operator housing.

6. Valves for throttling service shall be equipped with an infinitely variable locking device or a totally enclosed gear operator.

7. Operators shall produce the required torque with a maximum pull of 80 lbs [356 N] on the lever, handwheel, or chain. Operator components shall withstand, without damage, a pull of 200 lbs [890 N] on the handwheel or chainwheel or an input of 300 foot-lbs [407 J] on the operating nut.

B. **Handwheels**: Handwheel diameters shall be at least 8 inches [200 mm] but not more than 24 inches [600 mm] for 30 inch [750 mm] and smaller valves and not more than 30 inches [750 mm] for 36 inch [900 mm] and larger valves.

C. **Chainwheels**: Unless otherwise specified in the valve schedules, all valves with center lines more than 7'-6" [2.3 m] above the floor shall be provided with chainwheels and operating chains. Each chainwheel operated valve shall be equipped with a chain guide which will permit rapid handling of the operating chain without "gagging" of the wheel and will also permit reasonable side pull on the chain. Suitable extensions shall be provided, if necessary, to prevent interference of the chain with adjacent piping or equipment. Operating chains shall be hot-dip galvanized or zinc plated carbon steel and shall be looped to extend to within 4 feet [1.2 m] of the floor below the valve.

D. **Levers**: Levers shall be capable of being locked in at least five intermediate positions between fully open and fully closed. In any building or structure containing lever operated valves, at least two operating levers shall be provided for each size and type of lever operated valve.

E. **Chain Levers**: Suitable operator extensions shall be provided, if necessary, to prevent interference of the chain with adjacent piping or equipment. Operating chains shall be hot-dip galvanized carbon steel and shall be looped to extend to within 4 feet [1.2 m] of the floor below the valve.

F. **Wrench Nuts**: Unless otherwise specified in the valve schedules or on the drawings, wrench nuts shall be provided on all buried valves and on all valves that are to be operated through floor boxes. Unless otherwise directed by DISTRICT, all wrench nuts

shall comply with Section 4.4.13 of AWWA C500 (latest version thereof). At least two operating keys shall be furnished for operation of the wrench nut operated valves.

G. **Operating Stands**: Operating stands shall be provided in the locations indicated on the drawings or as indicated in the valve schedules. Operating stands shall support the handwheel approximately 36 inches [900 mm] above the floor. A sleeve made from standard weight galvanized steel pipe shall be provided for the opening in the floor beneath each operating stand. When stems are 10 feet [3 m] or longer, a suitable thrust bearing shall be provided in each operating stand to carry the weight of the extension stem.

H. **Wall Brackets**: Wall brackets shall be provided to support manual operators in the locations indicated on the drawings or in the respective valve schedules. The horizontal face of the bracket shall be predrilled to accept the operator and the stem without modification. The top of the bracket shall extend sufficiently to bear on and transfer thrust loads to the top of the supporting structure.

2.04 OPERATOR ACCESSORIES

A. Extension Stems

1. Extension stems and stem guides shall be furnished when indicated in the respective valve schedules, indicated on the drawings, or otherwise required for proper valve operation. Extension stems shall be of solid steel and shall be not smaller in diameter than the stem of the operator shaft. Extension stems shall be connected to the operator with a single Lovejoy "Type D" universal joint with grease-filled protective boot. All stem connections shall be pinned.

2. At least two stem guides shall be furnished with each extension stem, except for buried valves. Stem guides shall be of cast iron, bronze bushed, and adjustable in two directions. Stem guide spacing shall not exceed 100 times the stem diameter or 10 feet [3 m], whichever is smaller. The top stem guide shall be designed to carry the weight of the extension stem. The extension stem shall be provided with a collar pinned to the stem and bearing against the stem thrust guide.

3. Extension stems for chemical resistant butterfly valves located in drainage sumps shall be the two-piece type with stainless steel stem, PVC housing, wall support, and collar. Unless otherwise indicated on the drawings, the length of the stem extension shall be as necessary to position the valve operator 12 inches above the maximum liquid level in the immediate area.

4. Extension stems for buried valve operators shall extend to within 6 inches [150 mm] of the ground surface, shall be centered in the valve box using spacers, and shall be equipped with a wrench nut.

5. Extension stems for buried valve operators shall be provided with position indicators as specified in the valve schedules.

B. Position Indicators

1. Unless otherwise specified, each valve operator shall be provided with a position indicator to display the position of the plug or disc relative to the body seat opening.

2. For quarter turn plug, ball, or cone type valves installed in interior locations, the indicating pointer shall be mounted on the outer end of the valve operating shaft extension and shall operate over an indicating scale on the operating mechanism cover. Where the shaft passes through the cover, a suitable stuffing box or other seal shall be provided to prevent the entrance of water.

3. Each operator for butterfly valves, except where located in manholes, buried, or submerged, shall have a valve disc position indicator mounted on the end of the valve shaft. A disc position indicator shall also be provided on each operating stand or the operator mounted thereon.

4. **Position for Buried Operators**: When specified in the respective valve schedules, each buried valve operator shall be equipped with a position indicator. Position indicators shall be Indico "Model 179 Valve Position Indicators" manufactured by the Mills Engineering Company, Needham Heights, Massachusetts, or "Diviner" ground level position indicator manufactured by the Henry Pratt Company, Aurora, Illinois. Each indicator assembly shall be designed for installation on the extension stem connected to the operating stem of the buried operator mechanism and shall be mounted in the top section of the valve box beneath the valve box cover. Each indicator shall be equipped with a wrench nut. Internal gearing shall be sealed and protected from the elements.

C. Floor Boxes

1. Openings through concrete slabs provided for key operation of valves shall be provided with a cast iron floor box complete with cover. The floor box shall be of the depth indicated on the drawings. Where the operating nut is in the slab, the stem shall have a guide to maintain the nut in the center of the box; where the nut is below the slab, the opening in the bottom of the box shall accommodate the operating key.

2. Each floor box and cover shall be shop coated with manufacturer’s standard coating.

D. **Torque Tubes**: Torque tube shall utilize pipe rather than solid shafting between the valve input shaft and the output shaft of the valve floorstand operator. An adjustment of 2 inches [50 mm] shall be provided in the torque tube installation. Torque tube shall be coated with the same material as the submerged valve.

E. Valve Boxes

1. Each valve buried to a depth of 4 feet [1.2 m] or less shall be provided with a slide type valve box. Valve boxes shall be cast iron, extension sleeve type, suitable for the depth of cover indicated on the drawings. Only one extension will be allowed with each slide type valve box. Valve boxes shall be at least 5 inches [125 mm] in inside diameter, shall be at least 3/16 inch [4.7 mm] thick, and shall be provided with suitable cast iron bases and covers.

2. Each valve buried deeper than 4 feet [1.2 m] shall be provided with a valve box consisting of a cast iron cover and a 6 inch [150 mm] Cast Iron Pipe section. The cover shall be Clay & Bailey "No. 2193". The pipe shaft shall extend from the valve to 5 inches [125 mm] inside the valve box cover.

3. All parts of valve boxes, bases, and covers shall be shop coated with manufacturer's standard coating.

4. Valve boxes which are to be provided with position indicators shall have top sections and covers designed for proper installation of the position indicator and accessories.

2.05 SHOP PAINTING

A. All ferrous metal surfaces, except bearing and finished surfaces and stainless steel components of valve operators and accessories, shall be shop painted for corrosion protection. The valve manufacturer's standard coating will be acceptable, provided it is functionally equivalent to the specified coating and is compatible with the specified field painting.

B. The following surfaces shall be painted:

Polished or Machined Surfaces	Rust-preventive compound.
Other Surfaces	Epoxy enamel.
Operators and Accessories	Universal primer.

PART 3 EXECUTION

3.01 INSTALLATION

A. Operators will be installed on the valves in accordance with Section 15010 - Valve Installation.

****END OF SECTION****

SECTION 15206

GATE VALVES

PART 1 GENERAL

1.01 THE REQUIREMENT

A. The CONTRACTOR shall provide gate valves and appurtenances, complete and operable, in accordance with the Contract Documents.

B. The requirements of Section 15180 – Valve Operators apply to this Section.

1.02 CONTRACTOR SUBMITTALS

A. Complete drawings, details, and specifications covering the valves and their appurtenances shall be submitted in accordance with Section 01300 – Submittals and as specified herein. Show dimensions, materials of construction by specification reference and grade, linings, and coatings. Included in the submittal shall be drawings by the valve manufacturer to indicate the position of the valve actuator and valve shaft.

B. Each drawing shall be identified with the valve number or name as specified in this section.

C. Certified copies of test results as required by Section 5 of the governing standard, with an affidavit of Compliance and manufacturer's proof-of-design per AWWA C509 (latest version thereof) as indicated in Section 6.3 of the governing standard, shall be submitted to ENGINEER before the valves are shipped.

1.03 DELIVERY, STORAGE, AND HANDLING

A. Shipping, handling and storage shall be in accordance with the Products, Materials and Equipment section and as specified herein.

B. Care shall be taken in loading and transporting to prevent injury to the valves or coatings. Valves shall not be dropped. All valves will be examined upon delivery to project site by ENGINEER. Any damage to the valves coatings shall be repaired as acceptable to the ENGINEER at no additional cost.

C. Prior to shipping, the ends of all valves shall be acceptably covered to prevent entry of foreign material.

PART 2 PRODUCTS

2.01 GENERAL

A. Buried valves shall be of the inside screw, non-rising stem type. The valve operators shall be as indicated, with counter-clockwise opening stems, in accordance with Section 15180 – Valve Operators.

B. All valve interior ferrous surfaces shall be protected against corrosion by factory applied fusion-bonded or thermal setting epoxy coating which shall be a minimum of 16 mils thick per AWWA C550 (latest version thereof).

C. All valves shall have a smooth inside bore on the bottom half to prevent accumulation of sediment.

2.02 RESILIENT-SEATED GATE VALVES (2- to 10-inch)

A. **General**: Resilient-seated gate valves shall be provided for all gate valves 2-inch through 10-inch.

B. **Construction**: Resilient-seated gate valves shall conform to ANSI/AWWA C 509 (latest version thereof) - Resilient-Seated Gate Valves for Water Supply Service. The valves shall be suitable for a design working water pressure of 200 psig, with flanged, bell and spigot, or mechanical joint ends. The valve body, bonnet, and disc shall be of cast iron or ductile iron and the disc or body shall be rubber-coated. Body and bonnet wall thickness shall be equal to or greater than the minimum wall thickness as listed in Table 2 of ANSI/AWWA C509 (latest version thereof). The stem, stem nuts, glands, and bushings shall be of bronze, with the stem seal per ANSI/AWWA C 509 (latest version thereof).

C. **Operators**: Unless otherwise indicated, resilient-seated gate valves shall have manual operators in accordance with Section 15180 - Valve operators.

D. Manufacturers, or Equal

1. American Flow Control
2. American AVK.
3. Mueller Company (Grinnell Corp.)
4. US Pipe

2.03 GATE VALVES (4-INCH OR SMALLER)

A. **Construction**: Gate valves, 4-inch or smaller, for general purpose use, shall be non-rising stem, heavy-duty type for industrial service, with screwed or soldered ends to match the piping. The bodies shall have union bonnets of bronze conforming to ASTM B 62 (latest version thereof) - Composition Bronze or Ounce Metal Castings. The stems shall be of bronze conforming to ASTM B 62 (latest version thereof), or ASTM B 371 (latest version thereof) - Specification for Copper-Zinc-Silicon Alloy Rod. The solid wedges shall be of bronze conforming to ASTM B 62. The valves shall have malleable iron handwheels, unless otherwise indicated, and stem seals shall be of Teflon-impregnated or other acceptable non-asbestos packing. All valves shall have a pressure rating of minimum 125 psi steam, and 200 psi cold-water, unless otherwise indicated.

B. Manufacturers, or Equal

1. American Flow Control
2. American AVK.
3. Mueller Company (Grinnell Corp.)
4. US Pipe

PART 3 EXECUTION

3.01 GENERAL

A. Gate valves shall be installed in accordance with the provisions of Section 15010 – Valve Installation. Care shall be taken that valves in plastic lines are well supported at each end of the valve.

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KERN COUNTY PUBLIC HEALTH SERVICES

WELL DESTRUCTION PROCEDURES

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KERN COUNTY
Public Health Services
DEPARTMENT

MATTHEW CONSTANTINE
DIRECTOR

2700 M STREET, SUITE 300 BAKERSFIELD, CALIFORNIA 93301-2370 VOICE: 661-862-8740 FAX: 661-862-8701 WWW.CO.KERN.CA.US/EH

WATER WELL DESTRUCTIONS

Water wells that are no longer in use (abandoned) or are no longer producing adequate supplies of water are required by state law and county ordinance to be destroyed according to established procedures.

Abandoned water wells can act as conduits for surface and subsurface pollution to enter groundwater supplies. Once polluted, groundwater is no longer drinkable.

Abandoned wells can also be illegally used for the disposal of liquid and solid wastes, causing further degradation of the groundwater quality.

The following guidelines will enable you to destroy your well in compliance with those regulations:

1. An application for a permit to destroy the well must be submitted to the Kern County Public Health Services Department, Environmental Health Division, for review prior to the well destruction.

2. The contractor submitting an application must have a C-57 license and be registered with the Department.

3. A fee at the rate of $100 per hour will be charged for the travel and inspection time.

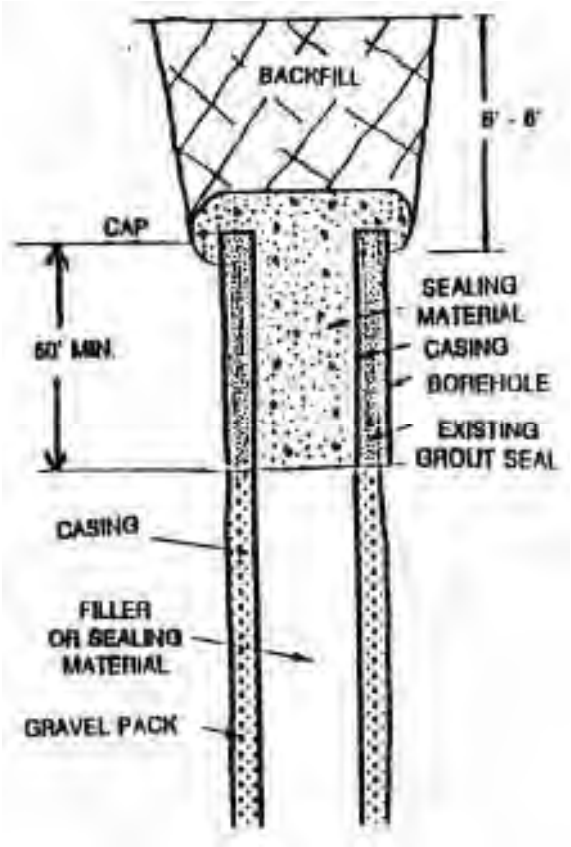
4. Cut off casing six to eight feet (6'-8') below grade if in an urban area.

5. Sealing material shall consist of neat cement, sand cement, concrete, bentonite or other approved material. Cuttings from drilling, or drilling mud, shall not be used for any part of the sealing material.

6. With an aid of a tremie pipe, cement, concrete, or sand-cement grout in top 50 feet, spilling over to form a mushroom cap.

7. Placement of the 50-foot cement seal must be witnessed by a representative of this Division.

WELL DESTRUCTION



KERN COUNTY
Public Health Services
DEPARTMENT

MATTHEW CONSTANTINE
DIRECTOR

2700 M STREET, SUITE 300 BAKERSFIELD, CALIFORNIA 93301-2370 VOICE: 661-862-8740 FAX: 661-862-8701 WWW.CO.KERN.CA.US/EH

DESTRUCTION OF WELL WITH REGIONAL CONFINING CLAY

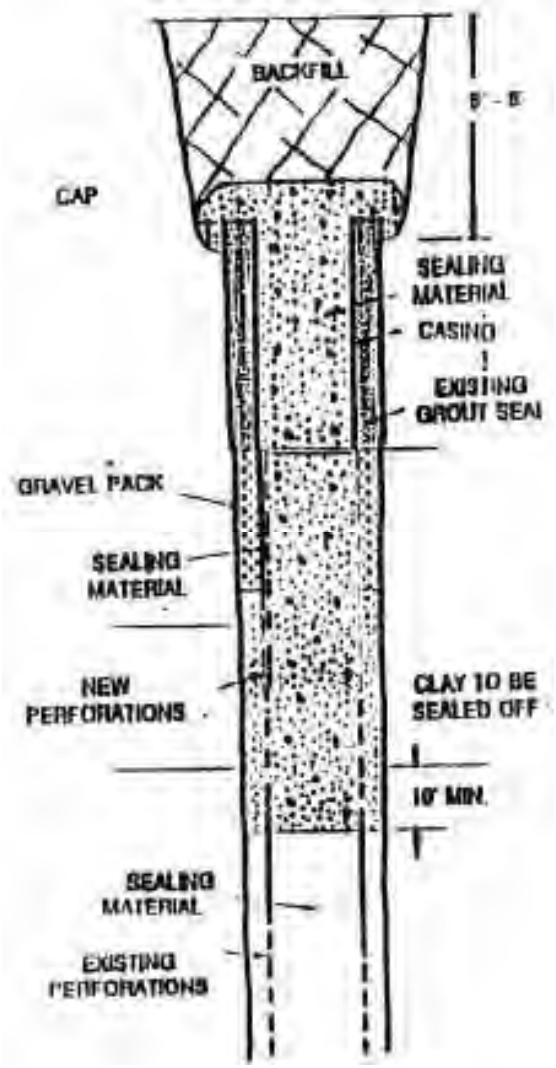
For wells that penetrate a regional confining clay, additional requirements are as follows:

1. Depth of the annular seal will be determined at the time the application is submitted or after the application is submitted to the Kern County Water Agency for review.

2. Casing may be required to be perforated across the regional confining clay with a mills knife or wire line casing shot.

3. The casing is to be immediately pumped full of approved sealing material with the aid of a tremie pipe from 10' below the regional confining clay to the top of the well casing.

4. The destruction procedures for the upper seal are the same as for the shallow well destruction.



WELL DESTRUCTION

PROCEDURES

DEPARTMENT OF PUBLIC HEALTH SERVICES,
ENVIRONMENTAL HEALTH DIVISION
2700 M STREET, SUITE 300
BAKERSFIELD, CA 93301

(661) 862-8700

October 2006

RCSD STANDARDS

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Rosamond Community Services District

3179 35th Street West
Rosamond, California 93560
(661) 256-3411
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E-MAIL: RosamondCSD@RosamondCSD.Com

STANDARD WATER & SEWER SPECIFICATIONS & DRAWING DETAILS

April 9, 2008

TABLE OF CONTENTS

STANDARD DETAIL DRAWINGS FOR WATER AND SEWER

WATER NOTES

1. THE WATER FACILITIES TO BE DEDICATED TO THE R.C.S.D SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS OF THE R.C.S.D.

2. THE R.C.S.D. ENGINEERING DEPARTMENT SHALL BE NOTIFIED AT LEAST TWO (2) WORKING DAYS PRIOR TO START OF CONSTRUCTION. TELEPHONE (661) 256-3411

3. THE CONSTRUCTION PLANS MUST BE APPROVED BY THE R.C.S.D. PRIOR TO THE START OF ANY WATER CONSTRUCTION. TWO (2) SETS OF APPROVED PLANS AND A COMPLETE ELECTRONIC COPY (AUTOCAD DWG FORMAT) OF SAID PLANS SHALL BE FURNISHED TO THE R.C.S.D. PRIOR TO DISTRICT APPROVAL THE PLANS MUST BE SIGNED BY A CALIFORNIA REGISTERED ENGINEER.

4. PRIOR TO ACCEPTANCE OF THE WATER FACILITIES, ALL NECESSARY EASEMENT DOCUMENTS SHALL BE PROPERLY EXECUTED AND RECORDED. THREE (3) COPIES EACH OF THE RECORDED DOCUMENTS SHALL BE FURNISHED TO THE R.C.S.D.

5. WATER MAINS SHALL BE INSTALLED FIVE (5) FEET FROM THE CURB FACE UNLESS OTHERWISE INDICATED IN THE PLANS. ALL WATER SERVICES SHALL BE METERED.

6. WORK IN THE STATE OF CALIFORNIA OR THE COUNTY OF KERN RIGHTS-OF-WAY SHALL BE DONE IN ACCORDANCE WITH THE APPROPRIATE ENCROACHMENT PERMITS.

7. THE WATER SYSTEM, INCLUDING LATERALS, SHALL BE HYDROSTATIC TESTED, AFTER ALL UNDERGROUND UTILITIES ARE CONSTRUCTED, AND PRIOR TO PLACING STREET PAVEMENT. ALL WORK SHALL BE LEFT OPEN AND UNCOVERED UNTIL INSPECTED BY R.C.S.D.

8. ALL VALVES SHALL BE FLANGE CONNECTED TO FITTINGS.

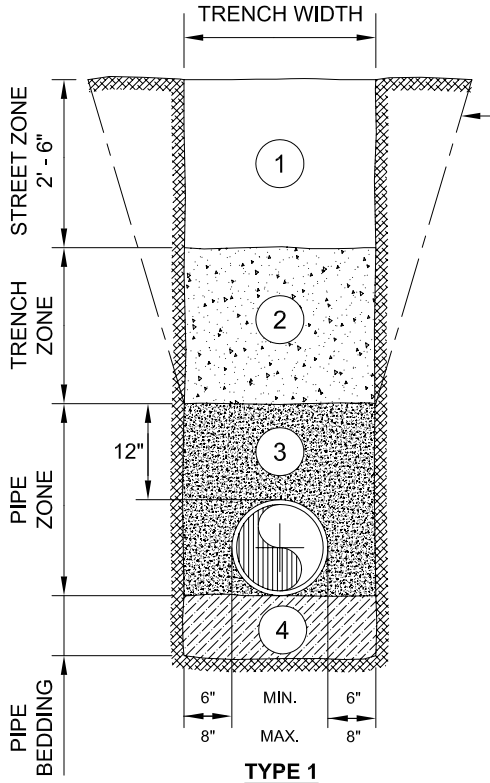
9. ALL WATER LINES SHALL HAVE A MINIMUM COVER OF 36 INCHES.

10. ONE (1) COMPLETE SET OF DRAWINGS (CHRONOFLEXES OR MYLAR), AND ONE (1) COMPLETE ELECTRONIC SET (AUTOCAD DWG FORMAT) OF DRAWINGS SHALL BE FURNISHED TO THE DISTRICT ON COMPLETION OF CONSTRUCTION.

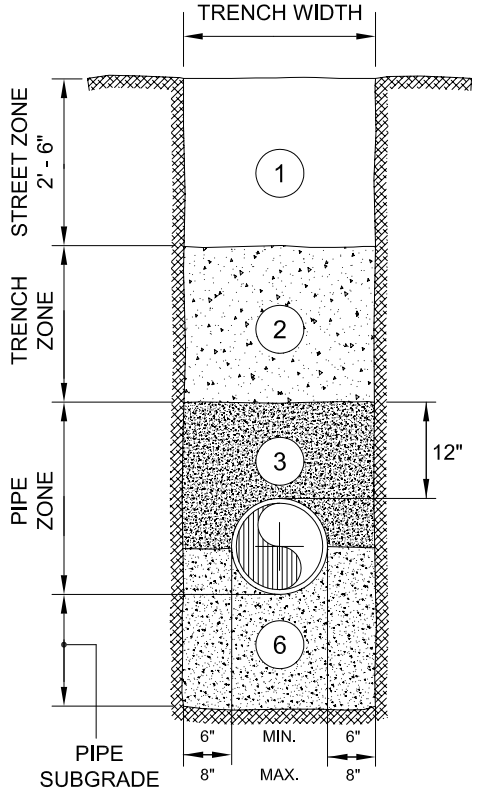
11. TRENCHING MATERIAL TO BE COMPACTED TO 90%. TRENCHING MATERIAL TO BE COMPACTED TO 95% UNDER SURFACE GRADE.

12. WATER SERVICE WILL NOT BE TURNED ON UNTIL ALL SEWER LINES HAVE BEEN INSPECTED BY AN R.C.S.D REPRESENTATIVE, REGARDLESS OF KERN COUNTY FINAL APPROVALS.

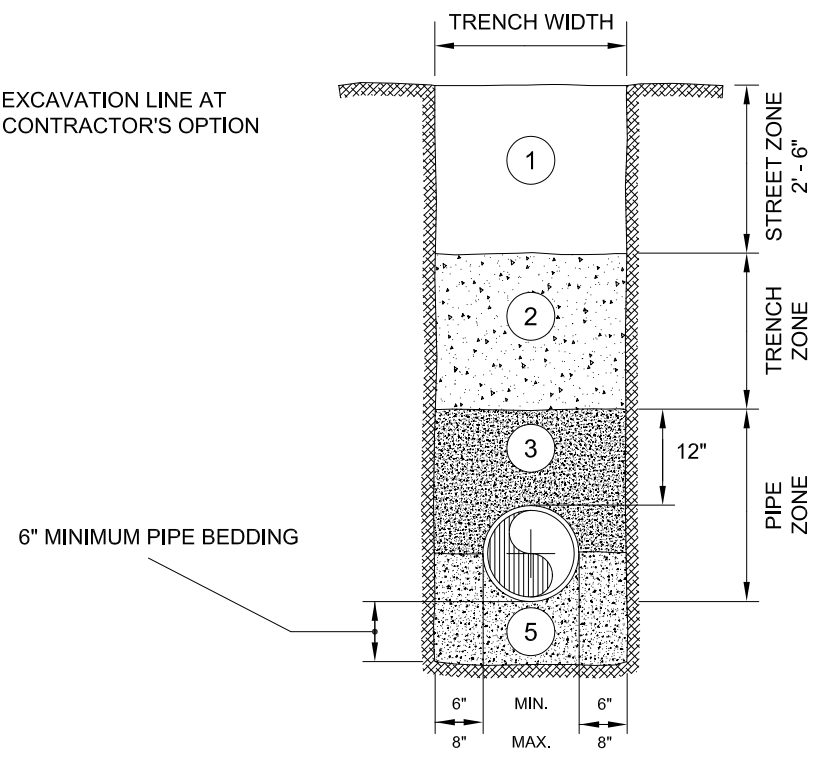
13. ALL FIRE HYDRANTS SHALL BE WET BARREL TYPE.



TYPE 1



TYPE 3
UNSUITABLE MATERIALS IN SUBGRADE



TYPE 2
ROCKY OR OVER-EXCAVATED

1. BACKFILL COMPACTED TO 90% RELATIVE COMPACTION, 95% WHEN UNDER ROAD
2. BACKFILL COMPACTED TO 90% RELATIVE COMPACTION
3. SELECT MATERIAL OR SAND COMPACTED TO 90% RELATIVE COMPACTION (¾" MAXIMUM GRADATION)
4. 3" TO 6" NATIVE MATERIAL WITH ¾" MAXIMUM GRADATION OR SAND WHERE REQUIRED BY INSPECTOR OR ENGINEER
5. SAND COMPACTED TO 85% RELATIVE COMPACTION
6. SAND OR AGGREGATE COMPACTED TO 85% RELATIVE COMPACTION AND TO DEPTH SPECIFIED BY INSPECTOR OR ENGINEER

NOTES :

1. SAND AND SELECT MATERIAL SHALL BE PER STANDARD R.C.S.D. SPECIFICATIONS FOR EARTHWORK.
2. SEE R.C.S.D. STANDARD SPECIFICATIONS FOR EARTHWORK IF TRENCH WIDTH EXCEEDS THE MAXIMUM SHOWN IN THIS DRAWING.

