# SOUTHERN SAN JOAQUIN MUNICIPAL UTILITY DISTRICT

Kern County, California

## CONTRACT DOCUMENTS

## SPECIFICATIONS NO. SSJMUD 25-01
## Driver Road Pipeline Project

**ISSUED FOR BID**
**January 2025**

**GEI Consultants, Inc.**
5001 California Avenue, Suite 120
Bakersfield, CA 93309

A voluntary pre-bid conference will be held at 10:00 a.m. on Wednesday, February 5, 2025, at Southern San Joaquin Municipal Utility District, 11281 Garzoli Avenue, Delano, CA 93215.

Bids will be received until 2:00 p.m. on Wednesday, February 26, 2025, at Southern San Joaquin Municipal Utility District, 11281 Garzoli Avenue, Delano, CA 93215.

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# SOUTHERN SAN JOAQUIN MUNICIPAL UTILITY DISTRICT

SSJMUD

Kern County, California

## CONTRACT DOCUMENTS

## SPECIFICATIONS NO. SSJMUD 25-01
## Driver Road Pipeline Project

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


01/27/2025

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# SOUTHERN SAN JOAQUIN MUNICIPAL UTILITY DISTRICT

Kern County, California


**OFFICE LOCATION**
11281 Garzoli Avenue
Delano, CA 93215

**MAILING ADDRESS**
PO Box 279
Delano, CA 93216

**TELEPHONE**
661-725-0610

**EMAIL**
ssjmud@ssjmud.org

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# SECTION A
# NOTICE INVITING BIDS

## SOUTHERN SAN JOAQUIN MUNICIPAL UTILITY DISTRICT
Kern County, California

FOR CONSTRUCTING THE

## Driver Road Pipeline Project
## SPECIFICATIONS NO. SSJMUD 25-01

## A-1 Invitation for Bids

**NOTICE IS HEREBY GIVEN** that sealed bids will be received by the SOUTHERN SAN JOAQUIN MUNICIPAL UTILITY DISTRICT, hereinafter referred to as the District, for furnishing all labor, services, materials, tools, equipment, supplies, and facilities necessary therefore, transportation, utilities, and all other items 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 Plans and Specifications 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., and the Davis-Bacon Act, whichever is greater.** A copy of the prevailing wage determination issued by the Department of Labor current as of the publishing of this solicitation is included in the appendix. 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. Davis-Bacon Act wages can be found at www.dol.gov.

The Contractor, its Subcontractors and Suppliers will be required to comply with all applicable State and Federal requirements, including, without limitation, those specifically identified in any Grant Agreement. This Project is being funded in part by a Federal grant from the Bureau of Reclamation (Reclamation) WaterSMART Drought Response Program: Drought Resiliency Projects.

## A-2 Submitting Bids and Bid Opening

**Bids will be received at the offices of the District, 11281 Garzoli Avenue, Delano, CA 93215, until 2:00 p.m. on February 26, 2025,** at which time and place the bids will be publicly opened and read aloud. Bids shall be timely submitted in sealed envelopes marked as directed in Section A-13. Facsimile and electronic bids will not be accepted. It is the sole responsibility of the bidder to ensure that their bid is received in proper time and at the proper location and in the proper format. Facsimile bids will not be accepted. Bids received after said deadline time will be returned unopened to the bidder.

**A voluntary pre-bid conference will be held at 10:00 a.m. on February 5, 2025**, at the offices of the District, 11281 Garzoli Avenue, Delano, CA 93215.

## A-3 Location of the Work

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

## A-4 Description of Work

The description of the work is as follows:

Base Contract (Driver Road Pipeline Project):

1. Construct a new PVC waterline from the USBR Lateral 119.6 on Bassett Avenue to the existing groundwater recharge spreading basins west of Driver Road. Connect the pipeline to the existing Lateral 119.6-1.5S south of 9th Avenue
2. Abandon in place the existing USBR Lateral 119.6-1.5S from Bassett Avenue to 9th Avenue.
3. Connect several existing turnouts from Lateral 119.6-1.5S to the new PVC pipeline.

Optional Work (Driver Road Pipeline Project):

4. Construct a new PVC waterline from the new Driver Road Pipeline to SSJMUD Giumarra Spreading Basin Project south of 9th Avenue.

The work is described in the Technical Specifications and plans.

## A-5 Classification of Contractors License / Contractor Registration

Pursuant to Public Contract Code section 6100(b), any contractor, subcontractor, and/or specialty contractor, as defined under Business and Professions Code section 7026, 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 bid or be listed on a bid proposal 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 or engage in Work on the Project 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 Contract Documents. The Proposal Bidding Schedule includes places to enter bid prices for each of the various items of work. Bidders will be required to submit prices for all the items on the bid schedule. Award of the Contract, if made by the District, will be to the responsible Bidder submitting the lowest responsive Bid Proposal on the basis of the prices in the Base Bid in accordance with California Public Contract Code Section 20103.8(a). See Section B-17 for further particulars of the bidding and basis of award.

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 30 days after opening of Bids. Accompanying the Notice of Award will be a copy of the Agreement, 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 Plans, read the Specifications and the forms of the Contract Documents, and may 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 Bidder's Bond 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 the Southern San Joaquin Municipal Utility 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 five percent (5%) of the amount of the bid. 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 and pursuant to Public Contract Code section 22300, 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. Escrow instructions shall conform to the requirements of Public Contract Code section 22300.

## 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 Director of Industrial Relations pursuant to Labor Code section 1770 et seq. and the Davis-Bacon Act, whichever is greater. A copy of the prevailing wage rate schedules is incorporated herein by this reference. 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, and the Contractor shall otherwise comply with 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 Measurement and Payment, the Information Required of Bidders, the Agreement, the Bidder's Bond, the Faithful Performance Bond, the Payment Bond, the Non-Collusion Affidavits, the Good Faith Efforts Check List for Disadvantaged Business Enterprises, the Notice of Award, the Notice to Proceed, General Conditions, Special Conditions, Specifications, Plans, Appendices and any Change Order or Addenda, setting forth any modifications or interpretations of any of said documents, and Grant Agreements, all of which documents are on file or will be on file in the office of the District, 11281 Garzoli Avenue, Delano, CA 93215 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 or questions regarding the type of work required may be addressed to the following:

Grace Martin
GEI Consultants, Inc.
661-716-3010
gemartin@geiconsultants.com

All questions or inquiries regarding the project or the Contract Documents shall be directed solely to the person listed above. Bidders shall not contact any participants in the project regarding the project or the Contract Documents prior to the time that the bids are opened.

Portable Document Format (PDF) Contract Documents will be made available to Bidders either by email or link. No paper (hard) copies of Contract Documents will be provided to Bidders. **Requests for electronic Contract Documents may be requested from Grace Martin, GEI Consultants, Inc. at gemartin@geiconsultants.com.** Request must include company name, requesting person's name, requesting person's physical address, requesting person's email address, and requesting person's phone number. Addenda will only be distributed to requesting person.

**Bidders are required to notify the contact above if they obtain the Contract Documents from a planroom or any means other than from the contact above, in order to be added to the planholders list.**

The District may amend any provision or part of the Specifications at any time prior to three days before closing time, provided that the closing time set forth may be extended by District at any time prior to said closing time. Such amendments, if any, will be in the form of addenda which will be issued simultaneously to all persons who have obtained a copy of the Contract Documents from the contact above, and are on the planholder's list. Addenda will be emailed ONLY to all parties recorded by the Engineer as having received the Contract Documents. If you wish to receive addenda by some means other than email, please advise the Engineer immediately. Questions received after February 19, 2025, at 5:00 p.m. will 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 Southern San Joaquin Municipal Utility District and mailed or delivered to 11281 Garzoli Avenue, Delano, CA 93215. 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 Southern San Joaquin Municipal Utility District. The bid security shall be enclosed in the same envelope with the proposal.

## A-14 Substitute Securities

Pursuant to Public Contract Code Section 22300, equivalent securities may be substituted for monies withheld to ensure performance of the contract. The District reserves the right to solely determine the adequacy of the securities being proposed by the Contractor and the value of those securities. The District shall also be entitled to charge an administrative fee, as determined by District in its sole discretion, for substituting equivalent securities for retention amounts. The District's decisions with respect to the administration of the provisions of Section 22300 shall be final and shall include, but not be limited to, determinations of what securities are equivalent, the value of the securities, the negotiability of the securities, the costs of administration and the determination of whether or not the administration should be accomplished by an independent agency or by the District. The District shall be entitled, at any time, to request the deposit of additional securities of a value designated by District, in District's sole discretion, to satisfy this requirement. If the District does not receive satisfactory securities within twelve (12) consecutive days of the date of the written request, District shall be entitled to withhold amounts due to Contractor until securities of satisfactory value to District have been received.

Date: January 27, 2025 Southern San Joaquin Municipal Utility District

By: s/s Roland Gross
General Manager

****END OF SECTION****

# NOTICE INVITING BIDS (PUBLISHED VERSION)

## SOUTHERN SAN JOAQUIN MUNICIPAL UTILITY DISTRICT

Kern County, California

FOR CONSTRUCTING THE

## Driver Road Pipeline Project
## SPECIFICATIONS NO. SSJMUD 25-01

**NOTICE IS HEREBY GIVEN** that sealed bids will be received by the SOUTHERN SAN JOAQUIN MUNICIPAL UTILITY DISTRICT (hereinafter "District") until 2:00 p.m. on February 26, 2025, for construction of the Driver Road Pipeline Project, located within Kern County and in the vicinity of the city of Delano. Bids will be received at the offices of the District, 11281 Garzoli Avenue, Delano, CA 93215, 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 Bid. The bidding requirements and the work are fully described in the Plans and Specifications, referred to as Specifications No. SSJMUD 25-01. Portable Document Format (PDF) of Contract Documents are being made available to Bidders either by email or a download link. No paper (hard) copies of Contract Documents will be provided to Bidders. Requests for electronic Contract Documents may be requested from Grace Martin, GEI Consultants, Inc. at gemartin@geiconsultants.com. Request must include company name, requesting person's name, requesting person's physical address, requesting person's email address, and requesting person's phone number. Addenda will only be distributed to requesting person.

A voluntary pre-bid conference will be held on February 5, 2025 at 10:00 a.m. commencing at the offices of the District, 11281 Garzoli Avenue Delano, CA 93215.

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

Base Contract (Driver Road Pipeline Project):

1. Construct a new PVC waterline from the USBR Lateral 119.6 on Bassett Avenue to the existing groundwater recharge spreading basins west of Driver Road. Connect the pipeline to the existing Lateral 119.6-1.5S south of 9th Avenue
2. Abandon in place the existing USBR Lateral 119.6-1.5S from Bassett Avenue to 9th Avenue.

3. Connect several existing turnouts from Lateral 119.6-1.5S to the new PVC pipeline.

Optional Work (Driver Road Pipeline Project):

4. Construct a new PVC waterline from the new Driver Road Pipeline to SSJMUD Giumarra Spreading Basin Project south of 9th Avenue.

The work is described in the Technical Specifications and plans. 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. Contractors shall provide the District with their Contractor's license number and expiration date as provided in the proposal.

It is the District's intent that "plans," as used in Public Contract Code Section 3300, are defined as the construction contract documents, which include both the drawings and the specifications.

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.

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. and as provided in the Davis-Bacon Act, whichever is greater. 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 Davis-Bacon Act wages can be found at www.dol.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.

All questions about the meaning or intent of the Contract Documents or questions regarding the type of work required may be addressed to the following:

Grace Martin
GEI Consultants, Inc.
661-716-3010
gemartin@geiconsultants.com

This Project is being funded in part by a Federal grant from the Bureau of Reclamation (Reclamation) WaterSMART Drought Response Program: Drought Resiliency Projects. The Contractor, its Subcontractors and Suppliers will be required to comply with all applicable State and Federal requirements, including, without limitation, those specifically identified in any Grant Agreement.

Date: January 27, 2025 Southern San Joaquin Municipal Utility District

By: s/s Roland Gross
General Manager

****END OF SECTION****

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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 and submitted to the District by (1) an individual – the Proposal shall be signed by him and his full name and address shall be given; (2) a partnership - the Proposal shall be signed by a general partner of the partnership with the authority to act as an agent on behalf of the partnership and include the partnership name, the name of the general partner executing the Proposal, and provide the name and address of each member of the partnership; (3) a corporation - the Proposal shall be submitted in the name of the corporation, signed by its duly authorized officer or officers, attested by the corporate seal (optional, include the names and titles of all officers of the corporation, and include the address of the corporation and the state of incorporation; and (4) limited liability company - the Proposal shall be submitted in the name of the limited liability company, signed by an authorized agent of the limited liability company (if member-managed, by a member of the limited liability company authorized to act as an agent thereof; if manager-managed, by a manager of the limited liability company authorized to act as an agent thereof), and include the name and address of the limited liability company, as well as the name of the managers of the limited liability company if manager managed. Proposals will be considered only from a Contractor(s) and/or Subcontractor(s) that is/are licensed as required under applicable provisions of the Contractors' State License Law (California Business and Professional Code, Section 7000 et seq.) and rules and regulations adopted pursuant thereto. Each bidder shall insert his license number in the place provided in the Proposal. All Contractors and/or Subcontractors submitting or included on a Proposal shall be registered with the Department of Industrial Relations

pursuant to Labor Code section 1725.5 and include said registration number in the place provided in the Proposal. No oral, telephonic, or telegraphic proposal or modification of a proposal will be considered.

## 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. All bids will be opened and read publicly. Refer to Paragraph B-17 of the "Bid Submission and Opening Procedures" for information regarding the procedures for opening of bids. Bidders, their representatives and other interested parties are invited to be present at the opening. 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 and Responsive Bid

A "Responsive Bid" is one that materially conforms in all respects to the requirements set forth in Section A–Notice Inviting Bids and Section B–Instructions to Bidders. The District reserves the right to waive any irregularities in the Bids received.

A "Responsible Bidder" is one that has the qualifications, general competency, and resources to perform the Work covered by the Proposal. Among other matters, a Responsible Bidder is one that can demonstrate successful completion of projects

involving work of scope and complexity comparable to that being installed under the Contract Documents. Bids shall identify such projects and provide the information indicated in the "Information Required of Bidder" form. District expressly reserves the right to reject any Bid if it determines that Bidder's business or technical organization, financial resources, plant and equipment to be used in performing work, or lack of successful experience in performing work of similar scope and complexity, is such that it is not in District's best interest to accept the Bid.

## 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. Additionally, subletting shall be in compliance with the Subletting and Subcontracting Fair Practices Act, Public Contract Code section 4100, et seq.

## 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 Plans, read the Specifications and all other Contract Documents, visit the site of the work, 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.

This Project is being funded in part by a Federal grant from the Bureau of Reclamation (Reclamation) WaterSMART Drought Response Program: Drought Resiliency Projects.

## B-8 Execution of Contract

The District reserves the right to accept or reject bids for a period of thirty (30) calendar 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 ten (10) calendar 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 Bidder's Bond 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.

## 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, in accordance with the provisions of Civil Code sections 8150 et seq., and sections 9550 et seq. 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-17 and in conformance with Section 3700 et seq. 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.

## 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 United States, the U.S. Bureau of Reclamation, Southern San Joaquin Municipal Utility 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 days (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.

Contractor shall, at its sole cost and expense, procure and maintain the following insurance coverage:

**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 in a form acceptable to District.

b. Additional insured endorsement in favor of District and in a form acceptable to District.

c. Contractors and subcontractors shall name the District, its officers, agents and employees as additional insureds on liability insurance.

d. Separation of insureds.

**Business Automobile Insurance:** This insurance shall contain a combined single limit of at least $1,000,000, 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 in a form acceptable to District.

b. Additional insured endorsement in favor of District and in a form acceptable to District.

c. Contractors and subcontractors shall name the District, its officers, agents and employees as additional insureds on liability insurance.

d. 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 (Part B) with limits of at least $500,000 each accident, $500,000 by disease policy limit, $500,000 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.

**Excess Liability (if necessary):** The limits of insurance required in these Contract Documents may be satisfied by a combination of primary and umbrella or excess insurance. Any umbrella or excess insurance shall contain or be endorsed to contain a provision that such coverage shall also apply on a primary and non-contributory basis for the benefit of the District and other required additional insureds specified above (if agreed to in a written contract or agreement) before the District or other additional insureds' own primary or self-insurance shall be called upon to protect it as a named insured.

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.

## B-12 Subcontracts

Bidder shall furnish information regarding its Subcontractors in substantially the form set forth in the bid forms. If no Subcontractors are to be used, Bidder shall so state. Bidder's attention is directed to Sections 4100 through 4113 of the California Public Contract Code

for requirements and provisions relative to Subcontractors. No substitution of subcontractors by the Bidder shall be consented to or permitted except in accordance with the provisions of Public Contract Code Sections 4107 and 4107.5.

The bidder shall perform with his own organization, work equivalent to at least sixty (60) percent of the total Contract price, and no more than work equivalent to forty (40) percent of the total Contract price may be performed by subcontractors. The cost of Contractor-furnished materials installed by labor carried on the bidder's own payroll may be included in the above required sixty (60) percent.

In conformance with the provisions of Section 4104 of the Public Contract Code of the State of California, 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

In accordance with the provisions of Section 7106 of the Public Contract Code, 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 Southern San Joaquin Municipal Utility District, as a 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 required in said Instructions to Bidders. Said check or Bidder's Bond shall be for a sum not less than five percent (5%) 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 Instruction 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.

## B-15 Good Faith Efforts Checklist for Disadvantaged Business Enterprises

Each Bidder must complete and include as part of their proposal the Good Faith Efforts Checklist for Disadvantaged Business Enterprises (DBE) to ensure that certified DBEs have the opportunity to compete for procurements funded by USBR financial assistance funds. Bidders must make good faith efforts prior to submission of bids/proposals.

## B-16 Construction Schedule

**Preliminary Construction Schedule** - The Contractor shall submit with his Bid a preliminary construction schedule for the District's review, which includes important milestones. **For purposes of preparing said Construction Schedule, Contractors should assume the Notice to Proceed will be issued on or before March 31, 2025 and Contractor shall begin work within ten (10) days of receipt of the Notice to Proceed.** The Preliminary Construction Schedule shall be in sufficient detail to show the chronological relationship of all activities of the project, including, but not limited to, estimated starting and completion dates of various activities including shop drawing submittal and approval, mobilization of equipment and resources, procurement of materials, construction of components of project, and completion of closeout of project. 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 Preliminary Construction Schedule shall reflect completion of all work under the Contract within the specified times and in accordance with the Contract Documents, including the Specifications. The Preliminary Construction Schedule will be used by the District in determining award of the Contract.

**Post-Bid Pre-Award Schedule -** As a condition of award during the period after the opening of bids and prior to actual award of the Contract by the District, the apparent low bidder shall submit a Construction Schedule as set forth in this section. The Construction Schedule shall indicate the time of starting and completion of each major structure or phase of the Work and such intermediate phases as will serve for well-defined chronological order on the Construction Schedule. The schedule shall also indicate the anticipated date of receipt of major items of equipment, and all items of equipment receipt and installation of which is critical to the scheduled progress of the project. The Construction Schedule shall be prepared in Critical Path Method format.

Within five (5) calendar days after bid date, the apparent low bidder shall designate in writing an authorized representative who will be responsible for the preparation of the post-bid pre-award Construction Schedule as set forth in this Section.

The apparent low bidder's representative shall have the authority to fulfill the requirements of preparing the schedule in a professional and acceptable manner demonstrating competence in use of the Construction Schedule, including scheduling experience on project of similar value and complexity.

## B-17 Bid Submission and Opening Procedures

The Proposal Bidding Schedule includes a Base Bid and the lowest bid will be determined based on the submission of a responsive bid from a responsible bidder (refer to Section B-3). Accordingly, the following procedures will be followed:

a. **Bid Envelopes**: Bids must be submitted in a labeled envelope 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 the title of the Contract Documents for this work and the date and hour for opening bids.

**b. Contents of Bid:** Bidders shall complete and submit all documents noted as

"REQUIRED" listed below for bids to be considered responsive. Bid proposal shall be organized and submitted as follows:

**REQUIRED**

1. Bidder's Proposal
2. Proposal Bidding Schedule
3. Information Required of Bidder Form
4. Good Faith Efforts Check List for Disadvantaged Business Enterprises
5. Preliminary Construction Schedule (ref. Paragraph B-16)
6. Bidder's Non-Collusion Affidavit (ref. Paragraph B-13)

   *Note: the Subcontractors' Non-Collusion Affidavit may be submitted by the awarded Contractor after the Notice of Award.*
7. All Issued Addenda (signed front-covers only)
8. Bid Security (in the form of a certified or cashier's check or Bidder's Bond) (ref. Paragraph B-14)
9. Proof that contractor and subcontractors are registered with the Department of Industrial Relations pursuant to Labor Code section 1725.5. Listing the DIR number on the Information Required of Bidder Form is considered sufficient proof.
10. Proof that the Contractor(s) and/or Subcontractor(s) is/are licensed as required under applicable provisions of the Contractors' State License law (see California Business and Professional Code section 7000 et seq.), and as required under all rules and regulations adopted, applicable, and/or relevant with respect thereto. Listing the License number on the Information Required of Bidder Form is considered sufficient proof.

**Delivery of Bid:** It is the bidder's responsibility to make sure that their bid is submitted within the specified time. Late bids will not be accepted regardless of postmark and will be returned unopened to the bidder.

a. Hand Delivery – Bid shall be sealed and submitted prior to the time and place established for receiving bids.

b. Mail or Courier Delivery – Bid shall be sealed and inserted into another envelope or packaging exhibiting all information as required for delivery of the envelope or

package to the place established for receiving bids. Bidders submitting Bid Packages via mail or courier delivery are strongly encouraged to notify the District in advance that a bid is being delivered in this manner.

**Opening of Bids:** The Bid Opening will be held at the place and time stated in Paragraph A-2. The envelope containing the "Bid" as described in Section B-17b will be publicly opened at the prescribed time and the amount of the Base Bid will be read aloud. This will continue until all bids are announced. A bid tabulation will be prepared during the Bid Opening which lists the Base Bid amounts and the corresponding name of the bidders. At the request of the bidders, the District will transmit a bid tabulation of all bids, to include bidder name and the corresponding Base Bid amount.

**Announcement of Bid Ranking and Bidders:** The announcement of bid ranking and bidders will be completed after the public bid opening and evaluation of bids.

****END OF SECTION****

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# PROPOSAL

## SOUTHERN SAN JOAQUIN MUNICIPAL UTILITY DISTRICT

Kern County, California

FOR CONSTRUCTING THE

## Driver Road Pipeline Project
## SPECIFICATIONS NO. SSJMUD 25-01

**Proposals received until 2:00 p.m. on February 26, 2025**

**To the Board of Directors**
**Southern San Joaquin Municipal Utility District**
**11281 Garzoli Avenue**
**Delano, CA 93215**

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 Plans and Specifications and other Contract Documents therein referred to, the District's Grant Agreements between the District and the California Department of Water Resources and the U.S. Bureau of Reclamation, and proposes and agrees that if this bid as submitted in the attached Proposal 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 Plans and Specifications 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 Proposal 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 Plans and

Specifications, for the work and in the form of the Agreement. The undersigned has checked carefully all words and figures inserted in said Proposal 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 ten (10) days from the date 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 Southern San Joaquin Municipal Utility District in the amount of $_____, said amount to be not less than five percent (5%) 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, in accordance with Business and Professions Code Section 7028.15(e), that the statements contained herein are true and correct.

Dated _____, 20____

_____

_____

**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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# BIDDER'S 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 SOUTHERN SAN JOAQUIN MUNICIPAL UTILITY DISTRICT (hereinafter called the Obligee) in the penal sum of five percent (5%) 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 Specifications No. SSJMUD 25-01 for the Driver Road Pipeline Project.

**NOW, THEREFORE,** if the bid or proposal is not withdrawn within thirty (30) 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 _____, 20__.

_____(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. This bond must be issued by a California-admitted surety. Sureties must be authorized to do business in and have an agent for service of process in California. A certified copy of Power of Attorney must be attached.

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# PROPOSAL BIDDING SCHEDULE

## Driver Road Pipeline Project
## SPECIFICATIONS NO. SSJMUD 25-01

The following Proposal Bid Schedule lists the items necessary to complete the Work. Bidder shall complete the schedule including the unit and total price of each item, including applicable sales and other taxes. If the total cost of any item or the total Base Bid is inconsistent with the unit cost, the unit cost shall prevail. Payment of each item will be based on the Plans and are to be considered as "final pay quantity for each item", unless the dimensions of the portion of the work shown on the Plans are revised by the Engineer, or unless the portion of the work is eliminated. If the dimensions of the specific portion of the work are revised, and the revisions result in an increase or decrease in the estimated quantity of the portion of the work, the final quantity for payment will be revised in the amount represented by the changes in the dimensions. If the specific portion of the work is eliminated, the final pay quantity designated for the specific portion of the work will be eliminated. All costs for completing the Work described in the Contract Documents shall be included in the bid items listed below. Contractor shall include all costs to accomplish the project including (but not limited to): mobilization/demobilization, develop water supply, materials, equipment, labor, overhead, profit, taxes, delivery charges, permits etc.

## BASE CONTRACT

| Bid Item | Item | Unit | Quantity | Unit Price ($) | Amount ($) |
|---|---|---|---|---|---|
| **Base Contract** | | | | | |
| 1 | Mobilization and Demobilization | LS | 1 | | |
| 2 | Environmental Compliance and Permitting | LS | 1 | | |
| 3 | Traffic Control | LS | 1 | | |
| 4 | Demolition | LS | 1 | | |
| 5 | Pavement Restoration | SY | 96 | | |
| 6 | 36” PVC C900 | LF | 5,280 | | |
| 7 | 57” x 57” x 36” Tee Furnished with 36” BFV(s) (Cut-in tee) | LS | 1 | | |
| 8 | Connection to Existing Turnouts | EA | 3 | | |
| 9 | Furnish & Install 4” Combination Air Relief Valve | EA | 3 | | |
| 10 | 52” Steel Casing at 9th Avenue | LF | 58 | | |
| 11 | 52” Steel Casing at Cecil Avenue | LF | 80 | | |
| **Total Price for Base Contract (Item No. 1 through Item No. 11)** | | | | **$** | |

## OPTIONAL ITEM

| Bid Item | Item | Unit | Quantity | Unit Price ($) | Amount ($) |
|---|---|---|---|---|---|
| **Optional Items** | | | | | |
| 12 | 24” PVC C900 | LF | 1370 | | |
| **Total Price for Optional Item (Item No. 12)** | | | | **$** | |

| | |
|---|---|
| **TOTAL PRICE: <u>Base + Optional (Item No. 1 through Item No. 12)</u>** | **$** |

**Bid Submitted by** _____

**Contractor** _____

**Date** _____

****END OF SECTION****

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# MEASUREMENT AND PAYMENT

Payment for the various items of the Proposal Bid Schedule, as further specified herein, shall include all compensation to be received by the Contractor for furnishing all tools, equipment, supplies, and manufactured articles, and for all 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 Bid 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.

**Note:** Pay Items in the Bid Schedule are described in the specifications and are identified on the Contract Drawings at location.

In the case of unit price items, SSJMUD reserves the right to increase or decrease the quantities up to twenty-five percent (25%) using the bid unit price to accommodate conditions encountered on the Project. These adjustments are considered to be within the original Contract Scope and as such will not be considered as a basis for a change in the bid unit price. If the actual quantities of a Pay Item exceed twenty-five percent (25%), SSJMUD and the Contractor will negotiate an equitable increase or decrease in the bid price in accordance with the Contract Documents.

## BASE CONTRACT (Items 1 through 11)

### Bid Item No. 1: Mobilization and Demobilization:

a) **Description:** Mobilization shall include all activities and costs for transportation of personnel, equipment, and operating supplies to and from the site; establishment of portable sanitary and refuse facilities; location, provision and installation of field offices & equipment/materials, storage yards for excavation equipment, buildings, and other necessary facilities for the Contractor's operations at the site; premiums paid for performance and payment bonds, including coinsurance and reinsurance agreements as applicable; temporary project signage.

Contractor will be responsible to provide his own security for equipment, materials, fuel, tools, etc. that he may have on site.

The Contractor shall provide all necessary equipment & materials; all tools, accessories, power, fuel, materials, supplies, lighting, water, and other support equipment; and experienced personnel necessary to execute the work in an orderly an efficient manner.

Demobilization shall include all activities and costs for; removal of tools, materials, equipment, supplies, and facilities used by the Contractor during construction of the project and restoration of all damaged site features (roads, fences, gates, structures, etc.), final cleanup, and completion of all project submittal requirements, including final site survey and record documents.

**Amount shall not exceed 10% of total base bid amount for the Contract.**

**Mobilization and Demobilization also includes all items necessary to complete the project that are not covered under any other Bid Item.**

b) **Measurement and Payment:** The Final LUMP SUM Price paid for Mobilization and Demobilization 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 the mobilization and demobilization efforts and items to complete the project that are not covered under any other line item – including, but not limited to, premiums paid for performance and payment bonds, including coinsurance and reinsurance agreements as applicable.

## Bid Item No. 2: Environmental Compliance and Permitting:

a) **Description:** The Contractor shall comply with all local, state and federal requirements for Storm Water Pollution Prevention, site dust control, and other items identified in the General and Special Conditions. Contractor shall install, construct, maintain all necessary measures to comply with and keep the necessary records in accordance with the requirements of the applicable agencies.

b) **Measurement and Payment:** The Final Pay Lump Sum Price paid for Environmental Compliance measures shall include full compensation for furnishing all permits, fees, labor, materials, tools, equipment, and incidentals and for doing all work involved in PM-10, SWPPP, etc. compliance.

## Bid Item No. 3: Traffic Control:

a) **Description:** This item shall include providing all labor, materials, transportation, supplies, tools, equipment, and incidentals required to provide traffic control for safety and proper construction of the work within the Specifications and Plans. This item shall include all necessary coordination with the District, Landowners, utility companies, and Kern County and complying with their requirements.

b) **Measurement and Payment:** The Final Pay Lump Sum Price paid for Traffic Control shall include full compensation for all labor, materials, transportation, supplies, tools, equipment, incidentals and for 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.

## Bid Item No. 4: Demolition

a) Description: This item includes all work associated with removal of existing concrete or asphalt pavements, irrigation pipes and appurtenant structures as shown on the Drawings and Specifications. The Work includes demolition (including pipes that are abandoned in place and plugged with concrete), disposal, hauling, clearing, grubbing, and stripping as required to install and/or remove and dispose of all items as necessary to complete the Work.

b) **Measurement and Payment:** The Final Pay Lump Sum Price paid for Demolition 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 task, and no additional allowance shall be made, therefore.

## Bid Item No. 5 Pavement Restoration

a) **Description:** Contractor shall perform all work associated with restoration of existing asphalt concrete surfaces including grinding existing pavements, all equipment, materials, fuel, power, etc. needed, as specified in the Technical Specifications, as shown on the Drawings, and as directed by the Engineer.

b) **Measurement and Payment:** The Final Pay Quantity paid for Pavement Restoration shall be measured for payment by the square yard (SY). No compensation will be made for pavement restoration beyond the lines and grades shown on the drawings unless authorized in writing by the Engineer prior to start of the work.

## Bid Item No. 6: 36" PVC C900

a) **Description:** The Contractor shall provide all materials, labor, and incidentals to install the 36-inch PVC watermain as shown in the Plans and described in the Specifications, complete. No separate payment will be made for the eccentric reducers, fittings, valves or other incidentals to install the pipe.

b) **Measurement and Payment:** The Final Pay Quantity Unit Price paid per Linear Foot for furnishing and installing 36 inch PVC Pipe, 36' to 24" eccentric reducer, 36" x 36" x 24" tee, valves, fittings and accessories shall include full compensation for all labor, materials, transportation, supplies, tools, equipment, tax, and incidentals to excavate, backfill, metallic locator tape, thrust blocks and for doing all other work and operations which must be performed, or costs incurred for completing this task and no additional allowance shall be made.

## Bid Item No. 7: 57" x 57" x 36" Tee Furnished with 36" BFV(s) (Cut-in tee)

a) **Description:** The Contractor shall provide all materials, labor, and incidentals to install 57" x 57" x 36" connection to the existing watermain on Bassett Avenue as shown in the Plans and described in the Specifications, complete. No separate payment will be made for the eccentric reducers, fittings, valves or other incidentals to install the pipe.

b) **Measurement and Payment:** The Final Pay Lump Sum Price paid for 57" x 57" x 36" Tee Furnished with 36" BFV(s) (Cut-in tee) shall include full compensation for all labor, materials, transportation, supplies, tools, equipment, incidentals and for all other work and operations including dewatering of the existing watermain, demolition, restoration of existing pipeline lining and coatings 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.

## Bid Item No. 8: Connection to Existing Turnouts

a) **Description:** The Contractor shall provide all materials, labor, and incidentals to install new pipe, fittings to the existing turnouts as shown in the Plans and described in the Specifications, complete. No separate payment will be made for the eccentric reducers, fittings, valves or other incidentals to install the pipe

b) **Measurement and Payment:** The Final Pay Quantity Unit Price paid for Connection to Existing Turnouts shall include full compensation for all labor, materials, transportation, supplies, tools, equipment, incidentals and for all other work and operations including maintaining irrigation flow to the turnouts 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.

## Bid Item No. 9: Furnish and Install 4" Combination Air Relief Valve

a) **Description:** The Contractor shall provide all materials, labor, and incidentals to install the 4" combination air relief valves, fittings as shown in the Plans and described in the Specifications, complete. No separate payment will be made for the eccentric reducers, fittings, valves or other incidentals to install the pipe.

b) **Measurement and Payment:** The Final Pay Quantity Unit Price paid for Furnish and Install 4"Combination Air Relief Valve shall include full compensation for all labor, materials, transportation, supplies, tools, equipment, incidentals and for all other work 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.

## Bid Item No. 10: 52" Steel Casing at 9th Avenue

a) **Description:** The Contractor shall provide all materials, labor, and incidentals to install 52" carrier pipe beneath 9th Avenue as shown in the Plans and described in the Specifications, complete. No separate payment will be made for the eccentric reducers, fittings, valves or other incidentals to install the pipe.

b) **Measurement and Payment:** The Final Pay Lump Sum Price paid for 52"Steel Casing at 9th Avenue shall include full compensation for all labor, materials, transportation, supplies, tools, equipment, incidentals and for 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.

## Bid Item No. 11: 52" Steel Casing at Cecil Avenue

a) **Description:** The Contractor shall provide all materials, labor, and incidentals to install 52" carrier pipe beneath Cecil Avenue as shown in the Plans and described in the Specifications, complete. No separate payment will be made for the eccentric reducers, fittings, valves or other incidentals to install the pipe.

b) **Measurement and Payment:** The Final Pay Lump Sum Price paid for 52" Steel Casing at Cecil Avenue shall include full compensation for all labor, materials, transportation, supplies, tools, equipment, incidentals and for 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.

## Optional Item (Item 12)

### Optional Bid Item No. 12: 24" PVC C900

a) **Description:** The Contractor shall provide all materials, labor, and incidentals to install the 24-inch PVC watermain as shown in the Plans and described in the Specifications, complete. No separate payment will be made for the eccentric reducers, fittings, valves or other incidentals to install the pipe.

b) **Measurement and Payment:** The Final Pay Quantity Unit Price paid per Linear Foot for furnishing and installing 24 inch PVC Pipe, 24" to 15" eccentric reducer, valves, fittings and accessories shall include full compensation for all labor, materials, transportation, supplies, tools, equipment, tax, and incidentals to excavate, backfill, metallic locator tape, thrust blocks and for doing all other work and operations which must be performed, or costs incurred for completing this task and no additional allowance shall be made.

****END OF SECTION****

# INFORMATION REQUIRED OF BIDDER

## EXPERIENCE AND REFERENCES

Listed below are three projects performed under the bidder's supervision during the past ten (10) years involving work of scope and complexity comparable to this Project.

1. Project Name and Location _____

_____

Project Description: _____

_____

_____

_____

Owner: _____

Contract Amount/Completion Date: _____

Reference Contact Name and Telephone Number: _____

_____

2. Project Name and Location _____

_____

Project Description: _____

_____

_____

_____

Owner: _____

Contract Amount/Completion Date: _____

Reference Contact Name and Telephone Number: _____

_____

3. Project Name and Location _____

_____

Project Description: _____

_____

_____

_____

Owner: _____

Contract Amount/Completion Date: _____

Reference Contact Name and Telephone Number: _____

_____

**BIDDER'S LICENSE AND DIR (DEPARTMENT OF INDUSTRIAL RELATIONS) REGISTRATION NUMBER**

Class _____

License No. _____

DIR No. _____

**MATERIAL SUPPLIER INFORMATION**

The bidder shall indicate opposite each item of equipment or material listed below the name of the manufacturer or supplier of the equipment or material proposed to be furnished under the bid:

HDPE Pipe _____

Rip Rap _____

Aggregate Base _____

Pre-Cast Twin-Track Weir _____

Awarding of a Contract under this bid will not imply approval by the District or Engineer of the manufacturers or suppliers listed by the bidder. No substitution will be permitted after award of Contract unless equipment or material of the listed manufacturer or supplier does not meet the requirements of the Specifications.

**LIST OF SUBCONTRACTORS**

The bidder hereby designates below the names and business addresses of each subcontractor who will perform work or labor. Please fill out as completely as possible when submitting your bid. Use Subcontractor's business name style as registered with the License Board.

a. Complete the name and location of the place of business of each Subcontractor (i) who will perform work or labor or render service to the Bidder in or about the construction contemplated in the Plans and Specifications or (ii) licensed by the State who, under subcontract to the Bidder, specially fabricates and installs a portion of the work or improvement according to the detailed drawings contained in the Plans and Specifications in an amount in excess of one-half of one percent of the Bidder's total Bid.

b. Complete the portion of the Work that will be done by each subcontractor. The Bidder shall list only one subcontractor for each portion as is defined by the Bidder in his Bid.

c. Bidders are reminded of the penalties for the improper substitutions of a subcontractor pursuant to Public Contract Code Section 4110.

**SUBCONTRACTOR** _____

Business Address: _____

Class _____ License No. _____ DIR No. _____

Item No. or Description of Work: _____

Dollar Amount or Percentage of Total Bid: _____

**SUBCONTRACTOR** _____

Business Address: _____

Class _____ License No. _____ DIR No. _____

Item No. or Description of Work: _____

Dollar Amount or Percentage of Total Bid: _____

**SUBCONTRACTOR** _____

Business Address: _____

Class _____ License No. _____ DIR No. _____

Item No. or Description of Work: _____

Dollar Amount or Percentage of Total Bid: _____

**SUBCONTRACTOR** _____

Business Address: _____

Class _____ License No. _____ DIR No. _____

Item No. or Description of Work: _____

Dollar Amount or Percentage of Total Bid: _____

**SUBCONTRACTOR** _____

Business Address: _____

Class _____ License No. _____ DIR No. _____

Item No. or Description of Work: _____

Dollar Amount or Percentage of Total Bid: _____

**NOTE: Bidder shall attach all additional sheets and attachments as required. Failure to supply all 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 _____, 20_____, by and between the Southern San Joaquin Municipal Utility District, hereinafter called the "District," and _____, hereinafter called the "Contractor; with respect to _____ (the "Agreement").

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

a. This Agreement is for all Work (as that term is defined in the Contract) necessary to complete the items selected by the District from those described in the Contract Documents for_____, (the "Project").

b. The Contract includes all of the Contract Documents, to wit: the Notice Inviting Bids, the Instructions to Bidders, the accepted Proposal and Proposal Bidding Schedules, the Contractor's Licensing Statement, the Information Required of Bidders, this Agreement, the Bidder's Bond, the Faithful Performance Bond, the Payment Bond, the Non-Collusion Affidavits, the Notice of Award, the Notice to Proceed Checklist, Notice to Proceed Form, the General Conditions, the Special Conditions, the Plans and Specifications, Appendices, any change order or Addenda setting forth any modifications or interpretations of any of the Contract Documents, and Grant Agreements, including, but not limited to, their provisions, terms, conditions, and statements presented therein. All said Contract Documents are hereby incorporated in and made a part of this Agreement by reference thereto.

c. 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 Agreement and the Contract Documents, including but not limited to the Plans and Specifications, and to the approval and entire satisfaction of the Engineer and District.

d. The Project to which the Work covered by the Contract Documents pertains is being funded in part by a Federal grant from the Bureau of Reclamation (Reclamation) WaterSMART Drought Response Program: Drought Resiliency Projects.

Notwithstanding anything in this Agreement 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 under this Agreement, the Contract Documents, and all applicable State and Federal laws, rules, and regulations, and shall ensure that Contractor and all subcontractors and suppliers comply with all applicable requirements of the Grant and Federal and State law including, but not limited to, as provided in the Grant Agreements. Contractor further agrees to furnish to District any further information or documentation that the District reasonably determines may be necessary for District to comply with the Grant Agreements or any applicable law. The Work shall conform to the requirements of all governmental agencies having jurisdiction over the Work. Contractor shall also comply with all federal, state and local laws, ordinances, rules, regulations and orders under the Contract, including all licensing requirements and occupational, health, safety, employment and environmental laws. Such applicable laws, ordinances, rules, regulations and orders shall include, without limitation, those that are specifically incorporated into any Grant Agreements pertaining to the Work, which Grant Agreements and any amendments thereto the District will provide to Contractor following their execution. Contractor shall bear all costs, expenses and liabilities related to any changes in the Work to conform to such laws, ordinances, rules, regulations and orders.

e. 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.

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

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

h. 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.

i. 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 Agreement.

j. Contractor's License

All Contractors and/or Subcontractors are required to be licensed under applicable provisions set forth in the Contractors' State License Law (see California Business and Professional Code section 7000 et seq.) at all times during the course of performance of Work hereunder, and shall comply with all rules and regulations adopted and applicable pursuant to the foregoing.

k. Board of Industrial Relations Registration

Pursuant to Labor Code section 1725.5, Contractor and/or Subcontractor is to be registered with the Department of Industrial Relations at all times during the course of performance of the Work set forth in the Contract Documents. Contractor agrees to comply with the provisions set forth in Labor Code section 1725.5 prior to and through performance of the performance of the Work as set forth under the Contract Documents and this Agreement.

l. Indemnification

1. To the fullest extent of the law, the Contractor shall assume the defense of and indemnify, hold, and save harmless the U.S. Bureau of Reclamation, the California Department of Water Resources, the Southern San Joaquin Municipal Utility District, the Landowners, 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, arising out of or incident to the performance of this Agreement.
2. 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 of the Work performed, completed, and/or in place and to any materials on the 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.

3. To the fullest extent of the law, the Contractor shall assume the defense of and indemnify, hold, and save harmless the District, the U.S. Bureau of Reclamation, the California Department of Water Resources, the Southern San Joaquin Municipal Utility District, the Landowners, the Design Engineer and the Engineer and their respective directors, officers, employees and agents, against any and all liens, claims, demands, and costs, including attorneys' 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 Agreement, 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 Agreement, 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.

4. 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 indemnify, hold, and save the District and its Directors, officers, employees and agents harmless from loss of account thereof.

5. If the District, Southern San Joaquin Municipal Utility District, the Landowners, the Design Engineer or the Engineer and/or their respective Officials, Officers, Employees, Agents, Consultants, and Engineers are required to testify or contribute time and expense in any other way, in any suit or enforcement action of any kind brought to recover alleged damages or remedy alleged violations resulting from the acts or omissions (including negligent acts or omissions) in connection with, or accidents arising from, the acts, operations, and responsibilities of the Contractor, its Subcontractors, or others associated with or working under Contractor, in direct or indirect relation to the performance of the Work, they shall be reimbursed for any reasonable costs incurred by them for lost time, expert assistance, and incidental expenses in connection with their need to contribute time and expense, whether or not the suit or enforcement action proceeds to final judgment.

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

(District Seal)

Southern San Joaquin Municipal Utility District

Southern San Joaquin Municipal Utility District

By: _____

Contractor

(CORPORATE SEAL)

By: _____
(Title)

And: _____
(Title)

****END OF SECTION****

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# FAITHFUL PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS

**THAT, WHEREAS, the SOUTHERN SAN JOAQUIN MUNICIPAL UTILITY DISTRICT**, State of California, awarded a contract as of _____

_____to_____,

hereinafter designated as the "Contractor," for _____

pursuant to Southern San Joaquin Municipal Utility District Specification No. SSJMUD 25-01; 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 SOUTHERN SAN JOAQUIN MUNICIPAL UTILITY DISTRICT in the penal sum of

_____ Dollars ($_____), lawful money of the United States, said sum being not less than 100 percent of the total Contract value for faithful performance and for labor and materials the payment of which sum will 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-bounded 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 SOUTHERN SAN JOAQUIN MUNICIPAL UTILITY 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 Contractor 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.

As a condition precedent to the satisfactory completion of the said Contract, the above obligation shall hold good for a period of one (1) year(s) after the completion and acceptance of the said work, during which time if the above bounden Principal, his or its heirs, executors, administrators, successors or assigns shall fail to make full, complete and satisfactory repair and replacements or totally protect the said Owner, Engineer, and any design engineer from loss or damage made evident during said period of one (1) year(s) from the date of acceptance of said work and resulting from or caused by defective materials or faulty workmanship, in the prosecution of the work done, the above obligation shall be and remain in full force and virtue.

IN WITNESS WHEREOF, the above bounden parties have executed this instrument under their seals this_____day of_____, 20___, the name and corporate seal of each corporate party being hereto affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

ATTEST:

| | |
|---|---|
| (Principal Secretary) | (Principal) |
| (SEAL) | By |
| (Witness as to Principal) | (Address) |
| (Address) | (Surety) |

ATTEST:

| | |
|---|---|
| (Witness to Surety) | (Attorney-in-Fact) |
| (Address) | (Address) |

If CONTRACTOR is a partnership, all partners must execute BOND.

**NOTICE**: This bond must be acknowledged before a Notary Public. This bond must be issued by a California-admitted surety; sureties must be authorized to do business in and have an agent for service of process in California. A certified copy of Power of Attorney must be attached.

****END OF SECTION****

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# PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS

**THAT, WHEREAS, THE SOUTHERN SAN JOAQUIN MUNICIPAL UTILITY DISTRICT**, has awarded to _____ hereinafter designated as the "Contractor," a Contract for _____ _____ pursuant to SOUTHERN SAN JOAQUIN MUNICIPAL UTILITY DISTRICT Specifications No. SSJMUD 25-01; 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 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 **SOUTHERN SAN JOAQUIN MUNICIPAL UTILITY DISTRICT** in the sum of _____ and _____ Dollars ($_____), said sum being not less than one hundred percent (100%) of the total Contract amount payable by the said SOUTHERN SAN JOAQUIN MUNICIPAL UTILITY DISTRICT under the terms of the Contract, for which payment will and truly to be made, we bind ourselves, our heirs, executors and administrators, successors and assigns, jointly and severally, firmly by these presents.

The condition of the foregoing obligations is such that, whereas the above bounden Principal has been awarded a Contract as ___ with SOUTHERN SAN JOAQUIN MUNICIPAL UTILITY DISTRICT to do the following work, to-wit: _____ For DISTRICT SPECIFICATIONS.

**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, the above bounden parties have executed this instrument under their seals this_____day of_____, 20_____, the name and corporate seal of each corporate party being hereto affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

ATTEST:

| | |
|---|---|
| (Principal Secretary) | (Principal) |
| (SEAL) | By |
| (Witness as to Principal) | (Address) |
| (Address) | (Surety) |

ATTEST:

| | |
|---|---|
| (Witness to Surety) | (Attorney-in-Fact) |

| | |
|---|---|
| (Address) | (Address) |

If CONTRACTOR is a partnership, all partners must execute BOND.

**NOTICE:** This bond must be acknowledged before a Notary Public. This bond must be issued by a California-admitted surety; sureties must be authorized to do business in and have an agent for service of process in California. A certified copy of Power of Attorney must be attached.

## CALIFORNIA ALL-PURPOSE ACKNOWLEDGMENT

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

State of California )
)
County of_____)

On_____before me,_____, Notary Public, personally appeared

_____, who proved to me on the basis of satisfactory evidence to be the person(s) whose name is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct. WITNESS my hand and official seal.

_____

SIGNATURE OF NOTARY

---

## OPTIONAL

**ATTENTION NOTARY:** Although the information requested below is OPTIONAL, it could prevent fraudulent attachment of this certificate to an unauthorized document.

CAPACITY CLAIMED BY SIGNER

☐ INDIVIDUAL
☐ CORPORATE OFFICER(S)

_____
TITLE(S)

☐ PARTNER(S)

☐ LIMITED
☐ GENERAL

☐ ATTORNEY-IN-FACT

DESCRIPTION OF ATTACHED DOCUMENT

_____
TITLE OR TYPE OF DOCUMENT

_____
NUMBER OF PAGES

☐ TRUSTEE(S)
☐ GUARDIAN/CONSERVATOR
☐ OTHER: _____

_____
DATE OF DOCUMENT

**SIGNER IS REPRESENTING:**
NAME OF PERSON(S) OR ENTITY(IES)

_____
_____

_____
SIGNER(S) OTHER THAN NAMED ABOVE

****END OF SECTION****

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# NON–COLLUSION AFFIDAVIT

## (TO BE EXECUTED BY BIDDER AND SUBMITTED WITH BID)

STATE OF CALIFORNIA)

)ss

COUNTY OF _____ )

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 data relative thereto, or paid, and will not pay, any fee to any corporation, partnership, company, association, organization, bid depository, or to any member or agent thereof, to effectuate a collusive or sham bid.

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

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

Signed: _____

Title: _____

NOTE: This affidavit must be acknowledged before a Notary Public.

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# SUBCONTRACTOR'S NON–COLLUSION AFFIDAVIT
## (TO BE EXECUTED BY EACH SUBCONTRACTOR OF AWARDEE)

STATE OF CALIFORNIA)

)ss

COUNTY OF _____ )

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 data 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.

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

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

Signed: _____

Title: _____

NOTE: This affidavit must be acknowledged before a Notary Public.

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# GOOD FAITH EFFORTS CHECKLIST
## FOR DISADVANTAGED BUSINESS ENTERPRISE (DBE)
### (TO BE COMPLETED BY BIDDER AND SUBMITTED WITH BID)

Please complete the checklist to determine if you have complied with the requirements to make good faith efforts to ensure that certified DBEs have the opportunity to compete for procurements funded by USBR financial assistance funds. Bidders/offerers must make good faith efforts prior to submission of bids/proposals.

1. Did you ensure that DBEs were made aware of the project to the fullest extent practicable?

   ☐ Yes ☐ No

2. Did you ensure to solicit DBEs that have been identified as potential sources?

   ☐ Yes ☐ No

3. Did you consider in the contracting process whether firms competing for large contracts could subcontract with DBEs? This will include dividing total requirements, when economically feasible, into smaller tasks or quantities to permit maximum participation by small and minority business, and women's business enterprises?

   ☐ Yes ☐ No

4. Did you establish delivery schedules, where the requirement permits, which encourage participation by small and minority business, and women's business enterprises?

   ☐ Yes ☐ No

5. Did you use the services and assistance of the Small Business Administration, and the Minority Business Development Agency of the Department of Commerce to identify potential subcontractors?

   ☐ Yes ☐ No

6. List the potential DBE subcontractors that were contacted. Only list those whose line of work are consistent with the project's scope of work. If none were identified please note that.

   ☐ Yes ☐ No

| Name | How Contacted (e.g. letter, phone call, fax, e-mail) | Response (e.g. did not respond, not interested, not competitive) |
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****END OF SECTION****

# NOTICE TO BIDDERS OF VOLUNTARY JOB SITE TOUR

**YOU ARE INVITED TO ATTEND** a voluntary pre-bid conference and voluntary self-guided tour of the Driver Road Pipeline Project. A voluntary pre-bid conference will be conducted by the District on February 5, 2025, at 10:00 a.m. at the office of the District at 11281 Garzoli Avenue, Delano, CA 93215. Bidders are invited to partake in a voluntary self-guided tour of the Project at their convenience. The District will not accompany prospective bidders. Self-guided tours do not need to be coordinated with the bidding contact or District.

/s/ Roland Gross
General Manager
Southern San Joaquin Municipal Utility District
11281 Garzoli Avenue
Delano, CA 93215

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# NOTICE OF AWARD

TO: _____

PROJECT: SOUTHERN SAN JOAQUIN MUNICIPAL UTILITY DISTRICT
SPECIFICATIONS NO. SSJMUD 25-01
DRIVER ROAD PIPELINE PROJECT

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 or fail to provide the required bonds and certificates of insurance, 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 available to it at law, contract, or in equity.

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

Dated this _____ day of _____, _____.

SOUTHERN SAN JOAQUIN MUNICIPAL UTILITY DISTRICT
OWNER

By: _____
Roland Gross

Title: General Manager

**ACCEPTANCE OF NOTICE**

Receipt of the foregoing NOTICE OF AWARD is hereby acknowledged

By: _____

this the _____ Day of _____, _____

By: _____

Title _____

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# NOTICE TO PROCEED FORM

**TO:** _____

_____

**PROJECT:** Southern San Joaquin Municipal Utility District

Specifications No. SSJMUD 25-01

Driver Road Pipeline Project

**DATE:** _____

You are hereby notified to commence work in accordance with the Contract Documents for the above-described project on or before _____. **You are required to complete all Work per Special Conditions Section D-3.**

Owner: Southern San Joaquin Municipal Utility District

By: _____

Roland Gross
Deputy General Manager

---

**ACCEPTANCE OF NOTICE**

Receipt of the above NOTICE TO PROCEED is hereby acknowledged by

_____

this the _____day of_____, 20_____.

By: _____

Title: _____

****END OF SECTION****

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# NOTICE TO PROCEED CHECKLIST

**TO:** _____

_____

_____

**FROM:** Board of Directors

Southern San Joaquin Municipal Utility District

Notice is hereby given that you are authorized and directed to proceed with the following project in accordance with the Contract Documents: Specifications No. SSJMUD 25-01 for constructing the Driver Road Pipeline Project.

These documents have been received and are on file with the Southern San Joaquin Municipal Utility District:

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

Notification of Award of Contract has been filed by this District with the Department of Industrial Relations.

Under the terms of the Contract, work is to start within ten (10) calendar days after the date set forth below and is to be completed within the time set forth in the Special Conditions.

Southern San Joaquin Municipal Utility District

_____ By: _____

Date

Roland Gross
Deputy 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 accepted by Engineer which is to be used by Contractor in requesting payments and 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 and any Modifications thereof previously approved. Such acceptance is constituted by a Certificate of Completion and Final Acceptance by Engineer to Contractor.

d. **"Change Order"** – a written order to Contractor from Engineer authorizing a substitution, addition, deletion or revision 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. **"Construction Schedule"** – an outline of construction activities showing the sequence and timeline for completing the components of the Work.

g. **"Contract"** – the written agreement between District and Contractor covering the Work; other Contract Documents are attached to the Contract and made a part thereof as provided therein.

h. **"Contract Documents"** – the Notice Inviting Bids, the Instructions to Bidders, the accepted Proposal and Proposal Bidding Schedule, the Contractor's Licensing Statement, the Measurement and Payment, the Information Required of Bidders, the Agreement, the Bidder's Bond, the Faithful Performance Bond, the Payment

Bond, the Non-Collusion Affidavits, the Good Faith Efforts Check List for Disadvantaged Business Enterprises, the Notice to Proceed, General Conditions, Special Conditions, Specifications, Plans, Appendices and any Change Order or Addenda setting forth any modifications or interpretations of any of said documents, and any Grant Agreement.

i. **"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.

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

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

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

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

n. **"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.

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

p. **"District"** – the Southern San Joaquin Municipal Utility District.

q. **"DWR"** – the California Department of Water Resources.

r. **"Effective Date of the Contract"** – the date indicated in the Contract in which a fully executed Contract is delivered to the District.

s. **"Engineer"** – GEI Consultants, Inc.

t. **"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).

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

v. **"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.

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

x. **"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.

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

z. **"Grant Agreement" –** any agreement entered into between the District and any federal or state agency that pertains to this Contract and the Work**.**

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

bb. **"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.

cc. **"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.

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

ee. **"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.

ff. **"Owner" -** the Southern San Joaquin Municipal Utility District.

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

hh. **"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.

ii. **"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.

jj. **"Project"** – see Work**.**

kk. **"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.

ll. **"Record Drawings"** – set of drawings the Contractor shall maintain on which the Contractor shall mark all project conditions, locations, configurations, and any other changes or deviations which may vary from the information represented on the original Plans, including buried or concealed construction and utility features which are revealed during the course of construction.

mm. **"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.

nn. **"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.

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

pp. **"Shop Drawings" or "Submittals"** – all drawings, diagrams, illustrations, schedules and other material which are specifically 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.

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

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

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

tt. **"State"** – the State of California.

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

vv. **"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.

ww. **"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.

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

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

zz. **"U.S. Bureau of Reclamation, USBR, Reclamation"** – the United States Bureau of Reclamation Department of the Interior.

aaa. **"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.

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

ccc. 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.

ddd. **"AASHTO"** – the American Association of State Highway and Transportation Officials.

eee. **"ACI"** – the American Concrete Institute.

fff. **"AISC"** – the American Institute of Steel Construction.

ggg. **"AISI"** – the American Iron and Steel Institute.

hhh. **"ASME"** – the American Society of Mechanical Engineers.

iii. **"ASTM"** – the American Society for Testing and Materials.

jjj. **"AWS"** – the American Welding Society.

kkk. **"AWWA"** – the American Water Works Association.

lll. **"FWA"** – Friant Water Authority

mmm. **"IEEE"** (formerly AIEE) – the Institute of Electrical and Electronics Engineers.

nnn. **"IPCEA"** – the Insulated Power Cable Engineers Association.

ooo. **"NEMA"** – the National Electrical Manufacturers Association.

ppp. **"SSPC"** – the Steel Structures Painting Council.

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

rrr. The figures given in the Specifications or upon the Plans 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.

sss. 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 Plans to be furnished by the District. Should there be a conflict between the Specifications and the Plans, the Specifications shall be controlling, unless provided at the time of discovery in writing by the District that the plans govern in that case. Should there be a conflict between the General Conditions and the Special Conditions, the Special Conditions 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 it hereunder without prior written consent of the Engineer.

## C-4 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 or the Engineer, 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-4, 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-5 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.

## C-6 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-7 Compliance with Laws, Permits, Licenses, Approvals, Legal Obligations, Taxes

a. 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.

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

c. 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.

## C-8 Indemnification

a. To the fullest extent permitted by law, the Contractor shall assume the defense of and indemnify and save harmless the State of California, the California Department of Water Resources, the United States, the U.S. Bureau of Reclamation, Southern San Joaquin Municipal Utility District, the Engineer, and their respective directors, officers 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 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 California Department of Water Resources, the United States, the U.S. Bureau of Reclamation, Southern San Joaquin Municipal Utility

District, the Engineer, and their respective directors, officers and agents against any and all liens, claims, demands and costs, including attorneys' 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. Contractor 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 unless the Contractor has information that the process or article specified is or may be an infringement of a patent, in which case Contractor shall be responsible for such loss unless he promptly gives such information, in writing, to the Engineer.

## C-9 Assignments of Antitrust Actions

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 (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, materials, or services 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.

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.

## C-10 Claims and Payment of Attorneys' Fees

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 pursuant to Government Code Section 900 et seq. and a lawsuit on the claim 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 the matter remains in dispute, the case shall be submitted to judicial (non-binding) arbitration pursuant to Code of Civil Procedure Section 1141.10 et seq. 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.

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 attorneys' fees and litigation costs paid or owing as a result of such litigation.

Compliance with Public Contract Section 9204

Contractor shall comply with Public Contract Code Section 9204, the provisions of which are replicated, specifically, below:

(a) The Legislature finds and declares that it is in the best interests of the state and its citizens to ensure that all construction business performed on a public works project in the state that is complete and not in dispute is paid in full and in a timely manner.

(b) Notwithstanding any other law, including, but not limited to, Article 7.1 (commencing with Section 10240) of Chapter 1 of Part 2, Chapter 10 (commencing with Section 19100) of Part 2, and Article 1.5 (commencing with Section 20104) of Chapter 1 of Part 3, this section shall apply to any claim by a contractor in connection with a public works project.

(c) For purposes of this section:

(1) "Claim" means a separate demand by a contractor sent by registered mail or certified mail with return receipt requested, for one or more of the following:

(A) A time extension, including, without limitation, for relief from damages or penalties for delay assessed by a public entity under a contract for a public works project.

(B) Payment by the public entity of money or damages arising from work done by, or on behalf of, the contractor pursuant to the contract for a public works project and payment for which is not otherwise expressly provided or to which the claimant is not otherwise entitled.

(C) Payment of an amount that is disputed by the public entity.

(2) "Contractor" means any type of contractor within the meaning of Chapter 9 (commencing with Section 7000) of Division 3 of the Business and Professions Code who has entered into a direct contract with a public entity for a public works project.

(3) (A) "Public entity" means, without limitation, except as provided in subparagraph (B), a state agency, department, office, division, bureau, board, or commission, the

California State University, the University of California, a city, including a charter city, county, including a charter county, city and county, including a charter city and county, district, special district, public authority, political subdivision, public corporation, or nonprofit transit corporation wholly owned by a public agency and formed to carry out the purposes of the public agency.

(B) "Public entity" shall not include the following:

(i) The Department of Water Resources as to any project under the jurisdiction of that department.

(ii) The Department of Transportation as to any project under the jurisdiction of that department.

(iii) The Department of Parks and Recreation as to any project under the jurisdiction of that department.

(iv) The Department of Corrections and Rehabilitation with respect to any project under its jurisdiction pursuant to Chapter 11 (commencing with Section 7000) of Title 7 of Part 3 of the Penal Code.

(v) The Military Department as to any project under the jurisdiction of that department.

(vi) The Department of General Services as to all other projects.

(vii) The High-Speed Rail Authority.

(4) "Public works project" means the erection, construction, alteration, repair, or improvement of any public structure, building, road, or other public improvement of any kind.

(5) "Subcontractor" means any type of contractor within the meaning of Chapter 9 (commencing with Section 7000) of Division 3 of the Business and Professions Code who either is in direct contract with a contractor or is a lower tier subcontractor.

(d) (1) (A) Upon receipt of a claim pursuant to this section, the public entity to which the claim applies shall conduct a reasonable review of the claim and, within a period not to exceed 45 days, shall provide the claimant a written statement identifying what portion

of the claim is disputed and what portion is undisputed. Upon receipt of a claim, a public entity and a contractor may, by mutual agreement, extend the time period provided in this subdivision.

(B) The claimant shall furnish reasonable documentation to support the claim.

(C) If the public entity needs approval from its governing body to provide the claimant a written statement identifying the disputed portion and the undisputed portion of the claim, and the governing body does not meet within the 45 days or within the mutually agreed to extension of time following receipt of a claim sent by registered mail or certified mail, return receipt requested, the public entity shall have up to three days following the next duly publicly noticed meeting of the governing body after the 45-day period, or extension, expires to provide the claimant a written statement identifying the disputed portion and the undisputed portion.

(D) Any payment due on an undisputed portion of the claim shall be processed and made within 60 days after the public entity issues its written statement. If the public entity fails to issue a written statement, paragraph (3) shall apply.

(2) (A) If the claimant disputes the public entity's written response, or if the public entity fails to respond to a claim issued pursuant to this section within the time prescribed, the claimant may demand in writing an informal conference to meet and confer for settlement of the issues in dispute. Upon receipt of a demand in writing sent by registered mail or certified mail, return receipt requested, the public entity shall schedule a meet and confer conference within 30 days for settlement of the dispute.

(B) Within 10 business days following the conclusion of the meet and confer conference, if the claim or any portion of the claim remains in dispute, the public entity shall provide the claimant a written statement identifying the portion of the claim that remains in dispute and the portion that is undisputed. Any payment due on an undisputed portion of the claim shall be processed and made within 60 days after the public entity issues its written statement. Any disputed portion of the claim, as identified by the contractor in writing, shall be submitted to nonbinding mediation, with the public entity and the claimant sharing the associated costs equally. The public entity and claimant shall mutually agree to a mediator within 10 business days after the disputed portion of the claim has been identified in writing.

If the parties cannot agree upon a mediator, each party shall select a mediator and those mediators shall select a qualified neutral third party to mediate with regard to the disputed portion of the claim. Each party shall bear the fees and costs charged by its respective mediator in connection with the selection of the neutral mediator. If mediation is unsuccessful, the parts of the claim remaining in dispute shall be subject to applicable procedures outside this section.

(C) For purposes of this section, mediation includes any nonbinding process, including, but not limited to, neutral evaluation or a dispute review board, in which an independent third party or board assists the parties in dispute resolution through negotiation or by issuance of an evaluation. Any mediation utilized shall conform to the timeframes in this section.

(D) Unless otherwise agreed to by the public entity and the contractor in writing, the mediation conducted pursuant to this section shall excuse any further obligation under Section 20104.4 to mediate after litigation has been commenced.

(E) This section does not preclude a public entity from requiring arbitration of disputes under private arbitration or the Public Works Contract Arbitration Program, if mediation under this section does not resolve the parties' dispute.

(3) Failure by the public entity to respond to a claim from a contractor within the time periods described in this subdivision or to otherwise meet the time requirements of this section shall result in the claim being deemed rejected in its entirety. A claim that is denied by reason of the public entity's failure to have responded to a claim, or its failure to otherwise meet the time requirements of this section, shall not constitute an adverse finding with regard to the merits of the claim or the responsibility or qualifications of the claimant.

(4) Amounts not paid in a timely manner as required by this section shall bear interest at 7 percent per annum.

(5) If a subcontractor or a lower tier subcontractor lacks legal standing to assert a claim against a public entity because privity of contract does not exist, the contractor may present to the public entity a claim on behalf of a subcontractor or lower tier subcontractor. A subcontractor may request in writing, either on their own behalf or on behalf of a lower tier subcontractor, that the contractor present a claim for work

which was performed by the subcontractor or by a lower tier subcontractor on behalf of the subcontractor. The subcontractor requesting that the claim be presented to the public entity shall furnish reasonable documentation to support the claim. Within 45 days of receipt of this written request, the contractor shall notify the subcontractor in writing as to whether the contractor presented the claim to the public entity and, if the original contractor did not present the claim, provide the subcontractor with a statement of the reasons for not having done so.

(e) The text of this section or a summary of it shall be set forth in the plans or specifications for any public works project that may give rise to a claim under this section.

(f) A waiver of the rights granted by this section is void and contrary to public policy, provided, however, that (1) upon receipt of a claim, the parties may mutually agree to waive, in writing, mediation and proceed directly to the commencement of a civil action or binding arbitration, as applicable; and (2) a public entity may prescribe reasonable change order, claim, and dispute resolution procedures and requirements in addition to the provisions of this section, so long as the contractual provisions do not conflict with or otherwise impair the timeframes and procedures set forth in this section.

(g) This section applies to contracts entered into on or after January 1, 2017.

(h) Nothing in this section shall impose liability upon a public entity that makes loans or grants available through a competitive application process, for the failure of an awardee to meet its contractual obligations.

(i) This section shall remain in effect only until January 1, 2027, and as of that date is repealed, unless a later enacted statute that is enacted before January 1, 2027, deletes or extends that date.

<u>Compliance with Public Contract Section 20104</u>

Following compliance with Public Contract Code Section 9204 as provided herein, Contractor shall comply with Public Contract Code Section 20104 et seq., if applicable. The applicable provisions of Public Contract Code Section 20104 et seq. are replicated, specifically, below:

(a) (1) This article applies to all public works claims of three hundred seventy-five thousand dollars ($375,000) or less which arise between a contractor and a local agency.

(2) This article shall not apply to any claims resulting from a contract between a contractor and a public agency when the public agency has elected to resolve any disputes pursuant to Article 7.1 (commencing with Section 10240) of Chapter 1 of Part 2.

(b) (1) "Public work" means "public works contract" as defined in Section 1101 but does not include any work or improvement contracted for by the state or the Regents of the University of California.

(2) "Claim" means a separate demand by the contractor for (A) a time extension, (B) payment of money or damages arising from work done by, or on behalf of, the contractor pursuant to the contract for a public work and payment of which is not otherwise expressly provided for or the claimant is not otherwise entitled to, or (C) an amount the payment of which is disputed by the local agency.

(c) The provisions of this article or a summary thereof shall be set forth in the plans or specifications for any work which may give rise to a claim under this article.

(d) This article applies only to contracts entered into on or after January 1, 1991.

**20104.2**

For any claim subject to this article, the following requirements apply:

(a) The claim shall be in writing and include the documents necessary to substantiate the claim. Claims must be filed on or before the date of final payment. Nothing in this subdivision is intended to extend the time limit or supersede notice requirements otherwise provided by contract for the filing of claims.

(b) (1) For claims of less than fifty thousand dollars ($50,000), the local agency shall respond in writing to any written claim within 45 days of receipt of the claim, or may request, in writing, within 30 days of receipt of the claim, any additional documentation supporting the claim or relating to defenses to the claim the local agency may have against the claimant.

(2) If additional information is thereafter required, it shall be requested and provided pursuant to this subdivision, upon mutual agreement of the local agency and the claimant.

(3) The local agency's written response to the claim, as further documented, shall be submitted to the claimant within 15 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, whichever is greater.

(c) (1) For claims of over fifty thousand dollars ($50,000) and less than or equal to three hundred seventy-five thousand dollars ($375,000), the local agency shall respond in writing to all written claims within 60 days of receipt of the claim, or may request, in writing, within 30 days of receipt of the claim, any additional documentation supporting the claim or relating to defenses to the claim the local agency may have against the claimant.

(2) If additional information is thereafter required, it shall be requested and provided pursuant to this subdivision, upon mutual agreement of the local agency and the claimant.

(3) The local agency's written response to the claim, as further documented, shall be submitted to the claimant within 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 requested documentation, whichever is greater.

(d) If the claimant disputes the local agency's written response, or the local agency fails to respond within the time prescribed, the claimant may so notify the local agency, in writing, either within 15 days of receipt of the local agency's response or within 15 days of the local agency'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 local agency shall schedule a meet and confer conference within 30 days for settlement of the dispute.

(e) Following the meet and confer conference, if the claim or any portion remains in dispute, the claimant may file a claim as provided in Chapter 1 (commencing with Section 900) and Chapter 2 (commencing with Section 910) of Part 3 of Division 3.6 of Title 1 of the Government Code. For purposes of those provisions, the running of the period of time within which a claim must be filed shall be tolled from the time the claimant submits his or her written claim pursuant to subdivision (a) until the time that claim is denied as a result of the meet and confer process, including any period of time utilized by the meet and confer process.

(f) This article does not apply to tort claims and nothing in this article is intended nor shall be construed to change the time periods for filing tort claims or actions specified by Chapter 1 (commencing with Section 900) and Chapter 2 (commencing with Section 910) of Part 3 of Division 3.6 of Title 1 of the Government Code.

**20104.4**

The following procedures are established for all civil actions filed to resolve claims subject to this article:

(a) Within 60 days, but no earlier than 30 days, following the filing or responsive pleadings, the court shall submit the matter to nonbinding mediation unless waived by mutual stipulation of both parties. The mediation process shall provide for the selection within 15 days by both parties of a disinterested third person as mediator, shall be commenced within 30 days of the submittal, and shall be concluded within 15 days from the commencement of the mediation unless a time requirement is extended upon a good cause showing to the court or by stipulation of both parties. If the parties fail to select a mediator within the 15-day period, any party may petition the court to appoint the mediator.

(b) (1) If the matter remains in dispute, the case shall be submitted to judicial arbitration pursuant to Chapter 2.5 (commencing with Section 1141.10) of Title 3 of Part 3 of the Code of Civil Procedure, notwithstanding Section 1141.11 of that code. The Civil Discovery Act (Title 4 (commencing with Section 2016.010) of Part 4 of the Code of Civil Procedure) shall apply to any proceeding brought under this subdivision consistent with the rules pertaining to judicial arbitration.

(2) Notwithstanding any other provision of law, upon stipulation of the parties, arbitrators appointed for purposes of this article shall be experienced in construction law, and, upon stipulation of the parties, mediators and arbitrators shall be paid necessary and reasonable hourly rates of pay not to exceed their customary rate, and such fees and expenses shall be paid equally by the parties, except in the case of arbitration where the arbitrator, for good cause, determines a different division. In no event shall these fees or expenses be paid by state or county funds.

(3) In addition to Chapter 2.5 (commencing with Section 1141.10) of Title 3 of Part 3 of the Code of Civil Procedure, 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 under that chapter, pay the attorney's fees of the other party arising out of the trial de novo.

(c) The court may, upon request by any party, order any witnesses to participate in the mediation or arbitration process.

**20104.6**

(a) No local agency shall fail to pay money as to any portion of a claim which is undisputed except as otherwise provided in the contract.

(b) In any suit filed under Section 20104.4, the local agency shall pay interest at the legal rate on any arbitration award or judgment. The interest shall begin to accrue on the date the suit is filed in a court of law.

## C-11 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-12 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 the 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 ten (10) years involving work of size and complexity comparable to that to be installed under these Contract Documents. In conformance with Paragraph B-12, it is further required that the Contractor 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 Contractor's own payroll may be included in the above required sixty percent (60%).

## C-13 Contractor's License

Contractor, including all Subcontractors and Specialty Contractors, shall possess a valid California Contractor's license, of the required class for the Work to be performed and completed as required by the Project, the Contract Documents, and the Specification, at the time the Bid/Proposal is submitted and during the entire course of performance under the Contract. The following statement, in pertinent part, shall be included in at least 10-point type on all written contracts with respect to which the person is a prime contractor in accordance with Section 7030 of the California Business and Professions Code:

"Contractors are required by law to be licensed and regulated by the Contractors' State License Board which has jurisdiction to investigate complaints against contractors if a complaint regarding a patent act or omission is filed within four years of the date of the alleged violation. A complaint regarding a latent act or omission pertaining to structural defects must be filed within 10 years of the date of the alleged violation. Any questions concerning a contractor may be referred to the Registrar, Contractors' State License Board, P.O. Box 26000, Sacramento, CA 95826."

## C-14 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 herein and made a part hereof.

b. Each subcontract shall contain a suitable provision for the suspension or termination of that subcontract 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 relationship 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 Owner before the subcontractor commences performance of the Work. Each subcontract shall contain a reference to the agreement between Owner 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 Owner, if, in Owner'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 Owner 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 Owner.

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-15 Plans and Specifications

Plans furnished herewith are for bidding purposes. The Engineer will furnish the Contractor electronic copies of conformed Plans and Specifications. The Contractor shall have no claim for excusable delay on account of the failure of the Engineer to deliver necessary Plans or Specifications unless the Engineer shall have failed to deliver the same within two (2) weeks after receipt of written demand for the Plans and Specifications by the Contractor.

The Contractor shall keep one (1) paper copy of all current Plans and Specifications relating to the Work, in good order, available to the Engineer and his representatives, and convenient to the Site, on site at all times.

If the Contractor, in the course of the Work, finds any discrepancy between the Plans 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 Plans, 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.

The Contractor shall not take advantage of any errors, discrepancies or omissions which may exist in the Plans and Specifications but shall immediately call them to the attention of the Engineer whose interpretation or correction thereof shall be conclusive.

It is intended that the information pertaining to conditions that may affect the cost of the Work will be shown on the Drawings or indicated in the Specifications; however, the District does not warrant the completeness or accuracy of such information. The Contractor shall ascertain the existence of conditions that would affect the cost of the Work which would have been disclosed by a reasonable examination.

Existing improvements visible at the Site for which no specific disposition is made on the Plans but which could reasonably be assumed to interfere with the satisfactory completion of the improvements contemplated by the Plans shall be removed and disposed of by the Contractor.

When deemed necessary by the Engineer, additional Detailed Drawings will be furnished to the Contractor during the progress of the Work.

The location of the Work, its general nature and extent, and the form and general dimensions of all appurtenant works are shown on the Plans to be attached to and made a part of these Specifications. Drawings applicable to the Work described in the Contract Documents are listed on the front page of the Plans.

## C-16 Department of Industrial Relations Registration

Pursuant to Labor Code Section 1725.5, all Contractors, including Subcontractors and Specialty Contractors, are to be registered with the Department of Industrial Relations in order to be qualified to bid on, be listed in a bid proposal, or engage in the performance of any public work contract. The foregoing are required to register with the Department of Industrial Relations prior to bidding, being included on a bid, or engaging in Work set forth herein. Said Registration shall be maintained by the Contractor at all times prior to and throughout the course of completion of the Project, and the cost and renewal thereof is to be the sole responsibility of the Contractor, Subcontractor, and/or Specialty Contractor.

## C-17 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 the District twenty-five dollars ($25) for each worker employed in the execution of the Contract by him or by any Subcontractor under him for each calendar day during which such worker is required or permitted to work more than eight (8) hours in any one (1) calendar day and forty (40) hours in any one (1) calendar week in violation of the provisions 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. and the Davis-Bacon Act, whichever is greater.

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, which is incorporated herein by this reference. 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.

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. Davis-Bacon Act wages can be found at www.dol.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. Prior to commencing Work, Contractor 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-18 Quality Control

All items specified under the Specifications 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. 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 ensure that all items of Work meet material quality and performance requirements of the Specifications, if so directed by the Engineer, for those items of Work manufactured or fabricated elsewhere than his plant, the Contractor shall furnish written certification that adequate supervision, inspection and quality control procedures have been provided.

Refer to section D-13 for Quality Control – Testing responsibility.

## C-19 Construction Program (Schedule)

**Post-Award Schedule** - Within five (5) days of award of Contract by the District, the Engineer will return the post-bid pre-award Construction Schedule to the Contractor. The Contractor shall modify the schedule to include any modifications, or changes and to reflect final phasing and scheduling of Work.

The Contractor shall complete these modifications within five (5) calendar days from date the schedule is returned to him and shall resubmit it for review. Upon receiving written notice from the Engineer that the schedule, as revised, has been accepted, it will then become the Construction Schedule by which the Contractor shall construct the Work and shall be subject to progress reporting, revision, and updating procedures implemented during the course of construction.

The initial Construction Schedule shall contain no Contract changes or delays which may have occurred during the interim submittal period. Changes shall be entered at the first update revision as specified under revisions to Construction Schedule produced below.

At any time during the progress of the project, if Contractor's progress has fallen behind the accepted Construction Schedule, Contractor shall take such corrective steps as may be required, including but not limited to, increasing the number of personnel, shifts, overtime operations, days of work, and amount of construction equipment until such time as the Work is back on schedule, at no additional cost to the District. He shall also submit at the next weekly construction progress meeting such supplementary schedule

or schedules as may be deemed necessary to demonstrate the manner in which the approved rate of progress will be regained.

**Revisions to Construction Schedule** - The Contractor shall submit a revised Construction Schedule within five (5) days of the occurrence of any of the following:

a. When delay in completion of any activity or group of activities indicates an overrun of the Contract time by thirty (30) working days.

b. Delays in submittals, deliveries, or work stoppage are encountered which make re-planning or rescheduling of the Work necessary.

c. The schedule does not represent the actual prosecution and progress of the project as being performed in the field.

The revised Construction Schedule shall be submitted to the Engineer for review with a letter describing the reasons for submitting a revised Construction Schedule with any supporting documentation. The cost of revisions to the Construction Schedule resulting from Contract changes will be included in the cost for the change in the Work.

The cost of revision to the Construction Schedule not resulting from authorized changes in the Work shall be the responsibility of the Contractor.

## C-20 Superintendence

a. The Contractor shall submit a statement of the qualifications of its proposed superintendent to the Engineer for review. The statement shall include the superintendent's name, the name of each project that is the basis of the qualifications, each project site location, a brief description of each project, and the name and mailing address of the owner for each project.

b. The Contractor shall assign a duly authorized and competent person continually on the site during the Work. The superintendent shall have not less than 7 years' experience as a contractor's general superintendent on heavy engineering work with not less than 4 years as a superintendent on projects with complexity and configuration similar to the Work described in the contract documents.

c. If the superintendent is not deemed qualified or if the superintendent's performance on the Work is determined to be unsatisfactory by the Engineer, the superintendent shall be immediately removed from the project.

d. The Contractor shall furnish to the Engineer a written statement of the qualifications of the proposed substitute superintendent if a substitute superintendent is required.

e. A substitute superintendent shall meet the same requirements and shall be subject to approval by the Engineer.

## C-21 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-22 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 for its prosecution. 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 in enforcing the provisions hereof against the Contractor due to any refusal or failure to prosecute the Work.

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 affecting the Site in excess of a magnitude of 3.5 on the Richter Scale and tidal waves), acts of the public enemy, a war in which the United States of America is a participant, 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 ground water), 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 request 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 waive any such claim.

e. No additional time extensions will be granted for inclement weather conditions, only as provided under this paragraph. Contract time extensions will be granted as provided in this Paragraph C-22; 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 mitigative measures such as pumping of surface water, utilizing equipment best suited for adverse weather, etc.

## C-23 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 Site 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-23, 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-24 Changes and Extra Work

a. Without invalidating the Contract, District may, at any time or from time to time, order Change Work or request Extra Work to be performed by the Contractor. Change Work may involve increasing or decreasing the quantity of an item or portion of the Work; deleting any item, or items, of the Work; or adding items to the Work.

b. Engineer will provide Contractor with a written description of the scope of Work involved. Unless otherwise required, Contractor shall, within 10 days after receipt of such written material, submit in writing to Engineer a proposal for accomplishing such Work.

The proposal shall reflect any change in cost to Contractor for performing the proposed Change Work or Extra Work under the Contract, in comparison to what the cost would have been otherwise. The proposal shall state the basis for compensation for such Work. Sufficient detail shall be given in the proposal to permit thorough analysis.

The proposal shall state also the basis for any change of Contract Time, or for a change in the time required for completion of any items of Work for which a specific completion time or date is set forth in the Contract, due to the Change Work or Extra Work. Sufficient detail shall be given in the proposal to permit thorough analysis.

The proposal shall state if the performance of such Change Work or Extra Work would result in any change in the time required for completion of any items of the Work as shown on Contractor's current construction schedule. A revised construction schedule shall be submitted with the proposal if any such changes are involved.

Engineer will analyze the proposal data, clarify as needed and, if necessary, attempt to reach agreement on the terms of the proposal through negotiations with Contractor.

Engineer will then determine one of the following:

1. A Change Order will be issued ordering Change Work or Extra Work, based upon the Contractor's proposal covering such Work, or on the proposal as modified by mutual agreement.

2. The proposed Change Work or Extra Work will not be performed under the Contract.

Change Work and Extra Work must be authorized through a Change Order or Field Order. Upon receipt of a Change Order, Contractor shall proceed with the Work involved. All such Work shall be executed under the applicable conditions of the Contract Documents. If, as determined by District, any Change Order causes a change in Contract Price or a change in Contract Time, an equitable adjustment will be made.

c. Engineer may authorize minor Change Work not involving a change in Contract Price or Contract Time, which is consistent with the intentions of the Contract Documents. This will be accomplished by Field Order and shall be binding on District and on Contractor who shall perform the change promptly. If Contractor believes that Work under a Field Order justifies an increase in Contract Price or an extension of Contract Time, Contractor may make a claim as provided for in Paragraphs C-25 and C-27.

Engineer may also issue a Field Order for Change Work where, 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. In these cases, a Change Order will be developed as soon as possible to replace the Field Order.

Additional Work performed without authorization of a Change Order will not entitle Contractor to an increase in Contract Price or an extension of Contract Time.

It shall be solely the responsibility of Contractor to provide any notice to sureties of any change affecting the general scope of the Work or change in Contract Price or Contract Time.

d. Any Change Work or Extra Work will be authorized by written orders to Contractor by Engineer, except that in the event of an emergency which Engineer determines endangers life or property and only in such an event, Engineer may issue oral orders to Contractor for any Work required by reason of such emergency. Any such oral orders will be confirmed in writing as soon as practicable. Such orders, whether written or oral, may be accompanied by drawings and data as are necessary to show the extent of such ordered Work.

Contractor shall commence such Work so that all current Contract Time requirements will be met, except that in the event of an emergency which Engineer determines endangers life or property, Contractor shall commence such Work as required by Engineer.

e. If the time required for completion of any items for which a specific completion date is set forth in the Contract is changed because of the performance of Change Work or Extra Work, an adjustment in the time for completion for the affected items will be made. The construction schedule shall be revised to reflect such adjustment and resubmitted for approval.

## C-25 Changes of Contract Price

a. The Contract Price constitutes the total compensation payable to Contractor for performing the Work. All duties, responsibilities and obligations assigned to or undertaken by Contractor shall be at its expense without change in the Contract Price.