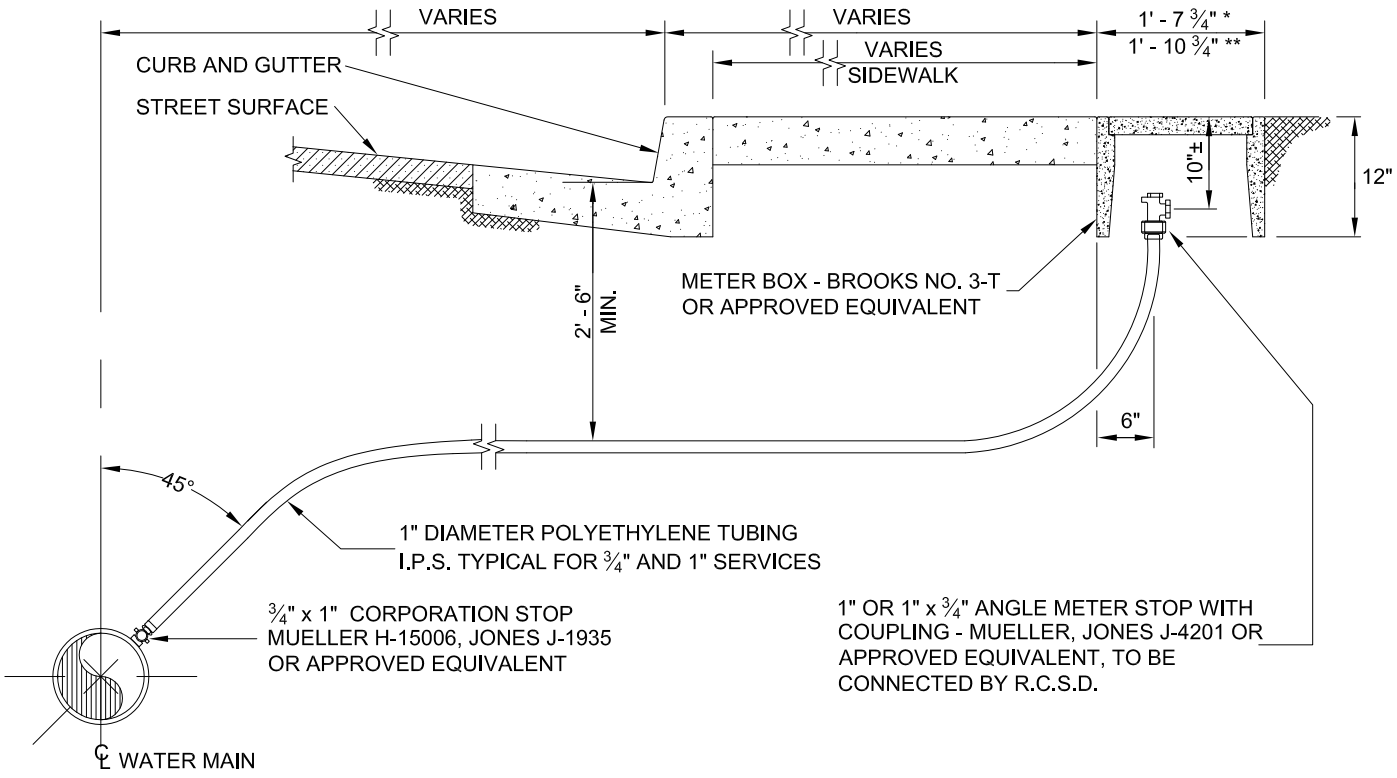
STANDARD SPECIFICATIONS AND DRAWING DETAILS | *Rosamond Community Services District*

DATE DRAWN **11/07**

WATER PIPE BEDDING AND BACKFILL DETAILS

SHEET NO. **W-2**

R.C.S.D. ENGINEERING DEPARTMENT | REVISION NO.:002-0308B | DRAWN BY : EVAN R. CRABTREE | APPROVED BY.:



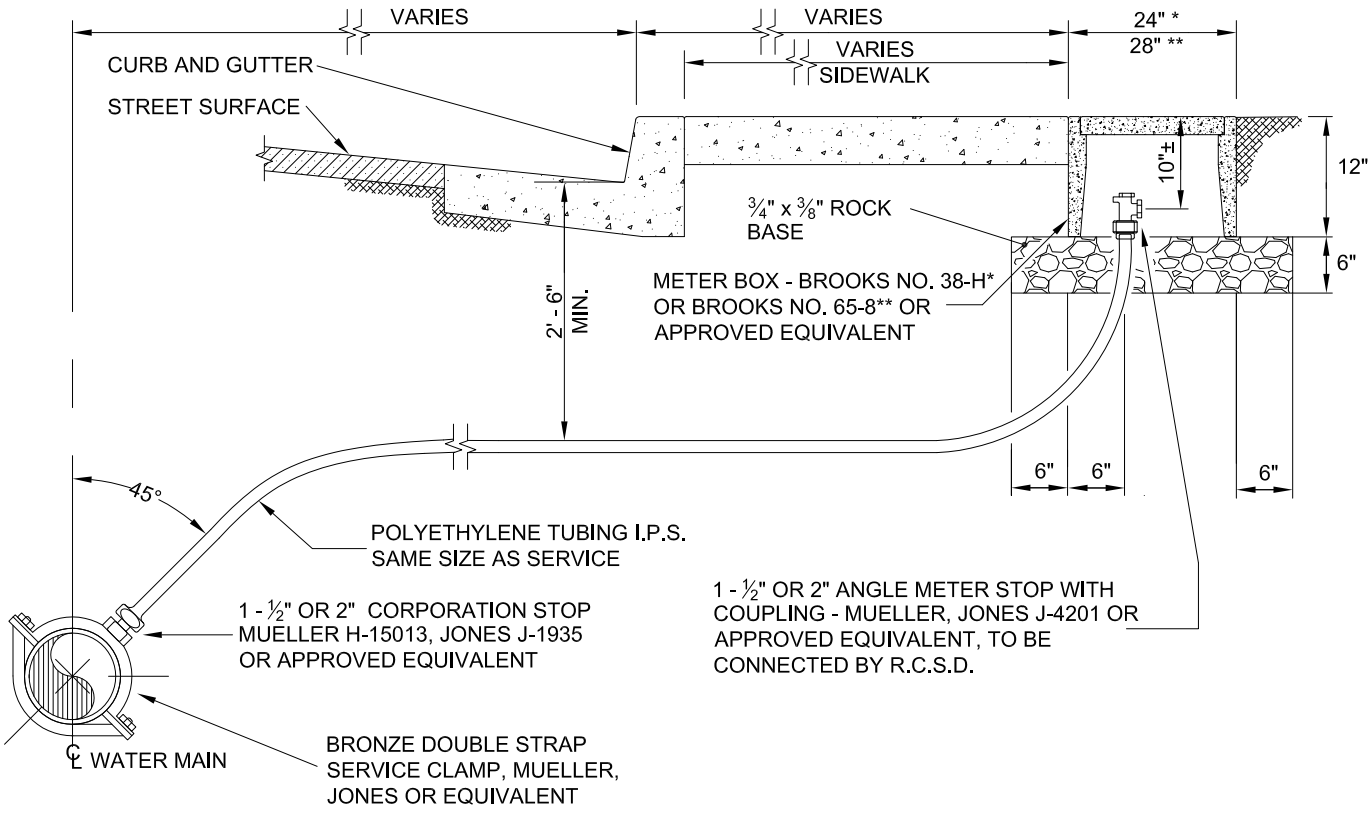
SECTION

NOTES :

1. IF METER BOX IS LOCATED ON A SLOPE NEXT TO A CURB OR SIDEWALK, A PROTECTIVE RETAINING WALL SHALL BE CONSTRUCTED.
2. CORPORATION STOP TAP SHALL BE MADE AS SPECIFIED BY THE PIPE MANUFACTURER'S INSTALLATION GUIDE. ALL DRY TAPS SHALL BE MADE WITH MACHINE WITH GUIDE OR PILOT FOR TAP.
3. THE REQUIRED SIZE OF THE SERVICE MUST BE APPROVED BY THE DISTRICT.
4. THE WATER SERVICE SHALL EXTEND PERPENDICULAR TO THE CENTERLINE OF THE STREET FROM THE WATER MAIN TO THE METER STOP.
5. METER BOXES SHALL BE CONSTRUCTED IMMEDIATELY BEHIND THE SIDEWALK WHERE SIDEWALKS ARE ADJACENT TO CURB.
6. * INDICATES METER BOX AND DIMENSION FOR ¾" SERVICE.
   * * INDICATES METER BOX AND DIMENSION FOR 1" SERVICE.

INDIVIDUAL METERS FOR CONNECTIONS TO SINGLE FAMILY HOMES

Rosamond Community Services District	STANDARD SPECIFICATIONS AND DRAWING DETAILS	
SHEET NO. **W-3**	**¾" AND 1" STANDARD WATER SERVICES**	DATE DRAWN **11/07**
R.C.S.D. ENGINEERING DEPARTMENT	REVISION NO.:002-0308B	DRAWN BY : EVAN R. CRABTREE	APPROVED BY.:



SECTION

NOTES :

1. THE REQUIRED SIZE OF THE SERVICE MUST BE APPROVED BY THE DISTRICT.
2. THE WATER SERVICE SHALL EXTEND PERPENDICULAR TO THE CENTERLINE OF THE STREET FROM THE WATER MAIN TO THE METER STOP.
3. METER BOXES SHALL BE CONSTRUCTED IMMEDIATELY BEHIND THE SIDEWALK WHERE SIDEWALKS ARE ADJACENT TO CURB.
4. IF METER BOX IS LOCATED ON A SLOPE NEXT TO A CURB,OR SIDEWALK A PROTECTIVE RETAINING WALL SHALL BE CONSTRUCTED.
5. CORPORATION STOP TAP SHALL BE MADE AS SPECIFIED BY THE PIPE MANUFACTURER'S INSTALLATION GUIDE. ALL DRY TAPS SHALL BE MADE WITH MACHINE WITH GUIDE OR PILOT FOR TAP.
6. * INDICATES METER BOX AND DIMENSION FOR 1 - ½" SERVICE.

   ** INDICATES METER BOX AND DIMENSION FOR 2" SERVICE.

STANDARD SPECIFICATIONS AND DRAWING DETAILS	*Rosamond Community Services District*	
DATE DRAWN **11/07**	**1- ½" AND 2" STANDARD WATER SERVICES**	SHEET NO. **W-4**
R.C.S.D. ENGINEERING DEPARTMENT	REVISION NO.:002-0308B	DRAWN BY : EVAN R. CRABTREE	APPROVED BY.:

SCHEDULE - METER AND VAULT SIZES		
METER SIZE	VAULT NO. AND SIZE IN INCHES	DIM. A
3"	735 - A 33 - ½" x 57 - ½"	3' - 3" ±
4"	746 - A 45 - ½" x 69 - ½"	4" - 0" ±
6"	747 - A 45 - ½" x 81 - ½"	4' - 0" ±
8"	747 - A 45 - ½" x 81 - ½"	4' - 0" ±
10"	735 - A 57 - ½" x 93 - ½"	5' - 3" ±
3" 4" 6" 8" 10" WATER SERVICES		

ITEM	DESCRIPTION
1	COMPOUND METER, ROCKWELL OR APPROVED EQUAL.
2	SCHEDULE 40 STEEL TEE TRIPLE FLANGED
3	GROOVED COUPLING ADAPTER, VICTAULIC STYLE 77 OR EQUAL.
4	SCHEDULE 40 STEEL PIPE, SINGLE FLANGED WITH PLAIN END - 12" LONG MINIMUM.
5	SCHEDULE 40 STEEL PIPE FLANGED AT BOTH ENDS.
6	PRECAST CONCRETE VAULT - GALVANIZED COVER WITH 7" x 14" READING LID - BROOKS PRODUCTS OR APPROVED EQUAL.
7	GATE VALVE - FLANGED, 3" DIAMETER, FOR 4" THROUGH 10" SERVICES USE FLANGED BUTTERFLY VALVES.
8	GATE VALVE - FLANGED, WITH VALVE BOX.
9	SCHEDULE 40 STEEL 90° BEND, FLANGED AT BOTH ENDS.
10	ADAPTER - FLANGED WITH RING TIGHT.
11	CAST IRON TEE WITH FLANGED OUTLET.
12	CLASS 'A' CONCRETE SUPPORTS.
13	CLASS II AGGREGATE BASE - 12" MINIMUM THICKNESS.
14	POLYVINYL CHLORIDE PIPE - CLASS 150 FOR 4" THROUGH 10" DIAMETER SERVICES. USE SCHEDULE 40 FLANGED STEEL PIPE FOR 3" DIAMETER SERVICE.
	NOTE : ALL STEEL PIPE SHALL BE FUSION EPOXY LINED AND COATED - 100% SOLID THERMOSETTING, APPLIED BY FLUIDIZED BED METHOD.
15	ADJUSTABLE PIPE SUPPORT GRINNEL OR APPROVED EQUAL.

PLAN

SECTION B

SECTION A

MASTER METERS FOR MOBILE HOME PARKS

Rosamond Community Services District

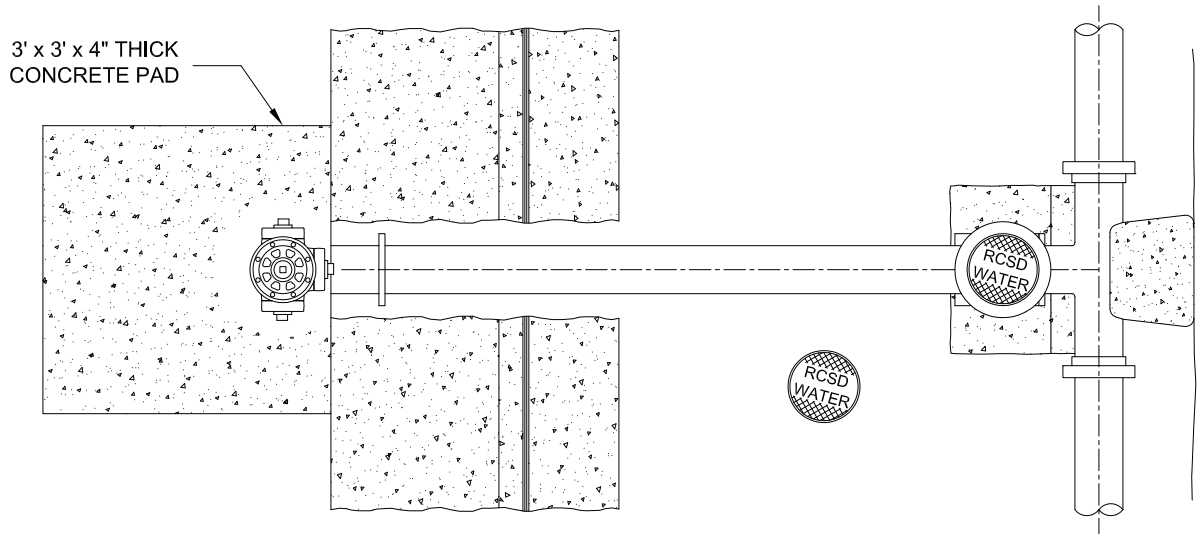
STANDARD SPECIFICATIONS AND DRAWING DETAILS

SHEET NO. **W-5**

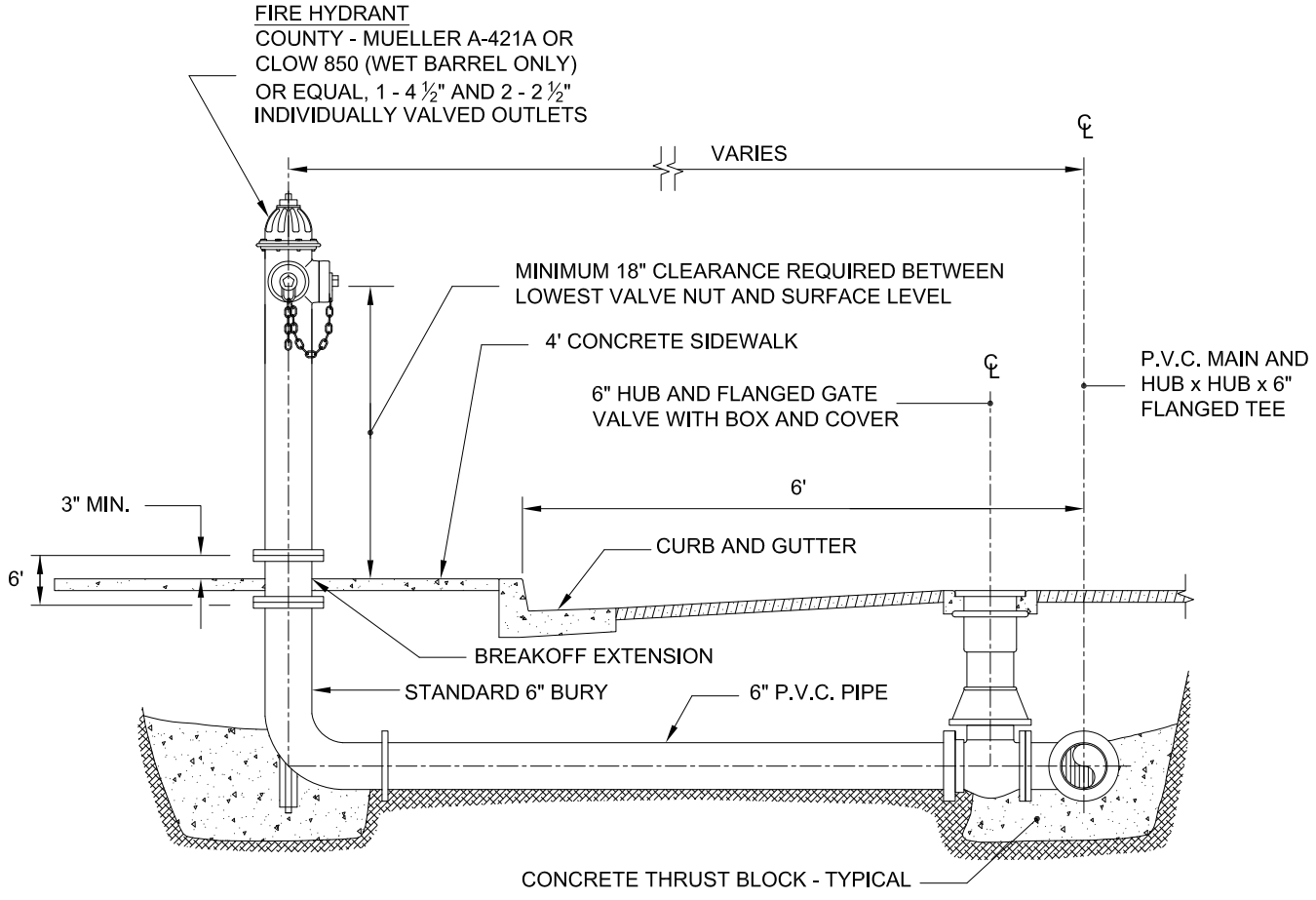
STANDARD WATER METER

DATE DRAWN **11/07**

R.C.S.D. ENGINEERING DEPARTMENT | REVISION NO.:002-0308B | DRAWN BY : EVAN R. CRABTREE | APPROVED BY.:

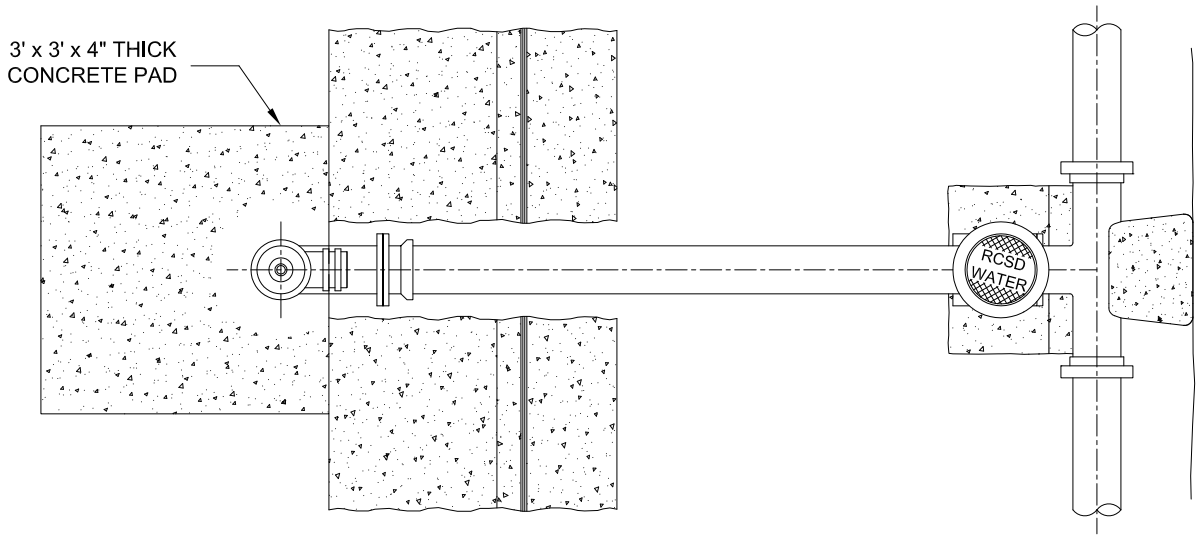


PLAN

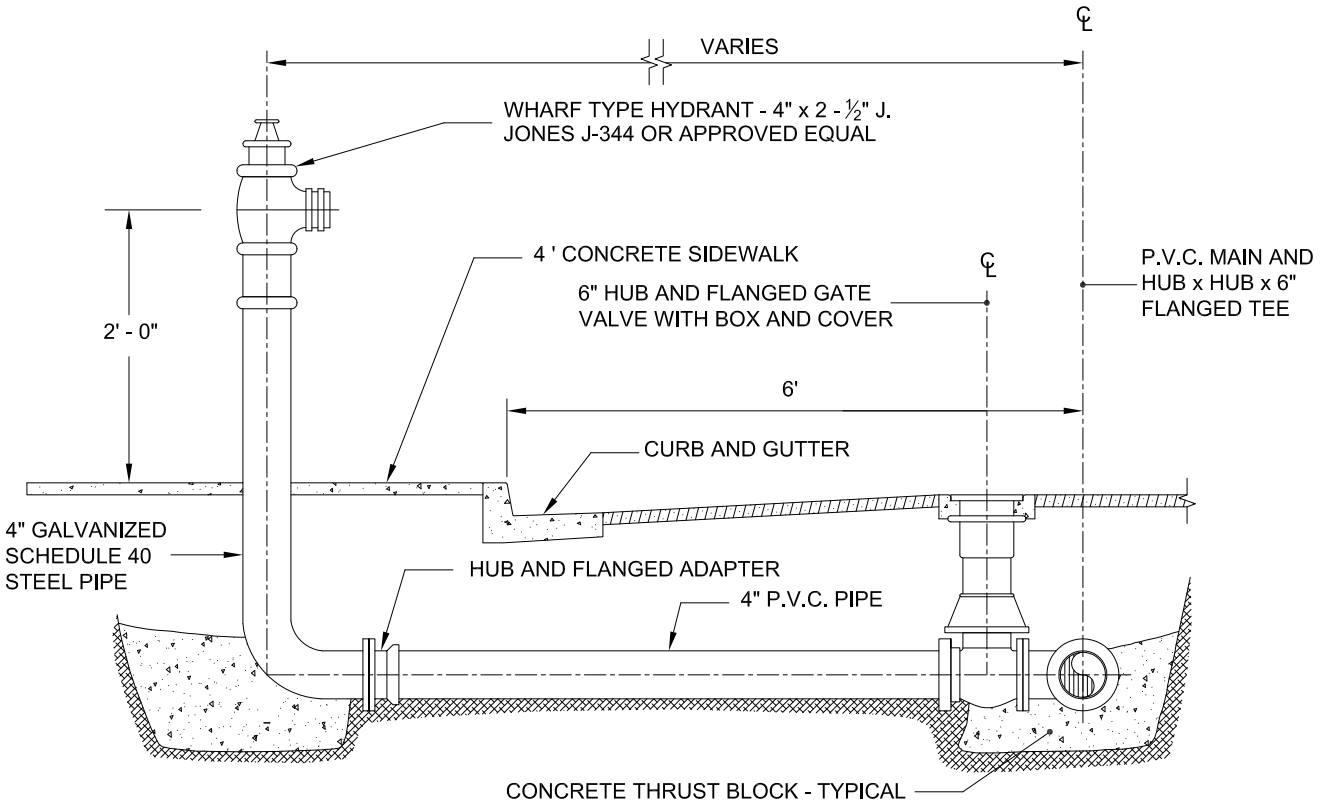


ELEVATION

STANDARD SPECIFICATIONS AND DRAWING DETAILS	*Rosamond Community Services District*	
DATE DRAWN **11/07**	**FIRE HYDRANT ASSEMBLY**	SHEET NO. **W-6**
R.C.S.D. ENGINEERING DEPARTMENT	REVISION NO.:002-0308B	DRAWN BY : EVAN R. CRABTREE	APPROVED BY.:



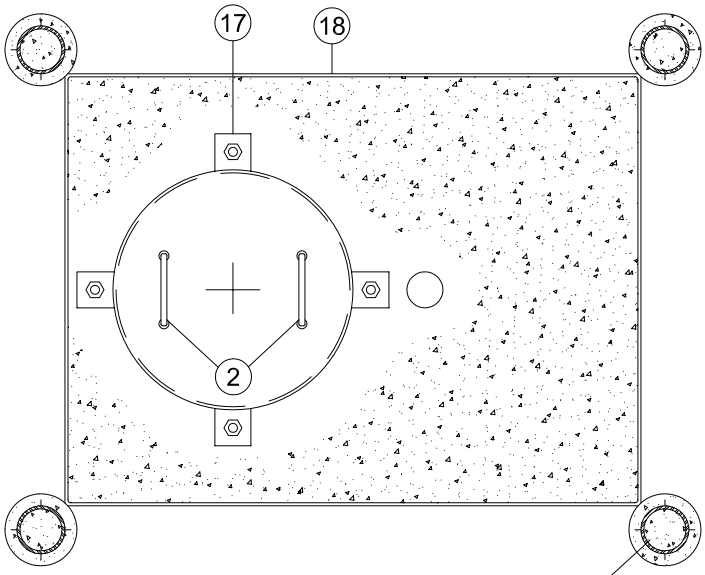
PLAN



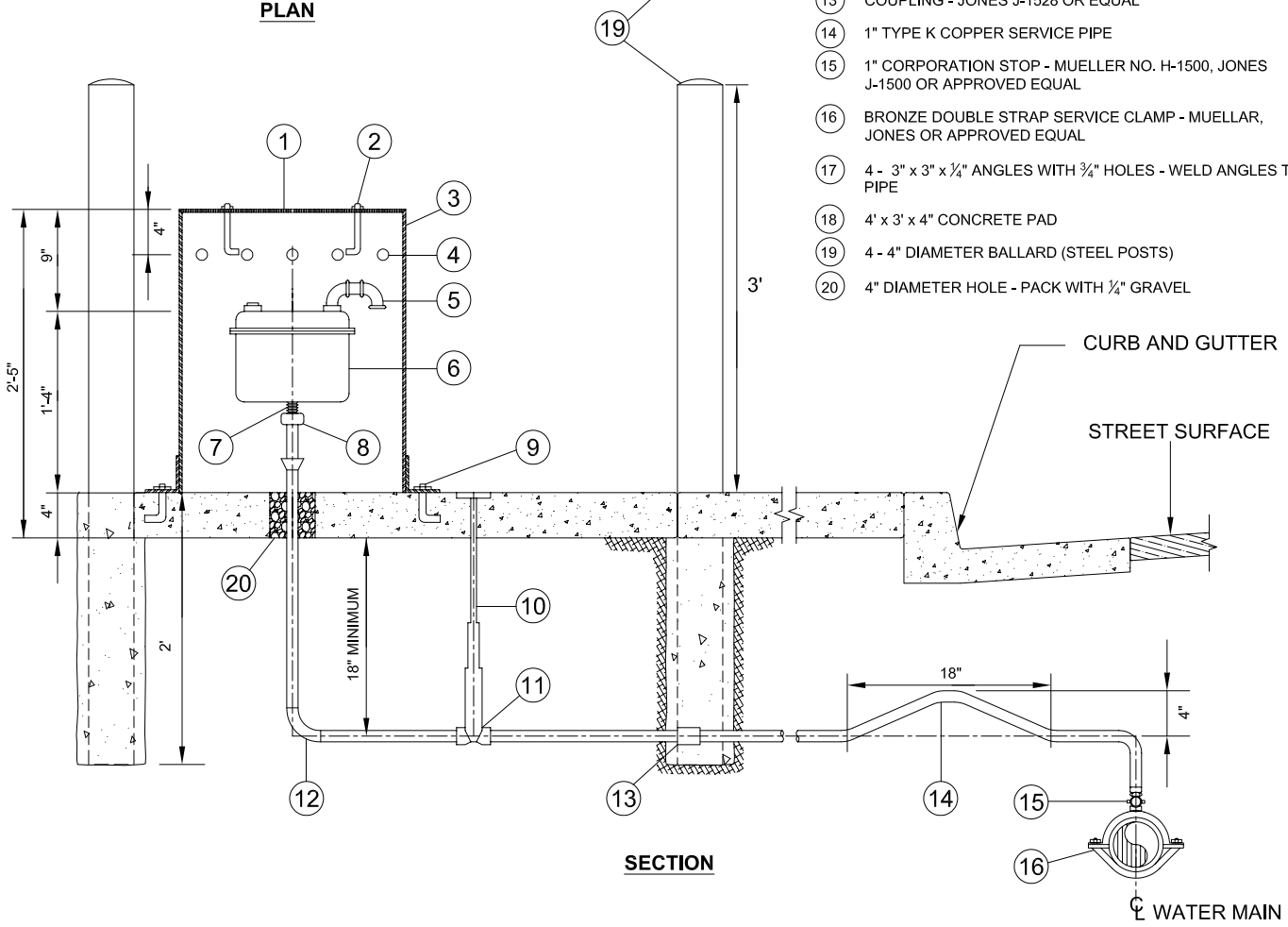
ELEVATION

NOTE : WRAP GALVANIZED RISER BELOW GROUND WITH 2 LAYERS OF 8 MIL THICK POLYKEN OR APPROVED EQUAL.