The Contract Price may be changed only by a Change Order. Any claim by Contractor for an increase in the Contract Price shall be based on written notice delivered to Engineer within 15 days after the occurrence of the event giving rise to the claim. Failing such notice, the claim shall be deemed to have been waived by Contractor. Notice of the amount of the claim with supporting data, shall be delivered within 45 days after such occurrence unless Engineer agrees in writing to allow an additional period of time. Any change in the Contract Price will be determined by Engineer.

b. The basis for change of Contract Price through a Change Order shall be either Contract unit or lump sum prices, if applicable, or new unit or lump sum prices, unless otherwise specified.

If the basis of compensation proposed by Contractor for Change Work, or any part thereof, is not acceptable, and if a basis of compensation for such Work, or any part thereof, cannot be agreed upon, the basis of compensation will be determined by Engineer and set forth in the Change Order.

In the event that an agreement cannot be reached for the basis of compensation, such basis of compensation will either be as developed by Engineer (considering the character, location and extent of the Change Work and Contract unit or lump sum prices) or cost-plus as provided in Paragraph C-25.c.

If at any time after Contractor commences such Change Work, another basis of compensation for such Work, or any part thereof, is agreed upon, compensation will be made in accordance with such agreement. In any event Contractor shall keep accurate records of its actual costs for such Change Work.

If the Change Order in a situation where a basis of compensation must be determined by the Engineer, involves deletion of an entire item, or items of Work, payment will be made to Contractor for Work performed prior to the date Contractor was notified by Engineer in writing of such deletion. If acceptable material for use in the deleted Work was ordered by Contractor prior to notification, and if the order for such material cannot be cancelled, as determined by Engineer, Contractor will be paid for such material. Upon such payment said material will become the property of District and District will arrange for its disposition at District expense. All payments to Contractor for material order's that cannot be cancelled will be on a cost-plus basis as provided in Paragraph C-25.c. below. If the order for said material can be cancelled, Contractor will be paid for only actual costs of ordering and canceling.

c. Any Work performed under the Contract on a cost-plus basis shall be in accordance with the following:

1. **Direct Labor Cost** - Payment shall be made for all manual classifications up to and including foremen, but shall not include superintendents, assistant superintendents, general foremen, surveyors, office personnel, time-keepers and maintenance mechanics. The direct labor cost for foremen shall be proportioned to all of their assigned work and only that portion applicable to cost-plus Change Work or Extra Work shall be paid for such Work. The time charged to Change Work or Extra Work shall be subject to daily approval and no charges shall be accepted unless evidence of such approval is submitted by Contractor with its billing. Labor rates used to calculate the direct labor costs shall be those rates in effect during the accomplishment of Change Work or Extra Work. In addition to the direct

payroll costs, the direct labor costs shall include payroll taxes and insurance, vacation allowance, subsistence, travel time, overtime premium and any other payroll additives required to be paid by Contractor by law or collective bargaining agreements. Copies of certified pertinent payrolls shall be submitted to Engineer. Overtime shall not be worked without prior written approval by the Engineer. 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 Change Work or Extra Work as authorized.

2. **Equipment Costs** - Payment for the rental and operation of the equipment furnished and used by Contractor shall be made for all construction and automotive equipment, except equipment or tools with a current new cost at point of origin of $500 or less each.

Equipment time charged to Change Work or Extra Work will be subject to daily approval and no charges will be accepted unless evidence of such approval is submitted with Contractor's billing.

The equipment rental rates used shall be those rates listed in "Labor Surcharge and Equipment Rental Rates" as published by Caltrans, in effect as of the date of the Contract. These rates shall include the cost of fuel, oil, lubrication, supplies, small tools, necessary attachments, repairs and maintenance of any kind, depreciation, storage, insurance, and all incidentals. Such rates shall not include costs for operating labor, which will be paid as provided in Paragraph C-25.c., Item 1. Direct Labor Cost, or for transportation of equipment to and from the location of Change Work or Extra Work. For equipment proposed to be used for which rental rates are not set forth in said publication, the rental rates shall be negotiated with Engineer and agreed upon in writing before such equipment is used on any Change Work or Extra Work.

When the operated use of equipment is infrequent and, as determined, the equipment need not remain at the Site continuously, payment shall be limited to actual hours of use. Equipment not operating but retained at the location of Change Work or Extra Work at Engineer's direction shall be

paid for at a rate equal to the rental rate times the right of way delay factor in the above-referenced Caltrans publication.

Transportation costs for bringing equipment that will be used exclusively for cost-plus Work to the Site and for returning equipment to the point of origin, will be reimbursed to Contractor based on invoices, provided that prior written approval for such transport has been given by Engineer to Contractor.

3. **Material Costs** - Payment for the cost of materials furnished and used by Contractor in performing any Change Work or Extra Work shall be made, provided such furnishing and use of materials was as specifically authorized in a Modification and the actual use was verified by Engineer. Charges shall be the net cost to Contractor for such materials delivered at the Site and vendor's invoice shall accompany the billing along with verification by Engineer of use of such materials.

4. **Subcontract and Outside Service Costs** - Payment for Work and services subcontracted by Contractor in the performance of Change Work or Extra Work will be allowed only when both the Subcontractor and the terms of payment to such Subcontractor have been approved in writing before the Subcontractor starts to Work on Change Work or Extra Work. Such charges will be allowed at net cost to Contractor on the same basis as provided in Items (1) through (3) above.

   Markups on Work performed by Subcontractors shall not exceed five percent (5%).

5. **Tools, Supplies, Overhead, Supervision and Profit** - Payment for use of tools and equipment with a current new cost of $500 or less each and for supplies, overhead, supervision and profit will be made in an amount determined as follows:

a) For Work performed by Contractor an amount equal to the following percentages of Items (1), (2) and (3) above:

| | |
|---|---|
| Direct Labor Costs | 20 |
| Equipment Costs | 15 |
| Material Costs | 15 |

b) For Work performed by Subcontractor or through outside services an amount equal to the following percentages of Items (1), (2) and (3) above:

| | |
|---|---|
| Direct Labor Costs | 25 |
| Equipment Costs | 15 |
| Material Costs | 15 |

No payment shall be made for cost-plus Work except as provided in Items (1) through (5) above. No payment shall be made for extended home office overhead costs. Any other costs for such Work shall be considered to be included in these payments.

## C-26 Claims for Extra Cost

If the Contractor claims that any instructions by Plans or otherwise that are issued after the Notice to Proceed involve extra cost under the 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.

## C-27 Changes of Contract Time

a. All time limits stated in the Contract Documents are of the essence of the Contract. The Contract Time may be changed only by a Change Order.

b. If any Change Work or Extra Work requires a change of Contract Time, or in the time required for the completion of any items of Work for which a specific completion time or date is set forth in the Contract, an adjustment shall be made by Change Order to allow sufficient time for the required Work to be efficiently performed by Contractor, as determined by the Engineer.

c. If Contractor's performance is prevented or delayed by any cause, existing or future, which is beyond the reasonable control and without the fault or negligence of Contractor and which condition was not foreseeable by Contractor at the time the Contract was entered into, such as an act, omission or neglect of the District, or its representatives, Acts of God (herein to include only the following occurrences or conditions and effect: earthquakes affecting the Site in excess of a magnitude of 3.5 on the Richter Scale and tidal waves), acts of the public enemy, a war in which the United States of America is a participant, 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 ground water), epidemics, quarantine restrictions, strikes, lockouts, freight embargoes, or unusually severe weather, Contractor shall, within ten (10) days after the commencement of any such delay, give to Engineer written notice thereof and of the anticipated results thereof. Within seven (7) days after the termination of any such delay, Contractor shall file a written notice with Engineer specifying the actual duration of the delay and claim for increase of Contract Time. Failing to meet either of the above notice requirement the claim shall be deemed to have been waived by Contractor. If District determines that the delay was beyond the control and without the fault or negligence of Contractor and not foreseeable by Contractor at the time the Contract was entered into, the Contract Time will be extended in an amount equal to time lost due to such delay and the Contract will be modified by Change Order accordingly.

   The Contract Time will not be extended if any such delay is attributed by Contractor to any Subcontractor(s) or Supplier(s) and District determines that the cause of the delay was not beyond the reasonable control or due to the fault or negligence of said Subcontractor(s) or Suppliers(s); or 1) the services, equipment or supplies involved were available in adequate time from other sources; 2) Engineer directed Contractor, in writing, to obtain such services, equipment or supplies from said other sources; and 3) Contractor failed to comply with such directions.

d. When Contractor requests an increase of Contract Time for delay due to inability to obtain materials or equipment, its last written notice, as provided in Paragraph C-27.c., shall include the following:

1. Date Engineer was notified of delay.
2. Date the delay began.
3. Exact description of material or equipment causing delay.
4. Documentation showing when and from whom ordered.
5. Documentation of promised delivery schedule.
6. Documentation of actual delivery schedule.
7. Description of how late delivery caused delay (include current construction schedule).
8. Documentation of measures taken to try and get prompt delivery.
9. Documentation of attempts to get timely delivery from other sources.
10. Description of steps taken to minimize effects of late delivery on progress of Work.
11. Description of steps taken to stay within Contract Time after actual delivery.
12. Statement of actual days lost as a result of late delivery.

## C-28 Inspection of Work

a. The State of California, the California Department of Water Resources, the US Bureau of Reclamation, Southern San Joaquin Municipal Utility District, the District, the Engineer and their respective directors, officers, 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 or proper testing may be required to be removed and replaced under proper inspection and testing 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 shows 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. 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. Refer to Section D-13 for quality control testing responsibility.

## C-29 Field Verification of Existing Dimensions and Ground Profiles

Layout dimensions shown on the Plans 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 ensure satisfactory fitting of all existing facilities with new Contract materials and equipment, and to insure that the proper earth cover is provided over all new and existing buried pipe. Depth of existing buried utilities shall be verified prior to construction.

## C-30 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 and without limiting the generality of the foregoing: obstacles, obstructions or adverse groundwater 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-31 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 owners 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 the Work. The Contractor shall

contact Underground Service Alert (USA) at 1-800-227-2600 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 workplan, 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 of such underground facility and give written notice to 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 the 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.

## C-32 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 (if applicable). 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 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 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 trunkline public utility facilities as defined by Government Code Section 4215 ("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-24 and C-25 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 shall immediately notify the Engineer in writing.

i. Subject to the provisions of Paragraph C-32.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-33 Temporary Use of District Facilities

Subject to the approval of the District, the Contractor will be permitted to make temporary use of any available, District-owned facilities in the vicinity of the Site 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.

## C-34 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.

## C-35 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.

## C-36 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. Unless the specification or description contains "Or-Equal" after the manufacturer/supplier name, no substitution is permitted, and the material must be supplied by the manufacturer or supplier as listed.

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 Time; 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. This form can be found at the end of this Section.

## C-37 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 owners of private drives before interfering with them. Such maintenance of traffic will not be required when Contractor has obtained written permission from the owner 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.

a. **Surface and Stormwater 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.

b. **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.

c. **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.

d. **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.

e. **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.

f. **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.

## C-38 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.

## C-39 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 the 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-32 of the General Conditions.

## C-40 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. Acceptance of the Work by the District will be in the form of the fully-executed and recorded Notice of Completion, which will be filed with the Kern County Recorder's office.

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 Paragraph 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 Paragraph. 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 Paragraph, 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 Paragraph or elsewhere in the Contract Documents.

No guarantee, whether provided in this Paragraph 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. In addition to any other warranties, representations and guarantees stated elsewhere in the Contract and any warranties implied by law, the Contractor agrees that, for a maintenance warranty period of three (3) years after the acceptance of the Work, the Contractor shall be responsible for the repair of all defects, leaks, or failures occurring in the pipe, pipe joints, and fittings (if applicable) from any cause whatsoever, except as hereinafter provided. The Contractor will be reimbursed the actual and necessary cost, plus twenty percent (20%) for profit and general expense of any Work or materials pertaining to repairs or replacements that are determined as not the responsibility of the Contractor.

The Contractor, upon notice from the District, shall promptly commence and diligently prosecute the repair of any defects, leaks, or failures that develop during the maintenance warranty period. The Work of repairing any defects, leaks, or failures includes the necessary excavation, pipe repair, backfill, and replacement of any appurtenances destroyed or disturbed by reason of such Work. Repairs as may be required shall be made by the Contractor in such a manner as to cause the least practicable interference with the use of the pipelines in service. The Contractor shall make necessary arrangements to have competent personnel and suitable equipment available so that repairs may be commenced within 48 hours after receipt of notice from the District.

The obligations of the Contractor under this Paragraph shall be enforceable against his surety or sureties for the Faithful Performance Bond under the 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 Faithful 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.

## C-41 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 Contractor's 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-42 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.

## C-43 Notice of Latent or Hazardous Conditions

In accordance with Section 7104 of the Public Contract Code, where the 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, as defined in Section 25117 of the Health and Safety Code, that is required to be removed to a Class I, Class II, or Class III disposal site in accordance with provisions of existing law;

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 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-44 Safety

a. Contractor shall be solely and completely responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. 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. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury or loss to:

1. All persons on the Site or who may be affected by the Work;
2. All the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and

3. Other property at the Site or adjacent thereto, including crops, trees, shrubs, lawns, walks, pavements, roadways, structures, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction.

b. Contractor shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection. Contractor shall notify owners of adjacent property and/or underground facilities (including districts and utility districts) when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property.

c. All damage, injury, or loss to any property caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by Contractor.

d. Contractor's duties and responsibilities for safety and for protection of the Work shall continue until such time as all the Work is fully completed and accepted. Such duties and responsibilities shall be extended, however, to include any time period in which warranty Work or other Work by Contractor, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, remains in progress.

e. The Contractor shall have at the Site, copies or suitable extracts of Construction Safety Orders, issued by Cal-OSHA. The Contractor shall comply with the provisions of these and all other applicable laws, ordinances and regulations.

The Contractor shall submit to the District a copy of his permit for the project issued by Cal-OSHA, within ten (10) calendar days after the mailing of the Notice of Award and before the commencement of any operations.

f. If there is any non-compliance with the Cal-OSHA Construction Safety Orders, the Contractor shall stop forthwith all affected Work until there is compliance in the

opinion of the State Division of Industrial Safety. The District, Engineer, officers, employees, consultants, and agents of the aforementioned, shall not be liable for costs incurred by the Contractor due to work stoppage. The Contractor will not be eligible for an extension of time to complete the Work within the time set forth in this Contract due to the Work stoppage.

## C-45 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 to the Engineer in a writing giving full details and statements of witnesses of 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. 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.

## C-46 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.

## C-47 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 the Specifications; however, on completion of the Work, and in addition to the requirements of Section C and E 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. **Borrow Areas and Quarry Sites** – The Contractor shall obtain locations of borrow areas for fill from District along with limits of borrow areas. Borrow pits and quarry sites shall be so excavated that water will not collect and stand therein. Before being abandoned, the sides of borrow pits and quarry sites shall be brought to stable slopes with slope intersections rounded and shaped to provide a natural appearance. All rubbish, Contractor's equipment and structures shall be removed from the Site. Waste piles shall be leveled and trimmed to regular lines and shaped to provide a neat appearance.

e. **Blasting Precautions** – No blasting is allowed.

f. **Costs** – No separate payment will be made for Work or materials specified under this Paragraph. All costs therefore shall be borne by the Contractor.

## C-48 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 Application for Payment 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 Contractor's 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-49 Submittals

a. **Schedule of Submittals** - Within ten (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 C-49.c.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.

c. **Submittal Procedures**

1. The Contractor shall submit to the Engineer for 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 the Contract, etc.). Only an electronic copy of each submittal with review comments will be returned to the Contractor. 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:

   Grace Martin, gemartin@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

   e) For Informational Purposes Only

   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 its 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.

g. **Operation and Maintenance Manuals –** Refer to Section C-53.i. of the Specifications for information.

## C-50 Payments to Contractor and Completion

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. **Applications for Payment**

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. As provided in Section 7201 of the Public Contract Code, a five percent (5%) retention of payment will be withheld on all progress payments.

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.

c. **Review** of **Applications**

1. Engineer will, within five (5) 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:

    a) 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;

    b) Contractor is in default of any Contract condition;

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

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

    e) The Contractor has failed to provide the required waivers and releases.

d. **Payment Becomes Due**

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

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 sixty (60) 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.

e. **Reduction in Payment**

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

    a) Claims have been made against District on account of Contractor's performance;

    b) Stop notices or liens have been filed in connection with the Work;

    c) There are other items entitling the District to a set-off against the

amount recommended;

d) Failure of the Contractor to make payment properly to Subcontractors or for material or labor;

e) A reasonable doubt that the Contract can be completed for the balance then unpaid;

f) Damage to another Contractor, Subcontractor, Supplier, or Individual;

g) Failure of the Contractor to keep his Work progressing in accordance with the time schedule; or

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

2. 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.

f. **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.

g. **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.

h. **Final Payment**

**1. Application for Payment**

a) 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.

b) 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 thirty-five (35) 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-50.h. 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 sixty (60) 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.

## C-51 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, of the latest Construction Schedule update, and of the record documents. 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 to review, evaluate, and discuss each Construction Schedule submittal. 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 Construction Schedule review 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.

## C-52 Record Drawings

a. The Contractor shall maintain one set of Record 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 Plans, 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 Plans. 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. Record Drawings shall be maintained up to date on a daily basis.

b. Changes shall be marked directly on the drawings. Green color-coding shall be used when showing information deleted from Drawings. Red color-coding shall be used when showing information added to Drawings. Blue color shall be used for clouding an area or areas affected by the change(s). Information shall be legible and completely detailed. The level of detail shall be sufficient to allow a draftsman to incorporate the changes into a CAD file without reference to other documents besides the marked-up drawing(s). It is not acceptable to simply reference change directives or to mark drawings: "see RFI-XX" or "see survey notes". If there is insufficient space on a drawing to markup the change, the Contractor will be required to draw additional sketches to completely explain the change and attach the sketches to the drawing.

c. The Engineer has the right to inspect the Contractor's marked-up drawings at any time to ascertain that they are being kept up to date and show sufficient details. The Engineer may require that all as-built records, survey field notes and other documentation be submitted at the completion of certain construction elements of the overall project. Should the Contractor's marked-up drawings, survey field notes, and other as-built documentation not be up to date or lack necessary details, the Engineer may withhold five percent (5%) from each monthly progress payment, until the drawings, survey field notes and other as-built documentation are brought up to date and properly detailed.

d. Copies of the Record Drawings shall be submitted upon completion of all Work.

e. 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.

f. Record Drawings shall be accessible to the Engineer at all times during the construction period.

g. 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.

h. 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 Record 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.

i. Contractor shall refer to Paragraph C-53 for requirements regarding Contract Closeout.

## C-53 Contract Closeout

Prior to submitting the Final Application for Payment and issuance of the Final Payment, as described in Paragraph C-50.h., the Contractor must complete the Work described below.

a. **Cleaning** – Throughout the period of construction the Contractor shall keep the Work 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.

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 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, Record 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 other 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. All 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 Manufacturer'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 C-52.

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.). <u>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.</u>

2. Operation and maintenance instructions shall include, at a minimum, the below listed 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 equipment Specification Section.

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 setpoints for equipment operation.

l) Complete internal and connection 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 O&M 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-54 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 attorneys' fees incurred by the District in enforcing the Contractor's obligations hereunder.

## C-55 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-56 Protest Procedure

a. **Notice of Intent to Protest**

A bidder who wishes to protest the award of a Contract shall submit a Notice of Intent to Protest in writing to the contact in A-12 no later than 1 business day after the bid opening. Failure to provide a Notice of Intent to Protest, by 5pm 1 business day after the bid opening and as described above, waives the right to protest.

b. **Filing a Protest**

By 5pm 2 business days after submitting the Notice of Intent to Protest, the protester shall submit a Protest to the contact in A-12. If protester is not a Disadvantaged Business Enterprise (DBE), a check made out to Southern San Joaquin Municipal Utility District, in the amount of $50, for an administrative fee, shall accompany the Protest. If protester is a DBE, a copy of documentation of such shall accompany the Protest.

The burden of proof is on the protester. The Protest shall include:

- A detailed basis for the Protest, supported by facts.
- References to the specific alleged deficiencies of the bid(s) being protested.
- The reason that the protester is the lowest responsible and responsive bidder, supported by facts.
- All referenced documents shall be attached to the Protest.

The Protest shall not be on the basis of or include any item not identified in the Specifications. There will not be an opportunity for a Protest to be amended. Failure to comply with this section waives the right to protest.

c. **Review of Protest**

The District shall provide the bidder(s) whose bid was protested with the Protest within 2 business days of receipt of the Protest. The bidder(s) whose bid was protested will have 5 business days from receipt of the Protest to respond in writing to the District, if they wish. Failure to comply with this section forfeits the bidder's right to respond to the Protest.

The District shall have 10 business days from receipt of the Protest to respond to the protester.

d. **Resolution of Protest**

The protester may withdraw the Protest at any time. Upon withdrawal, the Protest shall be considered resolved and the District shall proceed with award of Contract, as appropriate.

The District's response to the Protest shall be final, without opportunity for further commentary or challenge from the protester. Should the Contract not be awarded to a bidder as a result of the Protest, the bidder shall be notified at least 1 day prior to award of Contract.

****END OF SECTION****

# SECTION D

# SPECIAL CONDITIONS

## D-1 The Requirement

It is required that the Project be constructed in accordance with the Contract Documents. The Work is to be performed in Kern County, within the vicinity of Delano, California.

## D-2 Description of Work

The description of work is as follows:

Base Contract (Driver Road Pipeline Project):

1. Construct a new PVC waterline from the USBR Lateral 119.6 on Bassett Avenue to the existing groundwater recharge spreading basins west of Driver Road. Connect the pipeline to the existing Lateral 119.6-1.5S south of 9th Avenue
2. Abandon in place the existing USBR Lateral 119.6-1.5S from Bassett Avenue to 9th Avenue.
3. Connect several existing turnouts from Lateral 119.6-1.5S to the new PVC pipeline.

Optional Work (Driver Road Pipeline Project):

4. Construct a new PVC waterline from the new Driver Road Pipeline to SSJMUD Giumarra Spreading Basin Project south of 9th Avenue.

## D-3 Beginning and Completion of Work

a. **General**

Unless otherwise ordered by the Engineer, as hereinafter provided, the Contractor shall begin the Work within ten (10) calendar days after issuance of the Notice to Proceed and in accordance with Paragraph D-3b. below.

b. **Completion of Work**

The Contractor shall complete all specified onsite work within 300-calendar days and all Contract Work within 330-calendar days after issuance of the Notice to Proceed.

Anticipated Notice of Award (NOA): March 13, 2025
Completion of the Construction of new Pipelines: January 26, 2026
Completion Date for all Contract Work: February 25, 2026

Failure to perform and complete the construction Work within the time period described in Paragraph D-3b shall subject the Contractor to the assessment of liquidated damages provisions of Paragraph D-7.

## D-4 Labor Compliance Program

1. The District will implement the provisions of a Labor Compliance Program (LCP) to monitor and enforce prevailing wage requirements. In this regard, by submission of this Bid or the execution of the 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 third-party consultant 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 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 submit all of their Certified Payroll Records (CPR) to the Engineer and the third-party consultant at least monthly, or more frequently if required. In addition, 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 upload CPRs to the eCPR system.

4. The District will provide the DIR Project ID # to the Contractor for the project. The Contractor and its Subcontractors will be required to submit all of their Certified Payroll Records (CPR) electronically to the Labor Commissioner using DIR's electronic certified payroll reporting system at least monthly, or more frequently if required.

5. The Department will undertake those activities it deems necessary to monitor and enforce compliance.

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

7. 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.

8. The Contractor shall be responsible for posting job site notices, as prescribed by regulation including per Labor Code Section 1771.4(a)(2) a copy of the prevailing wage determination for each craft, classification or type of worker needed to execute the Contract at the jobsite in accordance with Labor Code section 1773.2.

9. The Contractor is directed to the following website for additional information regarding the public works contractor responsibilities: http://www.dir.ca.gov/Public-Works/publicworks.html. Not all of the requirements have been presented herein and it is the Contractor's responsibility to become informed about the requirements.

## D-5 Federal Grant 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. The Work shall conform to the requirements of all governmental agencies having jurisdiction over the Work. Contractor shall also comply with all federal, state and local laws, ordinances, rules, regulations and orders under the Contract, including all licensing requirements and occupational, health, safety, employment and environmental laws. Such applicable laws, ordinances, rules, regulations and orders shall include, without limitation, those that are specifically incorporated into any Grant Agreements pertaining to the Work, which Grant Agreements and any amendments thereto the District will provide to Contractor following their execution.

Contractor shall bear all costs, expenses and liabilities related to any changes in the Work to conform to such laws, ordinances, rules, regulations and orders.

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. **Contract Provisions**

1. By submission of this bid, the execution of the Contract or subcontract, or the consummation of the Contract, as appropriate, the bidder, contractor, subcontractor, material supplier, or vendor, as appropriate, certifies that it will comply with all applicable Contract provisions as described in this section.

2. Federal agencies are permitted to require changes, remedies, changed conditions, access and records retention, suspension of work, and other clauses approved by the Office of Federal Procurement Policy.

c. **Contracting With Small And Minority Businesses, Women's Business Enterprises, And Labor Surplus Area Firms**

1. The Contractor must take all necessary affirmative steps to assure that minority businesses, women business enterprises, and labor surplus area firms are used when possible. As part of the Bid Proposal, the Contractor shall complete and include the Good Faith Efforts Checklist for Disadvantaged Business Enterprises (DBE).

2. Affirmative steps must include:

a) Placing qualified small and minority businesses and women’s businesses enterprises on solicitation lists;

b) Assuring that small and minority businesses, and women’s business enterprises are solicited whenever they are potential sources;

c) Dividing total requirements, when economically feasible, into smaller tasks or quantities to permit maximum participation by small and minority business, and women's businesses enterprises;

d) Establishing delivery schedules, where the requirement permits, which encourage participation by small and minority businesses, and women's business enterprises;

e) Using services and assistance of the Small Business Administration, and the Minority Business Development agency of the department of Commerce; and

f) Requiring the Subcontractors to take the affirmative steps listed in paragraphs a) through e) above.

d. **Equal Employment Opportunity**

Compliance with Executive Order 11246 of September 24, 1965, entitled "Equal Employment Opportunity," as amended Order 11375 of October 13, 1967, and as supplemented in Department of Labor regulations (41 CFR chapter 60.

During the performance of the Contract, the contractor agrees as follows:

1. The contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, sexual orientation, gender identity, or national origin. The contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, sex, sexual orientation, gender identity, or national origin. Such action shall include, but not be limited to the following:

   Employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this nondiscrimination clause.

2. The contractor will, in all solicitations or advertisements for employees placed by or on behalf of the contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, sexual orientation, gender identity, or national origin.

3. The contractor will not discharge or in any other manner discriminate against any employee or applicant for employment because such employee or applicant has inquired about, discussed, or disclosed the compensation of the employee or applicant or another employee or applicant. This provision shall not apply to instances in which an employee who has access to the compensation information of other employees or applicants as a part of such employee's essential job functions discloses the compensation of such other employees or applicants to individuals who do not otherwise have access to such information, unless such disclosure is in response to a formal complaint or charge, in furtherance of an investigation, proceeding, hearing, or action, including an investigation conducted by the employer, or is consistent with the contractor's legal duty to furnish information.

4. The contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice to be provided advising the said labor union or workers' representatives of the contractor's commitments under this section and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

5. The contractor will comply with all provisions of Executive Order 11246 of September 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.

6. The contractor will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by the administering agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

7. In the event of the contractor's noncompliance with the nondiscrimination clauses of the Contract or with any of the said rules, regulations, or orders, the Contract may be canceled, terminated, or suspended in whole or in part and the contractor may be declared ineligible for further Government contracts or federally assisted construction contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of September 24, 1965, or by rule,

regulation, or order of the Secretary of Labor, or as otherwise provided by law.

8. The contractor will include the portion of the sentence immediately preceding paragraph (1) and the provisions of paragraphs (1) through (8) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The contractor will take such action with respect to any subcontract or purchase order as the administering agency may direct as a means of enforcing such provisions, including sanctions for noncompliance:

Provided, however, that in the event a contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the administering agency, the contractor may request the United States to enter into such litigation to protect the interests of the United States.

The applicant further agrees that it will be bound by the above equal opportunity clause with respect to its own employment practices when it participates in federally assisted construction work: Provided, That if the applicant so participating is a State or local government, the above equal opportunity clause is not applicable to any agency, instrumentality or subdivision of such government which does not participate in Work on or under the Contract.

The applicant agrees that it will assist and cooperate actively with the administering agency and the Secretary of Labor in obtaining the compliance of contractors and subcontractors with the equal opportunity clause and the rules, regulations, and relevant orders of the Secretary of Labor, that it will furnish the administering agency and the Secretary of Labor such information as they may require for the supervision of such compliance, and that it will otherwise assist the administering agency in the discharge of the agency's primary responsibility for securing compliance.

The applicant further agrees that it will refrain from entering into any contract or contract modification subject to Executive Order 11246 of September 24, 1965, with a contractor debarred from, or who has not demonstrated eligibility for, Government contracts and federally assisted construction contracts pursuant to the Executive Order and will carry out

such sanctions and penalties for violation of the equal opportunity clause as may be imposed upon contractors and subcontractors by the administering agency or the Secretary of Labor pursuant to Part II, Subpart D of the Executive Order. In addition, the applicant agrees that if it fails or refuses to comply with these undertakings, the administering agency may take any or all of the following actions: Cancel, terminate, or suspend in whole or in part this grant (contract, loan, insurance, guarantee); refrain from extending any further assistance to the applicant under the program with respect to which the failure or refund occurred until satisfactory assurance of future compliance has been received from such applicant; and refer the case to the Department of Justice for appropriate legal proceedings.

e. **Davis-Bacon Act**

Compliance with the Davis-Bacon Act (440 U.S.C. 3141-3148) as supplemented by Department of Labor regulations (29 CFR Part 5). In accordance with the statute, contractors must be required to pay wages to laborers and mechanics at a rate not less than the prevailing wages specified in a wage determination made by the Secretary of Labor. In addition, contractors must be required to pay wages not less than once a week. The decision to award a contract or subcontract must be conditioned upon the acceptance of the wage determination.

f. **Anti-Kickback Act**

Compliance with Copeland "Anti-Kickback" Act (40 U.S.C. 3145) as supplemented in Department of Labor regulations (29 CFR Part 3).

g. **Contract Work Hours and Safety Standards Act**

Compliance with 40 U.S.C. 3702 and 3704 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 3701-3708) as supplemented by Department of Labor Regulations (29 CFR Part 5).

h. **Clean Air Act and Federal Water Pollution Control Act**

Compliance with all applicable standards, orders, or regulations issued pursuant to the Clean Air Act (42 U.S.C. 7401-7671q) and the Federal Water Pollution Control Act as amended (33 U.S.C. 1251-1387).

i. **Debarment and Suspension**

By submission of this bid, the execution of the Contract or subcontract, or the consummation of the Contract, as appropriate, the bidder, contractor, subcontractor, material supplier, or vendor, as appropriate, certifies that they will comply with all standards and policies contained in the Department of the Interior regulations at 2 CFR 180, Subpart C and 2 CFR 1400.

j. **New Restrictions on Lobbying**

1. Byrd Anti-Lobbying Amendment (31 U.S.C. 1352)—Contractors that apply or bid for an award exceeding $100,000 must file the required certification. Each tier certifies to the tier above that it will not and has not used Federal appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee of any agency, a member of Congress, officer or employee of Congress, or an employee of a member of Congress in connection with obtaining any Federal contract, grant or any other award covered by 31 U.S.C. 1352. Each tier must also disclose any lobbying with non-Federal funds that takes place in connection with obtaining any Federal award. Such disclosures are forwarded from tier to tier up to the non-Federal award.

2. By submission of this bid, the execution of the Contract or subcontract, or the consummation of the Contract, as appropriate, the bidder, contractor, subcontractor, material supplier, or vendor, as appropriate, certifies that they will comply with all standards and policies contained in the Department of the Interior regulations at 43 CFR 18-New Restrictions on Lobbying, including the following certification:

   a) No Federal appropriated funds have been paid or will be paid, by or on behalf to any person for influencing or attempting to influence and officer of employee of an agency, a member of Congress, an officer or employee of Congress, or an employee of a member of Congress in connection with the awarding of any Federal Contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or

modification of any Federal contract, grant, loan or cooperative agreement.

b) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a member of Congress, an officer or employee of Congress, or an employee of a member of Congress in connection with the awarding of any Federal Contract, grant, loan or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying" in accordance with its instructions.

c) The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly.

k. **Procurement of Recovered Materials**

The District and its contractors must comply with section 6002 of the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act. The requirements of Section 6002 include procuring only items designated in guidelines of the Environmental Protection Agency (EPA) at 40 CFR part 247 that contain the highest percentage of recovered materials practicable, consistent with maintaining a satisfactory level of competition, where the purchase price of the item exceeds $10,000 or the value of the quantity acquired during the preceding fiscal year exceeded $10,000; procuring solid waste management services in a manner that maximizes energy and resource recovery; and establishing an affirmative procurement program for procurement of recovered materials identified in the EPA guidelines.

l. **Prohibition on Certain Telecommunications and Video Surveillance Equipment or Services**

2 C.F.R. § 200.216 prohibits the obligation or expending of federal award funds on certain telecommunication products or from certain entities for national security reasons. Funds may not be obligated or expended to:

a. Procure or obtain any equipment, system, or service that uses covered telecommunications equipment or services as a substantial or essential component of any system, or as critical technology of any system;

b. Enter into, extend, or renew a contract to procure or obtain any equipment, system, or service that uses covered telecommunications equipment or services as a substantial or essential component of any system, or as critical technology of any system; or

c. Enter into, extend, or renew contracts with entities that use covered telecommunications equipment or services as a substantial or essential component of any system, or as critical technology as part of any system.

The Contractor or subcontractors shall not use covered telecommunications equipment or services as described in section 889 of the 2019 National Defense Authorization Act. This prohibition applies even if the contract is not intended to procure or obtain, any equipment, system, or service that uses covered telecommunications equipment or services.

m. **Domestic Preferences for Procurements**

As appropriate and to the extent consistent with law, the Contractor should, to the greatest extent practicable under a Federal award, provide a preference for the purchase, acquisition, or use of goods, products, or materials produced in the United States (including but not limited to iron, aluminum, steel, cement, and other manufactured products). The requirements of this section must be included in all subawards including all contracts and purchase orders for Work or products under this award.

For purposes of this section:

1. "Produced in the United States" means, for iron and steel products, that all manufacturing processes, from the initial melting stage through the application of coatings, occurred in the United States.

2. "Manufactured products" means items and construction materials composed in whole or in part of non-ferrous metals such as aluminum; plastics and polymer-based products such as polyvinyl chloride pipe; aggregates such as concrete; glass, including optical fiber; and lumber.

n. **Inspection**

Reclamation shall have the right to inspect and evaluate the Work performed or being performed, and the premises where the work is being performed, at all reasonable times and in a manner that will not unduly delay the work.

o. **Drug-Free Workplace**

By submission of this bid, the execution of the Contract or subcontract, or the consummation of the Contract, as appropriate, the bidder, contractor, subcontractor, material supplier, or vendor, as appropriate, certifies that they will comply with all standards and policies contained in the Department of the Interior regulations at 2 CFR 1401-Government Requirements for Drug-Free Workplace, and 2 CFR 182.

p. **Assurances and Certifications**

1. By submission of this bid, the execution of the Contract or subcontract, or the consummation of the Contract, as appropriate, the bidder, contractor, subcontractor, material supplier, or vendor, as appropriate, certifies that they will comply with all of the Assurances, SF 424B or SF 424D as applicable. All antidiscrimination and equal opportunity statues, regulations and Executive orders that apply to the expenditure of funds under federal Contracts.

2. The bidder, contractor, subcontractor, material supplier, or vendor, as appropriate, shall comply with Title VI of the Civil Rights Act of 1964, Title IX of the Education Amendments of 1972, Section 504 of the rehabilitation Act of 1973, The Age Discrimination Act of 1975, and nay program-specific statues with anti-discrimination requirements.

3. The bidder, contractor, subcontractor, material supplier, or vendor, as appropriate, shall comply with civil rights laws including, but not limited to, the Fair Housing Act, the Fair Credit reporting Act, The Americans with Disabilities Act, Title VII of the Civil Rights Act of 1964, the Equal Educational Opportunities Act, the Age Discrimination in Employment Act, and the Uniform Relocation Act.

q. **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, de 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.

## D-6 Build America, Buy America Act

As required by Section 70914 of the Bipartisan Infrastructure Law (also known as the Infrastructure Investment and Jobs Act), P.L. 117-58, on or after May 14, 2022, none of the funds under a federal award that are part of Federal financial assistance program for infrastructure may be obligated for a project unless all of the iron, steel, manufactured products, and construction materials used in the project are produced in the United States, unless subject to an approved waiver. The requirements of this section must be included in all subawards and subcontracts, including all contracts and purchase orders for work or products under this program.

Contractor is hereby notified that the following are requirements of the project, and Recipients of an award of Federal financial assistance are hereby notified that none of the funds provided under this award may be used for a project for infrastructure unless:

1. all iron and steel used in the project are produced in the United States--this means all manufacturing processes, from the initial melting stage through the application of coatings, occurred in the United States;

2. all manufactured products used in the project are produced in the United States—this means the manufactured product was manufactured in the United States; and the cost of the components of the manufactured product that are mined, produced, or manufactured in the United States is greater than 55 percent of the total cost of all components of the manufactured product, unless another standard for determining the minimum amount of domestic content of the manufactured product has been established under applicable law or regulation; and

3. all construction materials are manufactured in the United States—this means that all manufacturing processes for the construction material occurred in the United States. The Buy America preference only applies to articles, materials, and supplies that are consumed in, incorporated into, or affixed to an infrastructure project. As such, it does not apply to tools, equipment, and supplies, such as temporary scaffolding, brought to the construction site and removed at or before the completion of the infrastructure project. Nor does a Buy America preference apply to equipment and furnishings, such as movable chairs, desks, and portable computer equipment, that are used at or within the finished infrastructure project but are not an integral part of the structure or permanently affixed to the infrastructure project.

For further information on the Buy America preference, please visit www.doi.gov/grants/BuyAmerica. Additional information can also be found at the White House Made in America Office website: www.whitehouse.gov/omb/management/made-in-america/.

**Definitions**

"Construction materials" includes an article, material, or supply that is or consists primarily of:

- non-ferrous metals;
- plastic and polymer-based products (including polyvinylchloride, composite building materials, and polymers used in fiber optic cables);
- glass (including optic glass);
- lumber; or
- drywall.

"Construction Materials" does not include cement and cementitious materials, aggregates such as stone, sand, or gravel, or aggregate binding agents or additives.

"Domestic content procurement preference'' means all iron and steel used in the project are produced in the United States; the manufactured products used in the project are produced in the United States; or the construction materials used in the project are produced in the United States.

"Infrastructure" includes, at a minimum, the structures, facilities, and equipment for, in the United States, roads, highways, and bridges; public transportation; dams, ports, harbors, and other maritime facilities; intercity passenger and freight railroads; freight and intermodal facilities; airports; water systems, including drinking water and wastewater systems; electrical transmission facilities and systems; utilities; broadband infrastructure; and buildings and real property. Infrastructure includes facilities that generate, transport, and distribute energy.

"Project" means the construction, alteration, maintenance, or repair of infrastructure in the United States.

## D-7 Liquidated Damages for Delays

It will be impractical or extremely difficult to fix the actual damages to the District which may result from any delays in completion of the Work beyond the time agreed upon. It is, therefore, stipulated and agreed that if all of the Work is not completed on or before the expiration of the completion time or times specified in Paragraph D-3, or within such extensions of time as may be granted, the District may retain the sum of $1,000 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.

## D-8 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 will be furnished by the District as part of the Contract.

c. **Use of District Water**

The District will provide water including sufficient water for earthwork, fire protection, dust abatement and testing requirements, at a rate of $0/AF. Methods of obtaining water will be provided by the District and coordinated with the awarded Contractor. Contractor shall be responsible for trucking provided water.

If water is supplied from a source other than the District, the cost of the water and the cost and methods of obtaining and conveying water shall be the responsibility of the Contractor.

d. **Equipment and Materials to be Furnished as Listed**

Each bidder shall submit with his proposal under the "Information Required of Bidder" form, 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, and unless equipment or material of the listed manufacturer or supplier does not meet the requirements of the Specifications.

## D-9 Right-of-Way, Construction Roads, Site Access

a. The District will provide the necessary right-of-way and access for construction of the facilities covered by these Specifications.

b. 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 Plans, 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 if so, 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.

c. Lands to be furnished by the District for construction operations will be specifically shown on the Plans 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.

d. 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.

## D-10 Access Roads and Staging Area

a. The Contractor shall maintain access roads to and on the Site to provide for delivery of material and for access to existing and operating plant facilities on the Site. For a road to be considered adequately maintained, it shall be reasonably dust free.

b. Adequately maintained access roads shall be maintained to all storage areas and other areas to which frequent access is required. Similar roads shall be maintained to all existing facilities on the Site to provide access for maintenance and operation. Where such temporary roads cross, buried utilities that might be injured by the loads likely to be imposed, such utilities shall be adequately protected by steel plates or work planking, or bridges shall be provided so that no loads shall discharge on such buried utilities.

c. The District may designate a storage area for Contractor's use while constructing the Project. It shall be the Contractor's responsibility, and he shall bear all expense for any temporary fence and/or other security measures the Contractor may deem necessary for protection of the equipment and materials.

d. The Contractor shall provide any additional temporary storage required for the protection of equipment and materials as recommended by manufacturers of such materials.

e. Storage and protection:

1. Materials and equipment shall be stored in accordance with Supplier's written instructions, with seals and labels intact and legible. Exposed metal surfaces of valves, fittings and similar materials shall be coated in accordance with manufacturers' recommendations to prevent corrosion.

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

## D-11 Surveys

Except for the initial design survey and site control points provided in the drawings, the Contractor shall establish all site survey control and construction staking survey necessary to perform the Work including establishing property lines and corners for private property if required and as built information.

Survey control and staking for construction will be done by a Licensed Land Surveyor provided by the contractor. Contractor shall establish the grade, position and alignment to complete the construction project per the plans and specifications.

All surveying for construction shall be performed by a California Licensed Land Surveyor provided by the Contractor. At a minimum, the Contractor's Licensed Surveyor shall set offset stakes with hubs on approximate 100' spacing for the full length of piping including stakes at angle points, turnouts, groundwater connections, air valves, and at the beginning and ends of the pipeline run. Offset stakes and hubs shall be preserved throughout the duration of the project to be used for inspection/verification purposes through the final grading phase.

The Contractor shall have all surveys, including surveys for measurement and payment purposes, supervised by a surveyor licensed to practice land surveying in the State of California. The Engineer may spot-check the Contractor's surveys. Any discrepancies between the Contractor's survey and the Engineer's spot-check will be resolved between the Contractor and the Engineer. The Engineer will make the final determination in the event a satisfactory resolution is not obtained.

The Contractor shall be responsible for preserving permanent survey monuments, benchmarks, and reference stakes/hubs. If any permanent or temporary survey monuments or benchmarks, including the above reference staking, are lost or disturbed during the progress of his work shall be replaced at the Contractor's expense. Said reference staking and control staking shall be provided as follows:

The Contractor shall be responsible for preserving permanent survey monuments and benchmarks. If any permanent or temporary survey monuments or benchmarks are lost or disturbed and need to be replaced as set forth in Section 8771 of the California Business and Professions Code, such replacement shall be made by the Engineer at the expense of the Contractor.

The Contractor shall notify the Engineer at least ten (10) working days before he will require survey services in connection with constructing any portion of the Work Contractor shall compile and maintain all survey notes in an approved form and shall furnish to the Engineer one copy of said notes as they are compiled and, upon completion of Contract work, Contractor shall furnish to the Engineer all original survey notes.

Contractor shall provide at its cost an experienced instrument person, competent assistants, and such instruments, tools, stakes and other materials required to complete the survey, layout, and measurement work. In addition, Contractor shall furnish at its cost competent persons and such tools, stakes, and other materials as District (and/or any Engineer) may require in establishing or designating control points, or in checking survey, layout, and measurement work performed by Contractor.

Contractor shall compile and maintain all survey notes in an approved form and shall furnish to the Engineer one copy of said notes as they are compiled and, upon completion of Contract Work, Contractor shall furnish to the Engineer all original survey notes. At the completion of the Work, Contractor shall submit a topographic map, sealed by the licensed surveyor who supervised the surveying, that includes locations of all permanent features within the Work Area.

## D-12 Not Used

## D-13 Quality Control – Testing

a. Contractor shall give Engineer timely notice of the Work for all required inspections, tests or approvals and shall cooperate with inspection and testing personnel to facilitate the required inspections or test.

b. Testing of materials for construction (soils, concrete, compaction, etc.) will be provided by the Contractor. In the event of a failed test, the Contractor shall be responsible to pay for all costs associated with retesting.

c. 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.

## D-14 Noise During Construction

In accordance with Kern County Code of Ordinances, title 8, Chapter 8.36, noise during construction is allowed between the hours of 6 a.m. and 9 p.m. during the weekdays, and between the hours of 8 a.m. and 9 p.m. on the weekends. Should the contractor work for extended hours during the week, or work weekends or holidays, prior written notice should be provided to the District.

## D-15 Soils Report

It is the Contractor's responsibility to carefully and independently examine the Contract Documents, including Plans and Specifications, as well as soils reports and other matters provided by District or its representatives and any other matter that may be necessary to determine local conditions of the Project Site, visit the project site, and be fully informed of all conditions and limitations. A complete soils report is included in Appendix B of the Specifications. The District makes no representation or warranty regarding the accuracy or interpretation of information regarding local conditions contained in the Contract Documents, including Plans and Specifications, or other documents, including soils reports, provided by District or its representatives concerning the project site. It is expressly understood that the District will not be responsible for the accuracy of any soil data derived from the soils report, including indicated ground water levels, nor for any deduction, interpretation or conclusion drawn from such informational data.

## D-16 Excavation Safety Plan

a. Not less than fourteen (14) calendar days before beginning excavation required under the Contract, the Contractor shall furnish to the Engineer for review working drawings of his excavation safety plan. Contractor shall not begin excavation until said plan has been reviewed by the Engineer.

b. The excavation safety plan 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. Plans varying from the shoring system standards established by the Construction Safety Orders of the Cal-OSHA or the Federal Safety Standards of the Department of Health, Education and Welfare, must be prepared by a registered civil or structural engineer. In no event shall the Contractor use a shoring, sloping, or protective system less effective than that required by said Construction Safety Orders, or less effective than that required by said Federal Safety Standards.

## D-17 Damage to Growing Crops

Contractor shall have the right to make temporary use of the Site, 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 Site 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 the 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-32 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 Site 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-18 Destruction of Boll Weevil Host Plants

The Contractor shall be responsible for ascertaining the current regulations of the State Department of Agriculture relative to destruction of "host" plants capable of sustaining the pink boll worm and boll weevil. When required by said regulations, the Contractor shall be responsible for the disposal or destruction of "host" plants or residue of "host" plants remaining within Contract right of way; methods of disposal shall be as applicable prescribed in said State regulations and as approved by the Engineer. The cost of all Work and materials as required for disposal or destruction of "host" plants and residue shall be borne by the Contractor.

## D-19 Prevention of Water Pollution and Prevention of Air Pollution

The Contractor shall prepare and submit to the Engineer a Stormwater Pollution Prevention Plan (SWPPP) within 10 calendar days after the Notice to Proceed is issued. 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 (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-20 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 Kern County. 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-21 Special Environmental Requirements

a. Cultural Resources Requirements

1. If cultural resources or archeological materials are identified during Project-related ground-disturbing activities, all work within 100-foot-radius of the find shall cease immediately and the District shall be notified. In the event of an inadvertent discovery, additional CEQA review might be necessary to make a determination on a properties' eligibility for listing in the CRHR and any actions that would be necessary to avoid adverse effects. A qualified archaeologist meeting Secretary of the Interior's Professional Standards for Archaeologists should assess the significance of the find, make a preliminary determination, and if appropriate, provide recommendations for treatment. Interested Native American Tribes will also be contacted, and if necessary treatment/investigation shall be developed in coordination with interested Native American Tribes providing recommendations. Any treatment plan should be reviewed by the District prior to implementation. Ground-disturbing activities shall not resume near the find until treatment, if any is recommended, the find is complete or if the qualified archaeologist determines the find is not significant.

2. If human remains are found, the District shall be immediately notified. The California Health and Safety Code requires that excavation be halted in the immediate area and within a 100-foot-radius, and that the Kern County Coroner be notified immediately to determine the nature of the remains. The coroner is required to examine all discoveries of human remains within

48 hours of receiving notice of a discovery on private or state lands (Health and Safety Code, Section 7050.5[b]). If the coroner determines that the remains are those of a Native American, the coroner must contact the Native American Heritage Commission (NAHC) by telephone within 24 hours of making that determination (Health and Safety Code, Section 7050.5[c]). Once notified by the coroner, the NAHC shall identify the person determined to be the Most Likely Descendant (MLD) of the Native American remains. With permission of the legal landowner(s), the MLD may visit the site and make recommendations regarding the treatment and disposition of the human remains and any associated grave goods. This visit should be conducted within 24 hours of the MLD's notification by the NAHC (PRC Section 5097.98[a]). If a satisfactory agreement for treatment of the remains cannot be reached, any of the parties may request mediation by the NAHC (PRC, Section 5097.94[k]). Should mediation fail, the landowner or the landowner's representative must reinter the remains and associated items with appropriate dignity on the property in a location not subject to further subsurface disturbance (PRC, Section 5097.98[b]).

b. Biological Resources Requirements

1. Worker Environmental Awareness Program Training

An Environmental Awareness Program will be presented to all Project personnel working in the field before Project activities begin and before new personnel begin work on the Project site. The program will be presented by a qualified biologist with knowledge of special-status wildlife that could occur on the Project site. The program will address each species biology and habitat needs, regulatory status and protection, measures required to reduce potential impacts during project construction, penalties for non-compliance, and benefits of compliance.

2. Pre-construction Survey

A qualified biologist will conduct a pre-construction survey to determine the potential for Western spadefoot, San Joaquin kit fox, burrowing owl, Swainson's hawk, tri-colored blackbirds, other special-status birds, and common raptors to occur on or adjacent to the Project site. If suitable habitat or sign of presence is observed, a protective buffer or exclusionary zone may be established and implemented. The size of the buffer and/or exclusionary zone will depend on type and intensity of Project disturbance, presence of visual buffers, and other variables that could affect the species to disturbance.

3. Construction and Operational Requirements

a) A qualified biologist (familiar with kit fox biology, natural history, and recognition of potential dens) will be on call during all construction activities. If a potential kit fox is observed, construction activities within 100 feet of the animal will cease and the qualified biologist will be notified immediately. Construction activities may not resume until the kit fox has left the construction area on its own and the qualified biologist confirms construction can resume.

b) Habitat subject to permanent and temporary construction disturbances and other types of project related disturbance shall be minimized.

c) To minimize temporary disturbances, all project-related vehicle traffic shall be restricted to established roads, construction areas, and other designated areas.

d) Project-related vehicles shall observe a 20 mile per hour speed limit in all project areas, except on county roads and State and Federal highways; this is particularly important at night when kit foxes are most active. To the extent possible, construction activities shall be limited to daylight hours. Off-road traffic outside the designated construction area shall be prohibited.

e) To prevent inadvertent entrapment of kit foxes or other animals during construction, all excavated, steep-walled holes or trenches more than 2 feet deep shall be covered at the close of each working day by plywood or similar materials or provided with one or more escape ramps of no more than a 45-degree slope constructed of earth fill or wooden planks.

All covered or uncovered excavations will be inspected at the beginning, middle, and end of each day. Before such holes or trenches are filled, they shall be thoroughly inspected for trapped animals. If a trapped or injured animal is discovered, Project activities in the immediate vicinity will stop, and escape ramps or structures will be installed immediately to allow the animal(s) to escape, and the procedures below must be followed. If a San Joaquin kit fox is unable to escape voluntarily, a qualified biologist will be summoned, and the biologist will notify the Service to determine what action should be taken.

f) Kit foxes are attracted to den-like structures such as pipes and may enter stored pipe becoming trapped or injured. All construction pipes, culverts, or similar structures with a diameter of 4 inches or greater that are stored on the construction site for one or more overnight periods shall be thoroughly inspected for wildlife before the pipe is subsequently buried, capped, or otherwise used or moved in any way.

Pipes laid in trenches overnight will be capped.

If an animal is discovered inside a pipe or other structure, the pipe/structure will not be moved, and the animal will be allowed to leave on its own. If a San Joaquin kit fox is unable to escape voluntarily, a qualified biologist will be summoned, and the biologist will notify the Service to determine what action should be taken.

g) If a San Joaquin kit fox or other special-status species is inadvertently killed or injured, a qualified biologist will be notified immediately. The biologist, in consultation with agency staff as necessary, shall identify the appropriate action.

h) Temporary spoils piles and other loose dirt, excavations, trenches, etc., that may attract San Joaquin kit fox and other wildlife will be stockpiled for the minimal length of time and regularly inspected for signs of burrowing mammal activity. If burrowing mammal activities are spotted, the spoils would be disturbed to prevent burrows from becoming established.

i) All food-related trash items such as wrappers, cans, bottles or food scraps generated during Project activities will be disposed of in closed containers and removed daily from the Project site.

j) No deliberate feeding of wildlife will be allowed.

k) No firearms shall be allowed on the project site.

l) To prevent harassment and mortality of kit foxes and wildlife or destruction of dens by dogs or cats, no pets shall be permitted on project sites.

m) Use of rodenticides and herbicides in project areas shall be restricted. This is necessary to prevent primary or secondary poisoning of kit foxes and the depletion of prey populations on which they depend. All uses of such compounds shall observe label and other restrictions mandated by the U.S. Environmental Protection Agency, California Department of Food and Agriculture, and other State and Federal legislation, as well as additional project-related restrictions deemed necessary by the Service. If rodent control must be conducted, zinc phosphide shall be used because of proven lower risk to kit fox.

n) A representative shall be appointed by the District who will be the contact for any employee or contractor who finds a dead, injured or entrapped kit fox or other special-status species.

o) Upon completion of the project, all areas subject to temporary ground disturbances, including storage and staging areas, temporary roads, pipeline corridors, etc. shall be re-contoured if necessary, and revegetated to promote restoration of the area to pre-project conditions. An area subject to "temporary" disturbance means any area that is disturbed during the project, but that after project completion will not be subject to further disturbance and has the potential to be revegetated.

p) Inspect under vehicles and equipment before the vehicles and equipment is moved. If a San Joaquin kit fox or other special-status species is present, the worker shall wait for it to move unimpeded to a safe location. If the animal does not move, the worker shall notify a qualified biologist.

q) Contractor to post signs and/or fencing around the work sites to restrict access of vehicles and equipment unrelated to site operations.

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

s) 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.

c. Environmental Requirements

In addition to all other applicable provisions of these Specifications, the Contractor shall comply with the following protections and measures required to reduce impacts to the sensitive receptors during Project construction.

1. Control of fugitive dust is required by San Joaquin Valley Air Pollution Control District Regulation VIII. The Contractor shall implement all of the following measures as identified by San Joaquin Valley Air Pollution Control District:

    a) Apply water to unpaved surfaces and areas.

    b) Use non-toxic chemical or organic dust suppressants on unpaved roads and traffic areas.

    c) Limit or reduce vehicle speed on unpaved roads and traffic areas.

    d) Maintain areas in a stabilized condition by restricting vehicle access.

    e) Install wind barriers.

    f) During high winds, cease outdoor activities that disturb the soil.

    g) Keep bulk materials sufficiently wet when handling.

    h) Store and hand material in a three-sided structure.

    i) When storing bulk material, apply water to the surface or cover the stage pile with a tarp.

    j) Do not overload haul trucks. Overlanded trucks are likely to spill bulk materials.

    k) Cover haul trucks with a tarp or other suitable cover. Or, wet the top of the load enough to limit visible dust emissions.

    l) Clean the interior of cargo compartments on emptied haul trucks prior to leaving the site.

    m) Prevent track-out by installing a track-out control device.

n) Clean up track-out at least once a day. If along a busy road or highway, clean up track-out immediately.

o) Monitor dust-generating actives and implement appropriate measures for maximum dust control.

## D-22 Other 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;

3. 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;

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

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

6. 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; and

7. 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.

b. **Existing Facilities** – Existing facilities are owned, operated, and maintained by the District; Southern California Gas Company, Southern California Edison, and AT&T may have utilities located contiguous to the project site.

1. The Contractor shall not obstruct or inhibit the ability of any of the afore mentioned utility companies to access, operate, and maintain their facilities on or adjacent to the project site.

2. The Contractor shall be responsible for contacting and coordinating with the appropriate party prior to conducting Work within 10’ of existing facilities.

3. The Contractor shall, at all times, protect in place all existing facilities. The contractor shall be solely liable in any instance of physical or liquidated damages that occur during construction.

****END OF SECTION****

# SECTION 01551

# TRAFFIC CONTROL

## PART 1 GENERAL

### 1.01 DESCRIPTION

A. This section covers the contract item Traffic Controls which includes providing temporary gates and fences, barricades, traffic control measures, and other safety measures to control vehicular traffic on access routes to the work site and at the work site.

B. For projects located in the public right-of-way, Kern County's permit requirements shall take precedence over the requirements specified herein.

C. Provide materials, equipment and labor required to execute this work as indicated on the drawings, specified herein and necessary to complete the work.

### 1.02 RELATED SECTIONS

A. Section C General Conditions, Section D Special Conditions, and the Drawings shall apply to this section.

### 1.03 REFERENCES

A. The following publications form a part of this specification to the extent referenced.

1. Standard Specifications for Public Works Construction (SSPWC):
    a. Standard Specifications for Public Works Construction.
    b. Standard Plans for Public Works Construction.
2. State of California, Department of Transportation (Caltrans):
    a. Standard Plans and Specifications, 2018 edition.
    b. Manual of Traffic Controls for Construction and Maintenance Work Zones.
    c. Current version of the Manual on Uniform Traffic Control Devices for use in California.

### 1.04 SUBMITTALS

A. Submittals and shop drawings shall be submitted in accordance with Article D-8 of Section D and as specified herein.

B. Submit a Traffic Control and Work Site Safety Plan for the work site with the following features per Part 6, "Temporary Traffic Control" of the Standard Specifications for Public Works Construction and these specifications.

1. Describe barricades, warning signs, warning lights, flag persons, and temporary fencing. Include drawings of the work site showing proposed traffic control devices and locations of the safety features.

2. Describe traffic control measures. Describe and show the locations of staging areas, construction parking, and where construction traffic will be entering and exiting public roadways. Describe the access routes where construction traffic will travel to access the work site.

3. Prepare the plan in consultation with Kern County, and other applicable agencies.

C. Submit a copy of the encroachment permits and riders obtained from applicable agencies.

D. Submit a copy of approval of the traffic control plan obtained from applicable agencies.

E. Construction area signs.

## PART 2 PRODUCTS

Not Used

## PART 3 EXECUTION

### 3.01 CONSTRUCTION AREA SIGNS

A. Construction area signs shall be furnished, installed, maintained, and removed when no longer required in accordance with the provisions in Section 12 of Caltrans Standard Specifications and these specifications.

B. All excavation required to install construction area signs shall be performed by hand methods without the use of power equipment. Care shall be used in performing excavation for signs in order to protect underground facilities. Regulations regarding notification of Dig-Alert apply to this work.

### 3.02 MAINTAINING TRAFFIC

A. Attention is directed to Subsection 7-10, "Safety" and Part 6, "Temporary Traffic Control" of the Standard Specifications for Public Works Construction and these specifications. Except as specifically stated in these specifications, nothing in these specifications shall be construed as relieving the Contractor from his responsibility as provided in said Subsection 7-10 and Part 6.

B. Traffic cones when used during the hours of darkness shall be affixed or covered with reflective cone sleeves as specified in Section 12.3-02, "Traffic Cones" of Caltrans Standard Specifications, except the sleeves shall be seven inches long.

C. Lane closures shall conform to the provisions in the section of these specifications entitled "Traffic Control System for Lane Closure".

## 3.03 TRAFFIC CONTROL SYSTEM FOR LANE CLOSURE

A. A traffic control system shall consist of traffic lanes in accordance with the detail drawings and the provisions of Section 12, "Temporary Traffic Control", of Caltrans Standard Specifications, the provisions under "Maintaining Traffic" of these specifications, and the sections of these specifications.

B. The provisions of this section will not relieve the Contractor from his responsibility to provide such additional devices or take such measures as may be necessary to comply with the provision of Subsection 7-10, "Safety", and Part 6, "Temporary Traffic Control" of the Standard Specifications for Public Works Construction.

C. During the hours of darkness as defined in Division 1, Section 280, of the Vehicle Code, portable signs to be illuminated shall be, at the option of the Contractor, one of the following:

1. Illuminated signs in conformance with provisions in Section 12-3.11B(3), "Portable Signs" of Caltrans "Standard Specifications";
2. Reflexite vinyl microprism reflective sheeting signs;
3. 3M high intensity reflectorized sheeting on aluminum substrate signs;
4. Seibulite Brand Ultralite Grade Series, encapsulated lens retroreflective sheeting signs;
5. Or equal.

D. If any component in the traffic control system is displaced or ceases to operate or function as specified, from any cause, during the progress of the work, the Contractor shall immediately repair said component to its original condition or replace said component and shall restore the component to its original location.

## 3.04 SPECIFIC REQUIREMENT

A. The protection of the paving from traffic and/or other sources is the Contractor's responsibility. Any damage to the paving during placement shall be repaired at the Contractor's expense.

B. The entire street width shall be open and safe for vehicle traffic at the end of each working day.

C. For work within the Kern County Right of Way, open excavations shall be backfilled at the end of each day, covered with trench plates, or protected using K-rail and crash cushions to the satisfaction of the County Inspector.

D. Striping and pavement markings obliterated by the construction work shall be re-installed using temporary striping or markings prior to the installation of permanent striping and markings.

## 3.05 PUBLIC SAFETY

A. Public safety shall be in accordance with Caltrans Section 7-1.04 “Public Safety.”

****END OF SECTION****

# SECTION 02110

# CLEARING AND GRUBBING

## PART 1 GENERAL

### 1.01 DESCRIPTION

A. The Work shall consist of clearing, grubbing, stripping, and removal and disposal of all trees, vines, stumps, roots, brush, rubbish, fences, remnant irrigation structures and sump pump equipment, and other unsuitable materials.

B. Provide materials, equipment and labor required to execute this work as indicated on the drawings, specified herein and necessary to complete the Work.

### 1.02 RELATED SECTIONS

A. Section C General Conditions, Section D Special Conditions, and the Drawings shall apply to this section. This section may require direct correlation with the following sections of the contract:

1. Section 02115 - Demolition.
2. Section 02223 - Earthwork

### 1.03 SUBMITTALS

A. Submittals shall be furnished in accordance with Article D-9 of Section D – Special Conditions.

B. Measures to control dust and noise.

C. Proposed temporary stockpile areas.

D. Disposal location(s), anticipated haul route(s), and disposal manifests.

E. Methods to protect-in-place existing utilities, including barricades and other facilities.

F. Submit Engineer meeting requests prior to the following a minimum of 72 hours in advance:

1. Field meeting prior to the start of clearing and grubbing operations.

## 1.04 SITE INSPECTION

A. Prior to moving onto the project site, the Contractor shall visit and inspect the Site conditions and review maps and drawings of the site, pipeline routes, utility markers and locations, and facilities delineating the District's property and limits of work area lines.

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.

## 1.05 FIELD CONTROL

A. Provide the necessary field survey in accordance with Article D-24 and Article D-28 of Section D – Special Conditions to assure compliance with the lines and grades shown on the Drawings.

B. Measures to control dust and noise shall be in accordance with Section C - General Conditions, Section D - Special Conditions and these specifications.

1. Promptly clean up loose excavation dirt and sweep clean all usable portions of roadway and walks as the work progresses to prevent dirt from being scattered. Promptly and regularly apply water or dust palliative to all dust and dirt areas, including stockpiles, to prevent dust from being a nuisance. The cost of preventative and corrective measures taken by the Contractor shall be included in the bid items and therefore no additional payment will be made.

# PART 2 PRODUCTS – NOT USED

# PART 3 EXECUTION

## 3.01 PRIMARY SITE ACCESS

A. Access to the site shall be limited to public rights of way and as shown.

## 3.02 CLEARING, GRUBBING, AND STRIPPING

A. Clearing and grubbing shall be in accordance with Section 17-2 of the 2018 Caltrans Standard Specifications.

B. Meeting

1. Prior to the start of clearing and grubbing operations, a field meeting shall be held with the Engineer to discuss site access, limits, location of the existing irrigation facilities to be removed and protected in place, temporary stockpiling, and disposal of material.

C. Clearing and Grubbing Depth and Limits

1. Definitions

a. The term Project Site is defined as the area within the property lines shown on the Drawings.

b. The term Irrigation Ditch is defined as the depression shown at northwest corner of Basin 4.

2. The Contractor shall clear and grub the project site area to 5 feet from the exterior toe of the levee or property boundary, whichever is greater.

3. The entire Project Site shall be stripped to a minimum depth of six (6) inches to remove any organic laden topsoil.

4. The entire Irrigation Ditch area, and three feet beyond the top, shall be stripped to a minimum depth of twelve (12) inches to remove any organic laden topsoil.

D. The Contractor shall perform all clearing and grubbing work for areas within the work site. Such areas shall be cleared and grubbed of all trees, vines, stumps, roots, brush, rubbish, fences, pipes, concrete, and other unsuitable materials 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.

E. The Contractor shall coordinate clearing and grubbing activities with the District to identify the location of the existing irrigation facilities to be protected in place prior to performing any work activities.

F. The Contractor shall install barricades or other measures prior to performing any work activities. Temporary fencing shall be installed enclosing the entire project area during construction.

G. The Contractor shall protect trees and crops in place not specifically shown or called out for removal and disposal.

H. No waste materials from the clearing operation shall be incorporated into compacted backfill or embankments. The sub-grade beneath all permanent embankments shall be grubbed and cleared of all stumps, roots, and objectionable organic matter. Where directed by the Engineer, all work specified herein shall be accomplished by the Contractor prior to

placement of construction stakes. All cleared, grubbed, and demolished materials shall become the property of the Contractor and shall be removed from the work site or District right-of-way before the date of completion of Contract or otherwise disposed of as approved by the Engineer. Upon completion of the work, the Contractor shall perform all required clean-up operations as directed, including all excavation, backfill and grading to lines shown on the Drawings or as directed in order to leave affected areas in a condition satisfactory to the Engineer. No materials or debris shall be burned.

I. Non-Hazardous Material Disposal

1. All non-hazardous asphalt concrete, concrete, metals, deleterious materials, brush, stumps, roots, vegetation, and debris shall be removed from the site and disposed of in a manner acceptable to agencies having jurisdiction over the work and the District per applicable federal, state, and local laws and regulations.

J. Hazardous Material Disposal

1. All hazardous material shall be removed from the site and disposed of in accordance with the General Conditions (Article C-38), in a manner acceptable to agencies having jurisdiction over the work, and the District per applicable federal, state, and local laws and regulations."

K. Stockpiling

1. Topsoil shall be stockpiled within the project limits or as directed by the Engineer. Stockpile shall be placed, graded, and shaped to promote proper drainage of stockpile area.

L. Permits

1. All permit requirements shall be complied with during the course of the work, both for transportation and disposal of materials.

****END OF SECTION****

# SECTION 02115

# DEMOLITION

## PART 1 GENERAL

### 1.01 DESCRIPTION

A. This section covers removal and disposal of existing District facilities.

B. If asbestos cement pipe is encountered, removal and/or demolition shall be in accordance with Section 13280 – Hazardous Substances Removal.

C. Provide materials, equipment and labor required to execute this work as indicated on the Drawings, specified herein and necessary to complete the work of this section.

### 1.02 RESTRICTIONS

A. Explosives and burning are not permitted in the performance of demolition work

B. Do not sell removed materials on-site.

### 1.03 RELATED SECTIONS

A. Section C General Conditions, Section D Special Conditions, and the Drawings shall apply to this section. This section may require direct correlation with the following sections of the contract:

1. Section 01551 – Traffic Control.
2. Section 02223 – Excavation, Backfilling, and Compacting.
3. Section 03300 – Concrete.
4. Section 13280 – Hazardous Substances Removal and Disposal.

### 1.04 REFERENCES

A. The following publications form a part of this specification to the extent referenced.

1. Standard Specifications for Public Works Construction (SSPWC):
    a. Standard Specifications for Public Works Construction.
    b. Standard Plans for Public Works Construction.

### 1.05 SUBMITTALS

A. Submittals shall be furnished in accordance with Article D-8 of Section D – Special Conditions.

B. Submit the following:

1. Demolition Plan

a. At least 30 days prior to construction, submit a comprehensive demolition plan for review and approval by Engineer. The Plan shall indicate the methods employed, sequence narrative description and drawings, equipment, procedures, existing structure vibration and movement mitigation and monitoring methods, transportation, disposal sites, proposed haul routes, dust control, noise mitigation, and salvageable items. The Plan shall also indicate all safety measures to be used in accordance with all applicable codes, including signs, barriers and temporary access and walkways.

2. Permits

a. Submit copies of all required permits or notices, if any required.

3. Test Reports

a. Submit copies of all test reports, if any.

4. Submit Engineer meeting requests prior to the following a minimum of 72 hours in advance:

a. Field meeting prior to the start of demolition and disposal operations

5. If required, Asbestos Notification forms to be submitted to the San Joaquin Valley APCD.

## 1.06 QUALITY ASSURANCE

A. General

1. Comply with the applicable reference Specifications as specified in Section C - General Conditions, Section D - Special Conditions, and as specified herein.

B. Contractor Qualifications

1. The Contractor shall comply with Section C - General Conditions and Section D - Special Conditions with respect to license requirements, certifications, training, skills, experience, and other qualifications. The Contractor, Subcontractors, and suppliers shall employ experienced, skilled labor as required in Section C - General Conditions and Section D - Special Conditions.

## 1.07 VERIFICATION OF CONDITIONS

A. Prior to performance of demolition work, inspect the site, and perform the following:

1. Thoroughly investigate on and off-site conditions. Determine type of structures, improvements, new construction schedule and priorities, and applicable requirements of governing authorities.

2. If necessary, test structures, pipes, and other facilities identified for demolition and removal to determine if hazardous materials are present and submit the test results to the Engineer for review.

3. Obtain and pay for all incidental licenses, permits, and inspections required by governing authorities.

## 1.08 DEBRIS REMOVAL

A. Remove all rubble, debris, and waste materials generated during the demolition procedures from the site as it accumulates.

B. Keep the whole of the site occupied by the Contractor in a clean and orderly state.

C. Unless otherwise shown on Drawings or directed by Engineer, Contractor shall find suitable dumping grounds for the waste materials at the Contractor's expense. Pay any costs whatsoever involved in securing the dumping grounds.

D. The dumping ground site shall be in accordance with all Federal, State, and Local laws. Seek and obtain such approval and file with the District and Engineer copies of all approvals or agreements so obtained.

## 1.09 PROTECTION

A. Take care to prevent spread of dust and flying particles. Sprinkle rubbish and debris with water to keep dust to a minimum.

B. Maintain adequate fire protection, including extinguishers and operative water-hose lines during demolition at locations where occurrence of fire is possible.

C. Provide temporary barricades, fences and safeguards to eliminate hazards to persons and property without interference to use of adjacent property, public rights-of-way, utilities and structures.

D. Protect existing structures and other facilities that are not to be demolished; any such item damaged by the Contractor shall be restored or replaced immediately at the Contractor's expense. Prevent movement or settlement of adjacent structures. Provide bracing and shoring.

E. When removing existing concrete, vibration shall be minimized.

F. Worker Protection

1. The Contractor is responsible for the health and well-being of its workers during the execution of this Contract. The work shall be conducted in accordance with all applicable local, State, and federal regulation.

## 1.10 REGULATORY REQUIREMENT

A. Perform work of this Section in accordance with laws, ordinances, and requirements of the agencies having jurisdiction.

B. Unless otherwise specified, perform work in accordance with the following:

1. American National Standards Institute (ANSI): ANSI A 10.6 – Safety Requirements for Demolition Operations.
2. Code of Federal Regulations, Title 40, Chapter 1, Subchapter I, Part 261.3 – Definition of Hazardous Waste
3. State of California Code of Regulations, Title 8: Cal/OSHA Construction Safety Orders.
4. California Code of Regulations, Title 24: Part 2, California Building Code, Chapter 33, Site Work, Demolition and Construction.

## 1.11 FIELD CONTROL

A. Provide the necessary field survey in accordance with Article D-22 of Section D – Special Conditions to assure compliance with the lines and grades shown on the Drawings.

B. Place and maintain barricades and safety signs as needed for traffic control and public safety and as required by Section 01551 – Traffic Control.

# PART 2 PRODUCTS

## 2.01 GENERAL

A. The Contractor shall provide temporary and permanent materials as required for the proper execution of the Work in this Section.

# PART 3 EXECUTION

## 3.01 PREPARATIONS

A. Meeting

1. Prior to the start of demolition and disposal operations, a field meeting shall be held with the Engineer to discuss the approved demolition plan, limits and disposal of material.

B. Inspect existing conditions and note dimensions, clearances, access, utilities, shoring, and protection required.

C. Have in place, before demolition begins, required protection measures, protective and regulatory devices, and personnel. Protective measures include barricades, warning and temporary routing signs, lights and other devices.

D. Where an abutting structure or part of a structure is to be left in place, make clean, smooth, vertical or horizontal cuts with a saw or other approved cutting device.

E. The Contractor may salvage materials from demolition for use in temporary facilities but shall not use salvaged materials in the Work unless approved in writing by the Engineer for each specific case, unless otherwise specifically called for in the Contract Documents.

F. Verify that the structures to be removed are cleared of utilities.

G. Provide temporary construction for the maintenance, support and protection of existing adjacent structures and facilities that are to remain.

**3.02 DEMOLITION**

A. Perform demolition in conformance with applicable Regulatory Requirements and as specified in this Section.

B. Concrete shall be demolished in sections and to nearest joint. Use bracing and shoring to prevent collapse. Cut concrete to nearest joint.

C. Do not place demolished material or demolition equipment where it will damage or create excessive loads on any structure.

D. If unforeseen obstructions are encountered, obtain instructions from the Engineer before proceeding with Work.

E. Perform demolition with personnel experienced in this type of work and in such manner as to eliminate hazards to persons and property without interference with new work and with use of adjacent areas, public rights-of-way, utilities and structures.

F. Footings, foundation walls, below-grade construction, and concrete slabs on grade shall be demolished and removed to a depth that will not interfere with new construction, but not less than 12 inches below existing ground surface or future ground surface, whichever is lower, or as indicated on the Drawings.

G. Below-grade areas and voids resulting from demolition of structures shall be completely backfilled as directed by the Engineer.

H. The Contractor shall provide patching, replacing, repairing, and refinishing of damaged areas involved in demolition as necessary to match the existing adjacent surfaces, whether shown or not shown on the Drawings, with materials and procedures accepted by the Engineer.

I. The Contractor shall repair all damages caused to adjacent facilities by demolition as directed by the Engineer at no cost to the District.

J. The Contractor shall make a detailed inspection after patching and repairing has been completed and shall carefully remove splattering of mortar from adjoining work (particularly, but not limited to, plumbing fixtures, trim, tile, and finish metal surfaces), and repair any damage caused by such cleaning operations.

K. Clean adjacent structures and facilities of dust, dirt, and debris caused by demolition, as directed by the Engineer, and return adjacent areas to the condition that existed prior to start of work.

L. Except as otherwise indicated or directed, dispose of off-site all rubbish, debris, and waste materials resulting from demolition in accordance with all Federal, State, and Local laws. Rubble, debris, and waste materials are not allowed to accumulate or be buried in fills.

M. Keep site work area and the adjacent areas affected free and clear from all debris caused by the demolition.

N. During and upon completion of demolition herein specified, remove from site all debris, unused materials and equipment caused by the demolition (unless otherwise noted), and leave site work area in a clean, acceptable condition.

O. Non-Hazardous Material Disposal

1. All non-hazardous asphalt concrete, concrete, metals, deleterious materials, vegetation and debris shall be removed from the site and disposed of in a manner acceptable to the District and in accordance with applicable federal, state, and local laws and regulations.

P. Hazardous Material Disposal

1. All hazardous material shall be removed (containerized and labeled) from the site and disposed of in accordance with Section 13280 – Hazardous Substances Removal and Disposal, in a manner acceptable to the District, and in accordance with applicable federal, state, and local laws and regulations.

## 3.03 CONSTRUCTION METHODS

A. Limits

1. All existing District pipelines within 5 feet of a pipeline constructed as a part of this project shall be removed as shown on the Drawings.

B. Cutting and Removal of Existing District Pipe

1. Removal of existing District pipe shall be completed at the limits shown on the plans.
2. For removal of Asbestos Cement Pipe see Section 13280 – Hazardous Substances Removal and Disposal.
3. The Contractor shall saw cut all reinforced concrete pipe before attempting to remove it.
4. At locations where the new pipeline will connect to an existing District pipeline, the Contractor shall take extreme caution while working on or near the existing reinforced concrete pipe. The existing pipe is known to be brittle. The Contractor shall avoid the use of heavy equipment near the existing pipe. Use of vibratory equipment shall be prohibited.

C. Abandonment Plug

1. All openings of pipes to be abandoned shall be plugged using a concrete abandonment plug in accordance with Section 03300 – Concrete and as shown on the Drawings.
2. Plugs shall be sufficiently sized to prevent water or other debris from entering the pipe.

## 3.04 SALVAGE

A. The District has the right to salvage any items scheduled for removal. The Contractor shall notify the Engineer five (5) days prior to any salvage or demolition work in writing to determine the disposition of items to be removed. The Engineer will mark items to be salvaged. Such items shall be properly disconnected, removed from their foundations, cleaned and stored at a location designated by the Engineer.

****END OF SECTION****

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# SECTION 02223

# EXCAVATION, BACKFILLING, AND COMPACTING

## PART 1 GENERAL

### 1.01 DESCRIPTION

A. This section describes the requirements for protection and location of existing utilities and facilities; and materials, testing, and performance of trench excavation, backfilling, and compacting.

B. The requirements include excavating, backfilling, and compacting for the following:

1. Water Pipelines;
2. Fittings;
3. Air Valve Assemblies;
4. Thrust Blocks; and
5. Other items, as shown.

C. For projects located in the County right-of-way, Kern County's approved encroachment permit requirements shall take precedence over the requirements specified herein.

D. All materials used and work performed shall be in strict accordance with the Project Geotechnical Investigation Report.

### 1.02 RELATED SECTIONS

A. Section C General Conditions, Section D Special Conditions, and the Drawings shall apply to this section. This section may require direct correlation with the following sections of the contract:

1. Section 01551 – Traffic Control.
2. Section 02115 Demolition
3. Section 02220 – Structural Earthwork
4. Section 02578 – Pavement Removal and Replacement.
5. Section 03300 – Concrete.
6. Section 15051 – Installation of Pressure Pipelines.

## 1.03 REFERENCES

A. The following publications form a part of this specification to the extent referenced.

1. American Society for Testing and Materials (ASTM):
    a. ASTM C 138 – Standard Test Method for Density (Unit Weight), Yield, and Air Content (Gravimetric) of Concrete.
    b. ASTM C 403 – Standard Test Method for Time of Setting of Concrete Mixtures by Penetration Resistance.
    c. ASTM D 2321 – Underground Installation of Thermoplastic and Sewers Other Gravity-Flow Applications.
    d. ASTM D 4832 – Standard Test Method for Preparation and Testing of Controlled Low Strength Material (CLSM) Test Cylinders.
    e. ASTM D 5971 – Standard Practice for Sampling Freshly Mixed Controlled Low-Strength Material.
    f. ASTM D 6024 – Standard Test Method for Ball Drop on Controlled Low Strength Material (CLSM) to Determine Suitability for Load Application.
2. California Test (CT):
    a. CT-216 – Method of Test for Relative Compaction of Untreated and Treated Soils and Aggregates.
    b. CT-231 – Method of Test for Relative Compaction of Untreated and Treated Soils and Aggregates Using Nuclear Gauge.
3. Cal/OSHA (California Title 8, Division 1, Chapter 4).
4. California Department of Industrial Safety.
5. Standard Specifications, State of California Department of Transportation (Caltrans), latest edition.
6. California Labor Code – Section 6705.
7. Construction Safety Orders of the California Division of Industrial Safety.
8. Kern County Encroachment Permit.
9. Geotechnical engineering Investigation Proposed SWID Farmer's Co-Op Pipeline Project, February 10, 2022.
10. Standard Specifications for Public Works Construction (SSPWC):
    a. SSPWC 201-6 – Controlled Low Strength Material (CLSM)

## 1.04 SUBMITTALS

A. Submittals shall be furnished in accordance with Article D-8 of Section D – Special Conditions.

B. Submit the following:

1. Shop drawings shall be submitted showing excavation and shoring, bracing, or sloping for worker protection in accordance with the General Conditions. The Contractor shall comply with the provisions for "Shoring and Bracing Drawings" in Section 6705 of the California Labor Code. The Contractor, prior to beginning any trench or structure excavation five feet deep or over shall submit to the Engineer and shall be in possession of the Engineer's written acceptance of the Contractor's detailed plan showing design of all shoring, bracing, sloping of the sides of excavation, or other provisions for worker protection against the hazard of caving ground during the excavation of such trenches or structure excavation. If such plan varies from the shoring system established in the Construction Safety Orders of the State of California, such alternative system plans shall be prepared by a civil or structural engineer licensed in the State of California.
2. Copy of the excavation permit issued by the California Department of Industrial Safety.
3. Excavation equipment specifications and methods.
4. Compaction methods and equipment specifications.
5. Placement methods.
6. Material samples and grain size analyses shall be submitted for any imported fill and/or engineered fill material used.
7. The slurry and CLSM mix designs, prepared by the manufacturer, showing compliance with the specified properties.
8. Six copies of a report from a testing laboratory shall be submitted verifying that backfill material conforms to the specified gradations or characteristics.
9. Such other samples of materials as the Engineer may require.

## 1.05 QUALITY ASSURANCE

A. All materials, equipment, and installation methods shall be in accordance with the Project Geotechnical Investigation Report.

B. Use workers who are thoroughly trained and experienced in the work, who are completely familiar with the specified requirements and methods needed for proper performance of the work in this section.

C. Place and maintain barricades and safety signs as needed for safety and as required by Section 01551 – Traffic Control.

D. Comply with the Kern County Encroachment Permit and Cal/OSHA codes and regulations.

E. Rework work not meeting the specified requirements, as determined by the Engineer, at no additional cost to the District.

F. Provide the necessary field survey to assure compliance with the lines and grades as shown on the drawings. If control stakes are destroyed or removed, restaking will be the sole responsibility of the Contractor at no additional expense to the Department.

G. Completed subgrade elevations shall be within 0.05 foot of design subgrade.

## 1.06 FIELD CONTROL

A. Barricades, cones, safety signs, etc. shall be placed and maintained as required by pertinent safety regulations.

B. Promptly clean up loose excavation dirt and sweep clean all usable portions of roadway as the work progresses to prevent dirt being scattered. Promptly and regularly apply water or dust palliative to all dust and dirt areas, including stockpiles, to prevent dust from being a nuisance.

## 1.07 PROTECTION AND LOCATION OF EXISTING UTILITIES AND FACILITIES

A. The protection and location of existing utilities and facilities shall be in accordance with Section 02624 – Exploratory Excavations.

## 1.08 PROTECTION OF LANDOWNER FACILITIES

A. The Contractor shall be responsible for the protection of all orchards, trees, shrubs, fences, and other agricultural or landscape items adjacent to or within the work area, unless otherwise directed by the Engineer. In the event of damage to agricultural, landscape, or landowner items, the Contractor shall replace the damaged items in a manner satisfactory to the Engineer.

## 1.09 DEFINITION OF ZONES

A. Pavement Zone

1. The pavement zone shall include the asphaltic concrete and aggregate base pavement section placed over the street zone. This zone is often referred to as the “structural section” of the street or highway.