Rosamond Community Services District	STANDARD SPECIFICATIONS AND DRAWING DETAILS	
SHEET NO. **W-7**	**WHARF TYPE HYDRANT ASSEMBLY**	DATE DRAWN **11/07**
R.C.S.D. ENGINEERING DEPARTMENT	REVISION NO.:002-0308B	DRAWN BY : EVAN R. CRABTREE	APPROVED BY.:



PLAN

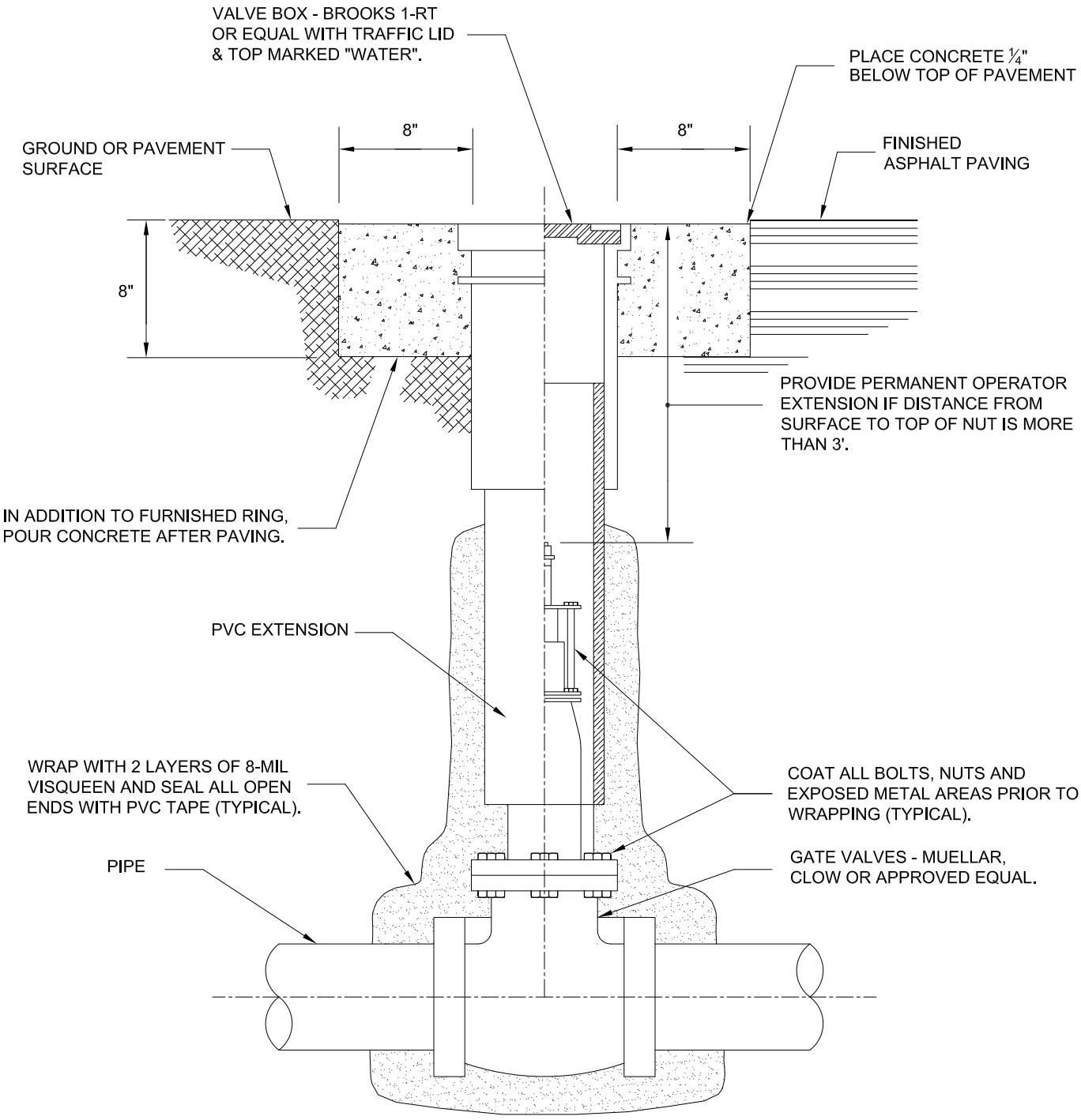


SECTION

ITEM	DESCRIPTION
1	20" DIAMETER, 10 GAUGE (¼" THICK), SOLID STEEL PLATE - GALVANIZED
2	2 - ½" x 6" x 4" DROP HANDLES - GALVANIZED
3	20" DIAMETER, 10 GAUGE, STEEL PIPE - GALVANIZED
4	3 ROWS OF 1" DIAMETER HOLES - 15 HOLES PER ROW
5	DISCHARGE NIPPLE - SCHEDULE 40 PIPE FITTINGS - GALVANIZED
6	1" COMBINATION AIR RELEASE, APCO NO. 143C, OR APPROVED EQUAL
7	SHORT BRASS NIPPLE - THREADED
8	ADAPTER - COPPER TO BRASS
9	⅝" DIAMETER ANCHOR BOLTS
10	CURB BOX - MUELLER H-10314 OR TYLER SERIES 6500
11	CURB VALVE - MUELLER H-15204 OR JONES J-1902
12	BRONZE QUARTER BEND - JONES J-1552 OR EQUAL
13	COUPLING - JONES J-1528 OR EQUAL
14	1" TYPE K COPPER SERVICE PIPE
15	1" CORPORATION STOP - MUELLER NO. H-1500, JONES J-1500 OR APPROVED EQUAL
16	BRONZE DOUBLE STRAP SERVICE CLAMP - MUELLAR, JONES OR APPROVED EQUAL
17	4 - 3" x 3" x ¼" ANGLES WITH ¾" HOLES - WELD ANGLES TO PIPE
18	4' x 3' x 4" CONCRETE PAD
19	4 - 4" DIAMETER BALLARD (STEEL POSTS)
20	4" DIAMETER HOLE - PACK WITH ¼" GRAVEL

NOTE : WHERE THERE IS NO CURB AND GUTTER, INSTALL 4 - 4" DIAMETER BALLARD (STEEL POST) AT EACH CORNER OF PAD. POSTS SHALL BE EMBEDDED IN 2' OF CONCRETE AND SHALL EXTEND 3' ABOVE GROUND. SWEDGED WITH PORTLAND CEMENT CONCRETE LEAVING A ROUNDED "DOME" ON PIPE TOP. PAINT ALL BALLARDS WITH 2 (TWO) COATS OF CATERPILLAR YELLOW.

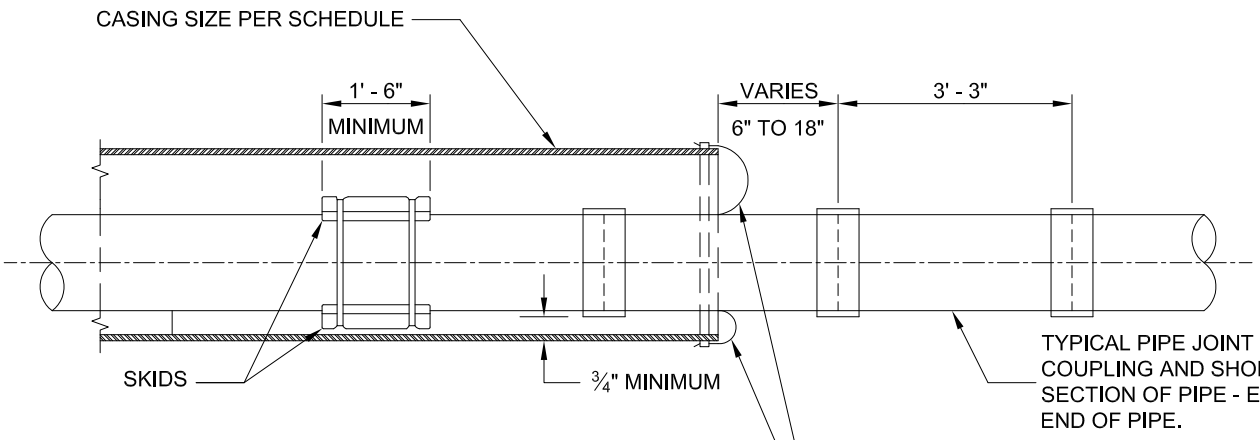
STANDARD SPECIFICATIONS AND DRAWING DETAILS	*Rosamond Community Services District*	
DATE DRAWN **11/07**	**COMBINATION AIR RELEASE VALVE ASSEMBLY**	SHEET NO. **W-8**
R.C.S.D. ENGINEERING DEPARTMENT	REVISION NO.:002-0308B	DRAWN BY : EVAN R. CRABTREE	APPROVED BY.:



SECTION - ELEVATION

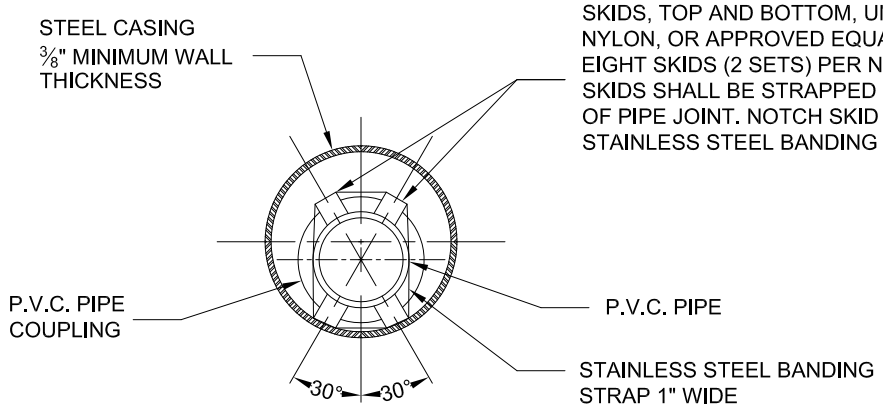
NOTE: PROVIDE ADJUSTABLE VALVE BOXES FOR ALL VALVES 4" OR LARGER.

Rosamond Community Services District	STANDARD SPECIFICATIONS AND DRAWING DETAILS	
SHEET NO. **W-9**	**VALVE BOX ASSEMBLY**	DATE DRAWN **11/07**
R.C.S.D. ENGINEERING DEPARTMENT	REVISION NO.:002-0308B	DRAWN BY : EVAN R. CRABTREE	APPROVED BY.:



LONGITUDINAL SECTION

END SEAL - EACH END OF THE CASING SHALL BE FITTED WITH AN END SEAL INSTALLED AS SHOWN AND SECURELY FASTENED WITH STAINLESS STEEL CLAMPS. THE END SEAL SHALL BE A MINIMUM OF ⅛" THICK NEOPRENE.



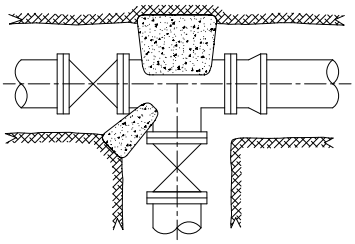
CROSS SECTION

SCHEDULE - STEEL CASING FOR PIPE	
NOMINAL PIPE DIAMETER	MINIMUM CASING DIAMETER
4"	12" I.D.
6"	12" I.D.
8"	18" I.D.
10"	20" I.D.
12"	24" I.D.
16"	30" I.D.
24"	40" I.D.

NOTES :

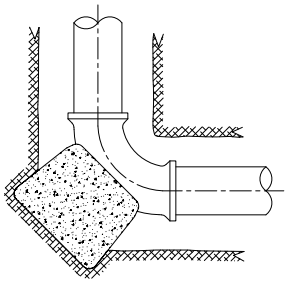
1. CASING SHALL BE INSTALLED BY THE BORE, JACK AND/OR TUNNEL METHOD.
2. SKIDS SHALL BE PER DETAIL AND SIZED TO ALLOW INSTALLATION OF CARRIER PIPE AND PROHIBIT PIPE JOINTS FROM EXCEEDING MANUFACTURER'S RECOMMENDED JOINT DEFLECTION.
3. VOIDS AROUND CASING SHALL BE PRESSURE GROUTED, WITH A 4 TO 1 MIX OF CEMENT GROUT.
4. ALL CASING SECTIONS SHALL BE JOINED BY CONTINUOUS WELDING PROCESS.

STANDARD SPECIFICATIONS AND DRAWING DETAILS	*Rosamond Community Services District*	
DATE DRAWN **11/07**	**STEEL CASING CONDUCTOR PIPE**	SHEET NO. **W-10**
R.C.S.D. ENGINEERING DEPARTMENT	REVISION NO.:002-0308B	DRAWN BY : EVAN R. CRABTREE	APPROVED BY.:

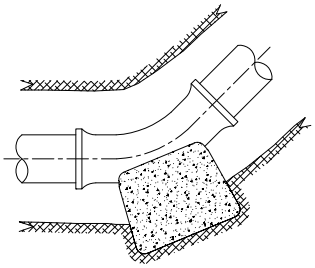


INSTALL THRUST BLOCK IF INLINE VALVE IS USED (CONDITION 6)

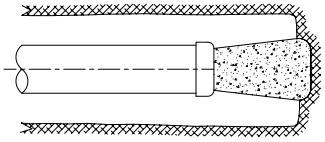
CONDITION 1
(OUTLET OR FIRE HYDRANT)



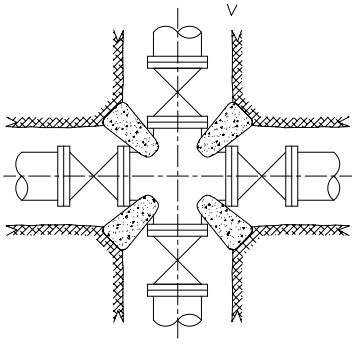
CONDITION 2
(ANGLE = 90°)



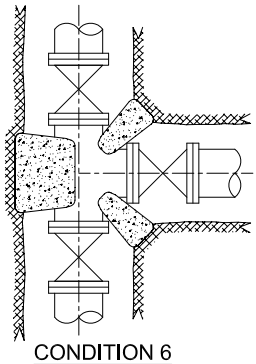
CONDITION 3
(ANGLE = 45°)



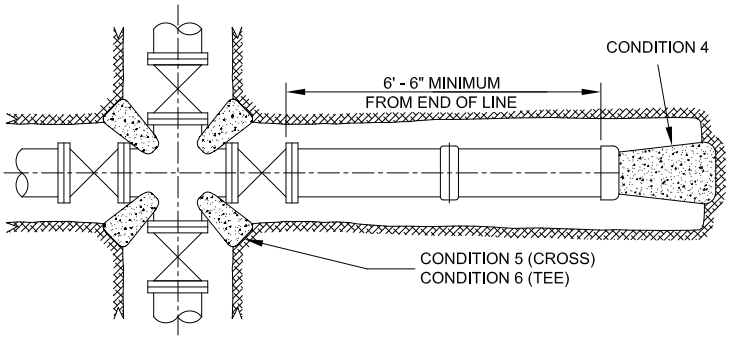
CONDITION 4
(END CAP)



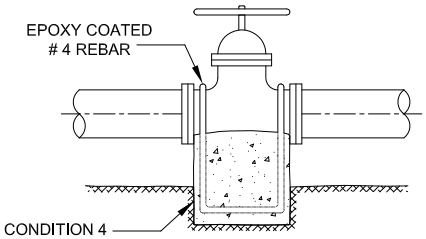
CONDITION 5
(MAINLINE CROSS)



CONDITION 6
(MAINLINE TEE)



CROSS OR TEE AT END OF LINE

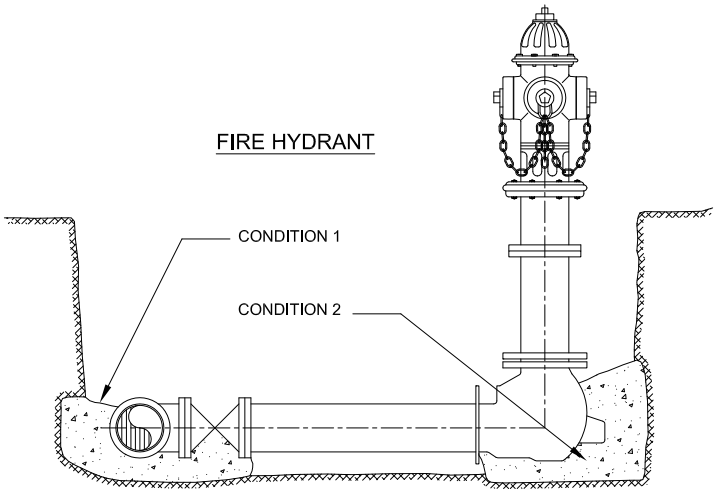


ANCHOR FOR INLINE
12" VALVES OR LARGER

THRUST BLOCK BEARING AREA IN SQ. FT.						
PIPE SIZE	CONDITION					
	1	2	3	4	5	6
6"	5.0	7.0	4.0	5.0	3.5 EACH	3.5 EACH
8"	8.5	12.0	6.5	8.5	6.0 EACH	6.0 EACH
10"	13.0	18.5	10.0	13.0	9.0 EACH	9.0 EACH
12"	18.5	26.0	14.0	18.5	13.0 EACH	13.0 EACH

BASED ON 1500 P.S.F., 200 P.S.I. TEST PROCEDURE

FIRE HYDRANT



NOTES :

1. SIZE THRUST BLOCK ACCORDING TO THE LARGEST OUTLET DIAMETER ON TEE OR CROSS.
2. ALL CONCRETE THRUST BLOCK BEARING FACES SHALL BE PLACED AGAINST UNDISTURBED SOIL OR APPROVED COMPACTED MATERIAL.
3. SEE SPECIFICATIONS FOR CONCRETE REQUIREMENTS.

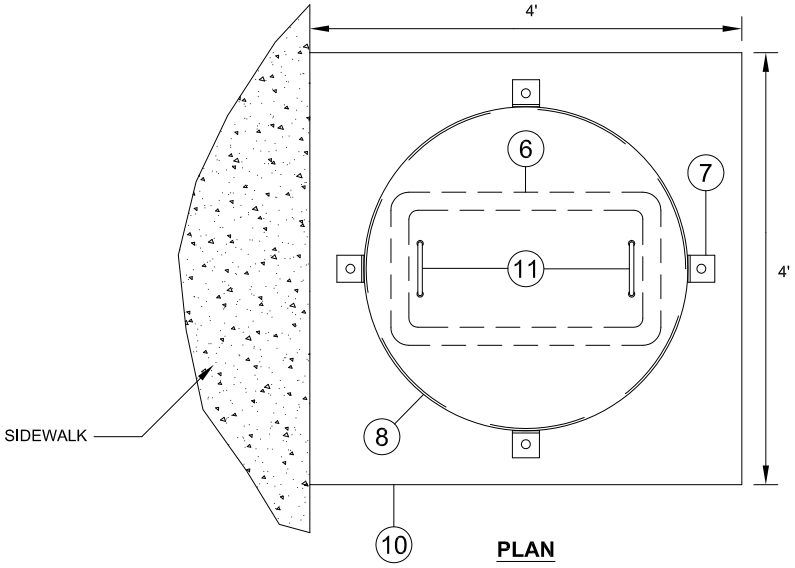
Rosamond Community Services District | STANDARD SPECIFICATIONS AND DRAWING DETAILS

SHEET NO. **W-11**

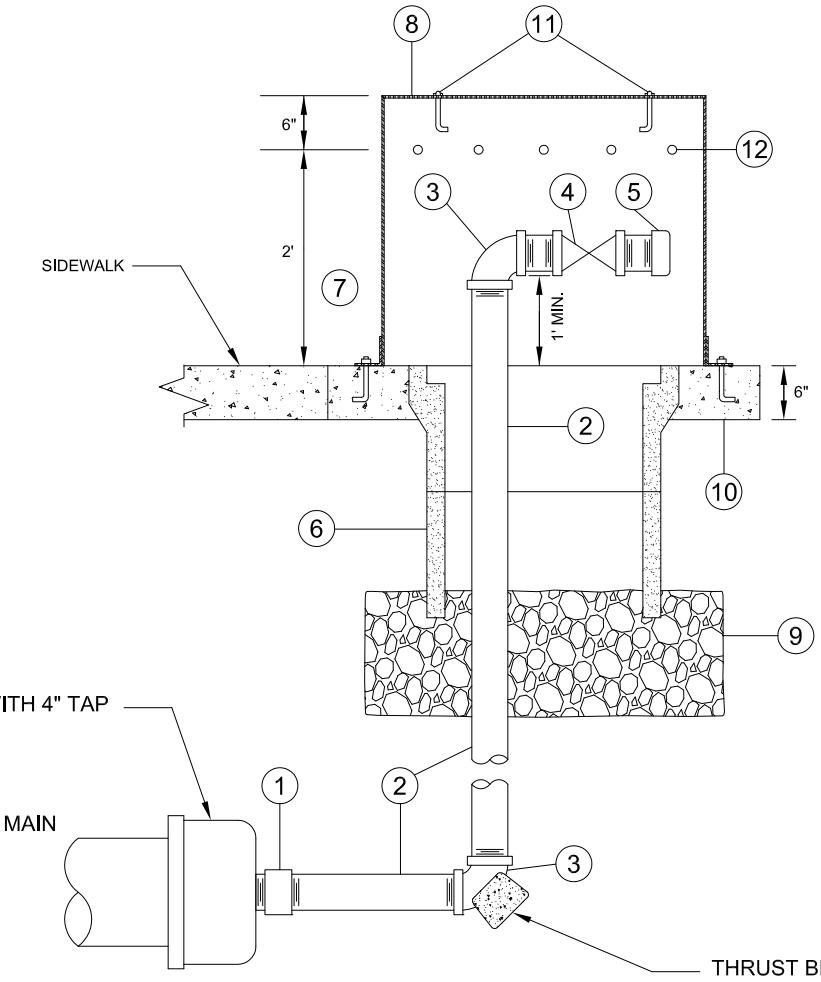
TYPICAL THRUST BLOCK DETAILS

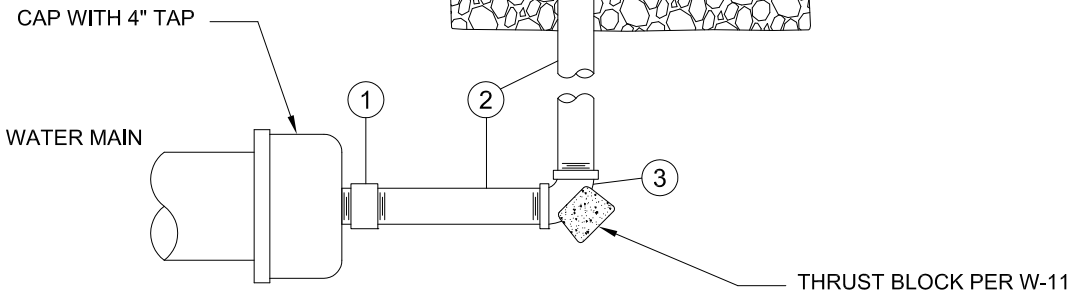
DATE DRAWN **11/07**

R.C.S.D. ENGINEERING DEPARTMENT | REVISION NO.:002-0308B | DRAWN BY : EVAN R. CRABTREE | APPROVED BY.:



PLAN





ELEVATION

ITEM	DESCRIPTION
1	4" GALVANIZED STEEL ADAPTOR
2	4" GALVANIZED STEEL PIPE
3	4" GALVANIZED STEEL ELBOW
4	4" BRONZE GATE VALVE
5	4" GALVANIZED STEEL THREADED CAP
6	17" x 30" SERVICE BOX - BROOKS SERIES 66-E OR EQUAL, NO TOP REQUIRED
7	4 - 3" x 3" x ¼" ANGLES WITH ⅝" DIAMETER ANCHOR BOLTS
8	36" DIAMETER, 10 GAUGE (¼" THICK), SOLID STEEL PLATE - GALVANIZED
9	¾" x ½" ROCK BASE
10	4' x 4' x 6" CONCRETE PAD
11	2 - ½" x 6" x 4" DROP HANDLES - GALVANIZED
12	15 - 1" DIAMETER HOLES, EQUALLY SPACED

STANDARD SPECIFICATIONS AND DRAWING DETAILS | *Rosamond Community Services District*

DATE DRAWN **11/07**

4 INCH BLOWOFF ASSEMBLY

SHEET NO. **W-12**

R.C.S.D. ENGINEERING DEPARTMENT | REVISION NO.:002-0308B | DRAWN BY : EVAN R. CRABTREE | APPROVED BY.:

NSF 61 TITLE 22 GUIDELINES

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§ 64572. Water Main Separation.

22 CA ADC § 64572BARCLAYS OFFICIAL CALIFORNIA CODE OF REGULATIONS

Barclays Official California Code of Regulations
Title 22. Social Security
Division 4. Environmental Health
Chapter 16. California Waterworks Standards
Article 4. Materials and Installation of Water Mains and Appurtenances

22 CCR § 64572

§ 64572. Water Main Separation.

(a) New water mains and new supply lines shall not be installed in the same trench as, and shall be at least **10 feet horizontally from and one foot vertically above, any parallel pipeline conveying:**

(1) Untreated sewage,

(2) Primary or secondary treated sewage,

(3) Disinfected secondary-2.2 recycled water (defined in section 60301.220),

(4) Disinfected secondary-23 recycled water (defined in section 60301.225), and

(5) Hazardous fluids such as fuels, industrial wastes, and wastewater sludge.

(b) New water mains and new supply lines shall be installed at least 4 feet horizontally from, and one foot vertically above, any parallel pipeline conveying:

(1) Disinfected tertiary recycled water (defined in section 60301.230), and

(2) Storm drainage.

(c) New supply lines conveying raw water to be treated for drinking purposes shall be installed at least 4 feet horizontally from, and one foot vertically below, any water main.

(d) If crossing a pipeline conveying a fluid listed in subsection (a) or (b), a new water main shall be constructed no less than 45-degrees to and at least one foot above that pipeline. No connection joints shall be made in the water main within eight horizontal feet of the fluid pipeline.

(e) The vertical separation specified in subsections (a), (b), and (c) is required only when the horizontal distance between a water main and pipeline is less than ten feet.

(f) New water mains shall not be installed within 100 horizontal feet of the nearest edge of any sanitary landfill, wastewater disposal pond, or hazardous waste disposal site, or within 25 horizontal feet of the nearest edge of any cesspool, septic tank, sewage leach field, seepage pit, underground hazardous material storage tank, or groundwater recharge project site.

(g) The minimum separation distances set forth in this section shall be measured from the nearest outside edge of each pipe barrel.

(h) With State Board approval, newly installed water mains may be exempt from the separation distances in this section, except subsection (f), if the newly installed main is:

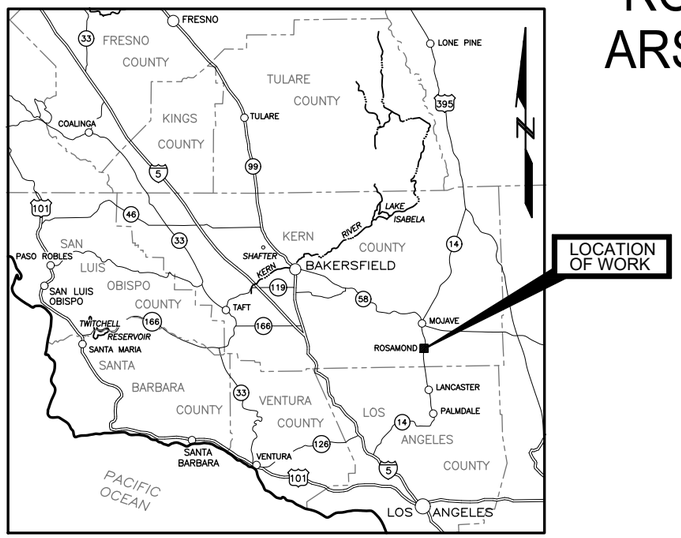
(1) less than 1320 linear feet,

(2) replacing an existing main, installed in the same location, and has a diameter no greater than six inches more than the diameter of the main it is replacing, and
(3) installed in a manner that minimizes the potential for contamination, including, but not limited to:
    (A) sleeving the newly installed main, or
    (B) utilizing upgraded piping material

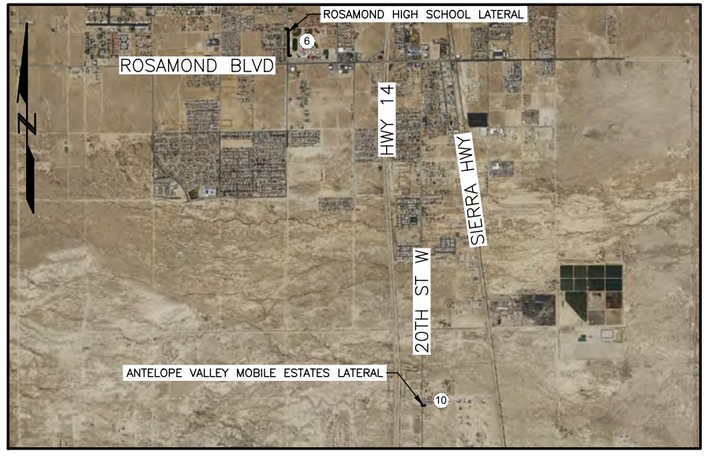
Note: Authority cited: Sections 116271, 116350 and 116375, Health and Safety Code. Reference: Sections 116275 and 116375, Health and Safety Code.