B. Trench Zone

1. The Trench Zone shall include the portion of the trench from the top of the pipe zone to the bottom of the pavement zone in paved areas or to the existing surface in unpaved areas.

C. Pipe Zone

1. The Pipe Zone shall include the full width of trench from the bottom of the pipe or conduit to a horizontal level 6-inches above the top of the pipe. This zone is also part of the "pipe-bedding zone" and as such it shall be filled with bedding material identical to that which is placed in the bedding zone.

D. Bedding Zone

1. The Bedding Zone shall be defined as a layer of material immediately below the pipe zone extending over the full trench width. This is also part of the "pipe-bedding zone"

E. Pipe-Bedding Zone

1. The pipe-bedding zone shall include the zones defined as the "pipe zone" and the "bedding zone". It shall include the full width of the trench from the bottom of the trench to a point 6-inches above the top of the pipe. Unless otherwise shown or specified, the pipe-bedding zone shall be from 6-inches under the pipe to 6-inches over it.

## 1.10 TESTING FOR COMPACTION

A. The Contractor shall cooperate with the District provided soils testing lab to take samples during placement of materials and test for moisture content, density, compaction, gradation, and classification to ensure conformance with these specifications.

B. The Contractor is responsible for coordinating and scheduling all required sampling and testing with the District provided lab.

C. Relative Compaction

1. "Relative Compaction" shall be expressed as the ratio, expressed as a percentage of the in place dry density to the laboratory maximum dry density.

D. Compaction Compliance

1. Compaction shall be deemed to comply with the specifications when none of the tests fall below the specified relative compaction.

E. Testing Intervals

1. Testing of Pipelines shall be completed at the following intervals:

a. A minimum of one soil classification and one moisture-density relation test shall be performed for each different type of soil material used for pipe-bedding and trench backfill.

b. These tests shall also be performed for every 1,500 cubic yards of material placed.

c. A minimum of one field density test shall be performed for each soil type, at the pipe bedding prior to pipeline installation, at pipe springline, 6-inches above the top of pipe, and at least one test for each 24 inches compacted thickness above the pipe zone. These test requirements shall be repeated every 300 feet of trench length, or as directed by the Engineer.

F. The presence of marginal materials, poor soil conditions or a prevalence of failed test results will be cause for substantially increasing the frequency and intervals of required testing. Alternatively, with approval of the Engineer and the District, the trench zone may be backfilled with a two-sack sand-cement slurry at no additional cost to the District.

G. Material placed between successful test and failed test shall be tested at one-fifth (1/5) the distance intervals until a passing test is achieved. All material from failed test to successful test shall be removed, recompacted and retested.

## PART 2 PRODUCTS

### 2.01 PAVEMENT ZONE MATERIALS

A. Pavement zone materials shall be as specified in Section 02578 – Pavement Removal and Replacement.

### 2.02 NATIVE BACKFILL – TRENCH ZONE

A. Based on the recommendations provided in the Project Geotechnical Investigation Report, the native material encountered at the site is generally suitable for use as Class II or III trench backfill.

B. Trench backfill material placed above the pipe-bedding zone materials shall be free from roots, debris, and organic matter. The backfill shall generally consist of non-expansive material that is not excessively wet and shall be free of cobbles or hard lumps of material larger than 3 inches in maximum dimension. Cobbles larger than three inches in size shall be broken into smaller pieces and removed from the site. Clay lumps shall be properly processed, and moisture conditioned to break up the lumps and uniformly mix into the trench backfill material.

### 2.03 BACKFILL MATERIAL – PIPE-BEDDING ZONE

A. The pipe-bedding zone is defined above in Part 1 paragraph entitled “Definition of Zones.” Pipe-bedding material shall consist of imported or suitable native material as described in this section.

B. Unless otherwise shown or specified, pipelines shall be supported on a minimum 6-inch-thick bedding layer below the pipe. Bedding layer material shall consist of suitable on-site materials from the trench excavations or imported materials specified herein.

## 2.04 NATIVE MATERIALS – PIPE-BEDDING ZONE

A. Based on the recommendations provided in the Project Geotechnical Investigation Report, the native material encountered at the site is generally suitable for use as Class II or III pipe-bedding zone backfill.

B. Pipe-bedding backfill material shall be free from roots, debris, and organic matter. The backfill shall generally consist of non-expansive material that is not excessively wet and shall be free of cobbles or hard lumps of material larger than 1.5 inches in maximum dimension. Clay lumps and cobbles larger than 1.5 inches in size shall be removed from the site.

## 2.05 IMPORTED MATERIALS – PIPE-BEDDING ZONE

A. Imported bedding material shall be Class II materials per ASTM D 2321, i.e., meeting the Unified Soils Classification System (USCS) criteria for GW, GP, SW, SP, GW-GC or SP-SM gravels and sands.

## 2.06 WATER FOR COMPACTION

A. Water used to assist in compaction shall be potable water unless otherwise approved by the Engineer.

B. Refer to Section D-7 for additional information regarding availability and use of District water.

## 2.07 SAND-CEMENT SLURRY

A. Sand-Cement slurry shall only in the locations designated on the plans.

B. Where Sand-Cement slurry is required, it shall consist of one sack (94 pounds) of Class V Portland cement per cubic yard of sand and sufficient moisture for workability.

## 2.08 CONTROLLED LOW STRENGTH MATERIAL (CLSM)

A. CLSM shall consist of free-flowing and self-compacting material that consists of cement, pozzolan fly ash, fine and coarse aggregates, and water in accordance with SSPWC 201-6. The fines content in the CLSM mix (percent material passing the No. 200 sieve including fly ash additives), shall be limited to 20 percent, by weight, per cubic yard.

B. CLSM shall have a minimum 28-day compressive strength of not less than 300 psi.

## 2.09 GEOTEXTILE

A. Geotextile fabric shall be non-woven Mirafi 140NL, or equivalent.

B. Geotextile shall be placed between the crushed rock and surrounding natural soil and backfill materials to prevent migration of fines into the crushed rock.

C. The geotextile shall be overlapped at the top by a minimum of one foot.

# PART 3 EXECUTION

## 3.01 CONSTRUCTION METHODS

A. Adequate equipment and methods shall be employed to accomplish the work in accordance with applicable grading codes or County ordinances, these specifications, and the approved grading plans. If, in the opinion of the Engineer, unsatisfactory conditions such as questionable soil, poor moisture condition, inadequate compaction, and adverse weather, have resulted in a quality of work less than required in these specifications, the District may reject the work and recommend that construction be stopped until the conditions are rectified.

B. Control of Water

1. The Contractor shall keep excavations free from water during construction in accordance with Section 02140 – Dewatering.

C. Surplus Material

1. Unless otherwise specified, surplus excavated material shall be disposed of in a legal manner at the Contractor's expense.
2. The Contractor shall satisfy himself that there is sufficient material available for the completion of the work before disposing of any material inside or outside the site. Shortage of material, caused by premature disposal of any material by the Contractor, shall be replaced by the Contractor at his expense.

D. Hauling

1. When hauling is done over County highways or streets, the loads shall be trimmed and the vehicle shelf areas shall be cleaned after each loading. The loads shall be watered after trimming to eliminate dust.

E. Maintenance of Roadways

1. All earthwork operations shall be performed in a manner which does not disrupt the continuous flow of traffic on existing roadways. All streets shall be swept clean daily where dirt and debris result from contractor's operations.

F. Finish Grading

1. Finish grades and existing or natural grades in the area of work are indicated on the plans. The Contractor shall do all grading, filling or excavating as required to completely grade the site to lines and grades shown, and to provide for the indicated drainage. Where finished grade corresponds practically with existing grade, the ground shall be worked up and graded off evenly with existing grade.

G. Tolerances

1. Finished grade shall be to the line and grade shown on the plans to within a tolerance of plus or minus 0.05 ft. Allowance for topsoil and grass cover, and subbase and pavement thickness shall be made so that the specified thickness can be applied to attain the finished grade.

H. Control of Erosion

1. The Contractor shall maintain earthwork surfaces true and smooth and protected from erosion. Erosion control measures shall be in accordance with Article D-29 of Section D – Special Conditions.

## 3.02 SITE CONDITIONS

A. Examine the area and conditions under which work of this section will be done. Correct conditions detrimental to timely and popper completion of the work. Do not proceed until satisfactory conditions are corrected.

## 3.03 SHEETING SHORING AND BRACING OF TRENCHES

A. The Contractor shall be solely responsible for the design of all cut slopes and installation of all temporary shoring systems. The maximum un-shored excavation slope during construction shall be 1-1/2:1 (H:V), per OSHA 1926 Subpart P Appendix A and B. Shoring, bracing, and benching shall be performed by the Contractor in accordance with the current edition of the California Construction Safety Orders.

B. Shoring systems shall be designed by a California Registered Civil Engineer to meet Cal OSHA regulations. The Contractor shall be responsible for providing the “competent person” required by OSHA standards to perform the excavation.

C. Trenches shall have sheeting, shoring and bracing conforming to CAL/OSHA requirements and the General Conditions. Lateral pressures for design of trench sheeting, shoring, and bracing shall be based on type of soil exposed in the trench, groundwater conditions, surcharge loads adjacent to the trench, and type of shoring that will be used in the trench.

D. Movable Trench Wall Supports

1. The Contractor shall not disturb the installed pipe and its embedment when using movable trench boxes and shields. Movable supports shall not be used below the

top of the pipe-bedding zone, or where moving results in trench wall erosion, unless Engineer approved methods are used for maintaining the integrity of embedment material. Before moving supports, place and compact embedment to sufficient depths to ensure protection of the pipe. As supports are moved, finish placing and compacting embedment.

E. Shoring Removal

1. Care shall be taken by the Contractor to remove the shoring system and backfill the trench so as not to disturb the pipe foundation, bedding zone, or backfill materials. Any voids created by removal of support systems shall be filled and all materials compacted to the required percent compaction. Resulting voids shall be filled with sand and cement slurry or another Engineer approved grout mix.

2. Where shoring cannot be removed without causing voids or disturbance to nearby project features that cannot be rectified, in the opinion of the Engineer, the shoring shall be cut off 1.5-feet above the pipe and left in place as directed by the Engineer. Leave rangers, whalers, braces, etc. in place as required to support cutoff sheeting and the trench wall in the vicinity of the pipe-bedding zone. Timber sheeting to be left in place is considered a permanent structural member and shall be treated against biological degradation as required, and against decay if above ground water. Preservative and protective compounds that react adversely with thermoplastics are not allowed.

## 3.04 OPEN TRENCH EXCAVATION

A. Any excavation within the street area subject to traffic loads shall be covered at all times with steel plating when not in use. The steel plating shall be of a thickness adequate to withstand the traffic loads that may be imposed and securely anchored at all times within temporary pavement to prevent displacement of the plate by traffic vibration. Detours, lane closures, street closures, traffic channelization, barricading and lighting of all excavations shall conform to Section 01551 – Traffic Control, and all requirements specified in the approved traffic control plan.

## 3.05 DEWATERING

A. Dewatering shall be in accordance with Section 02140 – Dewatering.

## 3.06 TRENCH WIDTHS

A. Unless otherwise shown on the drawings, the minimum trench width shall be 24-inches wider than the outside diameter of the pipe. The pipe shall be centered in the trench.

## 3.07 GRADE

A. Trenches shall be excavated to the lines and grades as shown on the drawings with allowance for the thickness of the pipe and bedding. If the trench is excavated below the required grade, the portion of trench excavated below the grade shall be refilled with refill material at no additional cost to the District. Refill material shall be placed over the full width of the trench in compacted layers not exceeding 6 inches deep to the required grade. Hard spots that would prevent a uniform thickness of pipe bedding shall be removed. Before laying pipe sections, the grade shall be checked, and any irregularities corrected. The trench bottom shall form a continuous and uniform bearing and support for the pipe at every point.

## 3.08 STORAGE OF EXCAVATED MATERIAL

A. During trench excavation, excavated material shall be stored only within the working area. Roadways or streets shall not be obstructed. The safe loading of trenches with excavated material shall conform to federal, State, and local laws.

## 3.09 LENGTH OF OPEN TRENCH

A. The length of open trench shall be limited to 500 feet in advance of the pipe laying or amount of pipe installed in one working day.

B. Driveways and other traveled ways shall be backfilled or adequately bridged to provide safe access and egress at the completion of each day's work.

C. For work within the County Right of way, open excavations shall be backfilled at the end of each day or protected using K-rail and crash cushions to the satisfaction of the County Inspector.

## 3.10 PIPE SUBGRADE PREPARATION

A. Pipe subgrade soils at the project area are expected to be suitable for support of the proposed PVC pipelines, with proper bedding and embedment placement as specified herein.

B. Loose, soft, or disturbed materials encountered at the subgrade level shall be removed until firm, unyielding material is encountered. If loose, soft, or unstable areas are encountered, these materials shall be over-excavated 12 inches or until a firm layer is encountered and replaced with compacted bedding material as specified herein.

C. If an unstable subgrade condition is still present at the bottom of the over-excavation, such as areas with perched groundwater, the use of a geotextile fabric will be required by the Engineer at the bottom of an over-excavated trench. The geotextile fabric shall be non-woven type, as specified in Section 02220 – Structural Earthwork and installed per the manufacturer's recommendations. The geotextile fabric shall be placed, only after

Engineer approval has been given to proceed, with trench construction, at the bottom of the over excavated areas with crusted rock placed on it. The crushed rock shall be placed in lifts that are no more than 1-foot thick, then compacted using vibratory techniques up to the bottom of the pipe-bedding zone. The crushed rock layers shall be firm and unyielding, and the geotextile shall then be folded over the top (minimum 12-inch overlap) of the crushed rock layers before pipe bedding is placed.

D. If cobble materials are encountered at the subgrade level, the pipe subgrade may be undulating and require over excavation to provide uniform bedding support with minimum bedding thickness below the pipe as specified in the Contract Documents. If over excavation is required to provide the minimum bedding thickness below the pipe, the subgrade shall be over-excavated a minimum of 12-inches and replaced with compacted bedding material.

E. In the event that groundwater is encountered at any of the anticipated trench depths, groundwater control measures shall be taken in accordance with Section 02140 – Dewatering. Loss of fines due to seepage or dewatering can cause soil voids in the vicinity of the pipe. Where the subgrade becomes disturbed due to localized seepage, surface water, or dewatering, the Contractor shall excavate the disturbed soils to a maximum depth of 2 feet and replace the disturbed soils with Engineer approved compacted bedding material.

F. The subgrade preparation recommendations presented above are also applicable to the foundations for above grade pipe supports, and appurtenant pipeline structures, such as manholes, and vaults.

## 3.11 PIPE TRENCH COMPACTION REQUIREMENTS

A. Unless otherwise shown on the drawings or otherwise described in the specifications for the particular type of pipe installed, relative compaction in pipe trenches shall be as specified herein.

B. Compaction of materials by ponding and jetting is prohibited.

C. Material Testing

1. All imported or native materials shall be tested before the start of compaction operations to determine the moisture density relationship for materials with cohesive components, and the maximum density for cohesionless materials. Variations in imported or native earth materials may require a number of curves of the moisture-density relationship.

D. Consolidation of Crushed Rock

1. Crushed rock shall be consolidated by one of three methods, as follows:

a. A minimum of three passes with a vibrator plate compactor.

b. Tamping of the crushed rock as it is placed, using the bucket of the backhoe.

c. Thoroughly wheel rolling with equipment.

2. Each lift of rock shall not exceed 12 inches of unconsolidated thickness.

E. Asphalt Concrete Pavement with Aggregate Base

1. Compaction of Aggregate Base shall be in accordance with Kern County Standards and Section 02578 – Pavement Removal and Replacement.

F. Water Piping

1. Bedding

a. The specified thickness of bedding material shall be placed over the full width of the trench. The top and bottom of the pipe bedding shall be graded ahead of the pipe laying to provide firm, uniform support along the full length of the pipe.

2. Bell Holes

a. Bell holes shall be excavated at each joint to permit proper assembly and inspection of the entire joint.

3. Pipe-Bedding Zone (Pipe Zone and Bedding Zone)

a. After the pipe has been bedded, pipe zone material shall be placed simultaneously on both sides of the pipe, keeping level of backfill the same on each side. Material shall be carefully placed around the pipe so that the pipe barrel is completely supported and that no voids or uncompacted areas are left beneath the pipe. Particular care shall be taken in placing material on the underside of the pipe to prevent lateral movement during subsequent backfilling. Material placed within the pipe zone shall be compacted by hand tamping only.

b. Pipe-bedding zone materials shall be placed and compacted in horizontal lifts to at least 95 percent relative compaction per CT-216. Material placed within 12 inches of the outer surface of the pipe shall be compacted by hand tamping equipment only.

4. Trench Zone

a. Trench backfill settlement is anticipated to be one inch or less in street right of way areas and two inches or less in unpaved areas, provided the compaction recommendations of this section are followed.

b. Backfill material shall be carefully deposited onto the backfill previously placed in the pipe zone. Free fall of material until at least two feet of cover is provided over the top of the pipe. Sharp, heavy pieces of material shall not be dropped directly onto the pipe or the tamped material around the pipe. Special care shall be taken to avoid damaging the pipe when compacting trench backfill above the pipe.

c. Backfill in the trench zone within the County right of way, greater than 30 inches below the pavement zone, or the top of ground surface, shall be compacted to not less than 95 percent relative compaction per CT-216.

d. In unpaved areas, outside of the County right of way, the backfill shall be compacted to at least 95 percent relative compaction per CT-216.

e. The appropriate lift thickness of the backfill will depend on the compaction equipment used but generally shall not exceed a thickness of six inches of loose placed material.

5. Foundation Stabilization

a. Rock refill material for foundation stabilization, where required shall be placed and consolidated to 95 percent relative density.

6. Over-Excavation:

a. Rock refill for over-excavation shall be placed and consolidated to 95 percent relative density.

G. Equipment

1. Axle-driven or tractor-drawn compaction equipment shall not be used within 5 feet of walls and structures.

H. Pavement Zone Backfill

1. Pavement zone backfill shall be done in accordance with the requirements and satisfaction of Kern County.

I. Miscellaneous items, including, but not limited to, valves and fittings:

1. Unless otherwise shown on the Drawings, compact the pipe zone to at least 95 percent relative compaction in accordance with CT-216.

## 3.12 BEDDING THICKNESS

A. Thickness of the bedding shall be as shown on the drawings or as otherwise described in the specifications for the particular type of pipe installed, but in no cases shall the thickness be less than 6 inches.

## 3.13 MATERIAL REPLACEMENT

A. Trenching and backfill material, which does not meet the specifications, shall be removed, disposed of, and replaced with Engineer approved material at no additional expense to the District.

## 3.14 FOUNDATION STABILIZATION

A. After the required excavation has been completed, the Engineer shall inspect the exposed trench subgrade to determine the need for any additional excavation. It is the intent that additional excavation shall be conducted in all areas within the influence of the pipeline where unacceptable materials exist at the subgrade. Over excavation shall include the removal of all such unacceptable materials that exist beneath the bedding and to the depth required.

B. The presence of unacceptable material may require excavating a wider trench. The width and depth of known areas to be over excavated shall be shown on the drawings. The over excavated portion of the trench shall be backfilled to the subgrade of the bedding with refill material for foundation stabilization. Foundation stabilization material shall be placed over the full width of the excavation and compacted in layers not exceeding six inches in depth, to the required grade.

## 3.15 PLACEMENT OF CLSM

A. General

1. Placement of CLSM shall be in accordance with Section 03300 – Concrete and SSPWC 201-6.
2. This paragraph applies to slurry placement, where applicable.

B. Preparation

1. Following excavation and subgrade preparation, remove all loose soil from trench walls and floor. Remove any unstable soil at the top of the trench which might fall into the trench during placement.

C. Placement

1. As CLSM is placed 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 spaces and voids and bringing only a slight excess

of water to the exposed surface. The CLSM shall be placed and consolidated by means that will not cause segregation of the mix.

2. If vibrators are used, they shall be high speed power vibrators (8,000 to 10,000 rpm) of an immersion type in sufficient number and with standby units as required. Vibrators shall not be used within 20 feet of connections to existing RCP.

3. Contractor shall use placement methods that ensure that the CLSM completely fills the trench around the pipe, including spaces and voids around the pipe, spaces between pipes, keyways in trench plugs, and spaces and voids around adjacent and crossing utilities. The placement method shall achieve complete consolidation and contact between the CLSM, the pipe, thrust blocks, and the trench walls.

4. CLSM shall be continuously placed against fresh material unless otherwise directed by the Engineer. When new material is placed against existing CLSM, the placement area shall be free from loose and foreign material. The surface of the existing material shall be soaked a minimum of one (1) hour before placement of fresh material but no standing water shall be allowed when placement begins.

5. When placed, temperature of the CLSM shall be between 50 and 90 degrees F. CLSM shall not be placed when the air temperature is below 40 degrees F. No CLSM shall be placed against frozen subgrade or other materials having temperature less than 32 degrees F. CLSM shall not be placed in pipe trenches during inclement weather or when the trench contains water.

6. To prevent flotation of the pipe, Contractor shall place the fresh CLSM in two or more lifts, with each lift reaching an initial set before the succeeding fresh CLSM is placed. Contractor shall be responsible for prevention and, if necessary, correction of flotation and displacement of the pipeline due to the use of CLSM. No movement of the pipe caused by flotation shall be allowed. If any movement occurs, CLSM shall be removed and the pipe placed back on line and grade. Any damage to the pipeline system caused by movement of the pipe shall be removed and/or repaired at no additional cost to the District.

D. Finishing

1. The finish surface shall be smooth and to the grade indicated or directed by the Engineer. Surfaces shall be free from fins, bulges, ridges, offsets, and honeycombing. Finishing by wood float, steel trowel, or similar methods is not required.

E. Curing

1. CLSM shall be kept damp for a minimum of seven (7) days or until final backfill is placed.

F. Protection

1. CLSM shall be protected from freezing for seventy-two (72) hours after placement.
2. Placement of backfill or concrete on top of or against the CLSM is not allowed until the CLSM passes a ball drop test described in ASTM D 6024.
3. CLSM shall be protected from running water, rain, and other damage until the material has been accepted and final fill completed.

G. Sampling and Testing

1. Sampling and Testing of CLSM shall be in accordance with Section 03300 – Concrete.
   a. Sampling shall be in accordance with ASTM D 5971.
   b. Compression testing shall be in accordance with ASTM D 4832.
   c. Setting test shall be in accordance with ASTM C 403.
   d. Density tests shall be in accordance with ASTM C 138.

## 3.16 PAVEMENT CUTTING REQUIREMENTS

A. AC pavement shall be removed and replaced in accordance with Kern County Standards, and Section 02578 – Pavement Removal and Replacement.

## 3.17 IMPORT OR EXPORT OF BACKFILL MATERIAL

A. Excess Material

1. Excess excavated soil material shall be removed and disposed of off the project site at no additional expense to the District.
2. Excess soil material shall be disposed of in a legal manner and in accordance with local regulations.

B. Imported Material

1. Any additional backfill material necessary to return all grades to plus or minus 0.2 feet from the grade encountered at the beginning of construction or as shown on the contract drawings shall be imported, placed, and compacted at no additional expense to the District.

## 3.18 MOISTURE CONTENT OF BACKFILL MATERIAL

A. During the compacting operations, optimum practicable moisture content required for compaction purposes shall be maintained in each lift of the backfill material. Moisture content throughout the lift shall be maintained at a uniform level. If placement is

discontinued and proper moisture content not maintained, the upper layer shall be brought back to proper moisture content by sprinkling, cultivating and rolling the backfill material before placing new material. At the time of compaction, the water content of the material shall be at optimum water content plus two or minus zero percentage points. Material which contains excessive moisture shall not be worked to obtain the required compaction. Material having excessive moisture content may be dried by blading, discing, or harrowing to hasten the drying process.

## 3.19 FOUNDATIONS FOR BELOW-GRADE STRUCTURES

A. Backfill and compaction of below-grade structures shall be in accordance with Section 02220 – Structure Earthwork and Section 03461 – Precast Concrete Manholes.

## 3.20 MAINTENANCE

A. Protection of Graded Areas

1. Newly graded areas shall be protected from traffic and erosion. Settled, eroded, and rutted graded areas shall be repaired and re-established to specified tolerances.

B. Reconditioning Compacted Areas

1. Where completed compacted areas are disturbed by subsequent construction operations or adverse weather, these areas shall be scarified, re-shaped, and compacted to required density prior to further construction.

## 3.21 CLEAN UP

A. After completing all earthwork, the Contractor shall leave the site in a neat and clean condition, doing all such grading as is required by the plans. Any existing features, structures, and other facilities damaged or affected by the work shall be replaced, repaired, or restored to their original condition or better.

****END OF SECTION****

# SECTION 02316

# OPEN TRENCH AND TRENCHLESS STEEL CASING

## PART 1 GENERAL

### 1.01 DESCRIPTION

A. This section describes materials and installation of steel carrier pipe by the open trench method or trenchless method.

B. In the performance of the Work, the Contractor shall comply with the lawful requirements of the State of California, Kern County Public Works Department, California Division of Industrial Safety, California Regional Water Quality Control Board, and all other applicable third-party requirements, with respect to safeguarding traffic and other improvements that might be endangered by the open trench casing operations.

C. The Contractor shall secure all necessary permits for start and prosecution open trench casing pipe. All Work shall conform to the necessary permits, these Specifications and other lawful and third-party agency requirements.

D. If the Contractor is not ready to place the carrier pipe in the casing at the time of completion of open trench casing operations, the ends shall be bulkheaded. Approach trenches in public streets shall be backfilled, temporary surfacing placed thereon, and the affected portion of the street reopened to traffic.

E. The Contractor and/or excavator shall notify “DIGALERT” forty- eight (48) hours prior to beginning excavation operations.

### 1.02 RELATED SECTIONS

A. Other sections and Drawings apply to this section. This section may require direct correlation with the following sections of the contract:

1. Section 02223 – Excavation, Backfilling and Compacting.
2. Section 09900 – Protective Coatings.
3. Section 15042 – Hydrostatic Testing of Pressure Pipelines.
4. Section 15064 – PVC Pressure Pipe (AWWA C900).
5. Section 15151 – Facility Identification.

### 1.03 REFERENCES

A. All Work specified herein shall conform to or exceed the applicable requirements of the referenced portions of the following publications to the extent that the provisions thereof

are not in conflict with other provisions of these Specifications. Where there is a conflict between these provisions and these Specifications, the more stringent requirement shall govern.

B. The following publications (latest edition, unless otherwise noted) form a part of this specification to the extent referenced.

1. Industry Standards

a. ANSI/AWS D1.1 – Structural Welding Code - Steel

b. ASTM A 36 – Standard Specification for Carbon Structural Steel

c. ASTM A 283 – Standard Specification for Low and Intermediate Tensile Strength Carbon Steel Plates

d. ASTM A 1011 – Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength

e. AWWA C206 – Field Welding of Steel Water Pipe

f. CALTRANS' Standard Specifications

g. CALTRANS Guidelines and Specifications for Trenchless Technology Projects

2. Permits

a. Kern County Public Works Department encroachment permit.

3. Project Geotechnical Investigation Report

a. Geotechnical Engineering Investigation Report Giummara Pipeline Project, BSK and Associates, January 18. 2023.

C. Comply with the applicable reference Specifications as directed in the General Conditions and the Special Conditions.

## 1.04 SUBMITTALS

A. Submittals shall be furnished in accordance with Article D-8 of Section D – Special Conditions and as specified herein.

B. Contractor to submit Statement of Contractor Staff Qualifications in accordance with Section 1 article entitled Quality Assurance.

C. For steel casing, submit manufacturer's mill specification sheet listing diameter, thickness, and class of steel used in making the casing, and the mill certification.

D. Submit drawings showing the location and type of joint for both casing and carrier pipe, and spacers.

E. Soil and Groundwater Analysis – Contractor shall provide a statement that they have reviewed the Project Geotechnical Investigation Report, along with any soils and groundwater level analysis as obtained by the Contractor. The Contractor is solely responsible for verifying soil and groundwater level conditions as necessary to ensure well-informed casing pipe installation plan.

F. Submit all permits associated with open trench and trenchless steel operations.

G. Submit an engineered shoring plan. Shoring submittals shall be wet-signed and stamped by a California-licensed Civil or Structural Engineer.

H. Submit a traffic control plan in accordance with the CALTRANS Encroachment Permit.

I. Submit a dewatering plan, if required per Section 02223 – Excavation, Backfilling, and Compacting.

J. Submit drawings, data sheets, and installation manuals for casing spacers and end seals

K. Submit carrier pipe testing plan and results.

L. Submit preconstruction and postconstruction photographs.

M. Submit as-built alignment.

## 1.05 QUALITY ASSURANCE

A. All work shall conform to the specifications and requirements of the State of California Department of Transportation encroachment permit and as directed by the Engineer.

B. Installations shall be monitored as specified herein and to the satisfaction of the Engineer and CALTRANS to ensure that the integrity of the existing roadway elevations are maintained.

C. All Work shall be performed in the presence of the Engineer, CALTRANS, and other public agency representatives as required by the Contract.

D. Welding Requirements

1. All welding procedures used to fabricate steel casings shall be prequalified under the provisions of AWS D1.1. Welding procedures shall be required for, but not necessarily limited to, longitudinal and girth or special welds for pipe cylinders, casing joint welds, reinforcing plates, and grout coupling connections.

E. Contractor Staff Qualifications

1. Superintendent in charge of carrier pipe installation: Shall have experience with similar work on a minimum of two (2) projects of equivalent size and complexity within the past five (5) years.

2. All welding shall be done by certified welders, welding operators, and tackers who have had adequate experience in the type of materials to be used. Welders shall be qualified under the provisions of AWS D1.1 by an independent local, approved testing agency not more than six (6) months prior to commencing work on the casing or pipeline. Machines and electrodes similar to those used in the work shall be used in qualification tests. The Contractor shall furnish all material and bear the expense of qualifying welders.

F. Scheduling

1. If the pipeline is not installed within the casing as a continuous operation following completion of the open trench casing, the casing portals shall be bulkheaded and the approach trenches backfilled and later reopened for pipe installation as directed by the Engineer.

G. Line and Grade

1. Contractor shall survey pipe casing for conformance with design line and grade.

2. Tolerances

a. Carrier pipe as measured from theoretical alignment at each casing joint location:

1) Within 2.0 inches of design horizontal alignment.

2) Within 1.0 inch of design vertical elevation.

3) No reverse grades or ponding of water.

## 1.06 PERMITS

A. All work shall conform to the specifications and requirements of the Kern County Department of Public Works encroachment permit.

B. The Contractor shall secure all required permits for construction of casing pipe installation.

## 1.07 DELIVERY, STORAGE AND HANDLING

A. The Contractor shall store steel pipe casing in the field by supporting the pipe uniformly per AWWA M11.

B. Proper care shall be used to prevent damage in handling, moving and placing the pipe casing. All pipe casing materials shall be lowered into the trench in a manner that prevents damage. The pipe casing shall not be dropped, dragged or handled in a manner that will cause bruises, cracks, or other damage.

## 1.08 PROJECT CONDITIONS

A. Contractor shall review the Project Geotechnical Investigation Report and verify field conditions prior to construction.

## 1.09 PROTECTION OF EXISTING UTILITIES AND FACILITIES

A. Identification, marking, and potholing of existing utilities in accordance with Section 02223 – Excavation, Backfilling, and Compacting.

## 1.10 PROTECTION OF CROPS AND TREES

A. Protection of landscaping shall be in accordance with Section 02223 – Excavation, Backfilling, and Compacting.

B. The cost of restoring pavement, curb, sidewalk, walls, driveways, lawns, storm drains, etc., and other landscaped facilities shall be borne by the Contractor.

# PART 2 PRODUCTS

## 2.01 STEEL CASING

A. Steel casings shall be welded steel pipe of the minimum diameter and minimum plate thicknesses indicated on the Drawings and specified herein.

B. Casing pipe includes an external steel casing pipe and host a PVC C900 interior carrier pipe (diameter, SDR, and CL as shown and as specified in Section 15063 – PVC Pressure Pipe (AWWA C900)).

C. Unless otherwise shown or specified on the Drawings, the casing pipe shall be used within the entire roadbed influence area and as shown on the Plans. The roadbed influence area is defined as the subsurface area located under the road and shoulder surface, between each shoulder point or back of curb; and continues transversely outward and downward from each shoulder point or back of curb on a 1 on 1 slope. Additionally, the influence area includes the area projected by a 45-degree line projected from the springline of the casing to the ground surface.

D. Materials

1. Steel casing shall be ASTM A 283, Grade C; ASTM A 1011 Structural Steel Grade 30 or 33; or ASTM A 36 unless noted otherwise.
2. Only new casing pipe shall be used, unless otherwise approved by the Engineer.
3. Unless otherwise shown or specified on the Drawings, the 52-inch casing pipe shall have a minimum wall thickness of 1/2-inch (0.500 inch).

a. Greater casing thickness and diameter shall be used as required for the method of work and loadings involved, as suitable for the site and as limited by possible interferences, but at no additional cost to the District.

b. The Contractor shall select a size of casing at or above the minimum specified, in order that the open trench casing may be done with a sufficient degree of accuracy to permit installation of the carrier pipe to the grades shown on the plans and to properly accommodate the largest dimension of the carrier pipe and restrained joints.

4. Casing pipe shall have square and machine beveled ends. The pipe end maximum out-of-square tolerance shall be 0.04-inch, (measured across the diameter).

5. Casing pipe shall be straight. The maximum allowable straightness deviation over any 10-foot length of steel casing pipe is 1/8-inch. The maximum straightness deviation in fabricated sections up to 40 feet shall be 3/8-inch.

6. Pipe shall be without any significant dimensional or surface deformities. All pipes shall be free of visible cracks, holes, foreign material, foreign inclusions, blisters, or other deleterious or injurious faults or defects. Any section of the pipe with a gash, blister, abrasion, nick, scar, or other deleterious fault greater in depth than ten percent (10%) of the wall thickness, shall not be used.

7. Casing pipe shall normally be constructed without any longitudinal seams. However, longitudinally welded casing pipe is allowed for 48-inch or larger diameter pipes when an AWS certified welder performs all the welding

8. The inside diameter (ID) of the casing pipe shall be at least six (6) inches larger than the largest outside diameter (OD) of the carrier pipe to allow the carrier pipe to be inserted or removed subsequently without disturbing the casing or the roadbed

E. Watertight Joints

1. Watertight casing pipe joints are required to ensure the integrity of the roadbed. Casing pipe shall be constructed to prevent water leakage or earth infiltration throughout its entire length.

F. Joints & Welding

1. Casing sections shall be joined by full circumference welding. Field welds shall be full-penetration bevel welds in accordance with the standards of quality as set forth in the specifications of the American Welding Society and ANSI/AWWA C206.

2. All welding shall be performed by skilled welders qualified under the provisions of ANSI/AWS D1.1. Welder qualifications shall be certified by an independent, local approved testing agency not more than six (6) months prior to commencing work.

3. Prepare ends of casings for proper bevel weld by providing a 45-degree bevel on the end of one of the two casing pieces being joined.

## 2.02 INTERIOR OF CASING (BETWEEN CARRIER PIPE AND CASING)

A. Annular space backfill is not required.

## 2.03 CASING SPACERS

A. Casing spacers are required for all carrier pipes. Casing spacers shall consist of stainless steel shell and risers, PVC liner, and composite runner skids runners.

B. Casing spacer skids and blocking shall be bolt-on style with a shell made of at least two halves. The band material shall be manufactured of a minimum 14-gauge T-304 stainless steel. Risers shall be 10-gauge T-304 stainless steel. All welds are to be chemically passivated. The runners shall be at least 12 inches long and shall be manufactured of high abrasion resistant and low coefficient of friction, glass filled polymer. Fasteners and hardware for securing the spacers and runners shall be stainless steel.

C. Casing spacers shall have a flexible EPDM liner having a minimum thickness of 0.090-inches with a hardness of Durometer "A" 85- 90. The liner shall have a rating of no less than 60,000 VPM and water absorption of 1% maximum.

D. Casing spacers shall be provided at 5-foot intervals (minimum of four spacers per 20-foot joint) along the carrier pipe and casing spacers shall be centered and restrained. Alternate spacing may be used if recommended by the casing spacer manufacturer and approved by the Engineer.

E. Detailed product submittals showing all dimensions shall be provided.

F. Casing spacers shall be as manufactured by Advance Products & Systems, Inc., Cascade Waterworks Mfg. Co., Pipeline Seal & Insulator, Inc., or equal.

## 2.04 END SEALS

A. When the casing is not filled with sand or other Engineer approved material, the casing end seals shall be 1/8-inch thick synthetic, rubber, designed to fit snugly around pipe and casing. Casing seals may be one piece with no field seams or the wrap-around style to facilitate installation after the casing and carrier pipe are already installed. Seamless style is preferred. Bands and hardware for attachment to pipe and casing OD shall be 316 stainless steel.

B. When the casing is filled with sand or other Engineer approved material, the annular space at each end of the casing shall be packed with mortar to seal the casing. The mortar closure shall extend a minimum of 12 inches into the casing. Casing end seals are

required in addition to the mortar seal. Alternate sealing methods can be submitted for Engineer review and approval.

C. End seals shall be as manufactured by Advance Products & Systems, Inc., Cascade Waterworks Mfg. Co., Pipeline Seal & Insulator, Inc., or equal.

## 2.05 LINING AND COATING

A. Lining

1. Lining of the casing pipe is not required.

B. Coating

1. Coating of the casing pipe is not required.

## 2.06 TRACER WIRE

A. Tracer wire is not required.

## 2.07 LOCATING TAPE

A. Locating tape material shall be in accordance with 15151 – Facilities Identification.

# PART 3 EXECUTION

## 3.01 GENERAL

A. Casing shall be installed in accordance with the CALTRANS Encroachment Permit Requirements.

## 3.02 INSTALLATION OF CASING

A. Casing shall be installed, backfilled, and compacted as shown and in accordance with Section 02223, Trenching, Backfilling, and Compacting.

B. Casing shall be lowered onto the bedding at the proper lines and grades to accommodate the specified lines and grades of the carrier pipe.

## 3.03 INSTALLATION OF CARRIER PIPE

A. Insertion of Carrier Pipe – Open Trench Method

1. After properly supporting the casing in the trench, the interior shall be thoroughly cleaned and the carrier pipe installed. The carrier pipe shall be installed on at least two skids of sufficient dimension to prevent the pipe bells and, if applicable, joint restraint, from touching the casing pipe and to allow for proper alignment of the carrier pipe to meet the specified grade.

B. Installation of Carrier Pipe - Trenchless Method

C. Securement

1. The top of the carrier pipe shall be blocked to prevent flotation. The carrier pipe shall be secured in a manner satisfactory to the Engineer to prevent floating and subsequent change of grade.

D. Pipe Skids and Blocking

1. Spacers shall be installed at mid-sections and in accordance with paragraph 2.04 entitled "Casing Spacers" if the carrier pipe segment is over ten (10) feet long. Detailed product submittals showing all dimensions shall be provided to the Engineer for approval.

E. Grade Adjustment

1. The carrier pipe grade shall be adjusted as required by changing the height of the casing spacer riser and/or the thickness of the runner pad skids to compensate for any grade variations of the casing pipe. The Contractor shall ensure that the carrier pipe does not come in contact with and is insulated from the casing pipe.
2. Upstream and downstream elevations of the carrier pipe shall be verified prior to sealing the casing ends.

F. Failure to Achieve Required Grade

1. If the alignment of the casing pipe is such that the carrier pipe grade cannot be met, the grade of the casing pipe shall, if required by the Engineer, be adjusted. If realignment is not deemed feasible by the Engineer, another casing pipe meeting the required grade shall be installed.
2. The failed casing pipe shall be removed by methods approved by the Engineer, CALTRANS, and the District. Abandonment of any component of the installation shall only be allowed as approved by the Engineer, CALTRANS, and the District.
3. Realignment or replacement and abandonment work shall in no way result in additional cost to the District.

G. Annular Space between Carrier Pipe and Casing

1. The annular space between the carrier pipe and casing shall not be filled unless otherwise shown or directed by the Engineer.

## 3.04 TESTING

A. Before backfilling the annular space, if required, installing end seals, and backfilling the casing pipe, the carrier pipe shall have passed an initial pressure test in accordance with Section 15042 – Hydrostatic Testing of Pressure Pipelines.

## 3.05 PIPE IDENTIFICATION AND LOCATING

A. Locator tape shall be installed as shown and in accordance with Section 15151 – Facilities Identification. Tracer wire from the carrier pipe shall be connected to the casing with the use of exothermic weld connections.

## 3.06 SITE RESTORATION

A. The disturbed work site area shall be restored to existing grades and original material condition and to the satisfaction of the Engineer.

B. Upon completion of the work, the Contractor shall remove and properly dispose of all excess materials and equipment from the work site.

****END OF SECTION****

# SECTION 02578
# PAVEMENT REMOVAL AND REPLACEMENT

## PART 1 GENERAL

### 1.01 DESCRIPTION

A. This section describes the requirements for materials, testing and inspection, removal, and replacement of asphalt concrete pavement, aggregate base course, and tack coat.

### 1.02 RELATED SECTIONS

A. Section C General Conditions, Section D Special Conditions, and the Drawings shall apply to this section. This section may require direct correlation with the following sections of the contract:

1. Section 02115 – Demolition.
2. Section 02223 – Excavation, Backfilling, and Compaction.
3. Section 03461 – Precast Concrete Manholes and Bases

### 1.03 REFERENCES

A. The following publications form a part of this specification to the extent referenced.

1. California Test Methods (CT):
    a. CT 216 – Method for Test for Relative Compaction of Untreated and Treated Soils and Aggregates.
    b. CT 231 – Method for Test for Relative Compaction of Untreated and Treated Soils and Aggregates Using Nuclear Gauge.
2. Kern County
    a. Encroachment Permit.
    b. Plate No. R-67 – Backfill Requirements on A/C Streets.
3. State of California, Department of Transportation, Caltrans:
    a. Standard Plans and Specifications, 2018.

### 1.04 SUBMITTALS

A. Submittals shall be furnished in accordance with Article D-8 of Section D – Special Conditions.

B. Pavement removal plan, including limits, and list of equipment used in this activity.

C. Mix Design:

1. Submit asphalt mix design data prepared within the last year by a certified laboratory acceptable to the County and the District for each asphalt concrete material type used on the project.

D. Materials Quality:

1. Submit material certificates signed by material producer and Contractor certifying that each materials item complies with or exceeds specified requirements.