ROSAMOND COMMUNITY SERVICES DISTRICT
ARSENIC REGIONAL CONSOLIDATION PROJECT
PHASE 1A

ROSAMOND, CALIFORNIA 93560
KERN COUNTY



VICINITY MAP
NTS



AREA MAP
NTS

SYSTEM	NAME
(6)	ROSAMOND HIGH SCHOOL WATER SYSTEM (ROSAMOND HIGH)
(10)	ANTELOPE VALLEY MOBILE ESTATES (ANTELOPE VALLEY)

LIST OF DRAWINGS		
SHEET NO	DWG NO	DRAWING TITLE
1	G–01	COVER SHEET, VICINITY MAP, AND LIST OF DRAWINGS
2	G–02	LOCATION MAPS
3	G–03	ABBREVIATIONS AND SYMBOLS
4	G–04	GENERAL NOTES
5	G–05	SURVEY CONTROL AND KEY MAP
6	C–01	ROSAMOND HIGH SCHOOL LATERAL PLAN AND PROFILE STA 10+00 TO STA 18+00
7	C–02	ROSAMOND HIGH SCHOOL LATERAL PLAN AND PROFILE STA 18+00 TO STA 22+41.2
8	C–03	ANTELOPE VALLEY MOBILE ESTATES LATERAL PLAN AND PROFILE STA 10+00 TO STA 11+29.9
9	C–04	NO. 6 ROSAMOND HIGH SCHOOL WELL SITE ENLARGED PLAN AND PHOTOS
10	C–05	NO. 10 ANTELOPE VALLEY MOBILE ESTATES WELL SITE ENLARGED PLAN AND PHOTOS
11	C–101	STANDARD DETAILS 1
12	C–102	STANDARD DETAILS 2
13	C–103	STANDARD DETAILS 3
14	C–104	STANDARD DETAILS 4

ENGINEER'S NOTICE TO CONTRACTOR

THE EXISTENCE AND LOCATION OF ANY UNDERGROUND UTILITY, PIPES OR STRUCTURES SHOWN ON THESE PLANS WERE OBTAINED BY A SEARCH OF AVAILABLE PUBLIC RECORDS. APPROVAL OF THIS PLAN BY ROSAMOND COMMUNITY SERVICES DISTRICT AND/OR SWRCB DOES NOT CONSTITUTE A REPRESENTATION AS TO THE ACCURACY OR COMPLETENESS OF THE LOCATION OR THE EXISTENCE OR NONEXISTENCE OF ANY UNDERGROUND UTILITY, PIPE OR STRUCTURE WITHIN THE LIMITS OF THIS PROJECT. THE CONTRACTOR IS REQUIRED TO TAKE ALL DUE PRECAUTIONARY MEANS TO PROTECT UTILITY LINES NOT OF RECORD OR NOT SHOWN ON THIS PLAN.

THE CONTRACTOR IS REQUIRED TO TAKE DUE PRECAUTIONARY MEASURES TO PROTECT THE UTILITIES OR STRUCTURES SHOWN AND ANY OTHER UTILITIES OR STRUCTURES AT THE PROJECT SITE. ALL UTILITY LINES AND STRUCTURES THAT MAY BE DAMAGED ON ACCOUNT OF THE CONTRACTOR'S OPERATIONS SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE, TO THE SATISFACTION OF THE CITY, COUNTY, STATE OR APPLICABLE UTILITY OWNER.

CALL UNDERGROUND SERVICE ALERT (USA) OF NORTHERN CALIFORNIA AT 811 OR 1–800–642–2444, 2 WORKING DAYS BEFORE STARTING WORK OR ANY EXCAVATIONS AND COMPLY WITH AFFECTED UTILITY COMPANY REQUIREMENTS.

811 Know what's below. Call before you dig.
CALL 811
AT LEAST TWO DAYS BEFORE YOU DIG
UNDERGROUND SERVICE ALERT OF SOUTHERN CALIFORNIA

FOR BIDDING PURPOSES ONLY
NOT TO BE USED FOR CONSTRUCTION

DESIGNED CERNA ALVAREZ CHECKED SANCHEZ
DRAWN COLLETTO SUBMITTED SANCHEZ
JOB NO 2305090

REV	DATE	DESCRIPTION	SUB	APP'D
A	3/19/2026	ISSUED FOR BID	RS	

REGISTERED PROFESSIONAL ENGINEER RICHARD SANCHEZ No. 37148 Exp. 06-30-2026 CIVIL STATE OF CALIFORNIA
03/19/2026

ROSAMOND COMMUNITY SERVICES DISTRICT
3179 35TH STREET WEST
ROSAMOND, CALIFORNIA, 93560

GEI CONSULTANTS, INC.
35 NORTH LAKE AVENUE, SUITE 220
PASADENA, CALIFORNIA, 91101
(818) 552–6400

ROSAMOND COMMUNITY SERVICES DISTRICT
ARSENIC REGIONAL CONSOLIDATION PROJECT PHASE 1A

COVER SHEET, VICINITY MAP, AND LIST OF DRAWINGS

DATE
MARCH 2026

DRAWING NUMBER
G–01

SHEET 1 OF 14

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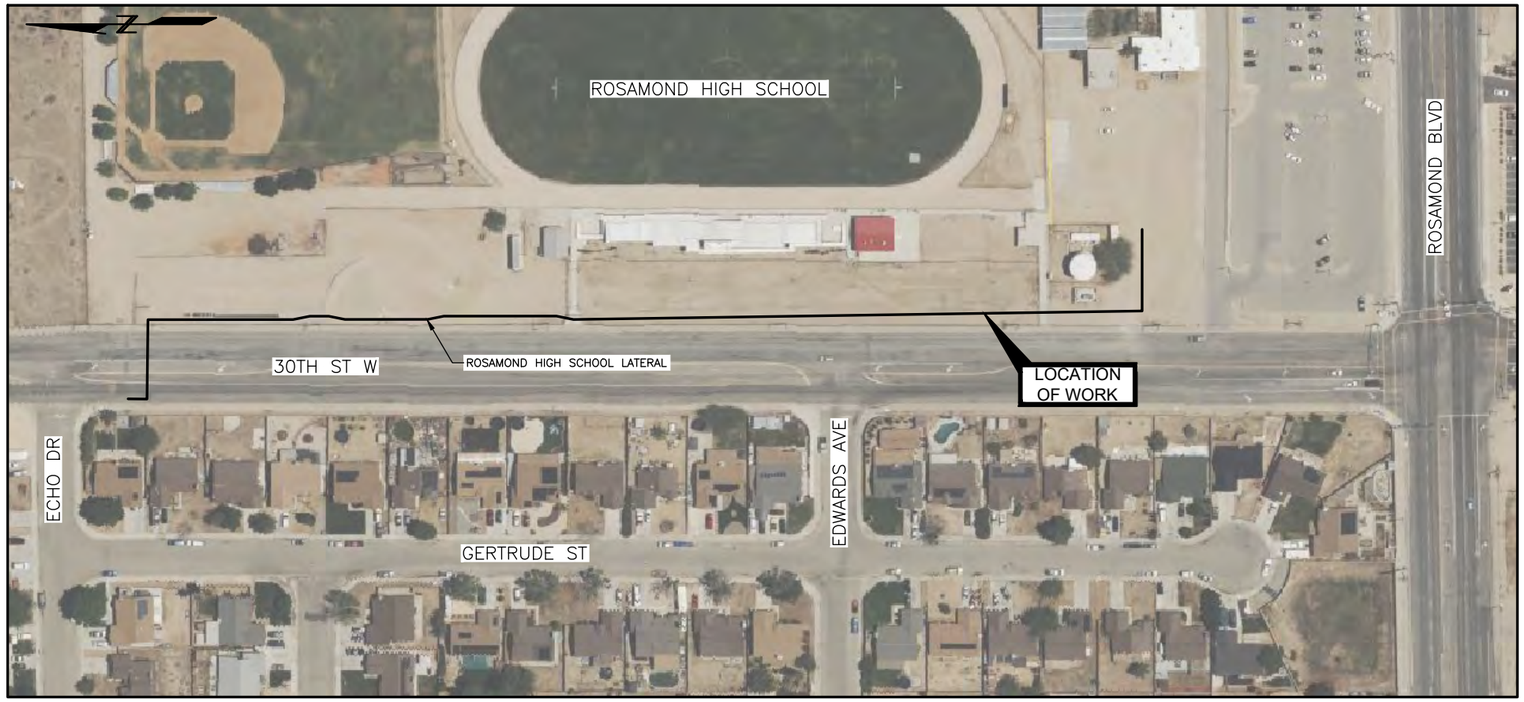
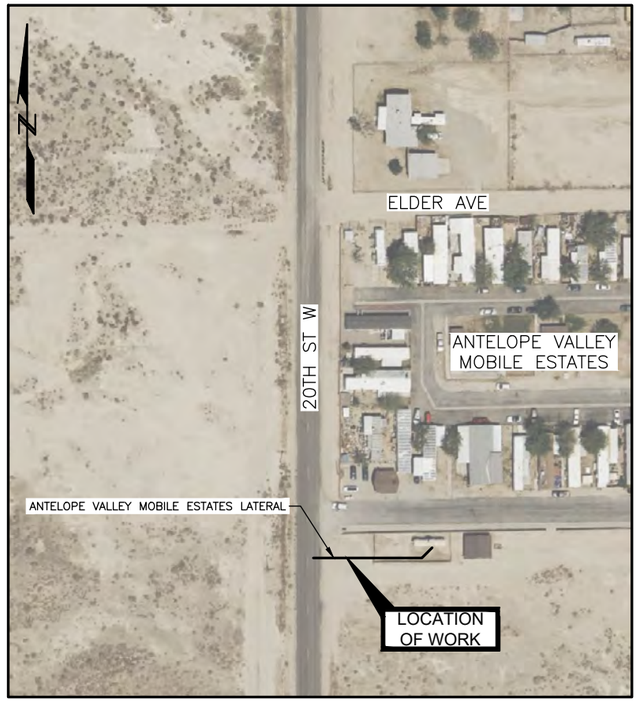


LOCATION MAP
SYSTEM 6 ROSAMOND HIGH SCHOOL WATER SYSTEM
NTS



LOCATION MAP
SYSTEM 10 ANTELOPE VALLEY MOBILE ESTATES
NTS

CONTRACTOR STAGING AREAS

1. CONTRACTOR WILL BE ALLOWED TO STAGE AT THE RCSD YARD, AT THE WASTEWATER TREATMENT PLANT, AND AT THE WELL LOCATIONS.
2. CONTRACTOR WILL NOT BE PERMITTED TO USE THE STREETS, COUNTY ROADS, OR PROPERTY FOR STAGING AREA FOR THE STORAGE OF EQUIPMENT AND SUPPLIES, UNLESS PERMITTED TO DO SO BY THE COUNTY PERMIT.
3. CONTRACTOR TO PROVIDE EQUIPMENT, TRAILER STAGING, AND STAFFING AREA INCLUDING, BUT NOT LIMITED TO: FENCING, SECURING ALL EQUIPMENT, MATERIALS AND ALL ITEMS STORED OFF THE WORK SITE, MAINTAINING CLEANLINESS IN AND AROUND STAGING AREA, AND RESTORATION OF THE STAGING AREA TO ITS ORIGINAL CONDITION.
4. CONTRACTOR SHALL OBTAIN DISTRICT APPROVAL OF STAGING AREA IN ADVANCE OF STAGING OPERATIONS.

FOR BIDDING PURPOSES ONLY
NOT TO BE USED FOR CONSTRUCTION

DESIGNED CERNA ALVAREZ CHECKED SANCHEZ
DRAWN COLLETTO SUBMITTED SANCHEZ
JOB NO 2305090

REV	DATE	DESCRIPTION	SUB	APP'D
A	3/19/2026	ISSUED FOR BID	RS	

REGISTERED PROFESSIONAL ENGINEER
RICHARD S. SANCHEZ
No. 37148
Exp. 06/30/2026
CIVIL
STATE OF CALIFORNIA
03/19/2026

ROSAMOND COMMUNITY SERVICES DISTRICT
3179 35TH STREET WEST
ROSAMOND, CALIFORNIA, 93560

GEI CONSULTANTS, INC.
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GEI Consultants

ROSAMOND COMMUNITY SERVICES DISTRICT
ARSENIC REGIONAL CONSOLIDATION PROJECT PHASE 1A

LOCATION MAPS

DATE
MARCH 2026

DRAWING NUMBER
G-02

SHEET 2 OF 14

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ABBREVIATIONS

AB	ANCHOR BOLT
ABAND	ABANDONED
AC	ASPHALTIC CONCRETE
ADJ	ADJUSTABLE
AR	AIR RELEASE VALVE
AV	AIR VACUUM VALVE
BC	BEGIN CURVE
BCR	BEGIN CURB RETURN
BF	BACKFLOW PREVENTION ASSEMBLY
BFV	BUTTERFLY VALVE
BFVS	BUTTERFLY VALVES
BM	BENCH MARK
BO	BLOWOFF
BVC	BEGIN VERTICAL CURVE
℄	CENTERLINE
CAV	COMBINATION AIR VALVE
C/E	CONSTRUCTION EASEMENT
CCT	CENTRAL CALIFORNIA TRACTION
CDF	CONTROL DENSITY FILL
CI	CAST IRON
CMP	CORRUGATED METAL PIPE
CO	CLEAN OUT
CONC	CONCRETE
COTG	CLEAN-OUT TO GRADE
DI	DRAIN INLET
DIA	DIAMETER
DWG	DRAWING
EA	EACH
EC	END CURVE
ECR	END CURVE RETURN
EF	EACH FACE
EL	ELEVATION
ELEC	ELECTRICAL OR ELECTRONIC
ELL	ELBOW
EVC	END VERTICAL CURVE
EXIST	EXISTING
EXP JT	EXPANSION JOINT
FG	FINISH GRADE
FH	FIRE HYDRANT
FIG	FIGURE
FIN	FINISHED
FL	FLOWLINE OR FLOOR
FM	FORCE MAIN
FPS	FEET PER SECOND
FT	FEET OR FOOT
G	GAS OR GATE
GA	GAGE OR GAUGE
GAL	GALLON
GALV	GALVANIZED
GEN	GENERAL OR GENERATOR
GV	GATE VALVE
H/B	HOSE BIBB
HDPE	HIGH DENSITY POLYETHYLENE
HMC	HARNESSED MECHANICAL COUPLING
HORIZ	HORIZONTAL
HP	HIGH PRESSURE
HPI	HORIZONTAL POINT OF INFLECTION
ID	INSIDE DIAMETER
IN	INCH
INV	INVERT
IRRG	IRRIGATION
JT	JOINT
L	LENGTH
L/D	LIMITS OF DISTURBANCE
LS	LIFT STATION
LT	LEFT
MAX	MAXIMUM
MGD	MILLION GALLONS PER DAY
MH	MANHOLE
MHP	MOBILE HOME PARK
MIN	MINIMUM
MISC	MISCELLANEOUS
MW	MANWAY
NAPOTC	NOT A PART OF THIS CONCTRACT
NO	NUMBER
NPDES	NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM
NTS	NOT TO SCALE
OD	OUTSIDE DIAMETER OR OVERALL DIMENSION
OH	OVERHEAD
P	POLE
PC	POINT OF CURVATURE
PVMT	PAVEMENT
PCC	PORTLAND CEMENT CONCRETE
PE	POLYETHYLENE
PH	POT HOLE
PI	POINT OF INTERSECTION
PIP	PROTECT-IN-PLACE
PL	PLATE, PROPERTY LINE OR PLACE
PP	POWER POLE
PRC	POINT OF REVERSE CURVE
PREFAB	PREFABRICATED
PRESS	PRESSURE
PS	PIPE STIFFNESS
PSI	POUNDS PER SQUARE INCH
PT	POINT OF TANGENCY
PV	PLUG VALVE
PVC	POLYVINYL CHLORIDE
PWPE	PROFILE WALL POLYETHYLENE PIPE
QTY	QUANTITY
R	RADIUS
R&D	REMOVE AND DISPOSE
R&R	REMOVE AND REPLACE
RC	REINFORCED CONCRETE
RCB	REINFORCED CONCRETE BOX
RCP	REINFORCED CONCRETE PIPE
RCCP	REINFORCED CONCRETE CYLINDER PIPE
REF	REFERENCE
REQD	REQUIRED
REV	REVISION
RR	RAILROAD
RT	RIGHT
ROW	RIGHT OF WAY
S	SLOPE (ALSO SIGN SYMBOL)
S/E	SEWER EASEMENT
SCH	SCHEDULE
SD	STORM DRAIN
SHT	SHEET

ABBREVIATIONS (CONTINUED)

SPECS	SPECIFICATIONS
SP	STEEL PIPE
SS	SANITARY SEWER, STAINLESS STEEL
T	TELEPHONE
TBM	TEMPORARY BENCH MARK
TBC	TOP BACK CURB
TCE	TEMPORARY CONSTRUCTION EASEMENT
TEMP	TEMPORARY
TOB	TOP OF BERM
TOL	TOP OF LEVEE
TW	TOP OF WALL
TYP	TYPICAL
UG	UNDERGROUND
U.N.O	UNLESS NOTED OTHERWISE
VAR	VARIES OR VARIABLE
VCP	VITRIFIED CLAY PIPE
VERT	VERTICAL
VPI	VERTICAL POINT OF INFLECTION
W	WATER
W.P	WORK POINT
WWM	WELDED WIRE MESH

NOTES:
ADDITIONAL ABBREVIATIONS CONFORM TO ANSI STANDARD ABBREVIATIONS Z32. 2.3

SYMBOLS

	ABANDONED UTILITIES
CAV	1" COMBINATION AIR VALVE (CAV) SEE DETAIL W-8 ON DWG C-101
BO	BLOWOFF, SEE DETAIL W-12 ON DWG C-102
MW	MANWAY
M	WATER METER, SEE DETAIL W-5 ON DWG C-101 (SIZE AS INDICATED ON DRAWING)
M	EXISTING WATER METER
V	VAULT
	FIRE HYDRANT ASSEMBLY
	BLIND FLANGE
	CAPPED END OR PLUGGED
	REDUCER
B8	SOIL BORING & IDENTIFICATION NUMBER
	BENCH MARK
W	EXISTING WELL
104	HORIZONTAL AND VERTICAL CONTROL POINT
∅	DIAMETER
@	AT
△	DEFLECTION ANGLE
	GATE VALVE
PR	PRESSURE REDUCING VALVE
	BUTTERFLY VALVE
RPZ	REDUCED PRESSURE ZONE BACKFLOW PREVENTION ASSEMBLY, SEE DETAIL W-14 ON DWG C-101
RPD	REDUCED PRESSURE DETECTOR BACKFLOW PREVENTION ASSEMBLY, SEE DETAIL W-14A ON DWG C-101
	POWER POLE

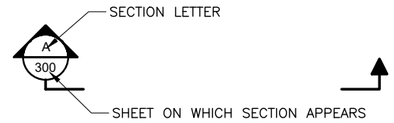
LINE TYPES

EXISTING	PROPOSED	DESCRIPTION
WS	WS	UG WATER SERVICE
WTR		UG WATER MAIN / CONTROL LINE
SAN	SAN	UG SANITARY SEWER MAIN
F/M	F/M	UG SANITARY SEWER FORCE MAIN
STM	STM	UG STORM LINE
OE	OE	OVERHEAD ELECTRICAL
UE	UE	UNDERGROUND ELECTRICAL
GAS	GAS	UG GAS
COMM	COMM	UNDERGROUND COMMUNICATIONS
T	T	UNDERGROUND TELEPHONE
FIBR	FIBR	UNDERGROUND FIBER
IRR	IRR	IRRIGATION PIPE
X	X	FENCE
		CURB
		PROPERTY LINE
ROW	ROW	RIGHT-OF-WAY
EASE	EASE	EASEMENT
		QUARTER SECTION LINE
		QUARTER MID-SECTION LINE
		DRAINAGE DITCH CENTERLINE
		PAVED SURFACE LIMITS
		UNPAVED SURFACE LIMITS

DETAIL & SECTION IDENTIFICATION

SECTION IDENTIFICATION:

SECTION CUT CALL-OUT



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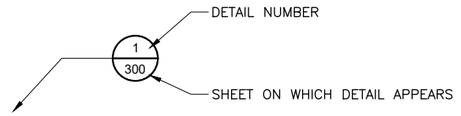
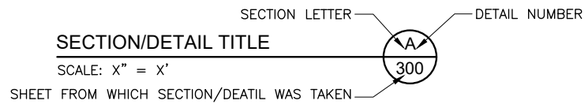
DETAIL CALL-OUT



SECTION/DETAIL TITLE



NOTES:

1. DISCIPLINE SPECIFIC SYMBOLS ARE SHOWN ON THE DISCIPLINE GENERAL DRAWINGS.
2. FOR WELDING SYMBOLS USE AMERICAN WELDING SOCIETY STANDARD SYMBOLS.

FOR BIDDING PURPOSES ONLY
NOT TO BE USED FOR CONSTRUCTION

DESIGNED CERNA ALVAREZ CHECKED SANCHEZ
DRAWN COLLETTO SUBMITTED SANCHEZ
JOB NO 2305090

REV	DATE	DESCRIPTION	SUB	APP'D
A	3/19/2026	ISSUED FOR BID	RS	

REGISTERED PROFESSIONAL ENGINEER RICHARD SANCHEZ No. 37148 Exp. 06-30-2026 CIVIL STATE OF CALIFORNIA
03/19/2026

ROSAMOND COMMUNITY SERVICES DISTRICT
3179 35TH STREET WEST
ROSAMOND, CALIFORNIA, 93560

GEI CONSULTANTS, INC.
35 NORTH LAKE AVENUE, SUITE 220
PASADENA, CALIFORNIA, 91101
(818) 552-6400

GEI Consultants

ROSAMOND COMMUNITY SERVICES DISTRICT
ARSENIC REGIONAL CONSOLIDATION PROJECT PHASE 1A

ABBREVIATIONS AND SYMBOLS

DATE
MARCH 2026

DRAWING NUMBER
G-03

SHEET 3 OF 14

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GENERAL NOTES

1. RCSD MAY UNDERTAKE OR AWARD OTHER CONTRACTS FOR ADDITIONAL WORK IN THE PROJECT AREA. CONTRACTOR SHALL COORDINATE WORK WITH SUCH OTHER CONTRACTORS WITHIN OR ADJACENT TO CONTRACT WORK AREAS. CONTRACTOR SHALL NOT COMMIT OR PERMIT ANY ACT WHICH WILL INTERFERE WITH THE PERFORMANCE OF WORK BY ANY OTHER CONTRACTOR OR BY OWNER'S EMPLOYEES.
2. AN OSHA PERMIT IS REQUIRED WHEN WORKERS ENTER TRENCHES OR EXCAVATIONS FIVE (5) FEET IN DEPTH OR DEEPER. CONTRACTOR SHALL OBTAIN ALL REQUIRED PERMITS AND CONFORM TO REQUIREMENTS OF OSHA.
3. RCSD WILL FURNISH BASIC CONTROL AND BENCH MARK ELEVATIONS FOR LOCATING THE PRINCIPAL COMPONENTS OF THE CONTRACT WORK. CONTRACTOR SHALL PERFORM ALL DETAILED SURVEYS NEEDED FOR CONSTRUCTION, INCLUDING SLOPE STAKING, GRADE STAKING, BATTER BOARDS, STRUCTURE LOCATION AND ALL OTHER WORKING POINTS, LINES AND ELEVATIONS REQUIRED.
4. CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE REGULATIONS OF THE CONSTRUCTION SAFETY ORDERS OF THE CALIFORNIA DIVISION OF INDUSTRIAL SAFETY AND THE FEDERAL SAFETY STANDARDS OF THE DEPARTMENT OF HEALTH EDUCATION AND WELFARE.
5. CONTRACTOR SHALL REMOVE ALL BRUSH AND STRUCTURAL DEBRIS REQUIRED FOR CONSTRUCTION. ALL REFUSE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF IN APPROVED WASTE SITES.
6. THE LOCATION, PIPE DIAMETER AND ELEVATIONS OF UNDERGROUND UTILITIES SHOWN ON THESE DRAWINGS ARE APPROXIMATE ONLY. THE CONTRACTOR SHALL CONTACT ALL UTILITY COMPANIES SO THAT THOSE COMPANIES MAY MARK THE LOCATIONS OF THEIR LINES PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL CONTACT UNDERGROUND UTILITIES SERVICE ALERT (USA) AT 1-800-642-2444 PRIOR TO EXCAVATION (48 HOURS MINIMUM). PROTECT THE EXISTING UTILITIES AND FIELD VERIFY THE LOCATION AND DEPTH OF EXISTING UTILITIES PRIOR TO CONSTRUCTION.
7. ALL UNDERGROUND UTILITIES AND ABOVE GROUND UTILITIES SHALL BE PROTECTED IN PLACE UNLESS OTHERWISE SHOWN. IF THE CONTRACTOR FINDS CONFLICT BETWEEN CONTRACT FACILITIES AND EXISTING FACILITIES, HE SHALL NOTIFY THE ENGINEER IMMEDIATELY AND FOLLOW NOTIFICATION UP IN WRITING.
8. LIMITS OF WORK ARE SHOWN ON THE DRAWINGS. PRIOR TO COMMENCING ANY WORK WITHIN A GIVEN AREA, THE CONTRACTOR SHALL STAKE THE RIGHT-OF-WAY LIMITS WITH LATHS, PAINTED MARKINGS, NAILS, OR FLAGGING AT 300-FOOT INTERVALS (MAXIMUM), AND SHALL MAINTAIN SAME UNTIL ALL WORK WITHIN THE GIVEN AREA IS COMPLETE.
9. PIPELINE STATIONING AND HORIZONTAL DIMENSIONS SHOWN ON THESE PLANS IS HORIZONTAL DISTANCE MEASURED ON A LEVEL PLANE. ACTUAL PIPE LENGTH SHALL BE DETERMINED BY MEASUREMENT ALONG THE SLOPE OR CURVE ON WHICH THE PIPE IS INSTALLED.
10. STRAIGHT SLOPES SHALL BE MAINTAINED BETWEEN INVERT ELEVATIONS OR TOP OF PIPE ELEVATIONS SHOWN ON THE DRAWINGS.
11. CONTRACTOR SHALL CONTACT GAS COMPANY REPRESENTATIVES FOR THEIR ATTENDANCE AT THE SITE PERFORMING WORK NEAR EXISTING GAS LINES.
12. THE CONTRACTOR SHALL CONDUCT EXPLORATORY EXCAVATIONS BY POTHOLING. POTHOLING SHALL BE PERFORMED 30 DAYS IN ADVANCE OF ACTUAL CONSTRUCTION FOR EACH 1,000 LINEAR FEET OF PIPE TO BE INSTALLED, AS SOON AS PRACTICAL AFTER ISSUANCE OF THE NOTICE TO PROCEED, AND IN ANY EVENT, A SUFFICIENT TIME IN ADVANCE OF ANY EXCAVATION OR CONSTRUCTION IN THAT AREA TO AVOID POSSIBLE DELAY IN THE PROGRESS OF WORK. COMPLETE 30-DAY POTHOLE REPORT OF POTHOLING OPERATIONS SHALL BE SUBMITTED TO THE ENGINEER WITHIN 3 WORKING DAYS AFTER COMPLETION OF POTHOLING, INDICATING DATES OF THE OPERATIONS, THE NORTHING AND EASTING COORDINATES AND INVERT ELEVATION OF THE EXPOSED UTILITY OR STRUCTURE, IDENTIFICATION OF ALL EXISTING PIPELINES DISCOVERED, AND ANY ADDITIONAL DISCOVERED INFORMATION OR DATA PERTINENT TO THE CONSTRUCTION.
13. ALL WATER OUTAGES NEED TO BE COORDINATED THROUGH AND APPROVED BY RCSD.

LIST OF UTILITY CONTACTS

AGENCY	CONTACT NAME	TEL NO
SCE	KIM GURULE	714-796-9932
CHARTER	RICK KEYNER	626-636-0603
SO. CAL. GAS DISTRIBUTION	TIMOTHY BRUCE	818-701-3335
SO. CAL. GAS TRANSMISSION	KEVIN KUENNER	951-845-0709
AT&T DISTRIBUTION	CATHY HURTADO	661-266-2037
AT&T TRANSMISSION	JOSEPH FORKERT	714-963-7694
RCSD SEWER	JOHN HOUGHTON	661-256-3411 X219
AVEK	TOM BARNES	661-943-3201

PERMITS

1. CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ANY AND ALL PERMITS, LICENSES, AND APPROVALS REQUIRED FOR PERFORMING ITS OBLIGATIONS UNDER THIS PROJECT.
2. CONTRACTOR SHALL OBTAIN REQUIRED PERMITS FROM AUTHORITIES AS SPECIFIED IN SPECIAL CONDITIONS, SECTION D-2, STATE PROVISIONS, AND ALSO AS SPECIFIED IN GENERAL CONDITIONS, SECTION C-19, COMPLIANCE WITH LAWS-TAXES- PERMITS.
3. CONTRACTOR SHALL BE RESPONSIBLE FOR PAYING FOR ALL PERMITS REQUIRED FOR CONSTRUCTION OF THE IMPROVEMENTS PROVIDED IN THE PROJECTS PLANS AND SPECIFICATIONS.
4. PERMITS SHALL BE OBTAINED PRIOR TO START OF CONSTRUCTION AND SUBMITTED TO ENGINEER FOR FILES.
5. PREVENTION OF WATER POLLUTION AND AIR POLLUTION – THE CONTRACTOR SHALL PREPARE AND SUBMIT TO THE ENGINEER A STORM WATER POLLUTION PREVENTION PLAN (SWPPP) WITHIN 10 CALENDAR DAYS AFTER THE NOTICE TO PROCEED IS ISSUED. SPECIAL CONDITIONS D-30.
6. SEE SPECIFICATION DIVISION 01 FOR GENERAL REQUIREMENTS.
7. SEE ADDITIONS AND AMENDMENTS TO THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION PERMITS.
8. RCSD WILL OBTAIN, AT NO COST TO CONTRACTOR, KERN COUNTY ENCROACHMENT PERMITS NECESSARY TO PERFORM THE WORK.
9. THE CONTRACTOR SHALL OBTAIN AND PAY FOR OTHER PERMITS AND FEES REQUIRED TO CONSTRUCT THE PROJECT, INCLUDING PERMITS NECESSITATED BY THEIR OFF-SITE OPERATIONS.
10. CONTRACTOR IS REQUIRED TO OBTAIN THE FOLLOWING REQUIRED PERMITS FROM THE CORRESPONDING AGENCIES:
    a. STORM WATER POLLUTION PREVENTION PLAN (SWPPP)
       IT WILL BE THE CONTRACTOR'S RESPONSIBILITY TO:
       1. OBTAIN, ON BEHALF OF THE RCSD, A CONSTRUCTION STORM WATER PERMIT FROM THE STATE WATER RESOURCES CONTROL BOARD ONLINE VIA THEIR WEBSITE; https://smarts.waterboards.ca.gov/smarts/faces/SwSmartslogin.xhmtt
       2. SUBMIT ALL THE REPORTS TO MAINTAIN COMPLIANCE;
       3. AND CLOSE OUT THE PERMIT UPON COMPLETION OF THE WORK.
    b. PM-10 DUST CONTROL PLAN COMPLIANCE AND PERMIT
    c. KERN COUNTY PUBLIC HEALTH SERVICES DEPARTMENT (SEE WELL DESTRUCTION NOTES BELOW)
    d. CALIFORNIA OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (CAL OSHA)

WELL DESTRUCTION NOTES:

1. WELL DEMOLITION SHALL BE IN ACCORDANCE WITH THE CALIFORNIA DEPARTMENT OF WATER RESOURCES BULLETINS 74-81 AND 74-90, AND THE KERN COUNTY PUBLIC HEALTH SERVICES DEPARTMENT WELL DESTRUCTION PROCEDURES OCTOBER 2006 (SEE APPENDIX A OF THE SPECIFICATIONS).

KERN COUNTY FIRE DEPARTMENT NOTES:

1. PER KERN COUNTY ORDINANCE 17.32.042 AND KERN COUNTY DEVELOPMENT STANDARDS SEC. 205-6, BLUE RAISED RETROREFLECTIVE PAVEMENT MARKERS SHALL BE PLACED ON A HIGHWAY, STREET, OR ROAD TO MARK FIRE HYDRANT LOCATIONS. THEY SHALL NOT BE USED FOR ANY OTHER PURPOSE. IN GENERAL, THE BLUE RAISED RETROREFLECTIVE PAVEMENT MARKERS:
   a. SHOULD BE PLACED 0.5 FOOT FROM THE CENTERLINE STRIPE, OR APPROXIMATE CENTER OF THE PAVEMENT WHERE THERE IS NO CENTERLINE STRIPE, ON THE SIDE NEAREST THE FIRE HYDRANT.

TRAFFIC CONTROL NOTES

1. THE CONTRACTOR SHALL OBTAIN A KERN COUNTY EXCAVATION AND/OR STREET USE PERMIT FOR WORK PERFORMED IN THE RIGHT OF WAY.
2. THE CONTRACTOR SHALL SUBMIT FOR KERN COUNTY APPROVAL COMPLETE AND COMPREHENSIVE TRAFFIC CONTROL PLANS PREPARED AND SIGNED BY A REGISTERED TRAFFIC ENGINEER IN THE STATE OF CALIFORNIA PRIOR TO THE START OF WORK. TRAFFIC CONTROL PLANS SHALL CONFORM TO KERN COUNTY PUBLIC WORKS STANDARDS AND ENCROACHMENT PERMIT REQUIREMENTS AND THE REQUIREMENTS SET FORTH IN THESE CONTRACT DOCUMENTS.
3. IT IS THE RESPONSIBILITY OF THE CONTRACTOR PERFORMING THE WORK ON A PUBLIC STREET TO INSTALL AND MAINTAIN THE TRAFFIC CONTROL DEVICES IN ACCORDANCE WITH THE SPECIAL PROVISIONS IN ORDER TO ENSURE THE SAFE MOVEMENT OF TRAFFIC AND PEDESTRIANS THROUGH OR AROUND THE WORK AREA AND PROVIDE MAXIMUM PROTECTION AND SAFETY FOR THE CONSTRUCTION WORKERS.
4. THE CONTRACTOR SHALL FURNISH, INSTALL, AND MAINTAIN THE TRAFFIC CONTROL DEVICES AS PROPOSED BY THE CONTRACTOR AND APPROVED BY KERN COUNTY PUBLIC WORKS, AND ADDITIONAL TRAFFIC CONTROL DEVICES AS MAY BE REQUIRED TO ENSURE THE SAFE MOVEMENT OF VEHICLES AND PEDESTRIANS, AND TO PROVIDE FOR THE SAFETY OF CONSTRUCTION WORKERS. THE CONTRACTOR SHALL MAINTAIN EXISTING TRAFFIC CONTROL SIGNS AND TRAFFIC SIGNALS IN THEIR PROPER LOCATION ON TEMPORARY MOUNTING SUPPORTS UNTIL PERMANENT SIGNS OR SIGNALS ARE RESTORED. THE CONTRACTOR SHALL USE SIGNS, DELINEATORS, BARRICADES, ETC., AS PER THE LATEST STATE OF CALIFORNIA, "MANUAL OF TRAFFIC CONTROLS FOR CONSTRUCTION AND MAINTENANCE WORK ZONES." THE NAME OF THE CONTRACTOR OR VENDOR WHO OWNS THE TRAFFIC CONTROL DEVICES SHALL BE CLEARLY NOTED ON EACH DEVICE.
5. BARRICADES USED AT NIGHT SHALL BE EQUIPPED WITH FLASHING/STEADY BURN WARNING LIGHTS. SIGNS, CONES, DELINEATORS, BARRICADES AND "K" RAILS INTENDED TO BE USED DURING HOURS OF DARKNESS SHALL BE REFLECTORIZED WITH A MATERIAL THAT HAS A SMOOTH, SEALED OUTER SURFACE, OR ILLUMINATED TO SHOW APPROXIMATELY THE SAME SHAPE AND COLOR DAY AND NIGHT. INTERNALLY OR EXTERNALLY ILLUMINATED SIGNS SHALL BE USED WHERE THERE IS SIGNIFICANT INTERFERENCE FROM EXTRANEOUS LIGHT SOURCES AND REFLECTORIZED SIGNS WILL NOT BE EFFECTIVE. EXTERNAL LIGHT SOURCES SHALL BE PROPERLY SHIELDED TO PROTECT DRIVERS FROM GLARE. STREET OR HIGHWAY LIGHTING IS NOT REGARDED AS MEETING THE REQUIREMENTS FOR SIGN ILLUMINATION.
6. TRAFFIC CONTROLS SHALL BE IN ACCORDANCE WITH KERN COUNTY PUBLIC WORKS STANDARDS AND REQUIREMENTS, CURRENT CALTRANS STANDARD SPECIFICATION, SECTION 12, AND SHALL CONFORM TO THE MUTCD TRAFFIC CONTROL GUIDE UNLESS OTHERWISE SHOWN ON THE TCP PERMIT.
7. IF CONSTRUCTION IS TO BE PERFORMED IN PHASES, ALL WORK SHALL BE COMPLETED IN EACH PHASE PRIOR TO BEGINNING WORK ON THE NEXT PHASE. EQUIPMENT, MATERIAL, OR DEBRIS SHALL NOT BE STORED OR REMAIN IN THE PUBLIC RIGHT-OF-WAY WITHOUT PRIOR APPROVAL BY THE DISTRICT'S CONSTRUCTION MANAGER.
8. WORK HOURS MAY BE SUBJECT TO FURTHER LIMITATIONS BY TRAFFIC CONTROL REQUIREMENTS.

NPDES GENERAL NOTES

1. STORM WATER POLLUTION PREVENTION PLAN (SWPPP)
   a. CONTRACTOR SHALL SUBMIT A SWPPP PREPARED BY A QSD AND OBTAIN RCSD OR ENGINEER APPROVAL PRIOR TO MOBILIZATION.
2. SEE SPECIFICATIONS, SPECIAL PROVISIONS ITEM D-30 – PREVENTION OF WATER POLLUTION AND AIR POLLUTION.
3. SEDIMENT FROM AREAS DISTURBED BY CONSTRUCTION SHALL BE RETAINED ON SITE USING STRUCTURAL CONTROLS AS REQUIRED BY THE STATEWIDE GENERAL CONSTRUCTION STORMWATER PERMIT.
4. STOCKPILES OF SOIL SHALL BE PROPERLY CONTAINED TO MINIMIZE SEDIMENT TRANSPORT FROM THE SITE TO STREETS, DRAINAGE FACILITIES OR ADJACENT PROPERTIES VIA RUNOFF, VEHICLE TRACKING, OR WIND AS REQUIRED BY THE STATEWIDE GENERAL CONSTRUCTION STORMWATER PERMIT.
5. APPROPRIATE BMPS FOR CONSTRUCTION-RELATED MATERIALS, WASTES, SPILLS OR RESIDUES SHALL BE IMPLEMENTED TO MINIMIZE TRANSPORT FROM THE SITE TO STREETS, DRAINAGE FACILITIES, OR ADJOINING PROPERTY BY WIND OR RUNOFF AS REQUIRED BY THE STATEWIDE GENERAL CONSTRUCTION STORMWATER PERMIT.
6. RUNOFF FROM EQUIPMENT AND VEHICLE WASHING SHALL BE CONTAINED AT CONSTRUCTION SITES AND MUST NOT BE DISCHARGED TO RECEIVING WATERS OR TO THE LOCAL STORM DRAIN SYSTEM.
7. ALL CONSTRUCTION CONTRACTOR AND SUBCONTRACTOR PERSONNEL ARE TO BE MADE AWARE OF THE REQUIRED BEST MANAGEMENT PRACTICES AND GOOD HOUSEKEEPING MEASURES FOR THE PROJECT SITE AND ANY ASSOCIATED CONSTRUCTION STAGING AREAS.
8. AT THE END OF EACH DAY OF CONSTRUCTION ACTIVITY ALL CONSTRUCTION DEBRIS AND WASTE MATERIALS SHALL BE COLLECTED AND PROPERLY DISPOSED IN TRASH CANS OR RECYCLE BINS.
9. CONSTRUCTION SITES SHALL BE MAINTAINED IN SUCH A CONDITION THAT A STORM DOES NOT CARRY WASTES OR POLLUTANTS OFF THE SITE. DISCHARGES OF MATERIALS OTHER THAN STORMWATER (NON-STORMWATER DISCHARGES) ARE PROHIBITED EXCEPT AS AUTHORIZED BY AN INDIVIDUAL NPDES PERMIT OR THE STATEWIDE GENERAL CONSTRUCTION STORMWATER PERMIT.
10. POTENTIAL POLLUTANTS INCLUDE, BUT ARE NOT LIMITED TO: SOLID OR LIQUID CHEMICAL SPILLS, WASTES FROM PAINTS, STAINS, SEALANTS, SOLVENTS, DETERGENTS, GLUES, LIME, PESTICIDE, HERBICIDE, FERTILIZERS, WOOD PRESERVATIVES AND ASBESTOS FIBERS, PAINT FLAKES OR STUCCO FRAGMENTS; FUELS, OILS, LUBRICANTS, AND HYDRAULIC, RADIATOR OR BATTERY FLUIDS; CONCRETE, AND RELATED CUTTING OR CURING RESIDUES; FLOATABLE WASTES; WASTES FROM ENGINE / EQUIPMENT STEAM CLEANING OR CHEMICAL DEGREASING; WASTES FROM STREET CLEANING; AND SUPER-CHLORINATED POTABLE WATER FROM LINE FLUSHINGS AND TESTING.
11. DURING CONSTRUCTION, DISPOSAL OF SUCH MATERIALS SHOULD OCCUR IN A SPECIFIED AND CONTROLLED, TEMPORARY AREA ON-SITE AND PHYSICALLY SEPARATED FROM POTENTIAL STORMWATER RUNOFF, WITH ULTIMATE DISPOSAL IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REQUIREMENTS.
12. DISCHARGING CONTAMINATED GROUNDWATER, PRODUCED BY DEWATERING GROUNDWATER THAT HAS INFILTRATED INTO THE CONSTRUCTION SITE IS PROHIBITED. DISCHARGING OF CONTAMINATED SOILS VIA SURFACE EROSION IS ALSO PROHIBITED. DISCHARGING NON-CONTAMINATED GROUNDWATER PRODUCED BY DEWATERING ACTIVITIES REQUIRES A NATIONAL POLLUTANTS DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT FROM THE RESPECTIVE STATE REGIONAL WATER QUALITY CONTROL BOARD.
13. NOTICE: ALL CONTRACTORS AND CONSTRUCTION PERSONNEL SHALL MEET THE REGULATORY CONSTRUCTION REQUIREMENTS ON THE PROJECT SITE, AS STATED IN THE COUNTY PERMIT.

FOR BIDDING PURPOSES ONLY
NOT TO BE USED FOR CONSTRUCTION

DESIGNED CERNA ALVAREZ CHECKED SANCHEZ
DRAWN COLLETTO SUBMITTED SANCHEZ
JOB NO 2305090

REV	DATE	DESCRIPTION	SUB	APP'D
A	3/19/2026	ISSUED FOR BID	RS	

REGISTERED PROFESSIONAL ENGINEER RICHARD SANCHEZ No. 37148 Exp. 06.30.2026 CIVIL STATE OF CALIFORNIA
03/19/2026

ROSAMOND COMMUNITY SERVICES DISTRICT
3179 35TH STREET WEST
ROSAMOND, CALIFORNIA, 93560

GEI CONSULTANTS, INC.
35 NORTH LAKE AVENUE, SUITE 220
PASADENA, CALIFORNIA, 91101
(818) 552-6400

GEI Consultants

ROSAMOND COMMUNITY SERVICES DISTRICT
ARSENIC REGIONAL CONSOLIDATION PROJECT PHASE 1A

GENERAL NOTES

DATE
MARCH 2026

DRAWING NUMBER
G-04

SHEET 4 OF 14

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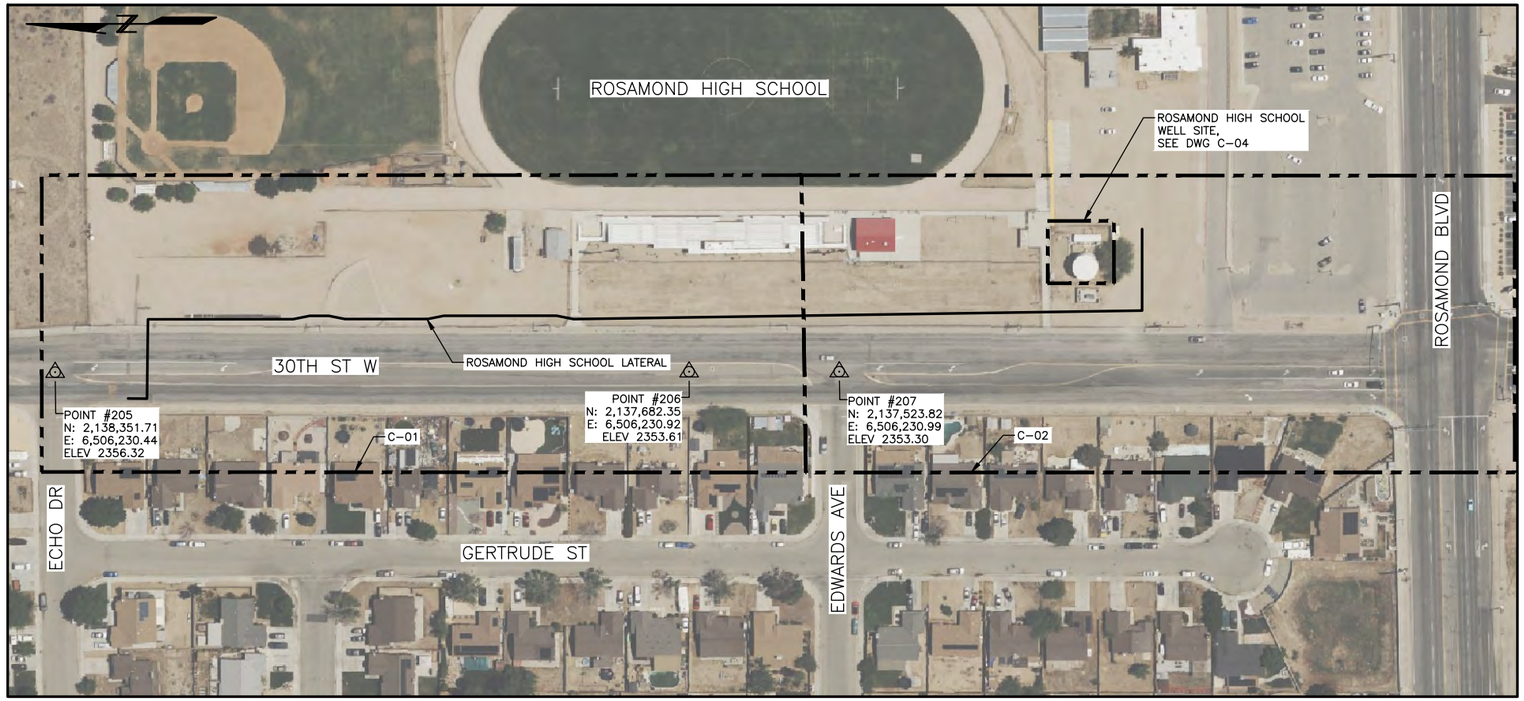
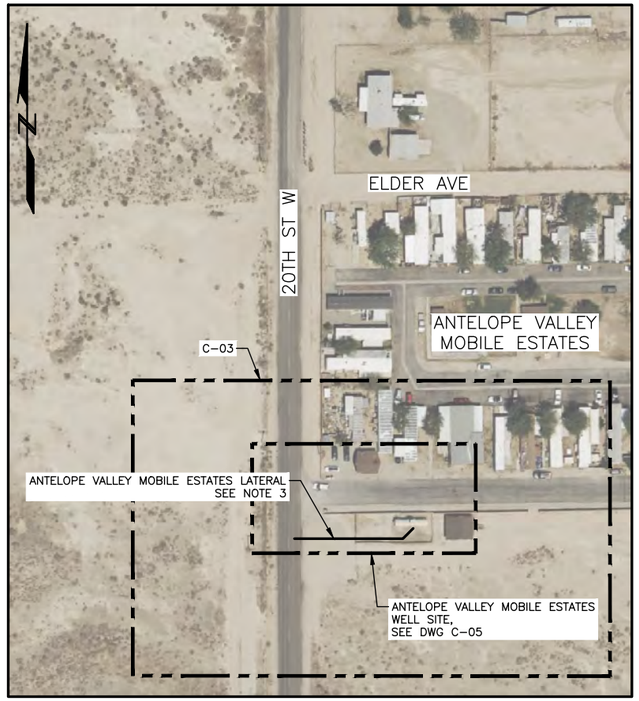


KEY MAP
SYSTEM 6 ROSAMOND HIGH SCHOOL WATER SYSTEM
NTS



KEY MAP
SYSTEM 10 ANTELOPE VALLEY MOBILE ESTATES
NTS

BENCH MARK MONUMENTS			
POINT #	NORTHING	EASTING	ELEVATION
205	2,138,351.71	6,506,230.44	2356.32
206	2,137,682.35	6,506,230.92	2353.61
207	2,137,523.82	6,506,230.99	2353.30

NOTES:

1. HORIZONTAL AND VERTICAL CONTROL POINT INFORMATION PROVIDED IN BENCH MARK MONUMENTS TABLE. THE CONTRACTOR SHALL FIELD MEASURE THE EXISTING FACILITIES AND DETERMINE DIMENSIONS PRIOR TO MANUFACTURING AND CONSTRUCTING NEW FACILITIES. MOREOVER, THE CONTRACTOR SHALL VERIFY THE VERTICAL AND HORIZONTAL LOCATION OF ALL PROJECT COMPONENTS WHERE A NEW FACILITY AND AN EXISTING FACILITY WILL TIE-IN PRIOR TO FABRICATION AND CONSTRUCTION OF THE WORK. IF ADJUSTMENTS NEED TO BE MADE TO FIT THE FIELD CONDITIONS, NOTIFY THE ENGINEER IMMEDIATELY.
2. THE CONTRACTOR SHALL ENSURE THAT ALL CONTRACT WORK IS CONSTRUCTED WITHIN THE RIGHT-OF-WAY ACQUIRED BY THE DISTRICT. BASE UPON THE SPECIFIED INFORMATION, THE CONTRACTOR SHALL DEVELOP AND MAKE ALL OTHER DETAILED SURVEYS AS REQUIRED FOR CONTRACT CONSTRUCTION. NO SEPARATE PAYMENT WILL BE MADE FOR SURVEY WORK AND THE COST OF ALL SUCH WORK SHALL BE INCLUDED IN THE PRICES NAMED IN THE PROPOSAL BID SCHEDULES.
3. FOR WORK AREAS WHERE CONTROL POINT INFORMATION IS NOT AVAILABLE, RCSD WILL FURNISH BASIC CONTROL AND BENCH MARK ELEVATIONS FOR LOCATING THE PRINCIPAL COMPONENTS OF THE CONTRACT WORK.

FOR BIDDING PURPOSES ONLY
NOT TO BE USED FOR CONSTRUCTION

DESIGNED CERNA ALVAREZ CHECKED SANCHEZ
DRAWN COLLETTO SUBMITTED SANCHEZ
JOB NO 2305090

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REGISTERED PROFESSIONAL ENGINEER RICHARD SANCHEZ No. 37148 Exp. 06-30-2026 CIVIL STATE OF CALIFORNIA
03/19/2026

ROSAMOND COMMUNITY SERVICES DISTRICT
3179 35TH STREET WEST
ROSAMOND, CALIFORNIA, 93560

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(818) 552-6400

GEI Consultants

ROSAMOND COMMUNITY SERVICES DISTRICT
ARSENIC REGIONAL CONSOLIDATION PROJECT PHASE 1A

SURVEY CONTROL AND KEY MAP

DATE
MARCH 2026

DRAWING NUMBER
G-05

SHEET 5 OF 14

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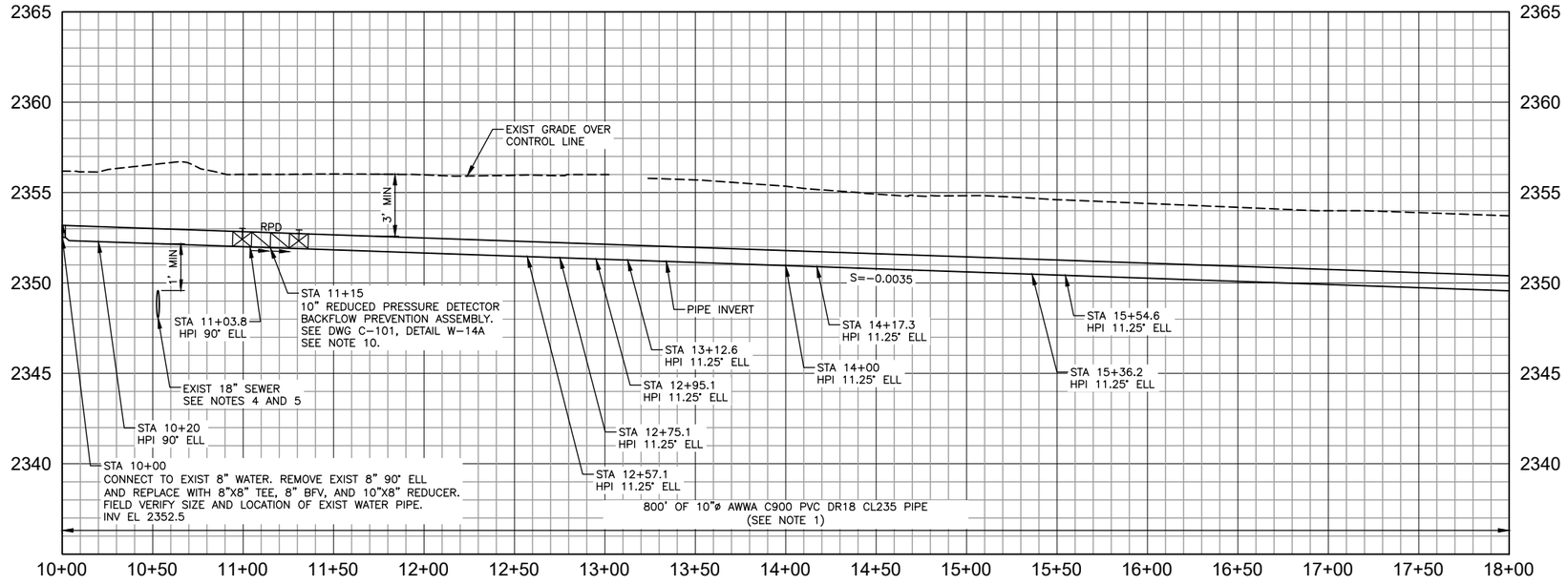

PROFILE
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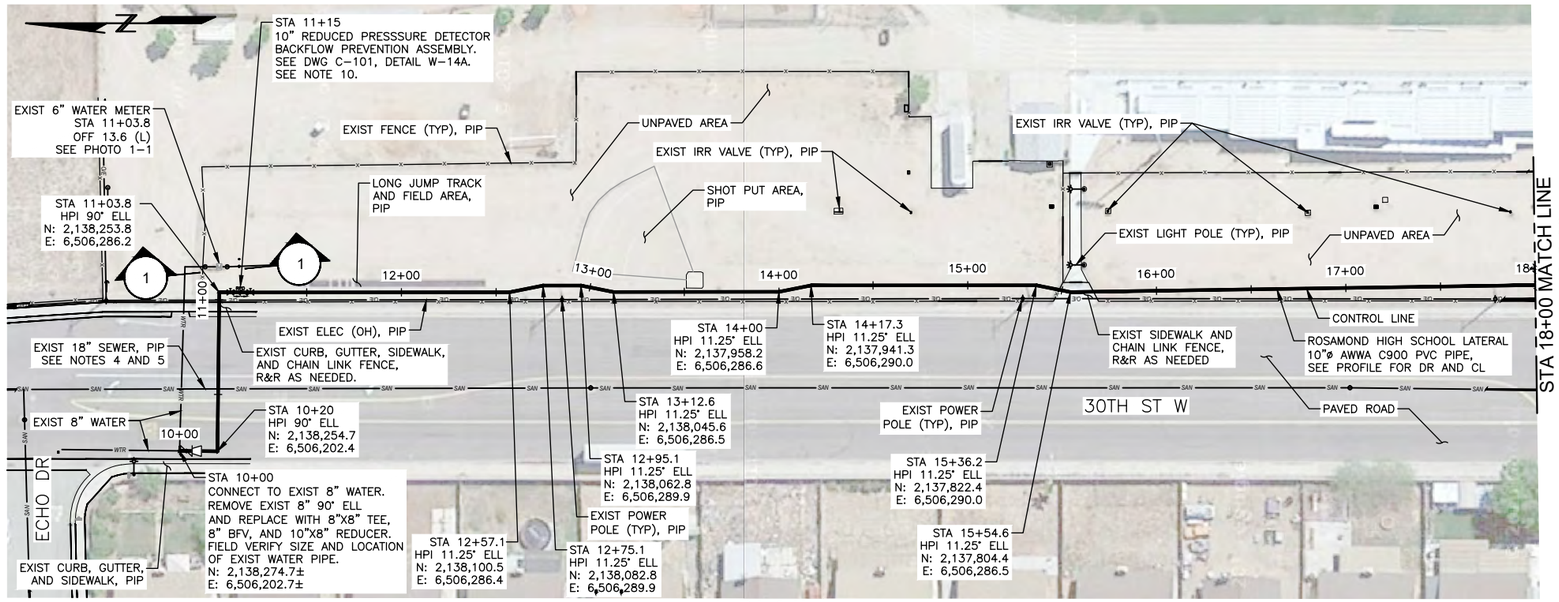
VERT 1"=4'



PLAN
SCALE: 1"=40'

NOTES:

1. RESTRAIN ALL JOINTS AT CHANGES IN DIRECTION AND AT ALL FITTINGS. CONTRACTOR SHALL USE RESTRAINT JOINTS PER DWG C-103 AT VERTICAL AND HORIZONTAL CHANGES OF DIRECTION.
2. SEE W-1 STANDARD WATER NOTES AND W-2 WATER PIPE BEDDING AND BACKFILL DETAILS ON DWG C-101. SEE DWG G-04 FOR GENERAL NOTES.
3. WATER MAIN SHALL MAINTAIN AT LEAST 10-FEET HORIZONTAL CLEARANCE FROM EXISTING SEWER AND 4-FEET FROM STORM DRAIN.
4. WATER MAIN SHALL MAINTAIN AT LEAST ONE (1) FOOT VERTICAL CLEARANCE ABOVE AN EXISTING SEWER OR STORM DRAIN AT EACH CROSSING. NO CONNECTION JOINTS SHALL BE MADE IN THE WATER MAIN WITHIN EIGHT (8) HORIZONTAL FEET OF A SEWER OR STORM DRAIN CROSSING.
5. UNLESS SHOWN ON DRAWING, WHEN HORIZONTAL AND/OR VERTICAL CLEARANCES BETWEEN WATER MAIN AND EXISTING SEWER OR STORM DRAIN CANNOT BE ACCOMPLISHED, SPECIAL PERMISSION MUST BE GRANTED FROM RCSD AND CA DIVISION OF DRINKING WATER FOR APPROVAL TO CONSTRUCT WATER MAIN WITHIN RESTRICTED AREA.
6. WATER MAIN SHALL MAINTAIN 25 FEET SEPARATION FROM EXISTING SEPTIC SYSTEMS.
7. PRESSURE TEST PIPE PER SPEC SECTION 15005.
8. INSTALL YELLOW UNDERGROUND DETECTABLE WARNING TAPE 2 FEET OVER PIPELINE.
9. THE CONTRACTOR SHALL CONDUCT EXPLORATORY EXCAVATION BY POTHOLING. SEE POTHOLING NOTE ON DWG G-04 AND SPEC SECTION 15000.
10. LOCATION OF BACKFLOW PREVENTION ASSEMBLIES ARE APPROXIMATE. FINAL LOCATION SHALL BE AS DIRECTED IN THE FIELD BY DISTRICT.