E. Materials Source:

1. Submit material certificates signed by materials 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 and 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 County, Engineer, at no additional cost to the District.

# PART 2 PRODUCTS

## 2.01 CONSTRUCTION MATERIALS

A. Construction materials shall comply with all applicable sections of the following:

1. Kern County
   a. Encroachment permit, and
   b. Standards and Standard Detail R-67.
2. Standard Specifications, State of California Department of Transportation (Caltrans), 2018.

## 2.02 MATERIALS

A. Aggregate Base

1. Supply untreated Class 2 aggregate base in compliance with Section 26 of Caltrans Standard Specifications (3/4-inch maximum size), 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.

2. Unless otherwise shown on the drawings, the total compacted thickness of the aggregate base layer shall be a minimum of 8 inches.

B. Asphalt Concrete

1. Asphalt shall meet the requirements of Section 39-2, Hot Mix Asphalt, of the Caltrans Standard Specifications.

2. Use asphalt concrete that is Type A, 3/4- inch maximum with gradations per Section 39-2.02B(4)(b) of the Caltrans Standard Specifications.

3. Asphalt binder shall be used in all layers and must be Performance Grade (PG) PG70-10, conforming to the provisions in Section 92 of the Caltrans Standard Specifications.

4. 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.

5. Asphalt Concrete shall have a compacted thickness of four (4) inches or match existing whichever is greater.

C. Tack Coat

1. The tack coat shall be diluted SS-1h Emulsion per Section 39-2.01C(3)(f) of the Caltrans Standard Specifications.

2. Tack coat shall be applied to all vertical surfaces against which pavement is to be placed and between leveling and finish courses of pavement placed more than two days apart. Application shall be done in accordance with the Standard Specifications of Section 39.

D. Striping

1. Replacing existing striping, traffic markings, pavement markers in accordance with the applicable portions of the State Standard and the provisions of Section 84 of the State of California Standard Specifications.

2. Paint color and type shall be as indicated on the drawings, or if not indicated, shall match as nearly as practical to the existing conditions of the site.

E. Water for Compaction

1. Water used to assist in compaction and subgrade preparation shall conform to Section 02223 – Excavation, Backfilling, and Compacting.

## PART 3 EXECUTION

### 3.01 CONSTRUCTION METHODS

A. Construction methods shall comply with all applicable sections of the Caltrans Standard Specifications.

### 3.02 TRAFFIC CONTROL

A. The Contractor shall provide traffic control in accordance with Section 01551 – Traffic Control.

### 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 PAVEMENT REMOVAL

A. Public Safety

1. The Contractor shall comply with all applicable, State of California and Kern County 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 excavation before the pavement is removed.

2. After backfilling and compacting the excavation, including the Class 2 aggregate base layer, asphalt concrete pavement shall be sawcut at a point not less than six inches outside the limits of the excavation or previous pavement cut, whichever is greater, and the additional pavement removed.

3. Sawcut lines shall be parallel or perpendicular to the flow of traffic.

D. Disposal of Material

1. All pavement and other improvements demolished shall be removed from the site and disposed of in a legal manner per Section 02115 – Demolition and to the satisfaction of the District.

## 3.05 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 ensure water will not pond on or around them. Take care to maintain the asphalt concrete paving elevations at the gutters to ensure 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.

## 3.06 PAVEMENT REPLACEMENT

A. General

1. Producing, hauling, placing, compacting, and finishing of asphalt concrete shall conform to Section 39 of the Caltrans Standard Specifications.

B. Paving and Striping

1. Final Paving and Striping shall be completed after pressure testing of the pipeline.

2. Temporary striping shall be maintained until permanent striping is applied.

## 3.07 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 six inches. The loosened material shall be worked to a finely divided condition and all rocks larger than three 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 of a 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 sections 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 95 percent relative compaction as determined by CT 216. The subgrade must be firm and unyielding before the base and/or surface courses are placed.

D. Final grade cross fall shall be a minimum 2 percent from the centerline of the roadway to the edge of the existing pavement, unless otherwise specified on the Drawings.

## 3.08 PLACING AGGREGATE BASE

A. Aggregate base shall be placed to the thickness shown on the Drawings or to match existing, whichever is greater. Aggregate base shall be compacted to 95 percent relative compaction as determined by CT 216 and placed in maximum of 6-inch lifts.

## 3.09 PREPAVING GRINDING

A. General

1. Prepaving Grinding of existing asphaltic concrete shall be completed in accordance with Section 39-2.01C(3)(e) of the Caltrans Standard Specifications and to the satisfaction of the County.

## 3.10 PLACING TACK COAT

A. Tack coat shall be applied at a rate of 0.05 gallons per square yard to the surfaces to receive finish pavement. Tack coat shall be applied to existing asphalt or concrete surfaces that will be in contact with new asphalt concrete paving.

B. Apply tack coat before and immediately in advance of placing asphalt concrete, apply additional tack coat to damaged areas or where loose extraneous material is removed.

## 3.11 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 39, Hot Mix Asphalt, of the Caltrans Standard Specifications.

B. Asphalt concrete shall be placed in lifts having a maximum of four (4) inches. Work shall be performed in accordance with Section 39, Hot Mix Asphalt, of the Caltrans Standard

Specifications. A tack coat of SS-1h shall be placed between all lifts, existing surfaces, and on all vertical faces.

C. The new finish surface of asphalt concrete shall be 3/8 inch above PCC curbs and gutters.

D. 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.

E. 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.

## 3.12 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.

## 3.13 STRIPING, TRAFFIC MARKINGS, AND PAVEMENT MARKERS

A. Prior to placement of asphalt concrete, remove existing striping, traffic markings, and pavement markers in accordance with the provisions of Section 84 of the State of California Standard Specifications.

B. Striping and pavement markings obliterated by the construction work shall be re-installed using temporary striping or markings prior to the installation of pavement striping and markings.

C. Following placing of asphalt concrete, replace existing striping, traffic markers, and pavement markers in accordance with the provisions of Section 84 of Caltrans Standard Specifications and the County Inspector.

D. Paint color and type shall match as nearly as practical the existing conditions of the site.

## 3.14 REMOVAL OF REJECTED AND UNAUTHORIZED WORK

A. 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.

****END OF SECTION****

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# SECTION 03300

# CONCRETE

## PART 1 GENERAL

### 1.01 DESCRIPTION

A. This section covers the requirements for concrete and grout for thrust blocks, pipe abandonment plugs, manhole and valve support pads, District marker posts, and other items.

### 1.02 RELATED SECTIONS

A. Section C General Conditions, Section D Special Conditions, and the Drawings shall apply to this section.

### 1.03 REFERENCES

A. The following publications form a part of this specification to the extent referenced.

1. American Concrete Institute (ACI):
    a. ACI 214 – Evaluation of Strength Test Results of Concrete.
    b. ACI 301 – Specifications for Structural Concrete for Buildings.
    c. ACI 304 – Guide for Measuring, Mixing, Transporting, and Placing Concrete.
    d. ACI 305.1 – Specification for Hot Weather Concreting.
    e. ACI 306.1 – Standard Specification for Cold Weather Concreting.
    f. ACI 309R – Guide for Consolidation of Concrete.
    g. ACI 318 – Building Code Requirements for Structural Concrete.
2. Army Corps of Engineers:
    a. CRD-C621 – Specification for Nonshrink Grout.
3. American Society of Testing and Materials (ASTM):
    a. ASTM C 31 – Standard Test Practice for Making and Curing Concrete Test Specimens in the Field.
    b. ASTM C 33 – Standard Specification for Concrete Aggregates.
    c. ASTM C 39 – Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens.

d. ASTM C 42 – Standard Test Method for Obtaining and Testing Drilled Cores and Sawed Beams of Concrete.

e. ASTM C 94 – Standard Specification for Ready-Mix Concrete.

f. ASTM C 138 – Standard Test Method for Density (Unit Weight), Yield, and Air Content (Gravimetric) of Concrete.

g. ASTM C 143 – Standard Test Method for Slump of Hydraulic Cement Concrete.

h. ASTM C 150 – Standard Specification for Portland Cement.

i. ASTM C 172– Standard Practice for Sampling Freshly Mixed Concrete.

j. ASTM C 231 – Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method.

k. ASTM C 260 – Standard Specification for Air-Entraining Admixtures for Concrete.

l. ASTM C 494 - Standard Specification for Chemical Admixtures for Concrete.

m. ASTM C 881 – Standard Specification for Epoxy-Resin-Base Bonding Systems for Concrete.

n. ASTM C 1064 – Standard Test Method for Temperature of Freshly Mixed Hydraulic-Cement Concrete.

o. ASTM C 1107 – Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink).

## 1.04 SUBMITTALS

A. Shop drawings shall be submitted in accordance with Article D-9 of Section D, ACI 318, and as specified herein.

1. Placement Drawings

   a. For all structural concrete.

   b. Identify locations of joints.

2. Plan for hot weather concreting procedures; including procedures for transporting, placing, protecting, curing, and monitoring temperature of concrete during hot weather.

3. Plan for cold weather concreting procedures, including procedures for transporting, placing, protecting, curing, and monitoring temperature of concrete during cold weather. Include procedures to be implemented upon abrupt changes in weather conditions or equipment failures. Include procedures for protecting the

subgrade from frost, and for preventing the accumulation of ice or snow on reinforcement or forms prior to placement.

4. Mix design with proof of design by laboratory, 8-hour (high-early strength concrete only), 7 day, and 28-day compressive tests or test reports of 8-hour, 7-day, and 28-day compressive tests of the mix where the same mix that was used on two previous projects, shall be submitted in writing for review by the Engineer at least 21 days before placing any concrete.

5. Certificate that cement used in the concrete complies with ASTM C 150 and these specifications shall be submitted.

6. Aggregates

    a. Certification of compliance with ASTM C 33 shall be provided. Weathering region limits of coarse aggregates: Severe, moderate, or negligible shall be stated. Basis of determining that potential reactivity is negligible shall be stated.

7. Ready Mix Concrete

    a. Delivery tickets or weighmasters certificate per ASTM C 94, including weights of cement and each size aggregate, volume of water in the aggregate, and volume of water added at the plant shall be provided. The volume of water added on the job shall be written on the ticket or certificate.

8. Concrete admixtures: Manufacturer's certificate of compliance with these specifications shall be provided.

9. Non-shrink and Epoxy Grout

    a. Manufacturer's certificate of compliance with these specifications and specific instructions for use shall be provided.

## 1.05 QUALITY ASSURANCE

A. Mix designer shall be a licensed professional engineer registered in the State of California, with a minimum of 5 years of experience in the design of concrete mixes.

B. Batch plant shall be currently certified by the National Ready Mixed Concrete Association.

C. 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.

D. Comply with applicable codes and regulations of governmental agencies having jurisdiction.

E. Rework any work not meeting the specified requirements, as determined by the Engineer, at no additional cost to the District.

## 1.06 TESTING

A. All concrete testing shall per performed at a District selected laboratory and paid for by the District.

B. The Contractor is responsible for coordinating and scheduling all required sampling and testing with the District's provided lab.

C. Freshly mixed concrete may be sampled and tested by the District and Engineer in accordance with ASTM C 172.

D. The District will cast and test (at a District selected laboratory) concrete specimens in accordance with ASTM C 31 and ASTM C 39 to determine the compressive strength of concrete placed in the work. A strength test will be the average of two specimens from the same concrete sample and tested at the same age. The strength of concrete will be considered acceptable if the moving average of three consecutive strength tests is above the specified strength and no individual test is more than 500 psi below the specified strength. Low strength concrete shall be investigated in accordance with procedures contained in ACI 301.

E. The samples from which cylinders are cast will also be tested for slump (ASTM C 143), unit weight (ASTM C 138), and temperature (ASTM C 1064).

F. The District shall submit copies of test results to the Engineer and the Contractor.

## 1.07 FIELD CONTROL

A. Examine the areas and conditions under which work in this section will be performed. Correct conditions detrimental to timely and proper completion of the work. Do not proceed until unsatisfactory conditions are corrected.

B. Maintain grades as shown on drawings.

C. Bring all discrepancies to the immediate attention of the Engineer.

# PART 2 PRODUCTS

## 2.01 CEMENT

A. Cement shall conform to ASTM C 150, Type V.

## 2.02 AGGREGATES

A. Aggregates shall comply with ASTM C 33 and shall be free from any substances that will react with the cement alkalis.

## 2.03 WATER AND ICE

A. Water and ice that is clean and free from objectionable quantities of organic matter, alkali, salts, and any other impurities which might reduce the strength, durability, and quality of the concrete shall be used in the concrete mix.

## 2.04 CONCRETE ADMIXTURES

A. Air-Entraining Admixture

1. Concrete may contain an air-entraining admixture which shall conform to ASTM C 260.
2. Admixture shall be Grace Construction Products, Master Builders, Sika, or equal.

B. Water-Reducing Admixture

1. Concrete may contain a water-reducing admixture which shall conform to ASTM C 494, Type A or Type D, and shall be compatible with the air-entraining admixture. The amount of admixture added to the concrete shall be in accordance with the manufacturer's recommendations.
2. Admixtures shall be Grace Construction Products, Master Builders Pozzolith polymer-type normal setting, Sika, or equal.

C. Accelerant

1. Concrete for thrust blocks may contain an accelerant which shall conform to ASTM C 494, Type C or Type E, and shall be compatible with any other admixtures used. The amount of admixture added to the concrete shall be in accordance with the manufacturer's recommendations.
2. Admixtures shall be Grace Construction Products, Master Builders, Sika, or equal.

D. Admixture Restrictions

1. Accelerating water-reducing admixtures or any other type of admixture that contains chlorides or other corrosive elements shall not be used in any concrete.

E. High-Early Strength Concrete

1. Admixtures for high-early strength concrete shall be non-chloride admixtures which meet the requirements of ASTM C 494.

2. Acceptable products are Grace Construction Products, Master Builders, or equal.

3. Concrete shall reach 2,500 psi compressive strength within eight hours of being placed.

## 2.05 NON-SETTLING GROUT

A. Non-Settling grout mortar shall be a non-shrink, non-metallic cementitious grout, and shall meet the requirements of ASTM C1107.

B. Acceptable products shall be Masterflow 928 Grout by Master Builders, Five Star Grout by Five Star Products, or approved equal.

## 2.06 EPOXY GROUT FOR CRACK REPAIR

A. Except as noted below, epoxy grout shall be a high modulus, two-component, moisture insensitive, 100 percent solids, thermosetting modified polyamid epoxy compound. The consistency shall be a paste form capable of not sagging in horizontal or overhead anchoring configurations.

1. Material shall conform to ASTM C881 Type 1, Grade 3, such as Chemrex Inc., Concresive Paste LPL; Sika Corporation Sikadur Hi-Mod Series; Adhesive Technology Corporation, Solidbond 200; or equal, and shall have a heat deflection temperature in excess of 130 degrees F.

B. Epoxy for pressure grouting/crack injection shall be a two-component, moisture insensitive, high modulus, injection grade, 100 percent solids, blend of epoxy resin compounds. The consistency shall be as required to achieve complete penetration in hairline cracks and larger.

1. Material shall conform to ASTM C881 Type 1 Grade 1, such as Sika Corporation, Sikadur 52; Chemrex Inc., Concresive LV1; Adhesive Technology Corporation, SLV 300 series; or equal.

## 2.07 EPOXY BONDING COMPOUND

A. Manufacturer's certifications as to suitability of product to meet job requirements with regard to surface, pot life, set time, vertical or horizontal application, and forming restrictions shall be provided.

B. Bonding compound shall be Concresive 1001 LPL, Adhesive Engineering Company, San Carlos, California; Sikadur Hi-Mod (Sikastix 370), Sika Chemical Corporation, Lyndhurst, New Jersey; or equal.

## 2.08 PRESSURE GROUTING EQUIPMENT

A. Pressure grouting equipment shall include a mixer and holdover agitator tanks and shall be designed to place grout at pressures up to 50 psi. Gages shall be provided to indicate pressure used. The mixer shall be provided with a meter capable of indicating to one-tenth of a cubic foot the volume of grout used.

## 2.09 CONCRETE MIX DESIGN

A. General

1. Concrete mix design shall conform to ASTM C 94 and ACI 318, except as modified by these specifications.

B. Fly Ash

1. Fly ash shall not be used in the mix as a partial substitute for cement.

C. Air Content

1. Air content as determined by ASTM C 231 shall be 4% content as determined by ASTM C 231 shall be 4% $\pm$ 1%.

D. Water-Cement Ratio

1. Maximum water-cement ratio shall not exceed 0.44 by weight.

E. Classes

1. Classes of concrete shall be used as described in the following table:

| Class | Type of Work | 28-Day Compressive Strength (psi) |
|---|---|---|
| B | Thrust blocks, pipe abandonment plugs, District Marker Posts, concrete collars, and all unspecified locations. | 3,250 |

F. Slump

1. Slump shall be measured in accordance with ASTM C 143. Slump shall be as 3 inches $\pm$ 1 inch.

G. Aggregate Size

1. Aggregate shall be 1-inch maximum for all concrete per ASTM C33 gradations.

## 2.10 WORKABILITY

A. General

1. Concrete shall be of such consistency and composition that it can be worked readily into the forms and around the reinforcement without excessive spading and without permitting the materials to segregate or free water to collect on the surface. The proportions shall be adjusted to secure a plastic, cohesive mixture, and one which is within the specified slump range.

B. Aggregate

To avoid unnecessary changes in consistency, aggregate shall be obtained from a source with uniform quality, moisture content, and grading. Materials shall be handled in such a manner that variations in moisture content will not interfere with production of concrete of the specified degree of uniformity.

## 2.11 THRUST BLOCKS

A. Concrete thrust blocks shall be constructed as specified on the plans.

B. Thrust Blocks shall be Class B concrete per Part 2 Paragraph entitled “Concrete Mix Design”.

## 2.12 CONCRETE REINFORCEMENT

A. Concrete reinforcement shall conform to ASTM A615, Grade 60.

# PART 3 EXECUTION

## 3.01 SITE-MIXED CONCRETE

A. The use of site-mixed concrete is not allowed.

## 3.02 READY-MIX CONCRETE

A. General

1. Ready-mixed concrete shall conform to ASTM C 94 as modified by these specifications.

B. Haul Time Requirements

1. The haul time of ready-mixed concrete shall be limited so that the specified slump is attained without the onsite addition of water, which may cause the mix design water-cement ratio to be exceeded. In no case shall the time between the time when the concrete is batched and it is placed exceed 90 minutes. When haul time

is excessive, truck-transported, dry-batched concrete shall be used and mixed on the jobsite. Partially hardened concrete shall not be retempered.

## 3.03 PLACING CONCRETE

A. General

1. Concrete placement shall conform to ACI 304 as modified by these specifications.

B. Placement Sequence

1. The sequence of concrete placement shall be coordinated in advance of actual placement to assure that construction joints will occur only as designed. Alternate sections of concrete walls and slabs shall be placed monolithically. Concrete for walls and slabs shall not be placed until seven days after placement of concrete for adjacent walls and slabs.

C. Notification

1. The Engineer shall be notified of readiness, not just intention, to place concrete in any portion of the work. This notification shall be such time in advance of the operation as the Engineer deems necessary for him to observe the preparations at the location of the proposed concrete placing. All forms, steel, screeds, anchors, ties, inserts and other items to be embedded shall be in place before notification of readiness is given to the Engineer.

D. Equipment Readiness

1. Sufficient primary and backup equipment shall be scheduled for continuous concrete placement and anticipate what actions will be taken during interruption. Extra concrete vibrators shall be provided. Concrete vibrators shall be tested the day before placing concrete.

E. Moisture Barriers

1. Where a moisture barrier is installed, the moisture barrier shall not be punctured by stakes or any other concrete accessories.

F. Removal of Water from Areas to Receive Concrete

1. Concrete shall not be placed until all 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. Concrete shall not be placed underwater, nor shall still water be allowed to rise on any concrete until the concrete has attained its initial set. Water shall not be permitted to flow over the newly deposited concrete in such manner and of such velocity that will damage the surface finish.

G. Concrete Placement and Freefall

1. Concrete shall be deposited at or near its final position to avoid segregation caused by rehandling or flowing. Concrete shall not be deposited in large quantities in one place to be worked along the forms with a vibrator. Concrete shall not be dropped freely into place from a height greater than four feet. A Tremie shall be used where the drop could exceed these limits.

H. Consolidation of Concrete

1. Conform to ACI 309R.

2. Mechanical vibrators shall be used while placing concrete to eliminate rock pockets and voids, to consolidate each layer with that previously placed, to completely embed reinforcing bars and fixtures, and to bring just enough fine material to exposed surfaces to produce a smooth, dense, and even texture. Vibrators shall be of the high-frequency internal type, and the number in use shall be able to consolidate the incoming concrete to a proper degree within 15 minutes after it is deposited in the forms. In all cases, at least two vibrators shall be available at the site. External vibrators shall be used for consolidating concrete only when the concrete is otherwise inaccessible for adequate internal consolidating.

I. Protection of Concrete

1. Concrete shall not be placed during rainstorms. Concrete placed immediately before rain shall be protected to prevent rainwater from coming in contact with it. Sufficient protective covering shall be kept on hand at all times for this purpose.

## 3.04 CONCRETE TESTS

a. Hold one cylinder for verification.

b. The test results shall be the average of the strengths of the two cylinders tested at 28 days.

c. If one cylinder in a test manifests evidence of improper sampling, molding, or testing, other than low strength, discard it and use the fifth cylinder for the test result.

d. Determine slump of the concrete using ASTM C 143 for each strength test sample and as required to establish consistency.

e. Facilities for safe storage and proper curing of concrete test specimens on the project site, as required by ASTM C 31 shall be provided and maintained by the Contractor.

f. Certified reports of the test results shall be provided directly to the Engineer. Test reports shall include sufficient information to identify the mix used, the stationing or location of the concrete placement, and the quantity placed. Slump, air content, temperature of concrete, and ambient temperature shall be noted. The 28-day strength test results shall be

evaluated in accordance with ACI 214. Quality control charts showing field test results shall be included with the test results for each class of concrete in each major structure. Charts shall be prepared in accordance with ACI 214. Quality control charts shall be maintained throughout the entire job and shall be available for the Engineer's inspection at any time.

2. Requirements for Attainment of Compressive Strength

   a. Concrete shall attain the 28-day strength specified. The average value of concrete strength tests shall be equal to or greater than the specified 28-day strength. Not more than 10 percent of the tests shall be less than the specified 28-day strength. No test shall be less than 90 percent of the specified 28-day strength.

3. Failure to Attain Specified Strength

   a. If the 28-day tests fail to meet the specified minimum compressive strength, the concrete will be assumed to be defective and one set of three cores from each area may be taken as selected by the Engineer and in accordance with ASTM C 42. If the average compressive strength, of the set of three concrete cores fails to equal 90 percent of the specified minimum compressive strength or if any single core is less than 75 percent of the minimum compressive strength, the concrete will be considered defective and shall be removed and replaced, all at no cost to the District. Costs of coring, testing of cores, and all required repairing pertaining thereto shall be the responsibility of the Contractor.

## 3.05 HOT WEATHER REQUIREMENTS

A. General

1. During hot weather, proper attention shall be given to ingredients, production methods, handling, placing, protection, and curing to prevent excessive concrete temperatures or water evaporation in accordance with ACI 305.1. There shall be no additional reimbursement for costs incurred for placing concrete in hot weather.

## 3.06 COLD WEATHER REQUIREMENTS

A. General

1. Adequate equipment shall be provided for heating concrete materials and protecting concrete during freezing or near-freezing weather in accordance with ACI 306.1. There shall be no additional reimbursement for costs incurred for placing concrete during cold weather.

## 3.07 TOLERANCES

A. Tolerances are defined as allowable variation from specified lines, grades, and dimensions, and as allowable magnitude of surface irregularities.

B. Allowable Variation from Specified Lines, Grades, and Dimensions:

1. Conform to ACI 117.

2. Variation is defined as the distance between the actual position of the structure or any element of the structure and the specified position of the respective structure or element.

## 3.08 CONCRETE FINISHING, CURING, AND WATERPROOFING

A. Concrete finishing shall be wood float or steel trowel.

****END OF SECTION****

# SECTION 03461

# PRECAST CONCRETE MANHOLES

## PART 1 GENERAL

### 1.01 DESCRIPTION

A. This section covers requirements for precast manholes and frames and covers as a part of each air valve assembly as shown on the Drawings.

### 1.02 RELATED SECTIONS

A. Section C General Conditions, Section D Special Conditions, and the Drawings shall apply to this section. This section may require direct correlation with the following sections of the contract:

1. Section 02223 – Excavation, Backfilling, and Compaction.
2. Section 03300 – Concrete

### 1.03 REFERENCES

A. The following publications form a part of this specification to the extent referenced.

1. American Society for Testing and Materials (ASTM)
    a. ASTM A 48 – Standard Specification for Gray Iron Castings
    b. ASTM A 536 – Standard Specification for Ductile Iron Castings
    c. ASTM A 123 – Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
    d. ASTM C 478 – Standard Specification for Circular Precast Reinforced Concrete Manhole Sections.
2. Kern County
    a. Encroachment Permit.
    b. Plate No. S-6 – Cast Iron Manhole Frame and Cover
    c. Plate No. S-8 – Standard Frames and Covers for Manholes & Cleanouts
    d. Plate No. D-5 – Type “C” Minor Structure – Manhole.
3. Project Geotechnical Investigation Report.
4. California Division of Occupational Safety and Health (Cal/OSHA)
5. California Test Method
    a. CT-216 – Method of Test for Relative Compaction of Untreated and Treated Soils and Aggregates.

## 1.04 SUBMITTALS

A. Submittals shall be furnished in accordance with Article D-8 of Section D – Special Conditions.

B. Submit manufacturer's catalog and test data on precast concrete manholes, frames, and covers along with installation recommendations for inlet and outlet seals and watertight caulking. Show dimensions and materials of construction by ASTM reference and grade. Show manhole cover lettering and pattern.

C. Design calculations and detailed drawings of manhole component sections signed by a registered California professional civil or structural engineer.

## 1.05 QUALITY ASSURANCE

A. Comply with applicable codes and regulations of governmental agencies having jurisdiction.

B. Inspection: After installation, the Contractor shall demonstrate to the satisfaction of the Engineer that all manholes 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.

# PART 2 PRODUCTS

## 2.01 PRECAST CONCRETE MANHOLES

A. General

1. Precast reinforced concrete manholes shall comply with ASTM C478.
2. Wall thickness shall not be less than five (5) inches.
3. Lifting holes, if used, shall be tapered, and no more than two shall be cast in each section.
4. Unless other shown, manholes shall be fabricated only from eccentric taper sections and standard cylinder units of the proper internal diameter.
5. Mark date of manufacture and name or trademark of manufacturer on inside of barrel.
6. Manholes exceeding three (3) feet in depth shall contain galvanized (ASTM A123) steps.

B. Manhole Design Load

1. All manhole components shall be designed for designed for AASHTO HS-20-44 continuous loading per standard specifications for highway bridges and site soil

conditions per the project geotechnical report. The live load shall be that which produces the maximum shear and bending moments in the structure.

C. Concrete

1. Precast reinforced concrete manhole risers and tops shall be constructed of Class A concrete with Type V cement in accordance with Section 03300 – Concrete.

D. Joints

1. Joints between manhole components shall be tongue and groove type and shall be sealed with a joint sealing compound, Conseal CS-102B, or approved equal.

E. Steps

1. Manhole sections shall be cast with galvanized steps in accordance with Cal/OSHA requirements as shown on the Drawings.

F. Manufacturers

1. Precast reinforced concrete manholes shall be manufactured by Inland Concrete Products (Oldcastle Precast), Manhole Builders, Olson Precast Company, Precon Products, Southwest Concrete Products (CalPortland), or equal.

## 2.02 MANHOLE FRAMES AND COVERS

A. General Requirements

1. Manhole frames and covers shall be in accordance with County Plate Nos. S-6 and S-8 except as modified herein and as shown on the Drawings.
2. Manhole frames and covers shall be made of ductile iron conforming to ASTM A 536, Class 400, or cast iron conforming to ASTM A 48, Class 30 minimum. Casting shall have a workmanlike finish and be smooth, clean, and free from blisters, blowholes.
3. Cover diameter shall be 36-inches and have two (2) 1/2-inch diameter holes.
4. Cover shall have a side pry hole and a self-draining blind pick.

B. Design Load

1. Frames and covers shall be of the traffic type. Design loading shall be as specified herein under the Part 2 paragraph entitled “Manhole Design Load”.

C. Fit and Matchmarking

1. Each manhole cover shall be ground, or otherwise machine finished so that it will fit in its frame without rocking. Frames and covers shall be matchmarked in sets before shipping to the site.

D. Skid Resistant Tread

1. Cover shall have a 2.0-inch by 1.0-inch diamond mat, 0.125-inches deep.

E. Cover Inscription

1. Covers shall have the words "SSJMUD – AIR VALVE" or as shown the Drawings cast thereon. With the exception of country of origin, no other lettering on the top side shall be permitted.

2. Cast letters shall be two (2) inches and the relief depth shall be at least 0.125-inches. Top surface of the letters and diamond tread pattern shall be flush with the outer ring edge and the frame top surfaces.

F. Inspection and Coating

1. Before leaving the foundry, castings shall be cleaned and subjected to a hammer inspection. Castings shall then be dipped twice in a preparation of asphalt and oil applied at a temperature of not less than 290°F, not more than 310°F, and in such a manner as to form a firm and tenacious coating.

G. Manufacturers

1. Manhole frames shall be manufactured by Alhambra Foundry, or equal.

2. Manhole covers shall be manufactured by Alhambra Foundry (A-1251), or equal.

## 2.03 NONSHRINK GROUT

A. Grout for grade-ring joints shall be in accordance with Section 03300 – Concrete.

## 2.04 EPOXY GROUT

A. Epoxy grout shall be used in repairing manhole and manhole base surfaces. Epoxy grout shall be made with epoxy and sand. The sand shall be clean, bagged, graded, and kiln dried silica sand. The prepared grout shall wet the contact surface and provide proper adhesion, or a coat of epoxy shall be applied prior to placing the epoxy grout. The epoxy bonding compound shall be in accordance with Section 03300 – Concrete.

## 2.05 GRANULAR BASE

A. Granular base to support the precast structure shall be 3/4-crushed rock conforming to Specification section 02220 – Structure Earthwork and as shown on the Drawings.

## 2.06 FILTER FABRIC

A. Granular base filter fabric shall be in accordance with Section 02220 – Structure Earthwork.

## 2.07 BACKFILL MATERIAL

A. Structural backfill materials shall be in accordance with Section 02220 – Structure Earthwork.

# PART 3 EXECUTION

## 3.01 GENERAL

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.

## 3.02 EARTHWORK

A. General

1. Excavation and backfill for precast concrete manholes shall be in accordance with Section 02220 – Structure Earthwork.
2. If the subgrade soils are disturbed, they should be scarified a minimum of twelve (12) inches and recompacted to 90 percent relative compaction as determined by CT-216.
3. If soil conditions are not adequate as determined by the Engineer, a specified depth of over-excavation shall be required and the re-fill material shall be placed in accordance with Section 02223 – Excavation, Backfilling, and Compacting prior to the placement of concrete.

B. Granular Base

1. Unless otherwise shown or specified, the bottom of the manhole shall be placed on a compacted gravel sub-base, graded level and to the proper elevation required for installation.
2. Wrap gravel rock base in filter fabric in accordance with Section 02220 – Structure Earthwork.

## 3.03 INSTALLATION

A. General

1. Manholes shall be constructed as shown on the Drawings and Kern County Standards.

B. Joints for Grade-Rings

1. Precast concrete manhole units shall be set in a bed of grout to make a watertight joint at least 1/2-inch thick with the concrete base or with the preceding unit. Manhole sections shall be set perfectly plumb. Joints shall be pointed and troweled and smoothed inside and outside of the manhole shaft joint. The excess grout shall be wiped off and removed.

C. Watertightness

1. It is the intent of these specifications that manholes and appurtenances be watertight and free from infiltration. Enough cold-applied, preformed, plastic joint sealing compound shall be applied such that the compressed material protrudes from the interior and exterior of each manhole joint. The excess material on the interior shall be trimmed flush.

2. The sealing compound shall be installed in accordance with the manufacturer's recommendations to provide a watertight joint.

D. Finish Elevation of Manhole Covers

1. Paved Areas

a. When installed in pavement, manholes shall be built up so that the cast iron manhole cover is 1/4-inch below the top of finished pavement surface, in accordance with Kern County Plate No. D-5.

2. Unpaved Areas

a. When installed in the road berm, manholes shall be built up so that the cast iron manhole cover is two (2) inches above finished grade.

E. Manhole Frame and Cover

1. The manhole frame shall be secured to the grade ring with grout and cement mortar. After the frames are securely set, the frames and the covers shall be cleaned and scraped free of foreign materials and shall be ground or otherwise finished as needed so the cover fits in its frame without rocking. The manhole frame and cover shall be constructed per Kern County Standard Drawings at interim and final condition.

F. Backfill

1. After the manhole and all appurtenances are in place and approved, backfill shall be placed to the original ground line or the limits designated on the plans.

a. Backfill around the precast concrete manhole shall be structural fill and shall be placed and compacted in accordance with Section 02220 – Structure Earthwork and Section 02223 – Excavation, Backfilling, and Compacting.

G. Concrete Collar

1. A Class A concrete collar shall be cast around the exterior perimeter of the manhole frame and grade rings in accordance with Section 03300 – Concrete and as shown on the Drawings.

H. Pavement Replacement

1. Replacement of bituminous pavement shall be in accordance with Section 02578 – Pavement Removal and Replacement.

## 3.04 MANHOLE REPAIRS

A. Manhole sections that exhibit defects in the concrete surface may be rejected for the reasons such as exposure of reinforcement, shattered concrete or cracks having a width of 0.01 inch or more throughout a continuous length of one (1) foot or more.

B. Defective concrete surfaces of manhole sections not rejected shall be repaired by chipping away unsound or imperfect concrete. Edges shall be left sharp and square with the surface. Loose material and dust remaining after chipping shall be removed by means of an air jet. Epoxy grout shall be applied to the surface to be repaired in accordance with the manufacturer's instructions. The grout shall wet the contact surface and provide proper adhesion, or a coat of epoxy shall be applied prior to placing the epoxy grout.

****END OF SECTION****

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# SECTION 09900

# PROTECTIVE COATINGS

## PART 1 GENERAL

### 1.01 DESCRIPTION

A. This section describes the requirements for furnishing and applying protective coatings, complete and in place, in accordance with the Contract Documents.

B. 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. Equipment nameplates.
4. Surfaces of items to be completely embedded in concrete.

C. The coating system schedules summarize the surfaces to be coated, the required surface preparation, and the coating systems to be applied.

D. 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 RELATED SECTIONS

A. Section C General Conditions, Section D Special Conditions, and the Drawings shall apply to this section. This section may require direct correlation with the following sections of the contract:

1. Section 15151 – Facilities Identification.

### 1.03 REFERENCES

A. The following publications form a part of this specification to the extent referenced.

1. ASTM International (ASTM)
    a. ASTM C309 – Liquid Membrane-Forming Compounds for Curing Concrete.
    b. ASTM D4259 – Preparation of Concrete by Abrasion Prior to Coating Application.
    c. ASTM D4285 – Indicating Oil or Water in Compressed Air.

d. ASTM D7091 – Nondestructive Measurement of Dry Film Thickness of Nonmagnetic Coatings Applied to Ferrous Metals and Nonmagnetic, Nonconductive Coatings Applied to Non-Ferrous Metals.

2. American Water Works Association (AWWA)

a. AWWA C205 – Cement-Mortar Protective Lining and Coating for Steel Water Pipe

b. AWWA C210 – Liquid-Epoxy Coatings and Linings for Steel Water Pipe and Fittings.

c. AWWA C213 – Fusion Bonded Epoxy Coating for the Interior and Exterior of Steel Water Pipe and Fittings.

d. AWWA C550 – Protective Interior Coatings for Valves and Hydrants.

3. The Society for Protective Coatings (SSPC)/NACE International (NACE)

a. SSPC-PA1 – Shop, Field, and Maintenance Painting of Steel.

b. SSPC-PA2 – Procedure for Determining Conformance to Dry Coating Thickness Requirements.

c. SSPC-SP1 – Solvent Cleaning.

d. SSPC-SP2 – Hand Tool Cleaning.

e. SSPC-SP3 – Power Tool Cleaning.

f. SSPC-SP5 – White Metal Blast Cleaning.

g. SSPC-SP6 – Commercial Blast Cleaning.

h. SSPC-SP7 – Brush-Off Blast Cleaning.

i. SSPC-SP10 – Near-White Blast Cleaning.

j. SSPC-SP13 – Surface Preparation of Concrete.

k. SSPC-VIS1 – Guide and Reference Photographs for Steel Surfaces Prepared by Abrasive Blast Cleaning.

l. SSPC-VIS3 – Visual Standard for Power- and Hand-Tool Cleaned Steel.

m. SP0188 – Discontinuity (Holiday) Testing of New Protective Coatings on Conductive Substrates.

n. SP0287 – Field Measurement of Surface Profile of Abrasive Blast-Cleaned Steel Surfaces Using a Replica Tape.

4. San Joaquin Valley Air Pollution Control District

a. Rule 4652 – Coatings and Ink Manufacturing.

b. Rule 4653 – Adhesives and Sealants.

## 1.04 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.

## 1.05 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, five (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.

## 1.06 SUBMITTALS

A. Submittals shall be furnished in accordance with Article D-8 of Section D – Special Conditions.

B. 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.

C. 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.

D. 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. Qualifications and references.
7. Coating inspection, measurement, detection, and testing devices.

## 1.07 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 five (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).

## 1.08 QUALITY ASSURANCE

A. General

1. Unless otherwise specified, the CONTRACTOR shall clean and paint or protectively coat the surfaces of all ferrous metalwork installed in conformance with this Section.
2. Regardless of the method of cleaning specified in this Section, surfaces of all metalwork shall be cleaned of oil, grease, dust, dirt, rust, loose mill scale and other foreign substances by approved means prior to painting or coating; where specified, power tool cleaning or sandblasting shall be performed.
3. Damaged areas of shop painted surfaces shall be cleaned and repainted to match existing at the CONTRACTOR's expense.
4. No paint or coating shall be shop or field applied in inclement weather or when the ambient temperature is below 45 degrees F.
5. Materials which have been painted shall be handled with care and protected as necessary to preserve the painted surfaces in good condition.

6. Items or surfaces not to be painted but which are adjacent to surfaces to be painted shall be protected against contamination and damage during cleaning and painting operations.

## 1.09 AIR QUALITY REQUIREMENTS

A. Materials shall comply with San Joaquin Valley Air Pollution Control District rules 4652 and 4653 for Coatings and Ink Manufacturing and Adhesives and Sealants, respectively, and any other rules for shop and field coating.

# 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

1. 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.
4. Unless otherwise noted or specified the finish color shall be the following:
   a. Above ground pipe, couplings, fittings, valves, pipe vents, bollards, and appurtenances shall be painted Safety Yellow.

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 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. Tnemec Company (Compton, California; 310-637-2363)
    b. PPG Protective & Marine Coatings
    c. 3M
    d. Or approved equal

B. Materials
1. High-Build Epoxy
    a. Tnemec "Series V69, Hi-Build, Epoxoline II", PPG "Amerlock 2 High Solids Epoxy", or approved equal.
2. High-Build Epoxy Lining – 100% Solids
    a. Tnemec "Series 22 Epoxoline" or approved equal.
3. Polyurethane
    a. Tnemec "Series 1095, Endura-Shield II", PPG "Durethane DTM Urethane Mastic 95-3300", or approved equal.

C. System A – Polyurethane
1. Shop coat DFT = 3-5 mils, Tnemec Series V69 Hi-Build Epoxoline II, PPG Amerlock 2 High Solids Epoxy, or approved equal.
2. Field coat DFT = 2-4 mils, Tnemec Series V69 Hi-Build Epoxoline II, or approved equal.
3. Finish coats (one or more, DFT = 2-4 mils), Tnemec Series 1095, Endura-Shield II, PPG Durethane DTM Urethane Mastic 95-3300, or approved equal.
4. Total system DFT = minimum of total paint system of 8 mils.

D. System B – High-Build Epoxy
1. Finish coats (two or more, DFT = 4-6 mils each coat), Tnemec Series V69 Hi-Build Epoxoline II, or approved equal.
2. Total system DFT = minimum of total paint system of 10 mils.

E. System C – High-Build Epoxy Lining

1. Type: liquid-epoxy lining in accordance with AWWA C210.
2. Service Conditions: Shall be used to coat interior surfaces of ferrous pipes.
3. Coating: Coating shall be in accordance with AWWA C210.
4. Total system DFT = Unless otherwise specified, minimum of total paint system of 20 mils (interior).
5. Approved manufacturers: Tnemec Epoxoline Series 22, or equal.

F. System D – Cement Mortar Coating

1. Type: cement-mortar lining and coating in accordance with AWWA C205.
2. Service Conditions: shall be used to coat exterior of buried surfaces of ferrous pipe.
3. Thickness: Provide a 3/4-inch minimum thickness mortar coating reinforced with 3/4-inch galvanized welded wire fabric or 2 × 4 W0.5 × W0.5 welded wire fabric in accordance with AWWA C205.
4. Coating: Coating shall be in accordance with AWWA C205 and the cement mortar shall contain no less than 1-part Type V cement to 3-parts sand. The cement mortar shall be cured by one of the following methods: 1) A curing compound meeting the requirements of 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 in accordance with AWWA C205; 2) Moist Curing and Additional Water Application in accordance with AWWA C205.

G. System No. E – Fusion-Bonded Epoxy Lining and Coating – Pipes

1. Type: Thermosetting powdered epoxy coating in accordance with AWWA C213.
2. Service Conditions: Shall be used to coat interior and exterior surfaces of ferrous metal pipe.
3. Surface Preparation: In accordance with AWWA C213.
4. Coating: Unless otherwise specified, apply to a total dry-film thickness of 12 mils in accordance with AWWA C213 and the manufacturer's recommendations.
5. Approved manufacturers: 3M, Scotchkote 134, or equal.

H. System No. F – Fusion-Bonded Epoxy Lining and Coating – Valves and Couplings

1. Type: Thermosetting powdered epoxy coating in accordance with AWWA C213 and C550.
2. Service Conditions: Shall be used to coat interior and exterior surfaces of ferrous metal valves and couplings.
3. Surface Preparation: In accordance with AWWA C213 and C550.