PHOTO 1-1

0 40 80
SCALE: HORIZ 1" = 40'
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SCALE: VERT 1" = 4'

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ROSAMOND COMMUNITY SERVICES DISTRICT
ARSENIC REGIONAL CONSOLIDATION PROJECT PHASE 1A

ROSAMOND HIGH SCHOOL LATERAL PLAN AND PROFILE STA 10+00 TO STA 18+00

DATE
MARCH 2026

DRAWING NUMBER
C-01

SHEET 6 OF 14

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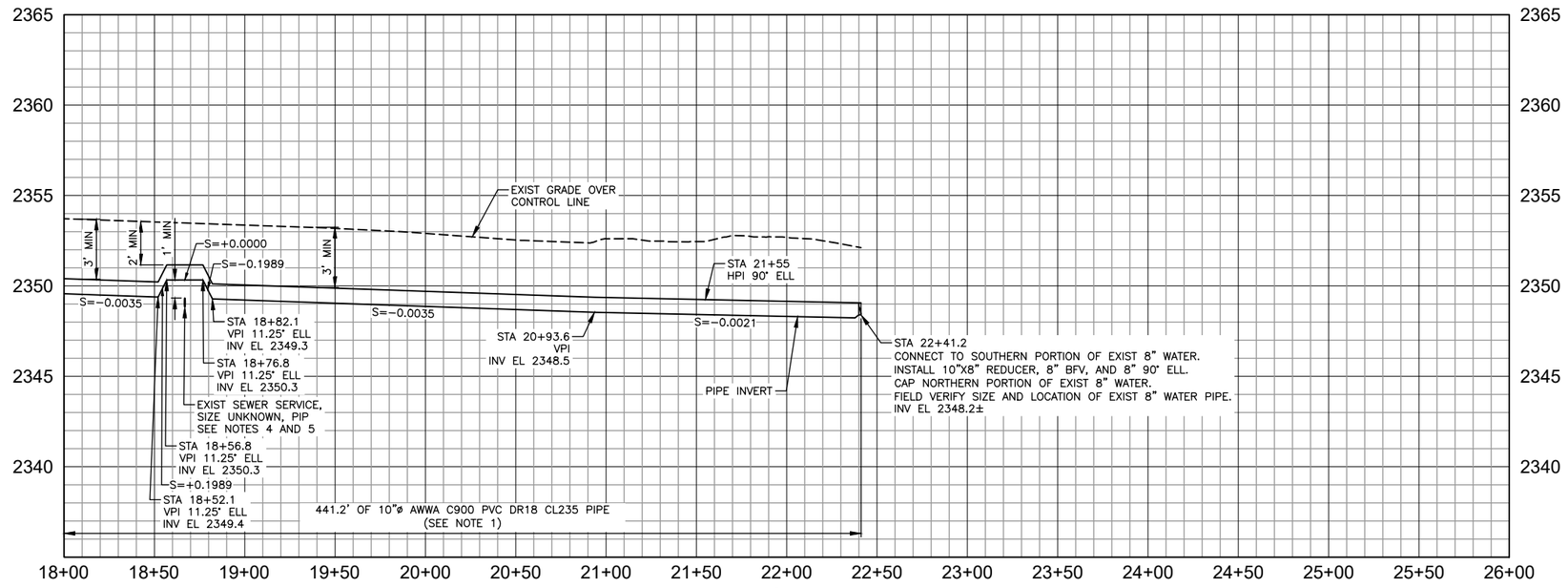

PROFILE
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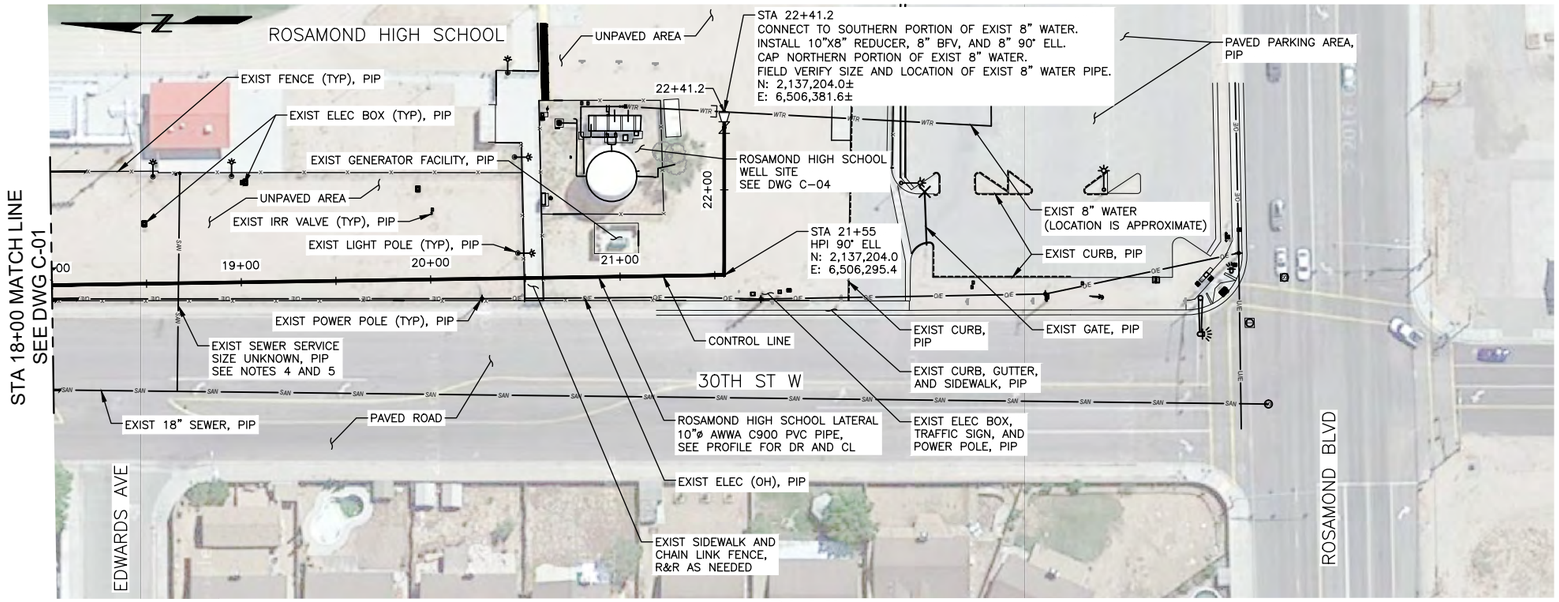
VERT 1"=4'



PLAN
SCALE: 1"=40'

NOTES:

1. RESTRAIN ALL JOINTS AT CHANGES IN DIRECTION AND AT ALL FITTINGS. CONTRACTOR SHALL USE RESTRAINT JOINTS PER DWG C−103 AT VERTICAL AND HORIZONTAL CHANGES OF DIRECTION.
2. SEE W−1 STANDARD WATER NOTES AND W−2 WATER PIPE BEDDING AND BACKFILL DETAILS ON DWG C−101. SEE DWG G−04 FOR GENERAL NOTES.
3. WATER MAIN SHALL MAINTAIN AT LEAST 10−FEET HORIZONTAL CLEARANCE FROM EXISTING SEWER AND 4−FEET FROM STORM DRAIN.
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6. WATER MAIN SHALL MAINTAIN 25 FEET SEPARATION FROM EXISTING SEPTIC SYSTEMS.
7. PRESSURE TEST PIPE PER SPEC SECTION 15005.
8. INSTALL YELLOW UNDERGROUND DETECTABLE WARNING TAPE 2 FEET OVER PIPELINE.
9. THE CONTRACTOR SHALL CONDUCT EXPLORATORY EXCAVATION BY POTHOLING. SEE POTHOLING NOTE ON DWG G−04 AND SPEC SECTION 15000.
10. SEE DWG C−04 FOR ROSAMOND HIGH SCHOOL WELL SITE PLAN.

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SCALE: HORIZ 1" = 40'
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SCALE: VERT 1" = 4'

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DRAWN COLLETTO SUBMITTED SANCHEZ
JOB NO 2305090

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REGISTERED PROFESSIONAL ENGINEER RICHARD R. SANCHEZ No. 37148 Exp. 06/30/2026 CIVIL STATE OF CALIFORNIA
03/19/2026

ROSAMOND COMMUNITY SERVICES DISTRICT
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GEI Consultants

ROSAMOND COMMUNITY SERVICES DISTRICT
ARSENIC REGIONAL CONSOLIDATION PROJECT PHASE 1A

ROSAMOND HIGH SCHOOL LATERAL PLAN AND PROFILE STA 18+00 TO STA 22+41.2

DATE
MARCH 2026

DRAWING NUMBER
C−02

SHEET 7 OF 14

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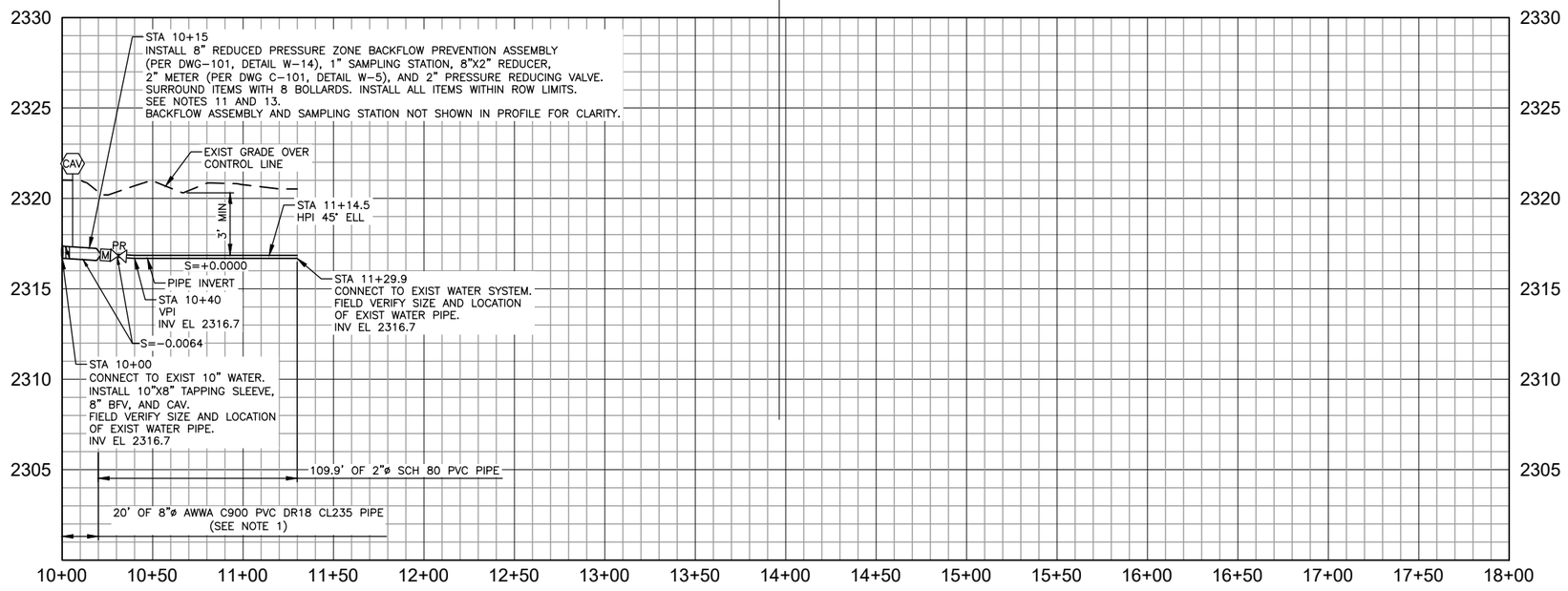

PROFILE
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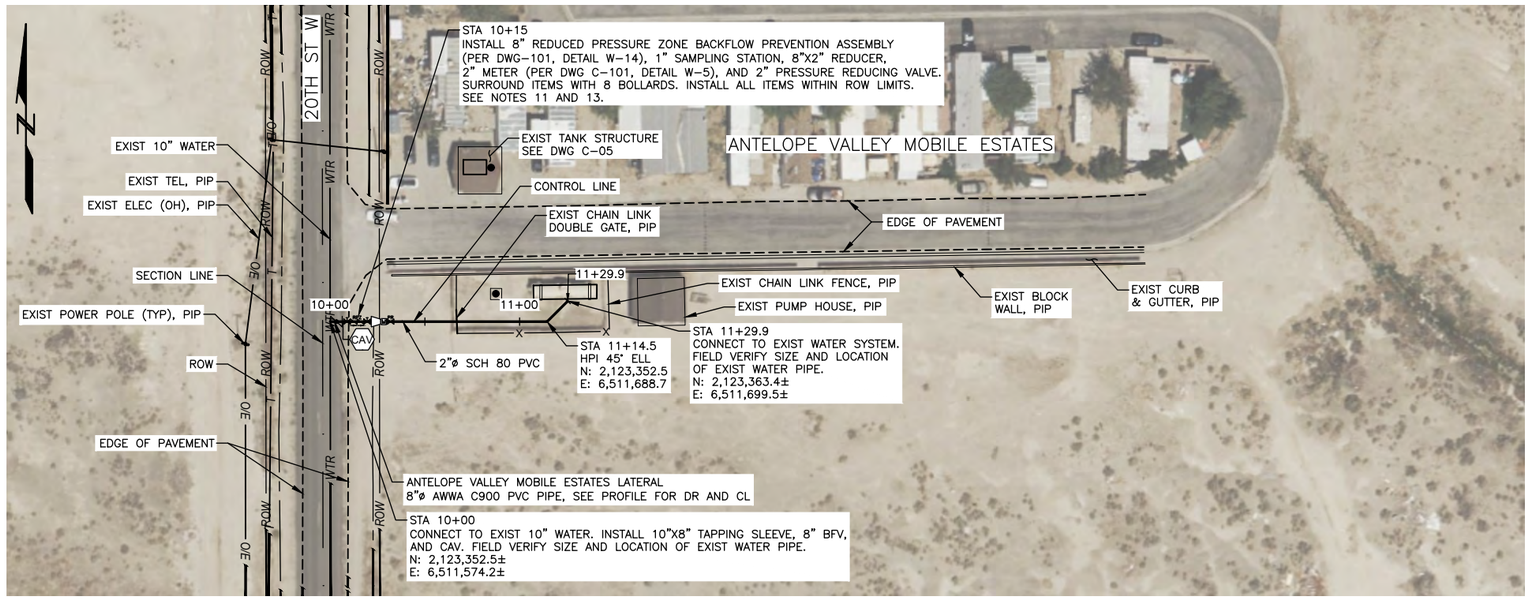

PLAN
SCALE: 1"=40'

NOTES:

1. RESTRAIN ALL JOINTS AT CHANGES IN DIRECTION AND AT ALL FITTINGS. CONTRACTOR SHALL USE RESTRAINT JOINTS PER DWG C-103 AT VERTICAL AND HORIZONTAL CHANGES OF DIRECTION.
2. SEE W-1 STANDARD WATER NOTES AND W-2 WATER PIPE BEDDING AND BACKFILL DETAILS ON DWG C-101. SEE DWG G-04 FOR GENERAL NOTES.
3. WATER MAIN SHALL MAINTAIN AT LEAST 10-FEET HORIZONTAL CLEARANCE FROM EXISTING SEWER AND 4-FEET FROM STORM DRAIN.
4. WATER MAIN SHALL MAINTAIN AT LEAST ONE (1) FOOT VERTICAL CLEARANCE ABOVE AN EXISTING SEWER OR STORM DRAIN AT EACH CROSSING. NO CONNECTION JOINTS SHALL BE MADE IN THE WATER MAIN WITHIN EIGHT (8) HORIZONTAL FEET OF A SEWER OR STORM DRAIN CROSSING.
5. UNLESS SHOWN ON DRAWING, WHEN HORIZONTAL AND/OR VERTICAL CLEARANCES BETWEEN WATER MAIN AND EXISTING SEWER OR STORM DRAIN CANNOT BE ACCOMPLISHED, SPECIAL PERMISSION MUST BE GRANTED FROM RCSD AND CA DIVISION OF DRINKING WATER FOR APPROVAL TO CONSTRUCT WATER MAIN WITHIN RESTRICTED AREA.
6. WATER MAIN SHALL MAINTAIN 25 FEET SEPARATION FROM EXISTING SEPTIC SYSTEMS.
7. DISINFECT PIPE SYSTEM PER SPEC SECTION 15008.
8. PRESSURE TEST PIPE PER SPEC SECTION 15005.
9. INSTALL YELLOW UNDERGROUND DETECTABLE WARNING TAPE 2 FEET OVER PIPELINE.
10. THE CONTRACTOR SHALL CONDUCT EXPLORATORY EXCAVATION BY POTHOLING. SEE POTHOLING NOTE ON DWG G-04 AND SPEC SECTION 15000.
11. LOCATION OF BACKFLOW PREVENTION ASSEMBLIES ARE APPROXIMATE. FINAL LOCATION SHALL BE AS DIRECTED IN THE FIELD BY DISTRICT. LOCATION OF BOLLARDS TO BE AS DIRECTED IN THE FIELD BY DISTRICT.
12. SEE DWG C-05 FOR ANTELOPE VALLEY MOBILE ESTATE WELL SITE PLAN.
13. CONTRACTOR SHALL OBTAIN SAMPLING STATION DETAILS/REQUIREMENTS FROM DISTRICT.
14. LOCATION OF CAV IS APPROXIMATE. FINAL LOCATION SHALL BE AS DIRECTED IN THE FIELD BY DISTRICT.

0 40 80
SCALE: HORIZ 1" = 40'
0 4 8
SCALE: VERT 1" = 4'

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DESIGNED CERNA ALVAREZ CHECKED SANCHEZ
DRAWN COLLETTO SUBMITTED SANCHEZ
JOB NO 2305090

REV	DATE	DESCRIPTION	SUB	APP'D
A	3/19/2026	ISSUED FOR BID	RS	

REGISTERED PROFESSIONAL ENGINEER RICHARD SANCHEZ No. 37148 Exp. 06/30/2026 CIVIL STATE OF CALIFORNIA
03/19/2026

ROSAMOND COMMUNITY SERVICES DISTRICT
3179 35TH STREET WEST
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ROSAMOND COMMUNITY SERVICES DISTRICT
ARSENIC REGIONAL CONSOLIDATION PROJECT PHASE 1A

ANTELOPE VALLEY MOBILE ESTATES LATERAL PLAN AND PROFILE STA 10+00 TO STA 11+29.9

DATE
MARCH 2026

DRAWING NUMBER
C-03

SHEET 8 OF 14

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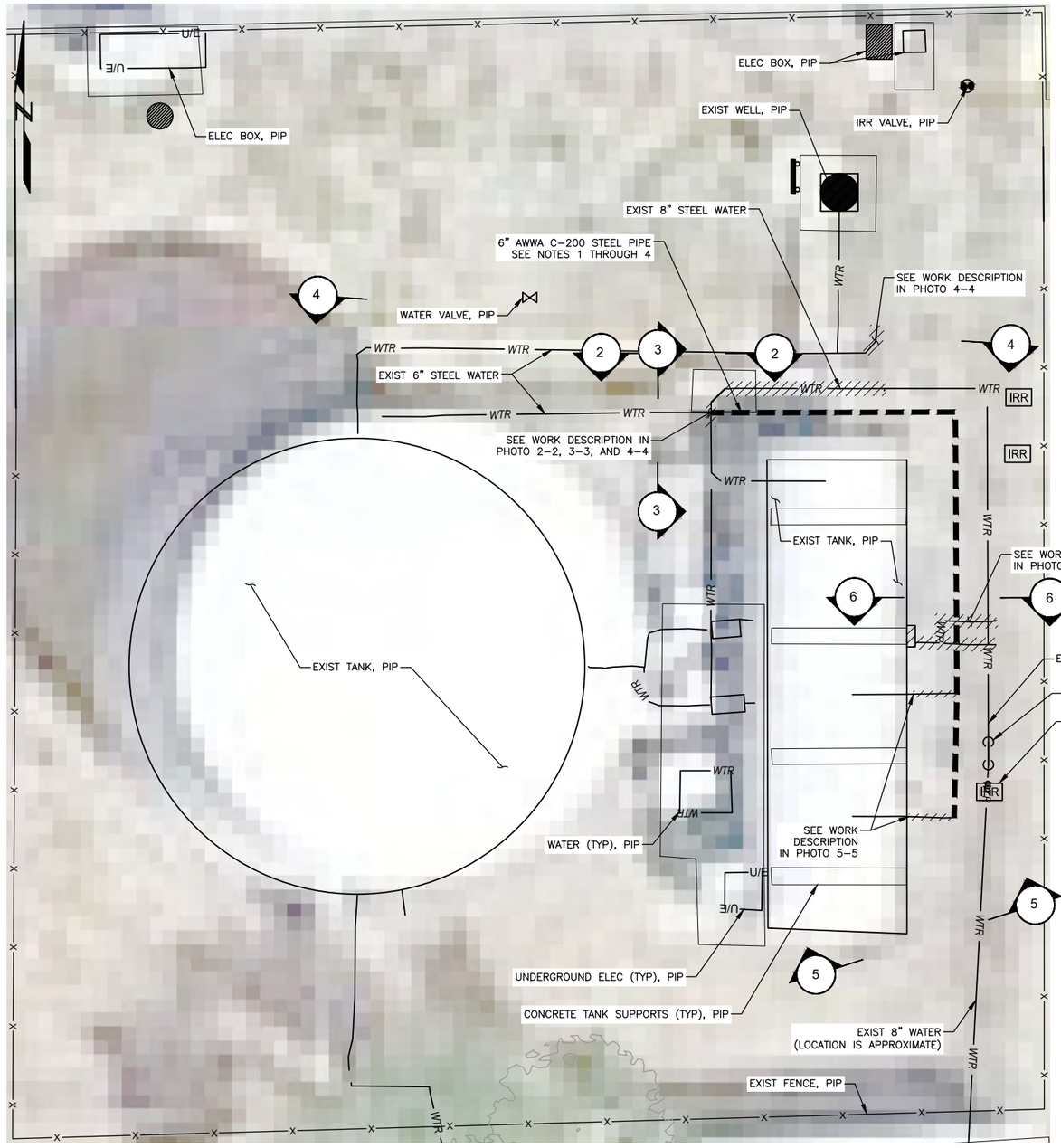

NO. 6 ROSAMOND HIGH SHCHOOL WELL SITE
NTS

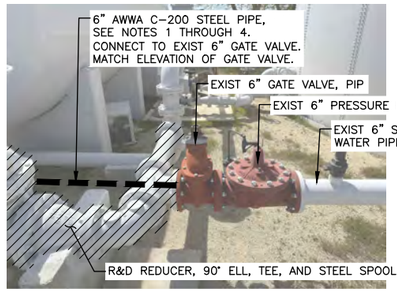

PHOTO 2-2

PHOTO 3-3

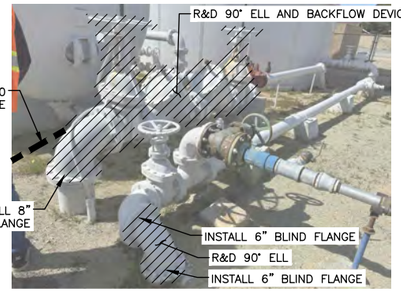

PHOTO 4-4

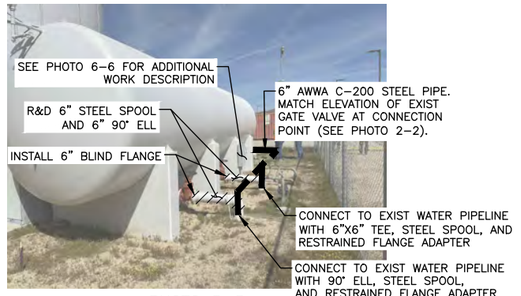

PHOTO 5-5

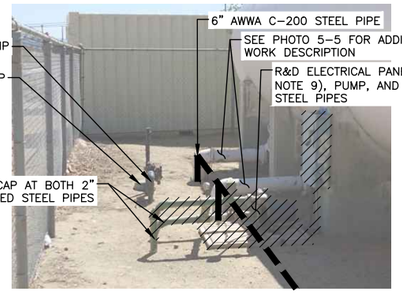

PHOTO 6-6

AWWA C-200 STEEL PIPE MINIMUM QUANTITIES
(SEE NOTES 1 THROUGH 4)

6" AWWA C-200 STEEL PIPE (LENGTH TO BE FIELD VERIFIED)	38 LF
6" 90° ELL	2 EACH
6" BLIND FLANGE	5 EACH
8" BLIND FLANGE	1 EACH
6"X6" TEE	1 EACH
6" RESTRAINED FLANGE ADAPTER	2 EACH
6"ø STEEL SPOOL; 2 FT LONG (LENGTH TO BE FIELD VERIFIED)	2 EACH
PIPE SUPPORT	4 EACH
2" CAP	2 EACH

LEGEND

REMOVE AND DISPOSE

NOTES:

1. THE MINIMUM QUANTITIES REQUIRED FOR COMPLETION OF WORK ARE SHOWN IN TABLE. ACTUAL QUANTITIES MAY VARY.
2. CONTRACTOR TO FIELD VERIFY LENGTH OF 6" AWWA C-200 STEEL PIPE AND 6"ø STEEL SPOOLS NEEDED TO COMPLETE WORK.
3. CONTRACTOR SHALL SUBMIT INSTALLATION PLAN FOR REVIEW AND APPROVAL BY THE ENGINEER. INSTALLATION PLAN SHALL INCLUDE, BUT IS NOT BE LIMITED TO, ALL STEEL PIPE MATERIAL AND APPURTENANCES REQUIRED, LAYOUT OF PIPELINE, AND DESIGN AND LOCATION OF PIPE SUPPORTS. LAYOUT OF PIPELINE SHALL TAKE INTO CONSIDERATION EXISTING UTILITIES THAT ARE TO REMAIN IN PLACE WHICH COULD RESULT IN ADDITIONAL MATERIALS NEEDED.
4. CONTRACTOR SHALL FIELD VERIFY SIZE, MATERIAL, AND LOCATION OF EXISTING WATER UTILITIES. CONTRACTOR SHALL ALSO FIELD VERIFY CONNECTION TYPE TO EXISTING WATER UTILITIES.
5. UNLESS EXPLICITLY STATED IN DRAWING, ALL NEW CONNECTIONS SHALL BE FLXFL TYPE.
6. USE FLANGE ISOLATING KITS ON CONNECTIONS BETWEEN DISSIMILAR METALS.
7. UNLESS EXPLICITLY STATED IN DRAWING, CONTRACTOR SHALL PROTECT IN PLACE ALL EXISTING FACILITIES.
8. PRESSURE TEST PER SPECS 15005.
9. BEFORE REMOVAL OF ELECTRICAL PANEL AND RELATED ELECTRICAL EQUIPMENT, CONTRACTOR SHALL CONFIRM SYSTEM IS DE-ENERGIZED AND SAFE TO WORK ON. CONTRACTOR SHALL REMOVE AND DISPOSE OF ELECTRICAL PANEL AND RELATED ELECTRICAL EQUIPMENT IN A SAFE MANNER.

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GEI Consultants

ROSAMOND COMMUNITY SERVICES DISTRICT
ARSENIC REGIONAL CONSOLIDATION PROJECT PHASE 1A

NO. 6 ROSAMOND HIGH SCHOOL WELL SITE ENLARGED PLAN AND PHOTOS

DATE
MARCH 2026

DRAWING NUMBER
C-04

SHEET 9 OF 14

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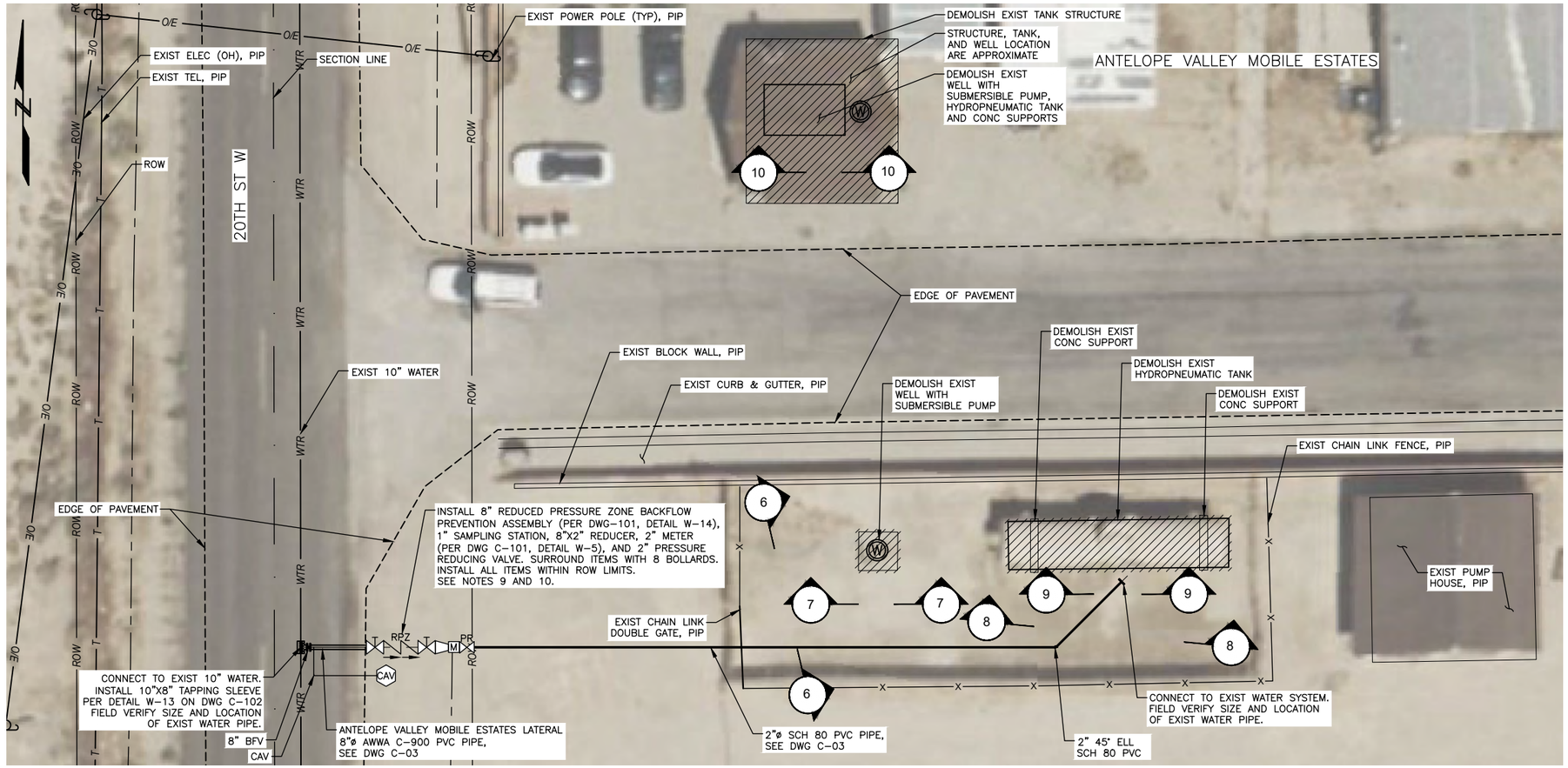

NO. 10 ANTELOPE VALLEY MOBILE ESTATES DEMOLITION PLAN

NTS

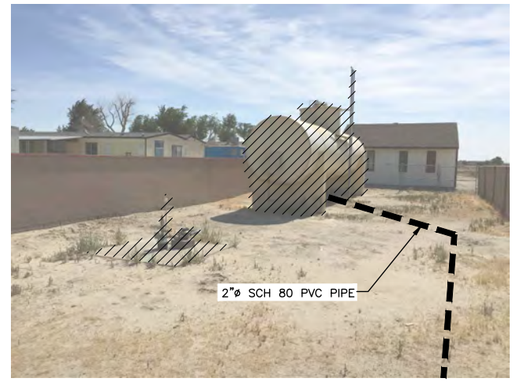

PHOTO 6–6

PHOTO 7–7

LEGEND

REMOVE AND DISPOSE

PHOTO 8–8

PHOTO 9–9

PHOTO 10–10

NOTES:

1. DEMOLISH EXISTING WATER TANKS, HYDROPNEUMATIC TANKS, ALL ASSOCIATED PIPING, CONCRETE PADS, AND CONCRETE TANK SUPPORTS AND FOUNDATION.
2. SEAL WATER WELL PER SPECIFICATIONS OR AS DIRECTED BY THE ENGINEER IN FIELD.
3. DEMOLISH ELECTRICAL.
4. DEMOLISH EXISTING WELL PUMPS AND PUMP SHAFTS.
5. WELL DESTRUCTION SHALL BE IN ACCORDANCE WITH THE CALIFORNIA DEPARTMENT OF WATER RESOURCES BULLETINS 74–81 AND 74–90 AND KERN COUNTY PUBLIC HEALTH SERVICES DEPARTMENT.
6. DISINFECT AND PRESSURE TEST PER SPECS 15005 AND 15008.
7. CONTRACTOR TO FIELD VERIFY LENGTH OF PVC PIPE NEEDED TO MAKE CONNECTION TO EXIST WATER SUPPLY LINE.
8. RESTRAIN ALL JOINTS AT CHANGES IN DIRECTION AND AT ALL FITTINGS. CONTRACTOR SHALL USE RESTRAINT JOINTS PER DWG C–103 AT VERTICAL AND HORIZONTAL CHANGES OF DIRECTION.
9. CONTRACTOR SHALL OBTAIN SAMPLING STATION DETAILS/REQUIREMENTS FROM DISTRICT.
10. LOCATION OF BACKFLOW PREVENTION ASSEMBLY IS APPROXIMATE. FINAL LOCATION SHALL BE AS DIRECTED IN THE FIELD BY DISTRICT. LOCATION OF BOLLARDS TO BE AS DIRECTED IN THE FIELD BY DISTRICT.
11. LOCATION OF CAV IS APPROXIMATE. FINAL LOCATION SHALL BE AS DIRECTED IN THE FIELD BY DISTRICT.

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DESIGNED CERNA ALVAREZ | CHECKED SANCHEZ
DRAWN COLLETTO | SUBMITTED SANCHEZ
JOB NO 2305090

REV	DATE	DESCRIPTION	SUB	APP'D
A	3/19/2026	ISSUED FOR BID	RS	

REGISTERED PROFESSIONAL ENGINEER · RICHARD S. SANCHEZ · No. 37148 · Exp. 06/30/2026 · CIVIL · STATE OF CALIFORNIA
03/19/2026

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ROSAMOND COMMUNITY SERVICES DISTRICT
ARSENIC REGIONAL CONSOLIDATION PROJECT PHASE 1A

NO. 10 ANTELOPE VALLEY MOBILE ESTATES WELL SITE ENLARGED PLAN AND PHOTOS

DATE
MARCH 2026

DRAWING NUMBER
C–05

SHEET 10 OF 14

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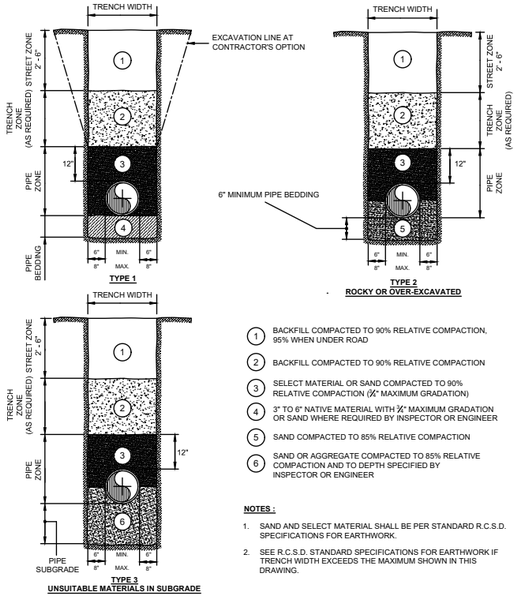
WATER NOTES

1. THE WATER FACILITIES TO BE DEDICATED TO THE R.C.S.D SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS OF THE R.C.S.D.
2. THE R.C.S.D. ENGINEERING DEPARTMENT SHALL BE NOTIFIED AT LEAST TWO (2) WORKING DAYS PRIOR TO START OF CONSTRUCTION. TELEPHONE (661) 256-3411
3. THE CONSTRUCTION PLANS MUST BE APPROVED BY THE R.C.S.D. PRIOR TO THE START OF ANY WATER CONSTRUCTION. TWO (2) SETS OF APPROVED PLANS AND A COMPLETE ELECTRONIC COPY (AUTOCAD DWG FORMAT) OF SAID PLANS SHALL BE FURNISHED TO THE R.C.S.D. PRIOR TO DISTRICT APPROVAL THE PLANS MUST BE SIGNED BY A CALIFORNIA REGISTERED ENGINEER.
4. PRIOR TO ACCEPTANCE OF THE WATER FACILITIES, ALL NECESSARY EASEMENT DOCUMENTS SHALL BE PROPERLY EXECUTED AND RECORDED. THREE (3) COPIES EACH OF THE RECORDED DOCUMENTS SHALL BE FURNISHED TO THE R.C.S.D.
5. WATER MAINS SHALL BE INSTALLED FIVE (5) FEET FROM THE CURB FACE UNLESS OTHERWISE INDICATED IN THE PLANS. ALL WATER SERVICES SHALL BE METERED.
6. WORK IN THE STATE OF CALIFORNIA OR THE COUNTY OF KERN RIGHTS-OF-WAY SHALL BE DONE IN ACCORDANCE WITH THE APPROPRIATE ENCROACHMENT PERMITS.
7. THE WATER SYSTEM, INCLUDING LATERALS, SHALL BE HYDROSTATIC TESTED, AFTER ALL UNDERGROUND UTILITIES ARE CONSTRUCTED, AND PRIOR TO PLACING STREET PAVEMENT. ALL WORK SHALL BE LEFT OPEN AND UNCOVERED UNTIL INSPECTED BY R.C.S.D.
8. ALL VALVES SHALL BE FLANGE CONNECTED TO FITTINGS.
9. ALL WATER LINES SHALL HAVE A MINIMUM COVER OF 36 INCHES.
10. ONE (1) COMPLETE SET OF DRAWINGS (CHRONOFLEXES OR MYLAR), AND ONE (1) COMPLETE ELECTRONIC SET (AUTOCAD DWG FORMAT) OF DRAWINGS SHALL BE FURNISHED TO THE DISTRICT ON COMPLETION OF CONSTRUCTION.
11. TRENCHING MATERIAL TO BE COMPACTED TO 90%. TRENCHING MATERIAL TO BE COMPACTED TO 95% UNDER SURFACE GRADE.
12. WATER SERVICE WILL NOT BE TURNED ON UNTIL ALL WATER LINES HAVE BEEN INSPECTED BY AN R.C.S.D REPRESENTATIVE, REGARDLESS OF KERN COUNTY FINAL APPROVALS.
13. ALL FIRE HYDRANTS SHALL BE WET BARREL TYPE.

STANDARD WATER NOTES (MODIFIED) **W-1**



TYPE 1

TYPE 2
ROCKY OR OVER-EXCAVATED

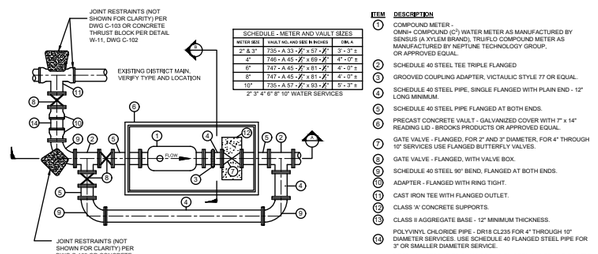
TYPE 3
UNSUITABLE MATERIALS IN SUBGRADE

1. BACKFILL COMPACTED TO 90% RELATIVE COMPACTION, 95% WHEN UNDER ROAD
2. BACKFILL COMPACTED TO 90% RELATIVE COMPACTION
3. SELECT MATERIAL OR SAND COMPACTED TO 90% RELATIVE COMPACTION (¾" MAXIMUM GRADATION)
4. 3" TO 6" NATIVE MATERIAL WITH ¾" MAXIMUM GRADATION OR SAND WHERE REQUIRED BY INSPECTOR OR ENGINEER
5. SAND COMPACTED TO 85% RELATIVE COMPACTION
6. SAND OR AGGREGATE COMPACTED TO 85% RELATIVE COMPACTION AND TO DEPTH SPECIFIED BY INSPECTOR OR ENGINEER

NOTES :

1. SAND AND SELECT MATERIAL SHALL BE PER STANDARD R.C.S.D. SPECIFICATIONS FOR EARTHWORK.
2. SEE R.C.S.D. STANDARD SPECIFICATIONS FOR EARTHWORK IF TRENCH WIDTH EXCEEDS THE MAXIMUM SHOWN IN THIS DRAWING.

WATER PIPE BEDDING AND BACKFILL DETAILS **W-2**
NTS

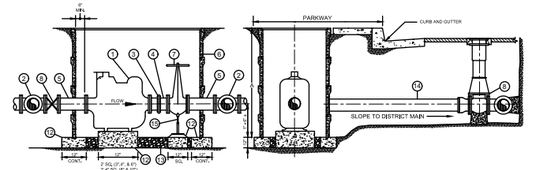


PLAN

SCHEDULE - METER AND VAULT SIZES		
METER SIZE	VAULT NO. AND SIZE IN INCHES	DIM. A
2" & 3"	735 - A 33 - 𝒳" x 57 - 𝒳"	3' - 3" ±
4"	746 - A 45 - 𝒳" x 69 - 𝒳"	4' - 0" ±
6"	747 - A 45 - 𝒳" x 81 - 𝒳"	4' - 0" ±
8"	747 - A 45 - 𝒳" x 81 - 𝒳"	4' - 0" ±
10"	735 - A 57 - 𝒳" x 93 - 𝒳"	5' - 3" ±

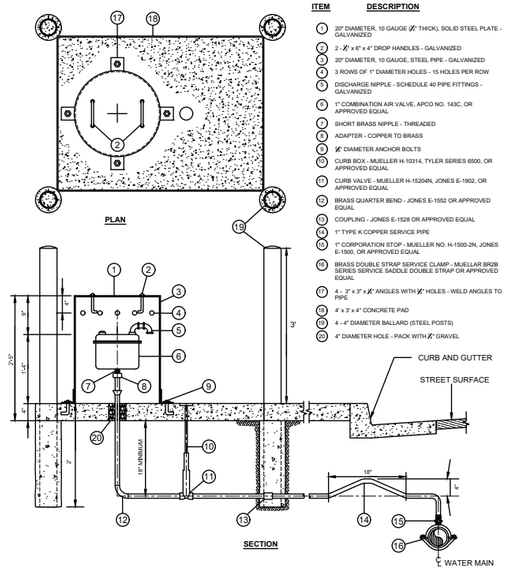
2" 3" 4" 6" 8" 10" WATER SERVICES

ITEM	DESCRIPTION
1	COMPOUND METER - OMNI+ COMPOUND (C²) WATER METER AS MANUFACTURED BY SENSUS (A XYLEM BRAND), TRUFLO COMPOUND METER AS MANUFACTURED BY NEPTUNE TECHNOLOGY GROUP, OR APPROVED EQUAL.
2	SCHEDULE 40 STEEL TEE TRIPLE FLANGED
3	GROOVED COUPLING ADAPTER, VICTAULIC STYLE 77 OR EQUAL.
4	SCHEDULE 40 STEEL PIPE, SINGLE FLANGED WITH PLAIN END - 12" LONG MINIMUM.
5	SCHEDULE 40 STEEL PIPE FLANGED AT BOTH ENDS.
6	PRECAST CONCRETE VAULT - GALVANIZED COVER WITH 7" x 14" READING LID - BROOKS PRODUCTS OR APPROVED EQUAL.
7	GATE VALVE - FLANGED, FOR 2" AND 3" DIAMETER, FOR 4" THROUGH 10" SERVICES USE FLANGED BUTTERFLY VALVES.
8	GATE VALVE - FLANGED, WITH VALVE BOX.
9	SCHEDULE 40 STEEL 90° BEND, FLANGED AT BOTH ENDS.
10	ADAPTER - FLANGED WITH RING TIGHT.
11	CAST IRON TEE WITH FLANGED OUTLET.
12	CLASS 'A' CONCRETE SUPPORTS.
13	CLASS II AGGREGATE BASE - 12" MINIMUM THICKNESS.
14	POLYVINYL CHLORIDE PIPE - DR18 CL235 FOR 4" THROUGH 10" DIAMETER SERVICES. USE SCHEDULE 40 FLANGED STEEL PIPE FOR 3" OR SMALLER DIAMETER SERVICE. NOTE: ALL STEEL PIPE SHALL BE FUSION EPOXY LINED AND COATED - 100% SOLID THERMOSETTING, APPLIED BY FLUIDIZED BED METHOD.
15	ADJUSTABLE PIPE SUPPORT GRINNEL OR APPROVED EQUAL.



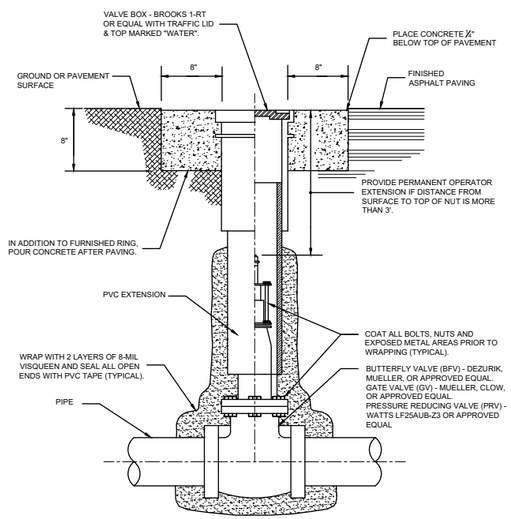
SECTION A SECTION B

STANDARD WATER METER **W-5**
NTS



NOTE : WHERE THERE IS NO CURB AND GUTTER, INSTALL 4 - 4" DIAMETER BALLARD (STEEL POST) AT EACH CORNER OF PAD. POSTS SHALL BE EMBEDDED IN 2' OF CONCRETE AND SHALL EXTEND 3' ABOVE GROUND. SWEDGED WITH PORTLAND CEMENT CONCRETE LEAVING A ROUNDED "DOME" ON PIPE TOP. PAINT ALL BALLARDS WITH 2 (TWO) COATS OF CATERPILLAR YELLOW.

COMBINATION AIR VALVE ASSEMBLY (MODIFIED) **W-8**
NTS

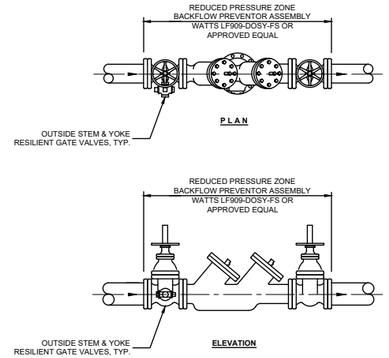


SECTION - ELEVATION

NOTES:

1. FOR UTILITY BOX ASSEMBLIES LOCATED WITHIN CITY OF ROSAMOND ROW, INSTALL BOX PER THIS DETAIL. FOR UTILITY BOX ASSEMBLIES LOCATED WITHIN KERN COUNTY ROW, INSTALL PER DETAIL R-89, DWG C-104.
2. PROVIDE ADJUSTABLE VALVE BOXES FOR ALL VALVES 4" OR LARGER.

VALVE BOX ASSEMBLY **W-9**
NTS

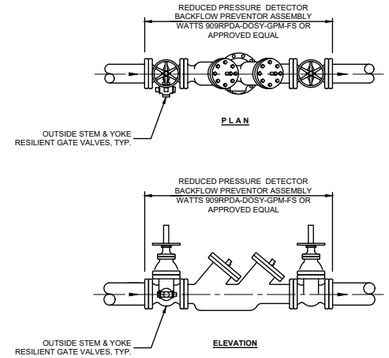


REDUCED PRESSURE ZONE BACKFLOW PREVENTION ASSEMBLY
NTS

NOTES:

1. BACKFLOW PREVENTION ASSEMBLY SHALL BE PER RCSD STANDARDS AND SPECIFICATION SECTION 15112 INCLUDING, BUT NOT LIMITED TO, FITTINGS, PIPING, PROTECTIVE ENCLOSURE WITH LOCK, REINFORCED CONCRETE PAD, PIPE SUPPORTS, ALL NECESSARY APPURTENANCES, AND OTHER INCIDENTALS TO COMPLETE THE WORK.

W-14



REDUCED PRESSURE DETECTOR BACKFLOW PREVENTION ASSEMBLY
NTS

NOTES:

1. BACKFLOW PREVENTION ASSEMBLY SHALL BE PER RCSD STANDARDS AND SPECIFICATION SECTION 15112 INCLUDING, BUT NOT LIMITED TO, FITTINGS, PIPING, PROTECTIVE ENCLOSURE WITH LOCK, REINFORCED CONCRETE PAD, PIPE SUPPORTS, ALL NECESSARY APPURTENANCES, AND OTHER INCIDENTALS TO COMPLETE THE WORK.

W-14A

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DESIGNED CERNA ALVAREZ CHECKED SANCHEZ
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03/19/2026

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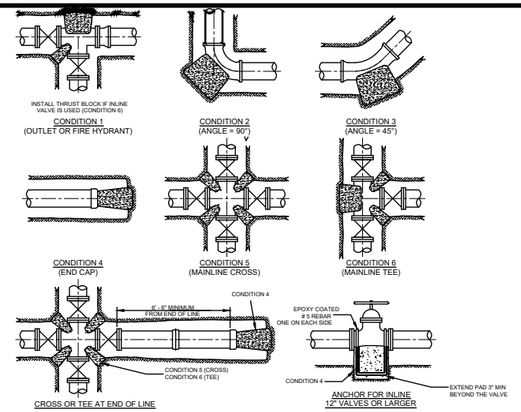
ROSAMOND COMMUNITY SERVICES DISTRICT
ARSENIC REGIONAL CONSOLIDATION PROJECT PHASE 1A

STANDARD DETAILS 1

DATE
MARCH 2026

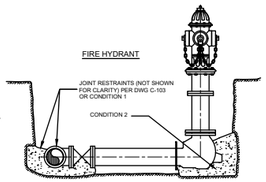
DRAWING NUMBER
C-101

SHEET 11 OF 14



THRUST BLOCK BEARING AREA IN SQ. FT						
PIPE SIZE	CONDITION					
	1	2	3	4	5	6
4"	3.5	6.0	3.5	3.5	3.5	3.5
6"	7.5	12.0	6.5	7.5	7.5	7.5
8"	12.5	20.5	11.5	12.5	12.5	12.5
10"	18.5	31.0	17.0	18.5	18.5	18.5
12"	26.0	44.0	24.0	26.0	26.0	26.0

BASED ON ESTIMATED SOIL BEARING CAPACITY OF 1000 PSF AND 150 PSI HYDROSTATIC TEST PRESSURE

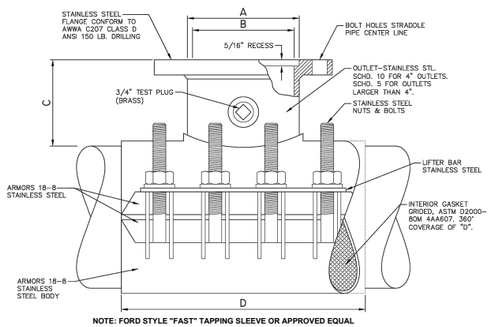


NOTES :

1. SIZE THRUST BLOCK ACCORDING TO THE LARGEST OUTLET DIAMETER ON TEE OR CROSS.
2. ALL CONCRETE THRUST BLOCK BEARING FACES SHALL BE PLACED AGAINST UNDISTURBED SOIL OR APPROVED COMPACTED MATERIAL.
3. SEE SPECIFICATIONS FOR CONCRETE REQUIREMENTS.
4. SEE DETAIL W-17 FOR REBAR HOOPS CAST INTO THRUST BLOCK.

TYPICAL THRUST BLOCK DETAILS **W-11**
NTS

NOMINAL PIPE SIZE	FLANGE SIZE	A	B	C	D	BOLT SIZE	NO. OF BOLTS	DESIGN STYLE
3"	3"	4-1/32"	3-1/4"	4-15/16"	15"	5/8"	8	2 pc.
4" through 12"	3"	4-1/32"	3-1/4"	4-15/16"	15"	5/8"	8	2 pc.
	4"	5-1/32"	4-1/4"	4-15/16"	15"	5/8"	8	2 pc.
	6"	7-1/32"	6-3/8"	5-1/4"	15"	5/8"	8	2 pc.
	8"	9-1/32"	8-3/8"	5-3/8"	20"	5/8"	12	2 pc.
	10"	11-1/32"	10-3/16"	5-7/8"	20"	3/4"	12	2 pc.
	12"	13-1/32"	12-7/16"	6"	24"	3/4"	14	2 pc.
14"	3"	4-1/32"	3-1/4"	4-15/16"	16"	3/4"	10	2 pc.
	4"	5-1/32"	4-1/4"	4-15/16"	16"	3/4"	10	2 pc.
	6"	7-1/32"	6-3/8"	5-1/4"	16"	3/4"	10	2 pc.
	8"	9-1/32"	8-3/8"	5-3/8"	20"	3/4"	12	2 pc.
	10"	11-1/32"	10-3/16"	5-7/8"	20"	3/4"	12	2 pc.
	12"	13-1/32"	12-7/16"	6"	24"	3/4"	14	2 pc.
16"-18"	3"	4-1/32"	3-1/4"	4-15/16"	16"	5/8"	15	3 pc.
	4"	5-1/32"	4-1/4"	4-15/16"	16"	5/8"	15	3 pc.
	6"	7-1/32"	6-3/8"	5-1/4"	16"	5/8"	15	3 pc.
	8"	9-1/32"	8-3/8"	5-3/8"	20"	5/8"	18	3 pc.
	10"	11-1/32"	10-3/16"	6-7/8"	20"	3/4"	18	3 pc.
	12"	13-1/32"	12-7/16"	6"	24"	3/4"	21	3 pc.
20"-24"	3"	4-1/32"	3-1/4"	4-15/16"	16"	3/4"	15	3 pc.
	4"	5-1/32"	4-1/4"	4-15/16"	16"	3/4"	15	3 pc.
	6"	7-1/32"	6-3/8"	5-1/4"	16"	3/4"	15	3 pc.
	8"	9-1/32"	8-3/8"	5-3/8"	20"	3/4"	18	3 pc.
	10"	11-1/32"	10-3/16"	5-7/8"	20"	3/4"	18	3 pc.
	12"	13-1/32"	12-7/16"	6"	24"	3/4"	21	3 pc.



NOTE: FORD STYLE "FAST" TAPPING SLEEVE OR APPROVED EQUAL

TAPPING SLEEVE **W-13**
NTS

INSTALLATION OF NEW WATER MAIN IN PROXIMITY TO SEWER

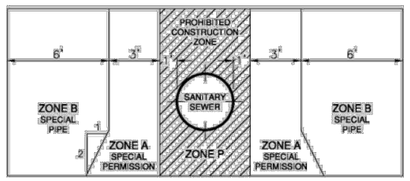


FIGURE 1 - PARALLEL CONSTRUCTION

1. WATER MAIN SHALL MAINTAIN AT LEAST 10 - FEET HORIZONTAL SEPARATION DISTANCE FROM EXISTING SEWER AND 4 - FEET FROM STORM DRAINS.
2. WATER MAIN SHALL MAINTAIN AT LEAST ONE (1) - FOOT VERTICAL CLEAR SEPARATION DISTANCE ABOVE A SEWER LINE OR STORM DRAIN AT EACH CROSSING. NO CONNECTION JOINTS SHALL BE MADE IN THE WATER MAIN WITHIN EIGHT (8) HORIZONTAL FEET OF THE SEWER OR STORM DRAIN.
3. UNLESS SHOWN ON DRAWING, WHEN HORIZONTAL AND/OR VERTICAL CLEARANCES BETWEEN WATER MAIN AND EXISTING SEWER OR STORM DRAIN CANNOT BE ACCOMPLISHED, SPECIAL PERMISSION MUST BE GRANTED FROM RCSD AND CA DIVISION OF DRINKING WATER FOR APPROVAL TO CONSTRUCT WATER MAIN WITHIN RESTRICTED AREA (ZONE A AND ZONE B).
4. WHEN INSTALLING WATER MAIN WITH LESS THAN 10 FEET CLEAR HORIZONTAL SEPARATION DISTANCE FROM A PARALLEL SEWER LINE, PIPE JOINT RESTRAINTS SHALL BE INSTALLED AND AWWA C900 PVC DR14 CL305 PIPE (SPECIAL PIPE) SHALL BE USED.