4. Coating: Unless otherwise specified, apply to a total dry-film thickness of 12 mils in accordance with AWWA C213 and C550 and the manufacturer's recommendations.

5. Approved manufacturers: 3M, Scotchkote 134, or equal.

I. System No. G – Buried Metal Coating Systems

1. Type: Low VOC epoxy coating. A total dry-film consisting of the combined thickness of both a prime coat and finish coat is described herein. The total dry-film thickness of this system shall be 24 mils.

2. Service Conditions: Shall be used to coat buried metal including but not limited to flanges, bolts and nuts, fittings, flexible pipe couplings, and structural steel.

3. Surface Preparation: SSPC SP-10 with a 2 mil angular anchor profile.

4. Coating Coat: Apply prime coat to a dry-film thickness of 6.0 to 8.0 mils. Apply two finish coats, each 6.0 to 8.0 dry-film thickness, to achieve the total dry-film thickness. The coating material shall be the same material as the prime coat.

5. Approved manufacturers: Tnemec, Series V69 Hi-Build Epoxoline II, or equal.

J. System No. H – PVC Tape

1. Prior to wrapping the pipe with PVC tape, the pipe and fittings first shall be primed using a primer recommended by the PVC tape manufacturer.

2. After being primed, the pipe shall be wrapped with a 20-mil adhesive PVC tape (4-inch width), half-lapped, to a total thickness of 40 mils.

3. Tightly apply tapes with 2-inch minimum uniform lap, free from wrinkles and voids. Use approved wrapping machines and experienced operators.

4. If required by the Engineer, all wrapped coating shall be spark-tested in the presence of the Engineer.

5. PVC tape shall be Polyken 920, or equal.

## 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 six (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.

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 SP0287 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 testing shall be conducted in accordance with NACE SP0188.
2. 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.
3. 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-PA2 and ASTM D7091 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-2 | Surfaces of buried steel pipe, rods, reinforcing steel, bolts, and clamps. | SSPC-SP10 with 2 mil angular anchor profile. | System G |
| CS-4 | All above ground steel pipe, fittings, and pipe vent coating. | Solvent cleaning SSPC-SP1, followed by commercial blast cleaning SSPC-SP6 | System A |
| CS-5 | Shop applied cement-mortar coating for buried steel pipe as shown on the Drawings. | AWWA C205 | System D |
| CS-7 | Buried valves | AWWA C213 and C550 | System F |
| CS-8 | Buried steel couplings, tapping sleeves, and fittings. | AWWA C213 and C550 | System F |
| CS-9 | Buried steel casing pipe as shown (field applied) | None | None |

****END OF SECTION ****

# SECTION 13280

# HAZARDOUS SUBSTANCES REMOVAL AND DISPOSAL

## PART 1 GENERAL

### 1.01 DESCRIPTION

A. This section covers the requirements for removal and disposal of hazardous substances and hazardous wastes form the work site, if found at the site.

B. Pipes containing asbestos are known to be present in the District's system and are expected to be encountered during completion of the work.

### 1.02 RELATED SECTIONS

A. Section C General Conditions, Section D Special Conditions, and the Drawings shall apply to this section. This section may require direct correlation with the following sections of the contract:

1. Section 02115 – Demolition.
2. Section 02223 – Excavation, Backfilling, and Compaction.
3. Appendix D – Kern County Public Works Non-Friable Asbestos Abatement Disposal Procedures.

### 1.03 REFERENCES

A. The following publications form a part of this specification to the extent referenced.

1. California Code of Regulations
   a. Title 8, Section 1529 – Construction Safety Orders (Asbestos).
2. Code of Federal Regulations:
   a. Title 40, Part 61, Subpart M – National Emissions Standards for Hazardous Air Pollutants (NESHAP).
   b. Title 29, Part 1910.1001 – Toxic Hazardous Substances (Asbestos).
3. California Health and Safety Code, Division 20, Chapter 6.5-Hazardous Waste Control Act.
4. California Water Code, Division 7 (Porter-Cologne Act).
5. Kern County Public Works Non-Friable Asbestos Abatement Disposal Procedures.
6. ASTM E2394 – Standard Practice for Maintenance, Renovation, and Repair of Installed Asbestos Cement Products.

7. ANSI/ASSP A10.6 – Safety and Health Program Requirements for Demolition Operations.

## 1.04 SUBMITTALS

A. Submit the following:

1. Removal, Transport, and Disposal Plan
   a. Plan detailing Contractor's plans for removal, transportation, and disposal of asbestos cement pipe. Plan shall include means and methods for performing the work.
   b. Detailed sequence of work with starting and end dates for each activity.
   c. Methods of protecting workers from exposure to the asbestos during work, including worker PPE and site/task specific training.
   d. Disposal site location.
2. Notifications and Permits:
   a. Any demolition, excavation, and disposal notifications and/or permits required by local, State, County, and federal authorities.
3. Waste Disposal Records:
   a. Receipt and acceptance of asbestos-containing material by a disposal (landfill) or recycling facility permitted to accept asbestos-containing material.
   b. Receipt and acceptance of universal wastes by a recycling/landfill facility licensed to accept universal wastes.
   c. Hazardous waste manifests, nonhazardous waste manifests, bills of lading, and/or receipts showing load tickets for all other building debris and refuse removal.
4. Work Site Health and Safety Plan. This plan provides a procedure for personnel and visitor safety, protection and monitoring, including procedures to be followed in the event of exposure to hazardous substances or hazardous waste.
5. Copies of the above plans shall be maintained at the work site throughout the demolition period.

## 1.05 COMPLIANCE

A. Regulatory Requirements: Comply with applicable federal, State, County, and local notification regulations before beginning demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.

B. Comply with ANSI/ASSP A10.6.

C. Comply with the requirements of ASTM E2394.

## 1.06 SERVICES

A. The Contactor shall implement approved practices, procedures, and general requirements for asbestos and other hazardous substances or hazardous waste abatements or removals and disposal, according to applicable laws, rules and regulations of federal, State, County, and local government agencies, including but not limited to the following:

1. Asbestos Removal, Transport, and Disposal Plan
2. Emergency Precautions and Procedures.
3. Worker Protection Procedures.
4. Work Area Preparation and Coordination.
5. Inspection and Coordination.
6. Work Requiring Containment.
7. Work Not Requiring Containment.
8. Sampling, Monitoring and Clearance.
9. Transportation and Disposal.

# PART 2 PRODUCTS

Not Used

# PART 3 EXECUTION

## 3.01 GENERAL

A. Contractor shall take the following precautions when working with materials containing asbestos:

1. Asbestos wastes must be labeled and containerized (bagged or wrapped) throughout the disposal process.
2. Minimize cutting and breaking.
3. Remove material intact.
4. Adequately wet to prevent generation of any dust during removal, bagging, and while in waste bags and/or wraps.
5. Wet the material thoroughly before and during demolition activities.
6. Bag or wrap the removed material or keep it wet until transferred to a closed receptacle within the work shift.

## 3.02 REMOVAL OF PIPES CONTAINING ASBESTOS

A. Removal of pipes containing asbestos shall be performed in accordance with 40 CFR, Part 61 – National Emission Standards for Hazardous Air Pollutants, and ASTM E2394.

B. Remove the existing pipes prior to cutting, welding, or performing work that may dislodge or damage the pipes.

C. Remove, transport and dispose of asbestos-containing material in accordance with local, State and federal regulations.

## 3.03 DISPOSAL OF HAZARDOUS SUBSTANCES AND HAZARDOUS WASTE

A. Hazardous materials shall be recovered and disposed of in accordance with all applicable federal, State, and local hazardous waste and hazardous substances laws and regulations. Laws and regulations that govern this work include, but are not limited to:

1. California Health and Safety Code, Division 20, Chapter 6.5 (California Hazardous Waste Control Act).
2. Title 8, California Code of Regulations, Section 1529 of the Construction Safety Orders.
3. California Water Code, Division 7 (Porter-Cologne Act).
4. Title 40, Part 61, Subpart M, Code of Federal Regulations – National Emissions Standards for Hazardous Air Pollutants (NESHAP).
5. Title 29, Part 1910.1001 Code of Federal Regulations – Toxic and Hazardous Substances (Asbestos).
6. Kern County Public Works Non-Friable Asbestos Abatement Disposal Procedures.

B. Materials shall be removed from the work site and disposed of as specified herein.

****END OF SECTION****

# SECTION 15020

# STEEL WATER PIPE (AWWA C200)

## PART 1 GENERAL

### 1.01 SUMMARY

A. This Section includes providing all labor, materials, and equipment and performing all operations required to furnish and install cement mortar lined and coated (CMLC) steel water pipe, pipe fittings, and pipe specials for connection to the existing Lateral 119.6.

B. Pipe trenching, bedding, and backfill are covered in Section 02223 – Excavation, Backfilling, and Compacting.

C. 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 of experience manufacturing pipe of the type and size specified.

D. 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 RELATED SECTIONS

A. The following Specification Sections are applicable to this Section:

1. Section 02223 – Excavation, Backfilling, and Compacting.
2. Section 09900 – Protective Coatings.

### 1.03 REFERENCES

A. The following is a list of other specifications and standards that may be referenced in this Section:

1. American Water Works Association (AWWA):
    a. AWWA C200 – Steel Water Pipe, 6 in. (150 mm) and Larger
    b. AWWA C205 – Cement-Mortar Protective Lining and Coating for Steel Water Pipe 4 inch and Larger - Shop Applied
    c. AWWA C206 – Field Welding of Steel Water Pipe
    d. AWWA C207 – Steel Pipe Flanges for Waterworks Service – Sizes 4 in. through 144 in.
    e. AWWA C208 – Dimensions for Fabricated Steel Water Pipe Fittings
    f. AWWA C604 – Installation of Steel Water Pipe – 4 In. or Larger.

g. AWWA M11 – Steel Water Pipe – A Guide for Design and Installation

2. American Society for Testing and Materials (ASTM):

a. ASTM A27 – Standard Specification for Steel Castings, Carbon, for General Application

b. ASTM A36 – Standard Specification for Carbon Structural Steel

c. ASTM A181 – Standard Specification for Carbon Steel Forgings, for General-Purpose Piping

d. ASTM A193 – Standard Specification for Alloy-Steel and Stainless-Steel Bolting for High Temperature or High-Pressure Service and Other Special Purpose Applications

e. ASTM A194 – Standard Specification for Carbon Steel, Alloy Steel, and Stainless-Steel Nuts for Bolts for High Pressure or High Temperature Service, or Both

f. ASTM A283 – Standard Specification for Low and Intermediate Tensile Strength Carbon Steel Plates

g. ASTM A572 – Standard Specification for High-Strength Low-Alloy Columbium-Vanadium Structural Steel

h. ASTM F593 – Standard Specification for Stainless Steel Bolts, Hex Cap Screws, and Studs

i. ASTM E165 – Standard Practice for Liquid Penetrant Testing for General Industry

j. ASTM E709 – Standard Guide for Magnetic Particle Testing

3. American Welding Society (AWS):

a. AWS D1.1 – Structural Welding Code-Steel

b. AWS A5.1 – Specification for Carbon Steel Electrodes

c. AWS 5.17 – Specification for Carbon Steel Electrodes and Fluxes for Submerged Arc Welding

d. AWS 5.20 – Carbon Steel Electrodes for Flux Cored Arc Welding

## 1.04 SUBMITTALS

A. Submittals shall be furnished in accordance with Article D-8 of Section D – Special Conditions.

B. Line Layout Drawings

1. Prior to fabrication of any pipe materials specified under this section of the Specifications, the Contractor shall submit line layout drawings and detailed shop drawings. Include lay lengths of fittings, valves, meters, couplings, harnesses, and

other equipment which determine piping dimensions. Label or number each fitting or piece of pipe and provide the following information for each item:

a. Materials of construction, including references to industry standards being met (i.e. ASTM, ANSI, AWWA, and other related standards).

b. Inside diameter, steel wall thickness, internal design pressure (lining and coating thicknesses) for each class of pipe to be furnished.

c. Electrode manufacturer's data and product data, including electrodes to be used for dissimilar metals.

d. Indicate all shop and erection details including cuts, copes, connections, holes, threaded fasteners and welds. Indicate welds using AWS "Welding Symbols

e. Paint primer type and thickness where joints and other coating and lining holdbacks occur.

f. .

g. Limits of each reach of field-welded joints and of concrete encasement.

h. Location of valves and fittings.

2. Manufacturer's certificates of compliance with prescribed industry standards (i.e. AWWA C200, C205, C206, C207, C208, C213, ASTM C150, and other related industry standards).

3. Show all pertinent details for field installation and shop fabrication of pipe, pipe fittings and specials for piping, including joint details for approval by the Engineer.

4. Pipe, pipe fittings and specials and joints shall be fabricated in accordance with the approved shop drawings, no deviations will be allowed.

5. Welding

a. Welder performance qualification test records "welders' certification".

b. Written Welding Procedure Specifications (WPSs) in accordance with AWS D1.1 requirement for each different welded joint proposed for use whether prequalified or qualified by testing.

c. Welding Procedure Qualification Records (WPQR) test results

d. Welding repair procedures.

e. Certified Material and Test Reports.

f. Schedule detailing inspections, NDT test dates and inspection hold points.

C. Inspection and Testing (physical and chemical properties of all steel, hydrostatic test reports, weld test reports, etc.) Reports

## 1.05 QUALITY ASSURANCE

A. Use adequate numbers of skilled workmen trained and experienced in necessary trades and crafts and completely familiar with specified requirements and methods for proper performance of Work of this section.

B. Pipe shall be subject to inspection at the place of manufacture. The Contractor shall notify the Engineer in writing of the manufacturing starting date not less than 14 days prior to the start of any phase of the pipe manufacture.

C. During manufacture of the pipe, the Engineer shall be permitted to make all inspections necessary to confirm compliance with the Specifications.

D. Materials used in the manufacture of the pipe shall be tested in accordance with the requirements of this Section and the referenced standards, as applicable.

E. The Contractor shall perform said material tests. The Engineer shall have the right to witness testing; provided that the Contractor's schedule is not delayed for convenience of the Engineer.

## 1.06 WELD INSPECTION AND TESTING

A. Visual welding inspection and Non-Destructive Testing (NDT) shall be conducted in accordance with a written practice by personnel qualified in accordance with AWWA C206.

B. Weld Tests

1. Visual Inspection

a. Continuous visual inspection.

b. Check fit-up of joint materials. Verify satisfactory alignment of material. Verify gaps and bevels of penetration welds.

c. Check during welding. Verify satisfactory technique is used.

d. Check after welding completed and cleaned by wire brush or chipping hammer.

e. Inspect with magnification when necessary and under strong, adequate light.

f. Inspect for the following defects

1) Surface cracking.

2) Porosity.

3) Excessive roughness.

4) Unfilled craters.

5) Gas pockets.

6) Undercuts.

7) Overlaps.

8) Size.

9) Insufficient throat and concavity.

2. Nondestructive Testing

a. Ultrasonic testing, except where not feasible, as determined by the Engineer, due to the type or location of the weld. Magnetic particle, liquid penetrant or radiograph tests when ultrasonic testing is not feasible as determined by the Engineer.

1) Ultrasonic inspection technique and standards: AWS D1.1 Part C.

2) Particle inspection method: ASTM E 709.

3) Penetrant inspection method: ASTM E 165.

4) Radiography tests: AWS D1.1, Part B.

5) Nondestructive testing technicians and operators shall be NDT Level II as defined in American Society for Nondestructive Testing, Inc., Recommended Practice No. SNT-TC-1A. The Level II technician shall sign the test reports.

3. Shop Inspection and Testing

a. Visual inspection of all welds.

b. Measurement of weld profiles for 25 percent of all welds at random.

c. NDT for all welds.

## 1.07 DELIVERY, STORAGE, AND HANDLING

A. 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 GENERAL

A. All pipe and appurtenances in this Section shall be in accordance with the requirements of AWWA M11, AWWA C200, and AWWA C208 except as noted otherwise herein.

## 2.02 STEEL WATER PIPE

A. Steel pipe shall be in conformance with AWWA C200.

B. All steel pipe shall be a capable of withstanding 25 ft of head, however, in no case shall theminimum wall thickness be less than 1/4 inch.

C. Steel pipe fabricated in conformance with AWWA C200 shall be electrically welded pipe, fabricated from steel plate in conformance with ASTM A36.

D. Unless otherwise specified or shown on the Drawings, all pipe ends shall be plain end or flanged.

1. Where shown on the Drawings or specified, flanged or mechanically coupled field joints shall be provided in conformance with details shown on the Drawings.

E. All items shall be prepared for shipment in such a manner as to protect them against damage in transit...

F. Except where otherwise shown on the Drawings, all steel plate specials and fittings shall be designed and fabricated in accordance with AWWA M11 and AWWA C200 with dimensions in accordance with AWWA C208.

## 2.03 FLANGES AND GASKETS

A. Flanges

1. AWWA standard C207, Class D shall be faced after welding.

B. Flange Gaskets

1. AWWA standard C207, full face, 1/8-inch thick.

## 2.04 BOLTS, NUTS, AND WASHERS

A. Bolts and nuts for flanged valves and flanges shall be Type 316 stainless steel conforming to ASTM A 193, Grade B8M, for bolts and ASTM A 194, Grade 8M, for nuts.

## 2.05 SHOP HYDROSTATIC TEST

A. The steel cylinder with joint rings shall be stressed to 75% of the minimum yield stress of the steel.

## 2.06 COATINGS AND LININGS

A. Coatings and lining shall be as shown. Where coating and lining are not indicated, pipe and fittings shall be fusion bonded epoxy lined and coated as specified herein.

B. Cement Mortar Coating

1. Cement mortar coating shall conform to AWWA C205 (minimum 3/4-inch thickness and ASTM C150 Type V cement) and Section 09900 – Protective Coatings, System D (Cement Mortar Coating). The cement mortar coating shall be

held back an adequate distance to accommodate the joint coupling. Exposed surfaces of bare steel shall be coated with epoxy in accordance with Section 09900.

C. Cement Mortar Lining

1. Cement mortar lining shall conform to AWWA C205.

## PART 3 EXECUTION

### 3.01 GENERAL

A. All piping shall be constructed to the lines, grades, or elevations specified or as indicated on the Drawings.

B. At all times when the work of installing pipe is not in progress, all openings into the pipe and the ends of the pipe in trenches or structures shall be kept tightly closed to prevent entrance of animals and foreign materials.

C. The Contractor shall maintain the inside of the pipe free from foreign materials and in a clean and sanitary condition until its acceptance by the Engineer.

### 3.02 PIPE INSTALLATION

A. General

1. Dewatering, excavation, shoring, sheeting, bracing, backfilling material placement, material compaction, compaction testing, and pipe laying requirements and limitations shall be in accordance with Section 02223 – Excavation, Backfilling, and Compacting, Section 15051 – Installation of Pressure Pipelines, and AWWA C604.

2. .

3. .

### 3.03 FIELD REPAIRS OF LINING AND COATING

A. Field repairs of lining or coating will be allowed only when it is determined by the Engineer that said repairs are feasible and the damage is slight enough to warrant field repairs.

B. Field repairs of all other linings or coatings shall be performed by a qualified representative of the pipe manufacturer/fabricator and in accordance with Section 09900 – Protective Coatings and applicable AWWA standards (e.g. C205).

C. All field repairs made to pipe linings or coatings shall be made in the presence of the Engineer and be subject to the Engineer's acceptance.

## 3.04 INSPECTION AND FIELD TESTING

A. Pipe, Fittings, and Specials Inspection

1. Acceptance

   a. Pipe shall be inspected by the Contractor in the presence of the Engineer for spalling, lining, and coating damage when it arrives at the job site.

   b. Cleaning: Thoroughly clean pipe and fittings before placement.

   c. Any repair of damaged area to the lining or the coating shall be made within 24 hours of the arrival of the pipe at the job site in accordance with applicable AWWA standards.

   d. Any pipe where lining or coating damage exceeds 20 square inches shall be rejected and removed from the job site.

2. Finished installations shall be carefully inspected for proper joints and sufficient supports, anchoring, interferences, and damage to pipe, fittings, and coating. Damage shall be repaired to the satisfaction of the Engineer.

   a.

****END OF SECTION****

# SECTION 15042

# HYDROSTATIC TESTING OF PRESSURE PIPELINES

## PART 1 GENERAL

### 1.01 DESCRIPTION

1. This section covers the hydrostatic pressure testing and lists the requirements for pressure and leakage testing of all PVC pressure pipelines, as specified herein.
2. Provide materials, equipment and labor required to execute this work as indicated on the drawings, specified herein and necessary to complete the work of this section.

### 1.02 RELATED SECTIONS

A. Section C General Conditions, Section D Special Conditions, and the Drawings shall apply to this section. This section may require direct correlation with the following sections of the contract:

1. Section 15089 – Air Valves.
2. Section 15100 – Valves.

### 1.03 REFERENCES

A. The following publications form a part of this specification to the extent referenced.

1. American Society of Mechanical Engineers (ASME)
   a. ASME Boiler and Pressure Vessel Code (BPVC), Section VII.
2. American Water Works Association (AWWA):
   a. AWWA C605 – Underground Installation of Polyvinyl Chloride (PVC) Pressure Pipe and Fittings for Water.

### 1.04 SUBMITTALS

A. Submittals shall be furnished in accordance with Article D-8 of Section D – Special Conditions.

B. Testing Plan

1. Hydrostatic pressure testing plan, equipment, and procedure.
2. Test bulkhead locations and design calculations, pipe attachment details, and methods to prevent excessive pipe wall stresses.

C. Requests for the Engineer to observe testing apparatus and testing shall be submitted 48 hours in advance.

## 1.05 QUALITY ASSURANCE

A. Use of an independent testing company is not required.

B. All hydrostatic testing of pipelines shall be completed in the presence of the Engineer.

# PART 2 PRODUCTS

## 2.01 TEST BULKHEADS

A. Test bulkheads shall be designed and tested in accordance with Section VIII of the ASME Boiler and Pressure Vessel Code. Materials shall comply with Part UCS of said code. Bulkhead design pressure shall be at least 2.0 times the specified test pressure for the section of pipe containing the bulkhead. Stress shall be limited to 70 percent of yield strength of the bulkhead material at the bulkhead design pressure. Air-release and water drainage connections shall be included.

## 2.02 MANUAL AIR-RELEASE VALVES

A. Temporary manual air-release valves shall be provided where necessary for pipeline test. The number and location of release valves shall be subject to the review and approval of the Engineer. The pipe outlet shall be constructed in the same manner as for a permanent air valve. After use, the connection shall be sealed with a blind flange, pipe cap, or plug in a manner and with the fittings satisfactory to the Engineer. All connections and exposed fittings which are installed shall be coated equivalently to the adjacent pipe and in accordance with the specifications.

## 2.03 WATER

A. Water used to for hydrostatic pressure testing shall be potable water unless otherwise approved by the Engineer.

B. Refer to Section D-7 for additional information regarding availability and use of District water.

# PART 3 EXECUTION

## 3.01 GENERAL

A. All hydrostatic pressure testing shall be in accordance with AWWA C605 and as specified herein.

B. As referenced in Article D-7 of Section D, the District does not make any guarantees as to availability of water. It is the responsibility of the Contractor to furnish all water necessary for testing.

C. The Contractor shall provide all labor, materials, and equipment required to perform the tests, including all required certified and calibrated measuring devices, water and means for conveying water and establishing required hydrostatic heads.

D. The test shall be conducted with valves in the test section open. Ends of each test section, open ends of pipes, valves, and fittings shall be suitably closed. Valves in the test section shall be operated during the test period.

E. Tests shall be made as soon as practical after completion of distribution system construction, but in no event sooner than three (3) days after the placing of any mortar or concrete that will be subjected to hydrostatic pressure during a test.

F. No test shall be performed without 48 hours prior written notice of intent to test being given to the Engineer, and no test shall be performed without the presence of the Engineer or his authorized representative. All tests and testing procedures will be subject to the approval of the Engineer.

G. The District will not be responsible for any damage, including damage to pipelines, connected with testing.

H. Contractor, at Contractor's expense, shall locate and repair leaks or other defects which may develop or become apparent during the test. Contractor shall excavate, including removal of backfill already placed, and make all repairs necessary for required watertightness, and then replace all excavated material, after which the Contractor shall retest the repaired pipeline section. Pipeline sections shall be repeatedly repaired and tested until they meet requirements set forth herein.

I. The Contractor shall continue testing and repair until the line meets the allowable of leakage over a 4-hour test period. If pipe repair is unsatisfactory or if leakage persists after repair, as determined by the Engineer, pipe shall be removed and replaced by new pipe of equivalent type, size and pressure class and the new pipe similarly retested.

## 3.02 LENGTH OF TEST SECTION

A. The maximum length of pipe to be included in any one test shall not exceed 2,500 feet or the distance between valves, whichever is greater. If the slope of the pipe is greater than five percent (5%) the pipe shall be tested in sections no greater than seven hundred (700) linear feet. Suitable test bulkheads, blocking, and fittings shall be installed as necessary to permit such sectionalizing.

## 3.03 PREPARATION

A. Backfill

1. The pipe trench shall be backfilled with a minimum of 3 feet of material.
2. Compaction backfill shall be placed around all concrete thrust blocks.

B. Make necessary provisions for thoroughly bleeding pipelines of air and debris.

C. Concrete Anchor and Thrust Blocks

1. All concrete anchor and thrust blocks shall be in place for a minimum of 72 hours, or allowed to cure a sufficient time to develop the designed minimum strength before testing, whichever is greater.

D. Filling of Pipeline

1. The pipe to be tested shall be filled with water at least 24 hours before testing can be conducted.

2. The pipeline shall be filled at a rate such that the average velocity of flow is no greater than 2 FPS. At no time shall the maximum flow exceed 2 FPS. The following table gives approximate filling rates to provide 2 FPS velocity for various pipe diameters.

| FILLING/FLUSHING RATES FOR 2 FPS VELOCITY | |
|---|---|
| Diameter | Filling Rates to Achieve Velocity of 2 fps (gpm) |
| 12 | 700 |
| 16 | 1,250 |
| 18 | 1,580 |
| 20 | 1,960 |
| 21 | 2,150 |
| 24 | 2,820 |
| 27 | 3,570 |
| 30 | 4,400 |
| 36 | 6,340 |
| | |
| | |
| | |
| | |
| | |
| Note: This table is also useful for determining the minimum flows required to achieve adequate flushing. Refer to Part 3 Paragraph entitled “General” herein. | |

E. Flushing

1. New pipelines shall be flushed prior to hydrostatic pressure testing or as directed by the District. Pipelines shall be flushed with a minimum velocity of 2 FPS until all contaminants have been removed from the pipeline.

2. Contractor shall make all arrangements necessary to provide the required flow to obtain a minimum velocity of 2 FPS.

3. Contractor shall take due precaution in providing for adequate drainage from the site. It is the responsibility of the Contractor to remove the flushing water from the project area.

4. The Contractor is responsible for any damage caused as a result of flushing operations.

F. Air Removal

1. All air shall be purged from the pipeline before checking for leaks or performing pressure tests on the system. To accomplish this, if air valves or other outlets are not available at high points, taps shall be made to expel the air, and these taps shall be tightly plugged after testing.

## 3.04 FIELD TEST PROCEDURE

A. At the Contractor's option, the lateral distribution system may be tested in its entirety upon completion, or the system may be tested in reaches by use of installed valves or by bulk heading. In any case, for each reach of the system, including farm turnouts, a 4-hour hydrostatic pressure test shall be performed, for each reach.

B. The Contractor shall complete and pass the pressure test prior to connecting any new line to the existing pipe. Test of new pipelines shall be conducted with the new valves open, and the open ends of pipes, valves, and fittings, suitably closed or blind flanged. Valves shall be operated and checked prior to the test period.

1. Installation of the above ground pipe vent shall not be completed until after the hydrostatic pressure test is completed.

C. The test pressure shall be applied with a positive displacement pump. A snubber and dampener shall be provided between the pump and the pipeline to reduce instantaneous pressure pulses to 10 percent of the specified test pressure. Water shall be drawn from containers in which the volume of water can be readily measured or through a positive displacement meter. The amount of water used to maintain the test pressure during the test period shall be considered the leakage.

D. The Contractor shall receive approval from the Engineer prior to initiating the test process.

E. All tests shall be completed in the presence of the Engineer.

F. Testing shall be completed using the following procedure:

1. The Contractor shall pressurize the pipeline to **50 PSI** using a hydrostatic test pump of sufficient size.
2. When the test pressure has been reached, pumping shall be discontinued until the line pressure has dropped 10 pounds per square inch (psi), at which time the line pressure shall again be pumped up to the test pressure.
3. If a large quantity of water is required to increase the pressure during testing, entrapped air, leakage at joints, or a broken pipe may be suspected. TESTS SHOULD BE DISCONTINUED until the source of trouble is identified and corrected.
4. This procedure shall be repeated until **4 hours** have elapsed from the time test pressure was first applied.
5. At the end of this period the pressure shall be pumped up to the test pressure one last time.

## 3.05 ALLOWABLE LEAKAGE

A. The leakage shall be considered as the total amount of water pumped into the pipeline during the test period, including the amount required in reaching the test pressure for the final time.

**B.** Allowable leakage shall be determined as follows:

No PVC pipe installation will be accepted if the leakage exceeds that determined by the following formula (taken from AWWA C605):

$$L_{US} = \frac{SD(P)^{1/2}}{148{,}000}$$

in which L = allowable leakage, in gallons per hour
S = length of pipe tested, in feet
D = nominal diameter of pipe, in inches
P = average observed test pressure of the pipe being tested, as shown in pounds per square inch gauge, based on the elevation of the lowest point in the line or section under test and corrected to the elevation of the test gauge.

C. Note that the allowable leakage rate for pipeline sections with flanged, welded, and/or grooved-end joints shall be zero.

## 3.06 REPETITION OF THE TEST

A. If the actual leakage exceeds the allowable, the faulty work shall be located, corrected, and the test repeated. The work shall be restored, and all damage resulting from leaks repaired. All visible leakage shall be eliminated.

B. The Contractor shall repair all leaks, to the satisfaction of the Engineer, backfill and compact, clean, restrain, and retest the entire section again as specified herein at no additional cost to the District until the section is approved by the Engineer.

## 3.07 VALVE LEAKAGE TESTING

A. Air Valves shall be tested in accordance with Section 15089 – Air Valves.

B. Valves shall be testing in accordance with Section 15100 – Valves.

## 3.08 BULKHEAD AND TEST FACILITY REMOVAL

A. After a satisfactory test, water shall be left in the pipeline unless otherwise directed by the District, test bulkheads and other test facilities removed, and pipe coatings restored.

## 3.09 LEAK TESTING FOR TIE-INS

A. Leakage testing of all tie-ins to existing pipelines and turnouts shall be completed prior to backfilling these locations.

B. The Contractor shall coordinate the filling of the new and existing pipelines with the District. All filling of existing pipeline is to be performed by District Operators.

C. Pipeline system will be filled up to the overflow point on the new pipe vent, resulting in a pressure head of approximately, 45 feet or 20 psi.

D. The system shall remain at this level for a minimum of 4 hours. While the system is pressurized, the Contractor shall inspect all pipeline connections for leaks prior to backfilling.

E. If any leaks are found, the Contractor shall dewater the pipeline, repair the leaks, refill the pipeline, and reinspect for leaks as required, at no additional cost to the District.

## 3.10 HYDROSTATIC PRESSURE TEST REPORTS

A. The testing documentation for each section shall include the following:

1. Pre-testing cleaning methods.
2. The test liquid.
3. Backflow prevention devices, if used.
4. The weather conditions and ambient temperature at the site during the test.

5. The test pressure.
6. The type of test gages in the test section.
7. The placement of test gages in the test section, such as test gage location distances and elevations from the beginning of the section.
8. Test gage calibration records.
9. Test pressures recorded during the test.
10. Any adjustments made to test pressure for elevated temperature.
11. The test duration.
12. A description of the test section length, elevations, and site location.
13. A description of the test section components.
14. Description of any leaks or failures and the corrective actions taken.
15. The date and time of day of the test.
16. The identification of the party conducting the test.
17. Engineer witnessing test.

****END OF SECTION****

# SECTION 15051

# INSTALLATION OF PRESSURE PIPELINES

## PART 1 GENERAL

### 1.01 DESCRIPTION

A. This section covers the installation of pressure pipelines fabricated of polyvinyl chloride, ductile iron, and welded steel, including pipeline closures and connections, and pipeline encasement.

B. Provide materials, equipment and labor required to execute this work as indicated on the drawings, specified herein and necessary to complete the work of this section.

### 1.02 RELATED SECTIONS

A. Section C General Conditions, Section D Special Conditions, and the Drawings shall apply to this section. This section may require direct correlation with the following sections of the contract:

1. Section 02223 – Excavation, Backfilling, and Compacting.
2. Section 03300 – Concrete.
3. Section 09900 – Protective Coatings.
4. Section 15042 – Hydrostatic Testing of Pressure Pipelines.
5. Section 15056 – Ductile Iron Pipe and Fittings.
6. Section 15063 – PVC Pressure Pipe (AWWA C900)
7. Section 15089 – Air Valves.
8. Section 15100 – Valves.
9. Section 15151 – Facilities Identification.

### 1.03 REFERENCES

A. The following publications form a part of this specification to the extent referenced.

1. AWWA Manuals and Standards – American Water Works Association.
2. ANSI Standards – American National Standards Institute.
3. ASME Standards – American Society of Mechanical Engineers.
4. ASTM Standards – American Society for Testing and Materials.
5. AWS Standards – American Welding Society.

6. California Test (CT) - 216 – Method of Test for Relative Compaction of Untreated and Treated Soils and Aggregates.

## 1.04 SUBMITTALS

A. Submittals shall be furnished in accordance with Article D-8 of Section D – Special Conditions.

B. Submit the following:

1. An installation schedule (tabulated layout) shall be submitted which includes:
   a. Order of installation and closures.
   b. Pipe centerline station and elevation at each change of grade and alignment.
   c. Elements, curves, and bends, both in horizontal and vertical alignment including elements of the resultant true angular deflections in cases of combined curvature.
   d. The location, length, size, design designation, and number designation of each pipe section and pipe special.
   e. Locations of junction structures.
2. Welder qualification certificates shall be submitted.
3. Manufacturer's catalog data on insulation kits and fittings.
4. Test procedure and records from all insulated joint tests.

# PART 2 PRODUCTS

## 2.01 INSTALLATION MATERIAL

A. As shown on the Drawings.

## 2.02 PIPING SCHEDULE

A. Unless noted otherwise on the Drawings or in the Technical Specifications, pipe shall be furnished in accordance with the following materials schedule.

| Diameter | Irrigation Water Service |
|---|---|
| Up to 27-inch | PVC C900 Pipe and Ductile Iron Fittings as shown on the Drawings |
| Over 27-inch and up to 54-inch | PVC C900 Pipe and Ductile Iron Fittings as shown on the Drawings |
| Over 54-inch | As shown on the Drawings |

## 2.03 LOCATOR TAPE

A. Locator tape shall be in accordance with Section 15151 – Facilities Identification.

## 2.04 TRACER WIRE

A. Tracer wire shall be in accordance with Section 15151 – Facilities Identification.

## 2.05 FLANGE INSULATION KITS

A. Insulating material shall be of the designated by the manufacturer as suitable for the operating temperature and pressure of the service.

B. Flange insulation kits shall consist of the following items:

1. Insulating Gaskets
    a. Gaskets shall be Type E full-faced, 1/8-inch minimum thickness, dielectric neoprene faced phenolic.
    b. Gaskets shall be Advance Products & Systems, Inc.; George Fischer Central Plastics; Pipeline Seal & Insulator, Inc; or equal.
2. Insulating Sleeves and Washers
    a. Insulating stud sleeves and washers shall be one-piece and full-length, made of Minlon or Mylar.
    b. One 1/8-inch thick gasket shall be attached to the sleeve, while the other shall be loose.
    c. Single insulating washers and sleeves shall be used on buried insulating flanges.
3. Insulating Washers for Bolts
    a. Insulating washers shall be 1/8-inch thick glassclad phenolic.
    b. Single insulating washers shall be used on buried insulating flanges.

c. Double insulating washers and full length sleeves shall be used on insulating flanges above ground, in structures, or in vaults.

4. Steel Washers Over Insulating Washer

a. Steel backing washers shall be 1/8-inch thick Type 316 stainless steel.

5. Manufacturers

a. Flange insulation kits shall be as manufactured by Advance Products & Systems, Inc.; George Fischer Central Plastics; Pipe Seal & Insulators; or equal.

## 2.06 POLYETHYLENE ENCASEMENT

A. Unless specified otherwise, all fittings, couplings, and valves shall be polyethylene encased in accordance with ANSI/AWWA C105/A-21.5.

1. Wrap shall be a two layers of loose 8-mil thick LLD or 4-mil thick HDCL polyethylene tube.

B. Polyethylene adhesive tape shall be two inch-wide and 10-mil thick, Polyken 900, Scotchwrap 50, or equal.

## 2.07 MARKER POSTS

A. Marker posts shall be in accordance with Section 15151 – Facilities Identification.

## 2.08 CONTROLLED LOW STRENGTH MATERIAL (CLSM)

A. CLSM materials shall be in accordance with Section 02223 – Excavation, Backfilling, and Compacting.

# PART 3 EXECUTION

## 3.01 DELIVERY AND TEMPORARY STORAGE OF PIPE AT SITE

A. Onsite Storage Limitation

1. Onsite pipe storage shall be limited to a maximum of one week, unless exception is approved by District.

B. Care of Pipe

1. Care shall be taken to avoid cracking of the cement mortar coating and/or lining on steel pipe. If necessary, plastic sheet caps shall be used to close pipe ends and keep coatings and linings moist.

## 3.02 HANDLING OF PIPE

A. Moving the Pipe

1. Pipes shall be lifted with handling beams or wide belt slings as recommended by the pipe manufacturer. Cable slings shall not be used. Pipe shall be handled in a manner to avoid damage to the pipe. Pipe shall not be dropped or dumped from trucks or into trenches under any circumstances.

B. Internal Pipe Braces

1. Internal braces placed in steel pipes shall be maintained until backfilling and compaction are completed.

C. Pipe Caps

1. Plastic caps placed over the ends of steel pipe shall not be removed until the pipe is ready to be placed in the trench. Plastic caps may be opened temporarily to spray water inside the pipe for moisture control.

D. Inspection of Pipe

1. The pipe and accessories shall be inspected for defects prior to lowering into the trench. Any defective, damaged or unsound pipe shall be repaired or replaced. All foreign matter or dirt shall be removed from the interior of the pipe before lowering into position in the trench.

## 3.03 PLACEMENT OF PIPE IN TRENCH

A. General

1. Excavation, shoring, sheeting, bracing, backfilling, material placement, material compaction, compaction testing, and pipe laying requirements and limitation shall be in accordance with Section 02223 – Excavation, Backfilling, and Compacting.

B. Sanitation of Pipe Interior

1. During laying operations, tools, clothing, or other materials shall not be placed in the pipe.

C. Prevention of Entry into Pipe

1. When pipe laying is not in progress, the ends of the pipe shall be closed using plugs constructed in a manner to prevent entry by any debris or animal.

D. Laying Pipe on Grades over 5 Percent

1. Pipes shall be laid uphill with the bell on the uphill end of each pipe length, whenever the grade exceeds 5 percent.

E. Pipe Base Thickness

1. Unless otherwise shown on the Drawings, the pipe base thickness shall be as specified in Section 02223 – Excavation, Backfilling, and Compacting.

F. Depressions at Joints and Pipe Sling Points

1. Depressions shall be dug into the pipe bedding material to accommodate the pipe bell, and to permit the removal of the pipe handling slings.

G. Placement of Pipe on Pipe Base

1. Pipe shall be lowered onto the bedding and installed to line and grade its full length on firm bearing except at the bell and at sling depressions. Unless specified otherwise, the tolerance on grade shall be 1/4-inch; the tolerance on line shall be one (1) inch. Grade shall be measured along the pipe invert.

H. Pipe Installation

1. Installation of the pipe shall be as specified herein.
2. The Engineer shall be notified at least two (2) weeks prior to field installation of pipe or fittings.
3. Pipe shall be installed without springing, forcing, or stressing the pipe or any adjacent connecting valves or equipment. Precautions shall be taken to prevent pipe from being displaced by water entering trench. Damaged or displaced pipe shall be replaced or returned to specified condition and grade.

I. Trench Curvature and Pipe Deflection

1. The radius of curvature of the trench shall be determined by the maximum length of pipe section that can be used without exceeding the allowable deflection at each pipe joint and without causing deviation from the trench width requirements.
2. The deflection at any flexible joint shall not exceed that prescribed by the manufacturer of the pipe.
3. The manufacturer’s printed installation guide outlining the radius of curvature that can be negotiated with pipe sections of various lengths shall be followed.

J. Equipment for Installation of Pipe

1. Proper implements, tools, and facilities as recommended by the pipe manufacturer’s standard printed installation instructions shall be provided and used by the Contractor for safe and efficient execution of the work.

2. All pipe, fittings, valves, and accessories shall be carefully lowered into the trench using suitable equipment in such a manner as to prevent damage to pipe and fittings.

3. Under no circumstances shall pipe or accessories be dropped or dumped into the trench.

K. Cutting, Machining, and Tapping Pipe

1. Cutting, machining, and tapping of the pipe shall be accomplished in accordance with the pipe manufacturer's standard procedures for this operation.

2. Pipe shall not be cut with a cold chisel, standard iron pipe cutter, nor any other method that may fracture the pipe or produce ragged, uneven edges.

## 3.04 ASSEMBLING RUBBER-GASKETED JOINTS

A. Cleaning Ends of Pipe

1. The ends of the pipe to be jointed shall be cleaned of all foreign material.

B. Lubrication

1. After placing in the trench, a nontoxic water-soluble soap solution shall be applied to the inside of the bell in the trench and to the rubber gasket and spigot of the pipe to be installed.

2. The rubber gasket shall be stretched into the groove in the bell end of the pipe and distributed uniformly around the circumference.

C. Joint Assembly

1. Without tilting the pipe to be installed, the spigot shall be inserted into the bell of the pipe. Come-a-longs or pipe jacks shall be used to drive the spigot end into the bell until properly seated.