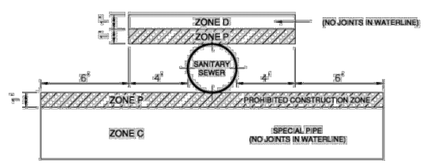
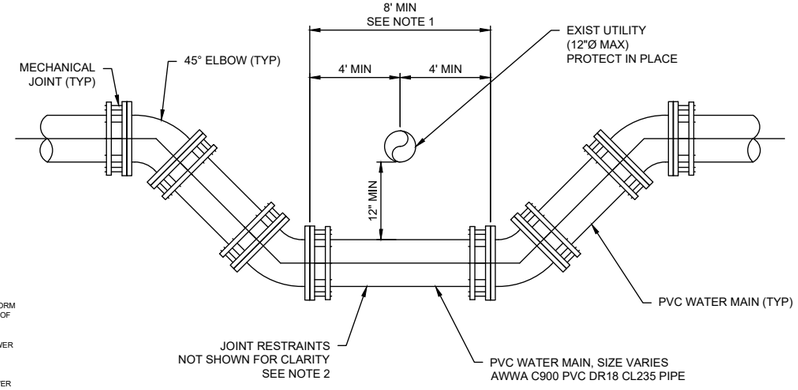


FIGURE 2 - CROSSINGS

WATER MAIN AND SANITARY SEWER SEPARATION **W-15**
NTS

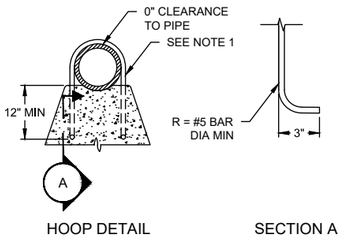


FOR EXISTING GAS, TEL, COMM, ELEC, AND WATER CROSSING (12"Ø OR LESS)

NOTES:

1. CONTRACTOR SHALL INSTALL ALL PIPE JOINTS A MINIMUM OF 4 FEET AWAY FROM THE CENTERLINE OF THE UTILITY CROSSED.
2. CONTRACTOR SHALL RESTRAIN ALL JOINTS AT CHANGES IN DIRECTION AND AT ALL FITTINGS. CONTRACTOR SHALL USE RESTRAINT JOINTS PER DWG C-103 AT VERTICAL AND HORIZONTAL CHANGES OF DIRECTIONS.

EXISTING UTILITY CROSSING **W-16**
NTS



HOOP DETAIL SECTION A

NOTES:

1. SEE DETAIL W-11 FOR MINIMUM REBAR REINFORCEMENT.

REBAR HOOP **W-17**
NTS

FOR BIDDING PURPOSES ONLY
NOT TO BE USED FOR CONSTRUCTION

DESIGNED CERNA ALVAREZ CHECKED SANCHEZ
DRAWN COLLETTO SUBMITTED SANCHEZ
JOB NO 2305090

REV	DATE	DESCRIPTION	SUB	APP'D
A	3/19/2026	ISSUED FOR BID	RS	

REGISTERED PROFESSIONAL ENGINEER RICHARD SANCHEZ No. 37148 Exp. 06/30/2026 CIVIL STATE OF CALIFORNIA
03/19/2026

ROSAMOND COMMUNITY SERVICES DISTRICT
3179 35TH STREET WEST
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GEI Consultants

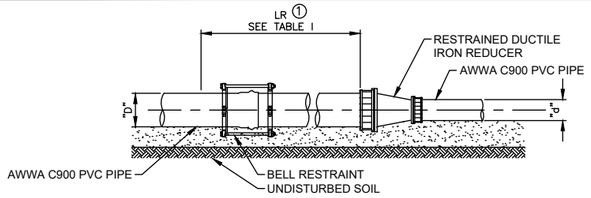
ROSAMOND COMMUNITY SERVICES DISTRICT
ARSENIC REGIONAL CONSOLIDATION PROJECT PHASE 1A

STANDARD DETAILS 2

DATE
MARCH 2026

DRAWING NUMBER
C-102

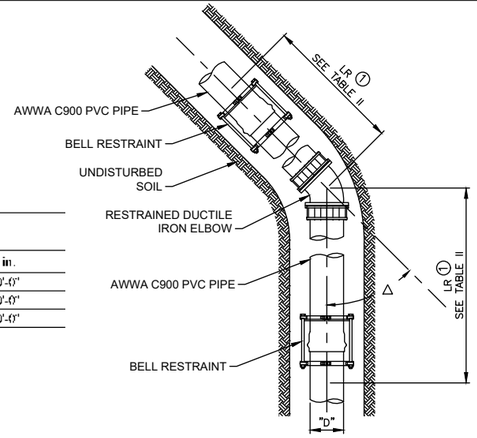
SHEET 12 OF 14



1 - DETAIL - REDUCERS NTS

TABLE I
MINIMUM RESTRAINED LENGTHS (LR)
REDUCERS

"D"	"d"		
	10 in.	8 in	6 in.
12 in.	40'-0"	70'-0"	90'-0"
10 in.	N/A	40'-0"	70'-0"
8 in.	N/A	N/A	40'-0"



2 - DETAIL - HORIZONTAL BENDS NTS

TABLE II
MINIMUM RESTRAINED LENGTHS (LR)
HORIZONTAL BENDS

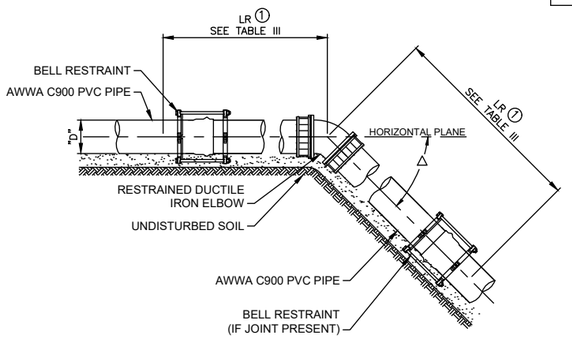
"D"	Δ 90°	Δ 45°	Δ 22.5°	Δ 11.25°
12 in.	40'-0"	20'-0"	10'-0"	10'-0"
10 in.	30'-0"	20'-0"	10'-0"	10'-0"
8 in.	30'-0"	20'-0"	10'-0"	10'-0"
6 in.	20'-0"	10'-0"	10'-0"	10'-0"

NOTES:

1. PROVIDE POLYETHYLENE SHEET (8 MIL MIN) BETWEEN FITTINGS AND/OR VALVES, REBAR, AND CONCRETE.
2. LR LENGTHS BASED ON A SOIL CLASSIFICATION OF SILTY SAND WITH AN ASSUMED INTERNAL FRICTION ANGLE OF 30 DEGREES AND 150 PSI HYDROSTATIC TEST PRESSURE.

CONSTRUCTION NOTES:

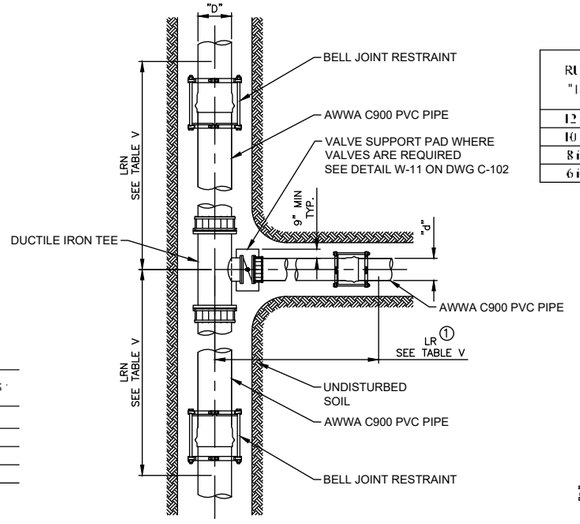
① ALL JOINTS WITHIN THE LR LENGTH MUST BE RESTRAINED. IF THE DISTANCE BETWEEN TWO FITTINGS IS LESS THAN OR EQUAL TO THE LR LENGTH, RESTRAIN ALL JOINTS BETWEEN THOSE FITTINGS.



3 - DETAIL - UPPER VERTICAL BENDS NTS

TABLE III
MINIMUM RESTRAINED LENGTHS (LR)
UPPER VERTICAL BENDS

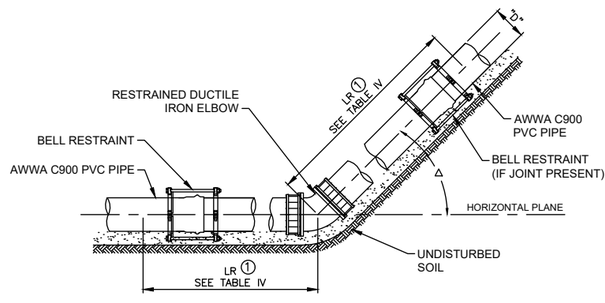
"D"	Δ 90°	Δ 45°	Δ 22.5°	Δ 11.25°
12 in.	120'-0"	50'-0"	30'-0"	20'-0"
10 in.	110'-0"	50'-0"	30'-0"	20'-0"
8 in.	90'-0"	40'-0"	20'-0"	10'-0"
6 in.	70'-0"	30'-0"	20'-0"	10'-0"



5 - DETAIL - TEES NTS

TABLE V
MINIMUM RESTRAINED LENGTHS (LR)
TEES (LRN = 10 FEET)

RUN "D"	"d"			
	12	10	8	6
12 in.	50'-0"	20'-0"	10'-0"	10'-0"
10 in.	60'-0"	30'-0"	10'-0"	10'-0"
8 in.	80'-0"	50'-0"	20'-0"	10'-0"
6 in.	90'-0"	60'-0"	30'-0"	10'-0"



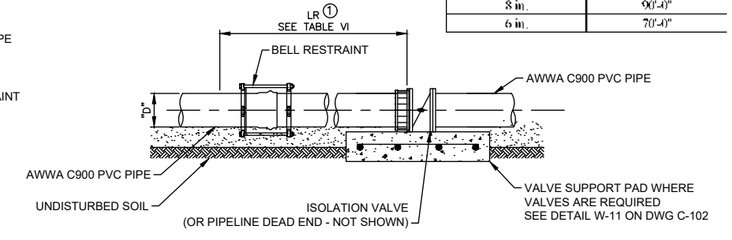
4 - DETAIL - LOWER VERTICAL BENDS NTS

TABLE IV
MINIMUM RESTRAINED LENGTHS (LR)
LOWER VERTICAL BENDS

"D"	Δ 90°	Δ 45°	Δ 22.5°	Δ 11.25°
12 in.	40'-0"	20'-0"	10'-0"	10'-0"
10 in.	30'-0"	20'-0"	10'-0"	10'-0"
8 in.	30'-0"	20'-0"	10'-0"	10'-0"
6 in.	20'-0"	10'-0"	10'-0"	10'-0"

TABLE VI
MINIMUM RESTRAINED LENGTHS (LR)
DEAD END & ISOLATION VALVES

"D"	DEAD END & ISOLATION VALVE
12 in.	120'-0"
10 in.	110'-0"
8 in.	90'-0"
6 in.	70'-0"



6 - DETAIL - DEAD END AND ISOLATION VALVE NTS

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DESIGNED CERNA ALVAREZ CHECKED SANCHEZ
DRAWN COLLETTO SUBMITTED SANCHEZ
JOB NO 2305090

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REGISTERED PROFESSIONAL ENGINEER
RICHARD SANCHEZ
No. 37148
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CIVIL
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03/19/2026

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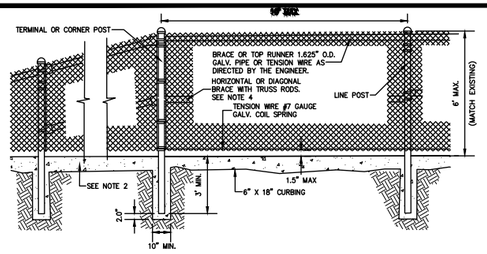
ROSAMOND COMMUNITY SERVICES DISTRICT
ARSENIC REGIONAL CONSOLIDATION PROJECT PHASE 1A

STANDARD DETAILS 3

DATE
MARCH 2026

DRAWING NUMBER
C-103

SHEET 13 OF 14



TYPICAL CHAIN LINK FENCE DETAIL

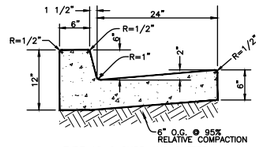
FENCING SPECIFICATIONS:

1. FENCING FABRIC SHALL BE 9 GAUGE, 2" MESH, AFTER WEAVING, KNUCKLED TOP AND BOTTOM. FENCING FABRIC SHALL BE GALVANIZED.
2. CORNER POSTS SHALL BE 2-7/8" O.D. GALVANIZED PIPE.
3. LINE POST SHALL BE 2-3/8" O.D. GALVANIZED PIPE.
4. PRIVACY SLATS SHALL BE 2-3/16" X 1/4".

NOTES:

1. INSTALLATION OF FENCING AND GATES SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF "STANDARD SPECIFICATION, STATE OF CALIFORNIA, DEPARTMENT OF TRANSPORTATION," APPROVED CURRENT EDITION.
2. CONCRETE CURBING SHALL BE CONSTRUCTED UNDER ALL FENCES. CURBING SHALL BE 6"X18" AND CONCRETE SHALL CONFORM TO THE REQUIREMENTS OF THE CALTRANS STANDARD SPECIFICATIONS FOR MINOR CONCRETE (SECTION90-2). CONCRETE SHALL CONTAIN AT LEAST 505 POUNDS OF CEMENTITIOUS MATERIAL PER CUBIC YARD. CONCRETE SHALL CONTAIN NO ADDITIVES UNLESS PRIOR APPROVAL IS OBTAINED FROM THE ENGINEER.
3. CORNER POST SHALL BE INSTALLED AT ALL ANGLES IN FENCE LINE IN EXCESS OF 10°.
4. END, CORNER, AND GATE POSTS SHALL BE BRACED TO THE NEAREST LINE POST WITH GALV. DIAGONAL OR HORIZONTAL BRACES USED AS COMPRESSION MEMBERS AND GALV. 0.375" STEEL TRUSS RODS WITH TURNBUCKLES OR TRUSS TIGHTENER USED AS TENSION MEMBERS.
5. FABRIC SHALL BE FASTENED TO GATE POST, TERMINAL POST, OR CORNER POST WITH 3" X 3/4" STRETCHER BAR BONDS AT 8" ON CENTER.
6. FABRIC SHALL BE FASTENED TO LINE POST, LAST RUNNER, AND BOTTOM TENSION WIRES WITH FABRIC BONDS SPACED APPROX. 14" APART.
7. FABRIC SHALL CONFORM TO ASTM A-392, CLASS 1.
8. SUBGRADE PREPARATION SHALL BE CONSTRUCTED TRUE TO GRADE AND CROSS SECTION WITH COMPACTION OF 85% TO A DEPTH OF 0.5".
9. WHEN REDWOOD SUBURBAN SCREEN, OR EQUIVALENT IS REQUIRED, IT SHALL BE CONSTRUCTED SO THAT THE SLATS ARE LOCKED INTO POSITION AND CAN ONLY BE REMOVED WITH TOOLS.
10. FENCE FABRIC IS TO BE TACK WELDED TO POSTS IN THREE PLACES (TOP, CENTER, AND BOTTOM). FENCE HARDWIRE IS TO BE TACK WELDED AND GROUND SMOOTH. ALL EXPOSED METAL PARTS ARE TO BE GALV. PRIOR TO INSTALLATION.
11. COMPLETELY COAT THE EXPOSED FACES OF THE CONCRETE WITH CURING COMPOUND IN ACCORDANCE WITH CALTRANS STANDARD SPECIFICATION, SECTION 90-1.03B(3).

CHAIN LINK FENCE D-10
NTS

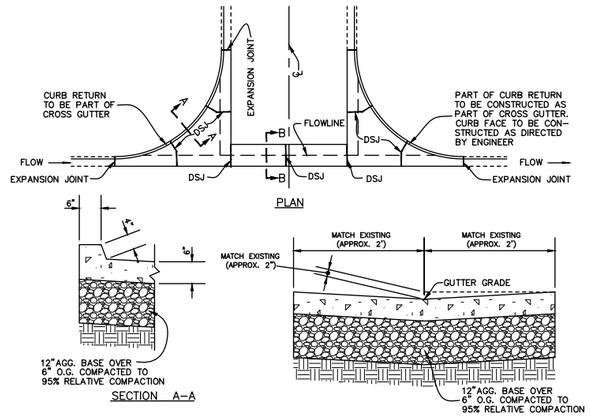


TYPE A2-6 CURB AND GUTTER

NOTES:

1. CONCRETE SHALL CONFORM TO THE REQUIREMENTS OF THE CALTRANS STANDARD SPECIFICATIONS FOR MINOR CONCRETE (SECTION 90-2). CONCRETE SHALL CONTAIN AT LEAST 505 POUNDS OF CEMENTITIOUS MATERIAL PER CUBIC YARD. CONCRETE SHALL CONTAIN NO ADDITIVES UNLESS PRIOR APPROVAL IS OBTAINED FROM THE ENGINEER.
2. NO COLORING SHALL BE ADDED.
3. COMPLETELY COAT THE EXPOSED FACES OF THE CONCRETE WITH CURING COMPOUND IN ACCORDANCE WITH CALTRANS STANDARD SPECIFICATIONS, SECTION 90-1.03B(3).

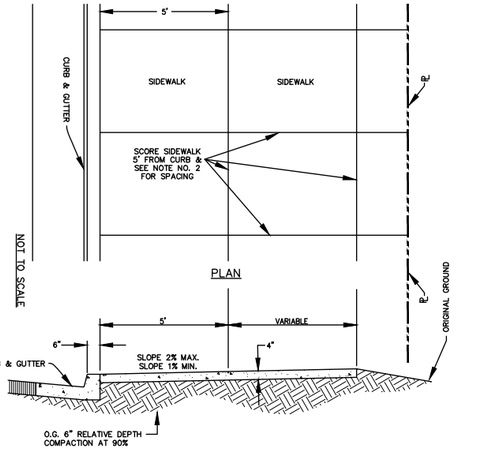
STANDARD CURBS R-52
NTS



NOTES:

1. EXPANSION JOINTS SHALL BE EITHER (A) 1/4" PREMOLDED EXPANSION FILLER PER SEC. 51-2 OF THE STANDARD SPECIFICATIONS, OR (B) 2" DEEP SCORED JOINT (WEAKENED PLANE, EXTRUSION MACHINE ONLY). PLACE EXPANSION JOINT BETWEEN EXISTING CONCRETE AND NEW CONCRETE.
2. DEEP SCORED JOINTS (DSJ) TO BE CONSTRUCTED AT LOCATIONS APPROVED BY THE ENGINEER.
3. CONCRETE SHALL CONFORM TO THE REQUIREMENTS OF THE CALTRANS STANDARD SPECIFICATIONS FOR MINOR CONCRETE (SECTION 90-2). CONCRETE SHALL CONTAIN AT LEAST 505 POUNDS OF CEMENTITIOUS MATERIAL PER CUBIC YARD. CONCRETE SHALL CONTAIN NO ADDITIVES UNLESS PRIOR APPROVAL IS OBTAINED FROM THE ENGINEER.
4. COMPLETELY COAT THE EXPOSED FACES OF THE CONCRETE WITH CURING COMPOUND IN ACCORDANCE WITH CALTRANS STANDARD SPECIFICATIONS, SECTION 90-1.03B(3).

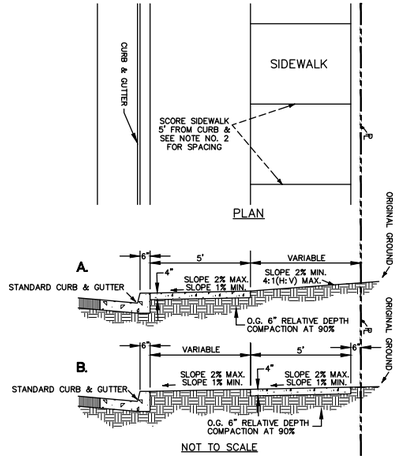
STANDARD CONCRETE CROSS DRAIN (TYPICAL) R-62
NTS



NOTES:

1. SLOPE IS PLUS 2% MAX FROM TOP OF CURB TO PROPERTY LINE.
2. SCORE SIDEWALK IN RECTANGLES OF NOT LESS THAN 12 SQUARE FEET NOR MORE THAN 20 SQUARE FEET.
3. CONCRETE SHALL CONFORM TO THE REQUIREMENTS OF THE CALTRANS STANDARD SPECIFICATIONS FOR MINOR CONCRETE (SECTION 90-2). CONCRETE SHALL CONTAIN AT LEAST 505 POUNDS OF CEMENTITIOUS MATERIAL PER CUBIC YARD. CONCRETE SHALL CONTAIN NO ADDITIVES UNLESS PRIOR APPROVAL IS OBTAINED FROM THE ENGINEER.
4. WEAKENED PLAN JOINTS SHALL BE CONSTRUCTED AT A MAXIMUM OF 8 FOOT INTERVALS OR AS DIRECTED BY THE ENGINEER.
5. EXPANSION JOINTS SHALL BE PLACED AT SIDES OF STRUCTURES, END OF CURB RETURNS, AND IN LINE WITH EXPANSION JOINTS IN EXISTING CURB. MAXIMUM SPACING - 60FT.
6. EXPANSION JOINTS SHALL BE EITHER (A) 1/4" TO 1/2" PREPMOLED EXPANSION JOINT FILLER PER SEC. 51-2 OF THE CALTRANS STANDARD SPECIFICATIONS, OR (B) 2" DEEP SCORED JOINT (WEAKENED PLANE, EXTRUSION MACHINE ONLY).
7. COMPLETELY COAT THE EXPOSED FACES OF THE CONCRETE WITH CURING COMPOUND IN ACCORDANCE WITH CALTRANS STANDARD SPECIFICATIONS, SECTION 90-1.03B(3).

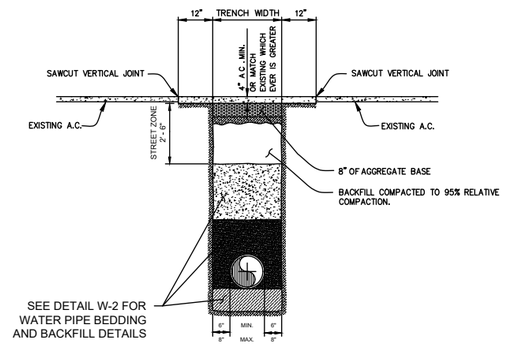
STANDARD SIDEWALK DETAIL (TYPE 1) R-64
NTS



NOTES:

1. SLOPE IS PLUS 2% MAX FROM TOP OF CURB TO PROPERTY LINE.
2. SCORE SIDEWALK IN RECTANGLES OF NOT LESS THAN 12 SQUARE FEET NOR MORE THAN 20 SQUARE FEET.
3. CONCRETE SHALL CONFORM TO THE REQUIREMENTS OF THE CALTRANS STANDARD SPECIFICATIONS FOR MINOR CONCRETE (SECTION 90-2). CONCRETE SHALL CONTAIN AT LEAST 505 POUNDS OF CEMENTITIOUS MATERIAL PER CUBIC YARD. CONCRETE SHALL CONTAIN NO ADDITIVES UNLESS PRIOR APPROVAL IS OBTAINED FROM THE ENGINEER.
4. WEAKENED PLAN JOINTS SHALL BE CONSTRUCTED AT A MAXIMUM OF 8 FOOT INTERVALS OR AS DIRECTED BY THE ENGINEER.
5. EXPANSION JOINTS SHALL BE PLACED AT SIDES OF STRUCTURES, END OF CURB RETURNS, AND IN LINE WITH EXPANSION JOINTS IN EXISTING CURB. MAXIMUM SPACING - 60FT.
6. EXPANSION JOINTS SHALL BE EITHER (A) 1/4" TO 1/2" PREPMOLED EXPANSION JOINT FILLER PER SEC. 51-2 OF THE CALTRANS STANDARD SPECIFICATIONS, OR (B) 2" DEEP SCORED JOINT (WEAKENED PLANE, EXTRUSION MACHINE ONLY).
7. COMPLETELY COAT THE EXPOSED FACES OF THE CONCRETE WITH CURING COMPOUND IN ACCORDANCE WITH CALTRANS STANDARD SPECIFICATIONS, SECTION 90-1.03B(3).

STANDARD SIDEWALK DETAIL (TYPE 2) R-65
NTS



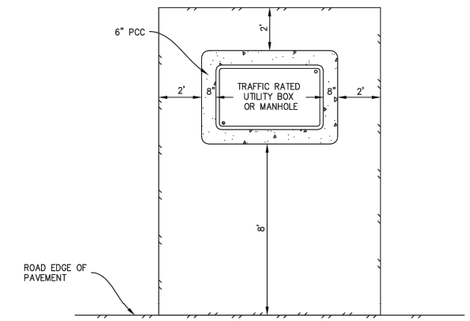
NOTES:

1. SEE SPECIFICATION SECTION 02730 FOR AC REQUIREMENTS.
2. BACKFILL MATERIAL TO BE PLACED IN LAYERS; 6" LAYERS OF PROPERLY MOISTENED MATERIAL.
3. SURFACING TO BE TRIMMED EXTRA WIDTH AFTER TRENCH IS BACKFILLED AND AB IS IN PLACE.
4. ALL WORK TO CONFORM TO CALIF. DEPT. OF TRANS. STANDARD SPECIFICATIONS, CURRENT EDITION, AND AS SHOWN ON THIS SHEET.
5. SAWCUTS SHALL BE MADE PARALLEL OR AT RIGHT ANGLES TO THE CENTERLINE OF THE ROAD.
6. PATCHES LESS THAN 2' FROM EXISTING PATCHES, EDGES OF PAVEMENT, CENTERLINE, LANE LINE, OR GUTTER SHALLBE EXTENDED TO INCLUDE INTERMEDIATE ISOLATED STRIP OF EXISTING PAVEMENT.
7. MINIMUM PATCH WIDTH SHALL BE 2' AT ITS SMALLEST DIMENSION UNLESS OTHERWISE APPROVED BY THE ENGINEER.
8. WHEN A POTHOLE OCCURS WITHIN AN EXISTING PATCH, ENTIRE PATCH SHALL BE REPLACED.

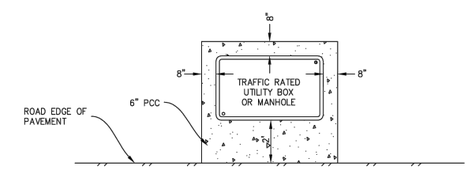
BACKFILL REQUIREMENTS ON A/C STREETS R-67A
NTS

NOTES:

1. FOR UTILITY BOX ASSEMBLIES LOCATED WITHIN KERN COUNTY ROW, INSTALL BOX PER THIS DETAIL. FOR UTILITY BOX ASSEMBLIES LOCATED WITHIN CITY OF ROSAMOND ROW, INSTALL PER DETAIL W-9, DWG C-101.



INSTALLED IN ASPHALT CONCRETE WITH CONCRETE COLLAR



INSTALLED IN PORTLAND CEMENT CONCRETE

TRAFFIC RATED UTILITY BOX DETAIL R-89
NTS

C:\Users\eccerna\DCVACCDocs\gei consultants\rcsd phase 1a\project files\00_cad_ph1a\Design\Sheets\C-101 - C-104.dwg C-104 Mar 19, 2026 03:43:08 pm

FOR BIDDING PURPOSES ONLY
NOT TO BE USED FOR CONSTRUCTION

DESIGNED CERNA ALVAREZ CHECKED SANCHEZ
DRAWN COLLETTO SUBMITTED SANCHEZ
JOB NO 2305090

REV	DATE	DESCRIPTION	SUB	APP'D
A	3/19/2026	ISSUED FOR BID	RS	

REGISTERED PROFESSIONAL ENGINEER RICHARD SANCHEZ No. 37148 Exp. 06/30/2026 CIVIL STATE OF CALIFORNIA
03/19/2026

ROSAMOND COMMUNITY SERVICES DISTRICT
3179 35TH STREET WEST
ROSAMOND, CALIFORNIA, 93560

GEI CONSULTANTS, INC.
35 NORTH LAKE AVENUE, SUITE 220
PASADENA, CALIFORNIA, 91101
(818) 552-6400

GEI Consultants

ROSAMOND COMMUNITY SERVICES DISTRICT
ARSENIC REGIONAL CONSOLIDATION PROJECT PHASE 1A

STANDARD DETAILS 4

DATE
MARCH 2026

DRAWING NUMBER
C-104

SHEET 14 OF 14