2. The joint recess recommended by the pipe manufacturer for made-up joints shall be maintained.

3. Where deflections at joints are required for curved alignment, the manufacturer's recommended allowable joint opening on one side shall not be exceeded.

4. A feeler gauge shall be used to verify proper placement of the gasket for each joint of pipe installed.

## 3.05 POLYETHYLENE ENCASEMENT

A. All fittings, couplings, and valves buried underground shall be protected with two layers of polyethylene encasement wrap.

B. Seams in polyethylene encasement shall be overlapped a minimum of one foot and wrapped with a polyethylene adhesive tape.

## 3.06 FLANGED CONNECTIONS

A. Bolt Hole Alignments

1. Pipe shall be set with flange bolts straddling the pipe horizontal and vertical centerlines.

B. Nuts and Bolts

1. Bolts and nuts for flanged valves and flanges shall be Type 316 stainless steel conforming to ASTM A 193, Grade B8M, for bolts and ASTM A 194, Grade 8M, for nuts.
2. Nuts and bolts shall be lubricated with anti-seize, recommended for use with stainless steel prior to installation.
3. Use torque-limiting wrenches to provide uniform bearing and proper bolt tightness.
4. Tighten flange bolts progressively, drawing up bolts on opposite sides gradually until bolts have uniform tightness around the flange.
5. Exposed bolt heads and threads shall be coated with grease.

## 3.07 INSTALLATION OF BENDS, TEES, AND REDUCERS

A. Fittings shall be installed utilizing standard installation procedure. Fittings shall be lowered into the trench by means of rope, cable, chain, or other acceptable means without damage to the fittings.

B. Cable, rope, or other devices used for lowering fitting into trench, shall be attached around exterior of the fitting for handling.

C. Under no circumstances shall the cable, rope, or other device be attached through the fitting’s interior for handling.

D. Fittings shall be carefully connected to the pipe and the joint shall be checked to insure a sound and proper joint.

E. Fittings shall be wrapped with eight (8) mil. sheet polyethylene film as specified herein.

## 3.08 INSTALLING THREADED PIPING

A. Threaded piping shall be reamed, deburred, and cleaned before making up joints.

B. Thread lubricant approved by the engineer shall be applied to threaded pipe ends before installing fittings, couplings, unions, or joints.

## 3.09 PIPELINE CLOSURE ASSEMBLIES

A. Pipeline closure assemblies shall be employed to unite sections of pipeline laid from opposite directions; to adjust the field length of the pipeline to meet structures, tie-ins to existing pipelines, and points established by design stations; and to close areas left open to accommodate temporary test bulkheads for hydrostatic testing.

B. Closure assemblies shall be an ASTM C153 ductile iron restrained mechanical joint long sleeve, manufactured by Tyler Union or equal.

## 3.10 THRUST RESTRAINT AND ANCHOR BLOCKS

A. Location

1. Thrust restraint and anchor blocks shall be provided on all pressure pipelines and shall be installed as shown on the Drawings at all rubber gasketed fittings that are not otherwise restrained.
2. Thrust restraint blocks or anchor blocks shall be installed at all valves, tees, crosses, ends of pipelines, and at all changes in direction of the pipeline greater than five (5) degrees deflection either vertically or horizontally when joints are not otherwise restrained.

B. General Requirements

1. Unless otherwise noted, thrust restraint and anchor blocks shall be of not less than 3,250 PSI concrete (Class B) and shall provide a thrust bearing area to resist horizontal and/or downward thrust.
2. Thrust restraint and anchor blocks shall also be of sufficient gross weight and area to give bearing against undisturbed vertical earth banks sufficient to absorb the thrust, allowing an earth bearing of 300 pounds per square foot per foot of cover, whichever value is less.
3. Thrust protection shall be set prior to pressurizing the line.
4. Exposed reinforcement shall be coated with one (1) inch of an approved non-shrink grout after the concrete has sufficiently cured. See Section 03300 – Concrete.

C. Thrust Restraint Not Called for on the Drawings

1. Thrust restraint elements, where not called for on the plans, shall be sized for 150 percent of operating pipeline pressure or the pipeline test pressure, whichever is greater.

2. Prior to construction, thrust and anchor block sizing shall be submitted to the Engineer for approval.

D. Concrete Placement

1. Concrete shall be placed against wetted and undisturbed soil, and the exterior of the fitting shall be cleaned and wetted to provide a good bond with the concrete.
2. The concrete interface with the fitting shall be an area of not less than the projected area of the fitting normal to the thrust resultant and centered on the resultant.
3. Cure concrete in accordance with Section 03300 – Concrete.
4. Concrete shall set prior to pipeline testing in accordance with Section 15042 – Hydrostatic Testing of Pressure Pipelines.

E. Disturbed Soil

1. Where soil is disturbed, horizontally, the Contractor shall extend the excavation line a minimum of 5-feet beyond the thrust block bearing face. The appropriate lift thickness of the backfill will depend on the compaction equipment used but generally shall not exceed a thickness of six inches of loosely placed material. Native material shall be placed and compacted in horizontal lifts to at least 95 percent relative compaction per CT-216. At the Contractor's option, the excavated area can be backfilled with CLSM in accordance with Section 02223 – Excavation, Backfilling, and Compacting.
2. Where soil is disturbed, vertically, the Contractor shall overexcavate and recompact in accordance with Section 02223 – Excavation, Backfilling, and Compacting.

F. Accessibility to Joints and Fittings

1. Unless otherwise directed by the District, thrust restraint and anchor blocks shall be placed so that the pipe and fitting joints are accessible for repair.
2. Placement shall include isolation of adjacent utilities and shall ensure that the bearing is against undisturbed soil.

G. Harness and Tie-Rods

1. Metal harness or tie-rods and pipe clamps shall be used to prevent movement if shown on the plans or directed by the Engineer.
2. The rods and clamp harnessing arrangement shall be installed utilizing flanged harness holddowns or lugged fittings and pipe with saddle clamps placed (where feasible and practical) to bear against the pipe bells.

3. Saddle clamps around the barrel of the pipe, which depend on friction to prevent sliding of the clamp, are acceptable. However, restraints with pointed set-screws which bear into the pipe wall are not acceptable and shall not be used.

4. All surfaces of exposed and buried steel rods, reinforcing steel, bolts, clamps, and other metal work shall be coated prior to backfilling, and touched up after assembly as specified in Section 09900 – Protective Coatings, System CS-2, "Buried Metal Coating Systems".

H. In-line Valves

1. Reinforcing steel tiedowns rods shall be used on all in-line valves. Refer to the plans for details.

2. Exposed metal portions shall be coated one (1) inch of an approved non-shrink grout after the valve pad has sufficiently cured. See Section 03300 – Concrete.

## 3.11 COMBINATION AIR AND VACUUM RELEASE VALVE ASSEMBLIES

A. General

1. Air valve assembles shall be installed in accordance with the manufacturer's instructions and Section 15089 – Air Valves.

2. Air release valve assemblies and combination air and vacuum valves shall be installed at each point in the pipeline as shown on the drawings or as specified by the Engineer.

B. Location

1. The tap for air valves shall be made in a level section of pipe no closer than 24 inches to a bell, coupling, joint, or fitting.

## 3.12 LOCATOR TAPE

A. Pipe locater tape shall be installed above the pipe in accordance with Section 15151 – Facilities Identification.

## 3.13 TRACER WIRE

A. Tracer wire shall be installed on top of the pipe in accordance with Section 15151 – Facilities Identification.

## 3.14 FLANGE INSULATION KITS

A. Flange insulation kits shall be installed as follows:

1. Cleaning

   a. Faces of flange pairs shall be cleaned of all dirt, rust or fouling materials which would interfere with a watertight joint and insulating properties of the flange kit.

2. Alignment

   a. Alignment pins shall be used to properly align the flange and gasket. The manufacturer's recommended bolt tightening sequence shall be followed.

   b. Bolt insulation sleeves shall be centered within the insulated washers so that the insulating sleeve is not compressed or damaged.

## 3.15 MARKER POSTS

A. Marker posts shall be installed in accordance with Section 15151 – Facilities Identification.

## 3.16 TESTING AND RECORD KEEPING

A. The Contractor shall furnish all necessary equipment, material and qualified personnel required to perform all testing described herein:

1. All piping shall be hydrostatically pressure tested in accordance with Section 15042 – Hydrostatic Testing of Pressure Pipelines.

2. Insulation Joints

   a. The Contractor shall test each insulated joint with the insulator tester in accordance with the manufacturer's written instructions.

   b. All damaged or defective insulation parts shall be replaced and retested.

   c. Records shall be kept of all insulated joint tests and shall be submitted to the District.

****END OF SECTION****

# SECTION 15056

# DUCTILE FITTINGS

## PART 1 GENERAL

### 1.01 DESCRIPTION

A. This section covers and describes the requirements for materials, installation, and testing of ductile iron (DI) fittings.

### 1.02 RELATED SECTIONS

A. Section C General Conditions, Section D Special Conditions, and the Drawings shall apply to this section. This section may require direct correlation with the following sections of the contract:

1. Section 02223 – Excavation, Backfilling, and Compaction.
2. Section 03300 – Concrete.
3. Section 09900 – Protective Coatings.
4. Section 15042 – Hydrostatic Testing of Pressure Pipelines.
5. Section 15051 – Installation of Pressure Pipelines.
6. Section 15100 – Valves.
7. Section 15151 – Facilities Identification.

### 1.03 REFERENCES

A. The following publications form a part of this specification to the extent referenced.

1. American National Standards Institute (ANSI):
   a. ANSI B 16.1 – Gray Iron Pipe Flanges and Flanged Fittings: Classes 25, 125, and 250
2. American Society for Testing and Materials (ASTM):
   a. ASTM A 193 – Standard Specification for Alloy-Steel and Stainless Steel Bolting for High Temperature or High Pressure Service and Other Special Purpose Applications.
   b. ASTM A 194 – Standard Specification for Carbon Steel, Alloy Steel, and Stainless Steel Nuts for Bolts for High Pressure or High Temperature Service, or Both.
   c. ASTM A 536 – Standard Specification for Ductile Iron Castings.
   d. ASTM C 150 – Standard Specification for Portland Cement.

e. ASTM D 2000 – Standard Classification System for Rubber Products in Automotive Applications.

f. ASTM F 593 – Standard Specification for Stainless Steel Bolts, Hex Cap Screws, and Studs.

3. American Water Works Association (AWWA):

a. AWWA C104 – Standard for Cement Mortar Lined Fittings.

b. AWWA C105 – Polyethylene Encasement for Ductile-Iron Pipe Systems.

c. AWWA C110 – Ductile-Iron and Gray-Iron Fittings.

d. AWWA C111 – Standard for Mechanical or Push-On Joints.

e. AWWA C115 – Flanged Ductile-Iron Pipe with Ductile-Iron or Gray-Iron Threaded Flanges.

f. AWWA C116 – Protective Fusion-Bonded Epoxy Coatings for the Interior and Exterior Surfaces of Ductile-Iron and Gray-Iron Fittings.

g. AWWA C150 – Thickness Design of Ductile-Iron Pipe.

h. AWWA C151 – Ductile-Iron Pipe, Centrifugally Cast.

i. AWWA C213 – Fusion-Bonded Epoxy Coatings and Linings for Steel Water Pipe and Fittings.

j. AWWA C600 – Installation of Ductile Iron Water Mains and Their Appurtenances.

k. AWWA C606 – Grooved and Shouldered Joints.

4. Standard Specifications for Public Works Construction (SSPWC):

a. Standard Specifications for Public Works Construction.

b. Standard Plans for Public Works Construction.

## 1.04 SUBMITTALS

A. Submittals shall be furnished in accordance with Article D-8 of Section D – Special Conditions.

B. Affidavits of compliance with standards referenced in this specification, e.g., AWWA C151, shall be provided.

C. Layout drawings showing the locations and dimensions of pipe and fittings shall be submitted where the proposed pipeline is to be placed along streets or alignments with a radius of curvature which dictates the use of shorter-than standard pipe lengths. In cases where restrained joint pipe is specified, lay drawings shall clearly identify the joints, lengths, fittings, and deviations from the curved centerline of the pipe trench. Consideration for adjacent parallel utility conduits is important in developing the lay drawings to avoid conflicts and encroaching into adjacent trench areas.

D. Lining, coating and wall thickness for all piping shall be provided.

E. Joint details for all types of joints used shall be submitted.

F. Calculations and/or test data proving that each proposed restrained joint arrangement can transmit the required forces shall be submitted.

G. Submit existing line dewatering and cut-in plan, including excavation and cut-in drawings and pothole information, for review and approval prior to construction.

H. Submit proposed existing line cut-in date and time at least 20 days prior to scheduled work.

## 1.05 QUALITY ASSURANCE

A. Use adequate numbers of skilled workmen trained and experienced in necessary trades and crafts and completely familiar with specified requirements and methods for proper performance of Work of this section.

B. Affidavits of compliance with standards referenced in this specification, e.g., AWWA C151, shall be provided.

C. Manufacturer of pipe and fittings shall employ manufacturing methods and material formulations in use for at least 5 years.

D. District and/or Engineer shall be entitled to inspect pipes and witness the manufacturing process.

## 1.06 DELIVERY, STORAGE, AND HANDLING

A. On site Storage Limitation

1. On-site pipe storage shall be limited to a maximum of one week, unless exception is approved by the Engineer.

B. Care shall be exercised in handling, loading, unloading, and storing ductile-iron pipe and fittings to avoid distortion, scratches, gouges, dents, and, in particular, scuffing of the ends.

C. All ductile-iron pipe and fittings shall be stored under cover in a flat, horizontal position, and protected from the sun and the elements until ready for installation.

D. Ductile-iron pipe shall be transported in a vehicle having a bed long enough to provide support for the full length of the pipe.

E. Any length of pipe or fitting that has been damaged or distorted shall be replaced.

F. When work is not in progress, open ends of pipe and fittings shall be securely closed so that no water, earth, or other substances will enter the pipe or fittings.

## PART 2 PRODUCTS

1. ).

## 2.02 DUCTILE-IRON FITTINGS

A. AWWA Reference Standard

1. Ductile-iron fittings shall have the same pressure rating as the pipe of which they are a part and shall be manufactured in accordance with ANSI A-21.10/AWWA C110.

B. Restrained Joints

1. Restrained joints shall be as called for on the plans. Joint restraint type shall be as specified in this Section for ductile iron pipe, and shall be as specified under Part 2 Paragraph entitled “Ductile-Iron Pipe.”

C. Bell Ends

1. Bell ends shall be compatible with the pipe ends so as to provide confinement of the rubber rings and prevent damage to the ends of the pipe. Ring grooves and interior surfaces of the bell shall be smooth and free from ridges, notches, or uneven surfaces.

D. Mechanical Joints

1. Mechanical joint fittings will be allowed only in areas specifically called for on the project plans or as approved by the Engineer as a substitute for other types of fittings. Mechanical joint fittings will be used in areas where there is limited room for a thrust block or in cases where the pipeline needs to be activated in a short period of time. These ductile iron fittings shall comply with ANSI A-21.11/AWWA C153, with a minimum pressure rating of 150 psi and an ANSI Class 125 and Class 150 bolt pattern. Tee-bolts for mechanical joint fittings shall be Type 316 stainless steel.

   a. Field applications where speed of construction to facilitate tie-ins and where there is limited space available for concrete thrust blocks, are examples of where mechanical joint fittings with retainer glands are appropriate.

E. Mechanical Joint Restraint Systems

1. Mechanical joints with retainer gland fittings will only be allowed in areas specifically called for on the project plans or as approved by the Engineer as a substitute for other types of fittings. Mechanical joint fittings shall meet or

exceed the ASTM A 536 requirements. Torque off bolts shall be tightened per manufacturer's recommendations and shall be inspected by the Engineer prior to backfill.

a. Approved manufacturers include: EBAA Iron, Ford Products, One-Lok, Romac, RomoGrip, Star Pipe Products, or equal.

F. Flanged Fittings

1. Unless otherwise indicated on the drawings, all fittings with flanged ends shall comply with ANSI A-21.10/AWWA C110, with a pressure rating of 350 psi and a Class 125 ASME/ANSI B 16.1 flange or an ANSI A-21.15/AWWA C115 Class 125 flange. The gasket surface shall have a serrated finish of approximately 16 serrations per inch, approximately 1/32-inch-deep, with serrations in either a concentric or spiral pattern.

G. Manufacturers

1. Fittings shall be manufactured by Tyler Union, US Pipe, Star Pipe Products, or equal.

## 2.03 GASKETS

A. Gaskets for Flanged Joints

1. Gaskets for flanged joints shall be 1/8 inch thick and be made of Ethylene Propylene Diene Monomer (EPDM), or synthetic fiber. Gaskets shall be suitable for a water pressure of 150 psi at a minimum temperature of 180 degrees F.

B. Full Face Type Gaskets or Ring Gaskets for Flanged Joints

1. Full face type gaskets with pre-punched holes shall be used where both flanges are flat face. Ring gaskets extending to the inner edge of the bolts may be used where a raised face flange is present.

C. Gaskets for Mechanical and Restrained Joints

1. Gaskets for mechanical, and restrained joints shall be synthetic or natural rubber in accordance with AWWA C111.

D. Manufacturers

1. Gaskets shall be Garlock, Klinger, Teadit, U.S. Pipe Flange-Tyte, or equal.

## 2.04 BOLTS, NUTS, AND WASHERS

A. Bolts and nuts for flanged valves and flanges shall be Type 316 stainless steel conforming to ASTM A 193, Grade B8M, for bolts and ASTM A 194, Grade 8M, for nuts. For grooved-end fittings, bolts shall be Type 316 stainless steel and conform to ASTM F 593 and have a minimum tensile strength of 110,000 psi.

B. Washers shall be provided for each nut, shall be of the same material as the nut, and shall be installed adjacent to the nut, between the nut and the flange.

C. The length of each bolt or stud shall be such that between 1/4 inch and 1/2 inch will project through the nut when drawn tight.

D. Insulating sleeves and washers shall be provided between dissimilar metals in accordance with Section 15051 – Installation of Pressure Pipelines.

## 2.05 LINING FOR PIPE AND FITTINGS

A. The interior of all pipe and fittings shall be lined with:

1. Unless otherwise, cement-mortar per ANSI A-21.4/AWWA C104. Lining shall be the double thickness listed in AWWA C104, Section 4.8. Lining materials shall conform to ASTM C 150, Type II.

2. If shown, fusion bonded epoxy coated per ANSI/AWWA C213 and ANSI/AWWA C116. Lining shall be a minimum dry film thickness (DFT) of 16 mils. Fusion bonded epoxy shall be Scotchkote 206N, or equal.

## 2.06 COATING FOR PIPE AND FITTINGS

A. Exterior surfaces of buried pipe and fittings shall be coated with an asphaltic material in conformance with ANSI A-21.10/AWWA C110, and ANSI A-21.51/AWWA C151. The coating shall be free from blisters and holes and shall adhere to the metal surface at ambient temperatures encountered in the field.

B. Exterior surfaces of ductile pipe installed above grade and in vaults shall be epoxy coated with the appropriate system in accordance with Section 09900 – Protective Coatings.

## 2.07 POLYETHYLENE ENCASEMENT

A. Polyethylene Encasement shall be in accordance with Section 15051 – Installation of Pressure Pipelines.

## 2.08 POLYETHYLENE ADHESIVE TAPE

A. Polyethylene adhesive tape shall be in accordance with Section 15051 – Installation of Pressure Pipelines.

## 2.09 RESTRAINED FLANGE COUPLING ADAPTERS

A. Restrained flange coupling adapters shall be used to connect flanged ductile iron fittings to plain end PVC pipe in accordance with Section 15162 – Pipe Couplings.

## 2.10 FLANGE INSULATION KITS

A. Flange insulation kits shall be in accordance with Section 15051 – Installation of Pressure Pipelines.

# PART 3 EXECUTION

## 3.01 GENERAL

A. Ductile-iron pipe and ductile iron fittings shall be installed in accordance with the applicable sections of AWWA C600, AWWA C116, AWWA C213, SSPWC (306-8.2), Section 15051 – Installation of Pressure Pipelines, and as specified herein.

## 3.02 INSTALLATION

A. Allowable Joint Deflection for Restrained Joint Pipe and Fittings: For restrained joints, deflection of the joint shall not exceed the manufacturer's recommended maximum deflection.

B. Acceptable Line and Grade for Piping: The pipe shall be laid true to the line and grade shown on the plans within acceptable tolerances. The tolerance on grade is one inch. The tolerance on line is two inches.

C. Touch-Up Coating: All exposed flanges and other metal surfaces and all damaged coatings shall be coated after assembly per Section 09900 – Protective Coatings.

## 3.03 WRAPPING PIPE WITH POLYETHYLENE ENCASEMENT

A. All ductile-iron pipe and fittings buried underground shall be protected with a polyethylene encasement wrap in accordance with AWWA C105. Installation of plastic film shall conform to the following:

B. Placement of Polyethylene Encasement

1. Using a sling, the pipe shall be picked up with a crane at the side of the trench and raised about three feet off the ground. The polyethylene tube, cut approximately two feet longer than the length of pipe, shall be slipped over the spigot end of the pipe and bunched up, accordion fashion, between end of the pipe and the sling.

C. Placement of Pipe into Trench

1. The pipe shall be lowered into the trench after the pipe is wrapped. The spigot shall be seated into the bell of the adjacent installed pipe, and the pipe lowered into the trench bottom. A shallow bell hole shall be provided in the trench bottom to facilitate the wrapping of the joint.

D. Joint Assembly

1. The pipe joint shall then be made up as described herein.

E. Adjustment of Polyethylene Encasement

1. The sling shall be removed from the center of the pipe and hooked into the bell cavity. The bell shall be raised approximately 12 inches and the tube of polyethylene film slipped along the full length of the pipe barrel. Enough of the film shall be left bunched up, accordion fashion, at each end of the pipe to overlap the adjoining pipe approximately one foot. Care shall be taken to ensure that soil that adheres to the pipe is removed as the polyethylene film is placed around the pipe.

F. Overlapped Joints

1. To make the overlapped joint wrap, the film shall be pulled over the bell of the pipe, folded around the adjacent spigot, and wrapped with about three circumferential turns of the plastic adhesive tape in order to seal the tube of film to the pipe. The tube on the adjacent pipe shall be then pulled over the first wrap on the pipe bell and sealed in place behind the bell, using approximately three circumferential turns of the polyethylene adhesive tape.

G. Attachment of Encasement

1. The resulting loose wrap on the barrel of the pipe shall be pulled snugly around the barrel of pipe, the excess material folded over the top and the fold held in place by means of short strips of polyethylene adhesive tape at intervals five feet apart along the pipe barrel.

## 3.04 FLANGED CONNECTIONS

A. Flanged pipe and fittings shall be shop fabricated, not field fabricated. Threaded flanges shall comply with AWWA C115 and shall be individually fitted and machine tightened in the shop.

## 3.05 MECHANICAL JOINT CONNECTIONS WITH RETAINER GLAND RESTRAINTS

A. Mechanical joint connections with retainer glands shall be assembled in accordance with the manufacturer's recommendations for the specific fitting and retainer gland.

B. Torquing of break-off gland bolts shall be done in the presence of the Engineer. Each fitting shall be observed by the Engineer prior to bagging and backfill. Any such fittings not observed by the Engineer shall be excavated and exposed for detailed re-inspection of the fitting and bolt torque.

## 3.06 RESTRAINED FLANGE COUPLING ADAPTERS

A. Restrained flange coupling adapters shall be installed in accordance with Section 15162 – Pipe Couplings.

****END OF SECTION****

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# SECTION 15063

# PVC PRESSURE PIPE (AWWA C900)

## PART 1 GENERAL

### 1.01 DESCRIPTION

A. This section covers and describes the requirements for materials, installation, and testing of polyvinyl chloride (PVC) pipe in accordance with the applicable provisions of AWWA C900.

### 1.02 RELATED SECTIONS

A. Section C General Conditions, Section D Special Conditions, and the Drawings shall apply to this section. This section may require direct correlation with the following sections of the contract:

1. Section 02223 – Excavation, Backfilling, and Compaction.
2. Section 09900 – Painting and Coating.
3. Section 15042 – Hydrostatic Testing of Pressure Pipelines.
4. Section 15051 – Installation of Pressure Pipelines.
5. Section 15056 – Ductile Iron Fittings
6. Section 15100 – Valves.
7. Section 15151 – Facilities Identification.

### 1.03 REFERENCES

A. The following publications form a part of this specification to the extent referenced.

1. American Society for Testing and Materials (ASTM):
   a. ASTM D 1785 – Standard Specification for Poly (Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120.
   b. ASTM F 477 – Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe.
2. American Water Works Association (AWWA):
   a. AWWA C153 – Ductile-Iron Compact Fittings
   b. AWWA C605 – Underground Installation of Polyvinyl Chloride (PVC) Pressure Pipe and Fittings for Water.
   c. AWWA C900 – Standard for PVC Water Pipe Size 4-inches to 60-inches.
3. Standard Specifications for Public Works Construction (SSPWC)

## 1.04 SUBMITTALS

A. Submittals shall be furnished in accordance with Article D-8 of Section D – Special Conditions.

B. Submit letter certifying that the Contractor has reviewed the District's purchase order and related documents for the furnished AWWA C900 pipe.

C. Affidavits of compliance with standards referenced in this specification, e.g., AWWA C900, shall be provided.

D. Submit materials list showing material of pipe and fittings with ASTM reference and grade. This includes additional PVC pipe, if required.

E. Layout drawings showing the locations and dimensions of pipe and fittings shall be submitted where the proposed pipeline is to be placed along streets or alignments with a radius of curvature which dictates the use of shorter-than standard pipe lengths. In cases where restrained joint pipe is specified, lay drawings shall clearly identify the joints, lengths, fittings, and deviations from the curved centerline of the pipe trench. Consideration for adjacent parallel utility conduits is important in developing the lay drawings to avoid conflicts and encroaching into adjacent trench areas.

## 1.05 QUALITY ASSURANCE

A. Use adequate numbers of skilled workmen trained and experienced in necessary trades and crafts and completely familiar with specified requirements and methods for proper performance of Work of this section.

B. Mark pipe with nominal size, type, class, schedule or pressure rating, and Manufacturer.

C. Factory testing shall be in accordance with ASTM D 1784.

1. .

## 1.06 DELIVERY, STORAGE, AND HANDLING

A. On-site Storage Limitation: On-site pipe storage shall be limited to a maximum of one week unless exception is approved by the Engineer.

B. Care shall be exercised in handling, loading, unloading, and storing PVC pipe and fittings to avoid distortion, scratches, gouges, dents, and, in particular, scuffing of the ends. Discolored pipe shall be rejected.

C. All plastic pipe and fittings shall be stored under cover in a flat, horizontal position, and protected from the sun and the elements until ready for installation. The covering shall be placed in such a way as to allow adequate air circulation between the cover and the pipe.

D. Plastic pipe shall be transported in a vehicle having a bed long enough to provide support for the full length of the pipe.

E. Any length of pipe or fitting that has been damaged or distorted shall be replaced.

F. When work is not in progress, open ends of pipe and fittings shall be securely closed so that no water, earth, or other substances will enter the pipe or fittings.

## 1.07 GUARANTEE AND MAINTENANCE WARRANTY

A. Special attention is directed to Section D-16. As specified therein the Contractor shall furnish a 3-year guarantee and maintenance warranty for all work and materials involved in the installation of any pipelines specified herein, effective the date of final acceptance for such system.

# PART 2 PRODUCTS

## 2.01 PVC PIPE

A. General

1. PVC pipe and ductile iron fitting joints shall be restrained as shown.

B. Material

1. PVC pipe material used to produce the pipe and couplings shall be made from Class 12454-A or B virgin compounds as defined in ASTM D 1784, with an established hydrostatic design basis rating of 4,000 psi for water at 73.4 degrees F (23 degrees C).

C. Pipe Lengths

1. Laying lengths of the furnished PVC pipe are 20 feet.

2.

D. Pipe Marking

1. PVC pipe length shall be marked showing the date of manufacture, nominal pipe size and O.D. base, the AWWA pressure class, and the AWWA specification designation (AWWA C900).

E. Manufacturers

1. PVC pipe, shall be manufactured by JM Eagle, Diamond Plastics Corporation, NAPCO, or equal.

## 2.02 FITTINGS

A. General

1. It is the Contractor's responsibility to furnish and install all fittings required to complete the work.

B. Materials

1. Fittings shall be ductile-iron conforming to Section 15056 – Ductile Iron Fittings.

C. Bell Sizes

1. Bell size shall be for Class 150 and Class 200 iron-pipe-size equivalent PVC pipe, including the rubber-ring retaining groove.

D. Reference Standard:

1. All castings shall be marked "DI" or "Ductile" and ANSI A21.53/AWWA C153.

E. Where restrained joints are required (specified or shown on the Drawings), the system shall be suitable for mechanical joint fittings and bell and spigot joints. The tee-bolts, threaded rods, and associated hardware shall be 316 stainless steel.

1. Mechanical joint restraint system shall be one of the following or equal:
   a. EBAA Iron Series 2000PV MEGALUG.
   b. Star Pipe PVC Stargrip Series 4000.
2. Bell and spigot restraint system shall be one of the following or equal:
   a. EBAA Iron Series 2800.
   b. Star Pipe PVC Stargrip Series 4400.

## 2.03 RUBBER RINGS

A. Rubber rings for use in couplings and fittings shall conform to the requirements of ASTM F 477. Rubber rings shall be stored out of direct sun light, clearly labeled with the material type, and protected in a manner to prevent deterioration.

## 2.04 TAPPING SLEEVE

A. General

1. Tapping sleeve with flanged outlet shall be in accordance with AWWA C223, where applicable.

B. Materials

1. Body
   a. ASTM A36

2. Gasket

   a. Nitrile Butadiene Rubber (NBR, Buna-N) per ASTM D2000. Molded virgin rubber with a pressure activated hydromechanical design. Gasket shall be bonded into a cavity for internal and external retention. Gasket temperature range shall be -40 degrees F to 212 degrees F. Gasket shall be suitable for water, salt solutions, mild acids, bases, and sewage.

3. Coating and Lining

   a. Fusion-bonded epoxy; minimum 12 mils DFT; AWWA Standard C213.

4. Hardware

   a. Bolts and Nuts

      1) Type 316 stainless steel conforming to ASTM A193, Grade B8M, for bolts and ASTM A194, Grade 8M, for nuts.

   b. Washers

      1) Washers shall be provided for each nut, shall be of the same materials as the nut, and shall be installed adjacent to the nut, between the nut and the flange.

      2) Plastic lubricating washer shall be provided between the sleeve body and metal washer.

C. Manufacturers

1. Tapping sleeve with NPT threaded outlet shall be Romac FTST420, Smith Blair 622, or equal.

## PART 3 EXECUTION

### 3.01 GENERAL

A. PVC pipe shall be installed in accordance with the applicable sections of AWWA C605, Section 15051 – Installation of Pressure Pipelines, SSPWC (306-8.5), and as specified herein.

B. Restrictions

1. When pipe is to be installed in new streets or when street improvements require placement and/or replacement of curbs, piping shall not be installed until new curbs are in place, unless special approval by the Engineer is obtained. If any curbing is damaged during piping installations, the damaged portions shall be repaired or replaced to the satisfaction of the agency having jurisdiction.

C. Closure Sections

1. Closure sections shall be in accordance with Section 15051 – Installation of Pressure Pipelines.

D. Cover

1. The pipe sections shall be laid in the trench to true alignment and grade in accordance with the drawings. Unless otherwise shown or where the grade is not shown, pipe shall have a minimum depth of cover of 36 inches. The pipe grade shall be approved by the Engineer.

E. Curved Alignment

1. The pipe shall not be laid along curves at a radius less than that listed in AWWA C605.
2. The minimum-radius curves are determined by the limit of 1-degree deflection for PVC pipe joints with factory-assembled bell couplings.
3. For integral bell PVC pipe, the minimum radius curves obtained by deflecting joints shall not exceed the manufacturer's recommendation (which may be less than 1 degrees).
4. Pipe may not be offset to a degree such that the spigot end of the pipe deflects (touches) against the end of the pipe bell.
5. Pipe sections shall not be bent to achieve a curve.
6. Pipe sections used to achieve a curve shall not be less than 10 feet.

## 3.02 INSTALLATION

A. Pipe Cutting

1. When pipe is cut and is to be joined to a ductile-iron fitting or another piece of pipe, the end shall be beveled in the field or shop to create a beveled end equal in workmanship to the machined ends of the pipe as furnished by the manufacturer. Such machining shall not result in undercutting the wall thickness and must be approved by the Engineer before installation.

B. Joints

1. Connecting parts of pipe, rings, couplings, and castings shall be cleaned before assembly. After bearing has been obtained, couplings shall be assembled in a workmanlike manner. The use of excessive lubricant will not be permitted, and the assembly of the couplings and rings shall be in accordance with the manufacturer's recommendations. Lubricant and rubber rings shall be supplied by the pipe manufacturer.

C. Restrained Joints

1. Mechanical joint restraint and bell and spigot restraint systems shall be installed in accordance with the manufacturer's recommendations and at the locations shown.

2. Joint restraint systems shall be encased in polyethylene in accordance with Section 15051 – Installation of Pressure Pipelines.

D. Tapping Sleeves and Services Saddles

1. Tapping sleeves and Services Saddles shall be installed in accordance with the manufacturer's recommendations and at the locations shown.

## 3.03 PIPE IDENTIFICATION AND LOCATING

A. Locator tape and tracer wire shall be installed on all pipelines in accordance with Section 15151 – Facilities Identification.

****END OF SECTION****

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# SECTION 15089

# AIR VALVES

## PART 1 GENERAL

### 1.01 DESCRIPTION

A. This section covers the materials and installation of combination air release and vacuum relief valves, hereafter referred to as "valves" or "air valves", for 6-inch and smaller valves used for irrigation water systems.

B. Provide materials, equipment and labor required to execute this work as indicated on the drawings, specified herein and necessary to complete the work of this section.

### 1.02 RELATED SECTIONS

A. Section C General Conditions, Section D Special Conditions, and the Drawings shall apply to this section. This section may require direct correlation with the following sections of the contract:

1. Section 03300 – Concrete.
2. Section 03461 – Precast Concrete Manholes.
3. Section 15042 – Hydrostatic Testing of Pressure Pipelines.

### 1.03 REFERENCES

A. The following publications form a part of this specification to the extent referenced.

1. American National Standards Institute (ANSI):
   a. ANSI B1.2.01 – Pipe Threads, General Purpose, Inch
2. American Society for Testing and Materials (ASTM):
   a. ASTM A 126 – Standard Specifications for Gray Iron Castings for Valves, Flanges, and Pipe Fittings.
   b. ASTM A 193 – Standard Specification for Alloy-Steel and Stainless Steel Bolting for High Temperature or High Pressure Service and Other Special Purpose Applications.
   c. ASTM A 194 – Standard Specification for Carbon Steel, Alloy Steel, and Stainless Steel Nuts for Bolts for High Pressure.
   d. ASTM A 240 – Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and General Applications.

e. ASTM A 276 – Standard Specification for Stainless Steel Bars and Shapes.

3. American Water Works Association (AWWA):

a. AWWA C512 – Air-Release, Air/Vacuum, and Combination Air Valves for Waterworks Service.

b. AWWA C550 – Protective Interior Coatings for Valves and Hydrants.

c. AWWA M51 – Air-Release, Air/Vacuum, & Combination Air Valves.

## 1.04 SUBMITTALS

A. Shop drawings shall be submitted in accordance with Article D-8 of Section D and as specified herein.

B. Submit manufacturer's catalog data. Show dimensions, materials of construction by ASTM reference and grade, and protective coating and lining.

C. Contractor shall submit complete information and technical data for all material and components, including, but not limited to, the following: fabrication, assembly, detailed specifications and data covering performance and materials of construction, parts, installation instructions, coatings, operators, and other pertinent data. Shop drawings shall clearly indicate size, end connections, and proposed service condition.

D. The manufacturer shall submit letter certifying the venting capacity.

E. Manufacturer's installation instructions or procedures including field adjustments as required.

F. Manufacturer's certification that valves have been shop-tested shall be submitted for Engineer’s acceptance at least thirty (30) days prior to scheduled shipment.

G. Operation and Maintenance Manual:

1. Contractor shall submit for each valve a detailed operation and maintenance manual in accordance with the General Conditions, and Special Conditions.

## 1.05 QUALITY ASSURANCE

A. ISO quality management system: Manufacturer shall have an ISO 9001 quality management system, certified by an accredited certifying agency within the four (4) years prior to the Notice to Proceed.

B. All valves shall be tested in accordance with manufacturer's recommendation and applicable AWWA/ANSI specifications.

C. All valves of a particular type shall be by one manufacturer.

D. Contractor shall coordinate valves furnished with connecting piping or equipment to ensure compatible end connections and proper valve operation.

## 1.06 DELIVERY, STORAGE, AND HANDLING

A. Valves shall be delivered and stored in accordance with AWWA C550.

B. The port opening shall be covered with plastic, cardboard or wood while in transit and during storage in the field. These covers shall remain in place until valves are ready to be installed.

C. Valve shall not be stored in contact with bare ground.

D. Valves shall not be stacked.

# PART 2 PRODUCTS

## 2.01 GENERAL

A. Air valve assemblies shall comply with AWWA C512 except as modified herein. Air release, air/vacuum and combination air valve assemblies and appurtenant components and materials shall be suitable for the system pressure and service.

B. Air valves shall be of the sizes indicated on the Drawings, with threaded ends to match the adjacent piping.

C. All threaded inlets/outlets shall be full size National Pipe Taper (NPT).

D. Valve flanges/ends shall be compatible (ANSI B16.1 125 lbs, ANSI B16.5 150 lbs, etc.), using appropriate adapters, with the piping system or appurtenance in which they are to be installed or as called for on the Drawings.

E. Unless otherwise shown or specified, each unit shall be supplied with a bronze inlet isolation gate valve matching the valve body inlet size, in accordance with Section 15100 – Valves.

F. Provide materials, equipment and labor required to execute this work as indicated on the drawings, specified herein and necessary to complete the work of this section.

## 2.02 COMBINATION AIR-VALVES

A. Valves shall be 1-inch, 2-inch, 3-inch, 4-inch, or 6-inch in diameter and shall include:

1. A float assembly and large venting orifice to exhaust large quantities of air from pipelines when being filled and to admit large quantities of air when pipelines are being drained.

2. Valves shall have a body with a threaded top containing the air release orifice.

3. The float shall rise with the water level in the body to close the orifice by sealing against a synthetic rubber seat. The float shall withstand an external pressure of 1,000 psig without collapsing.

4. 1-inch and 2-inch valves and shall include a 3/8-inch threaded outlet with stainless steel plug in the top cover or near the bottom of the valve body. 3-inch, 4-inch, and 6-inch valves shall include a 1-inch threaded outlet with stainless steel plug near the bottom of the valve body or on the side of the valve body above the minimum water level.

B. Small orifice sizes shall be as shown on the Drawings.

C. Materials of Construction for valves shall be as follows:

| Item | Material | Specification |
|---|---|---|
| Body and cover | Cast iron | ASTM A 126, Class B |
| Float | Stainless steel | Stainless steel: AISI Type 316, ASTM A 240 or A 276 |
| Guide rod, guide bushings | Stainless steel | AISI Type 316, ASTM A 240 or A 276 |
| Seat and cushion | EPDM | --- |
| Valve trim | Stainless steel | AISI Type 316, ASTM A 240 or A 276 |
| Cover bolts | Stainless steel | AISI Type 316, ASTM A 193, GR B8M |

D. Valves shall be designed for an operating pressure range of 5-20 psi unless otherwise specified on the plans or in the specifications. A low durometer seat and orifice button shall be furnished for low pressure applications.

E. Valves shall be Val-Matic Series 200C, APCO 140C, or approved equal.

## 2.03 VALVE END CONNECTIONS

A. Applications

1. 1-inch, 2-inch, and 3-inch valves shall have threaded ends at the bottom of the body. 4-inch and 6-inch valves shall have flanged ends.

B. Threaded Connections

1. Threaded ends shall comply with ANSI B1.20.1.

C. Flanged Connections

1. Flanges for Class 150 valves shall comply with ANSI B16.1, Class 125.
2. Flanges for Class 300 valves shall comply with ANSI B16.1, Class 250.

## 2.04 BOLTS AND NUTS FOR FLANGED VALVES

A. Bolts and nuts for flanged valves and flanges shall be Type 316, stainless steel conforming to ASTM A 193, Grade B8M, for bolts and ASTM A 194, Grade 8M, for nuts.

B. Washers shall be provided for each nut, shall be of the same material as the nut, and shall be installed adjacent to the nut, between the nut and the flange.

C. The length of each bolt or stud shall be such that between 1/4 inch and 1/2 inch will project through the nut when drawn tight.

## 2.05 GASKETS

A. Gaskets for flanged end valves shall be as described in the individual piping specifications.

## 2.06 PROTECTIVE COATINGS

A. Interior

1. All interior non-working ferrous surfaces, other than stainless steel, shall be given an epoxy coating unless specified otherwise.
2. All valves shall be fusion bonded epoxy coated (dry film thickness of 12 to 16 mils) and holiday tested in accordance with AWWA C550. The District shall approve epoxy coating materials and methods before application. Completed coating shall be free from all defects and shall be inspected by use of low voltage holiday detecting and non-destructive thickness gauges.
3. If small local repairs are necessary, they shall be made using a liquid epoxy recommended by the manufacturer of the epoxy with which the item was initially coated. The surface shall first be hand tool cleaned in accordance with SSPC-SP2. The repair epoxy material shall be applied in accordance with the manufacturer's instructions.
4. Where factory hydrostatic testing of the valve is required, the valve shall pass all tests prior to interior coating applications.

B. Exterior

1. Exterior surfaces, except stainless steel shall be coated with fusion bonded epoxy and holiday free in accordance with AWWA C550 with a dry film thickness of 12 mills.

C. Do not coat mating faces.

## PART 3 EXECUTION

### 3.01 INSTALLATION

A. Valves shall be installed as shown on the plans and in accordance with Section 15051 – Installation of Pressure Pipelines

1. Tap

   a. The tap for valves shall be made in a level section of pipe no closer than 24-inches to a bell, coupling, joint, or fitting.

2. Threaded Connections

   a. Threaded joints shall be cleaned by wire brushing or swabbing.

   b. Teflon joint compound or Teflon tape shall be applied to pipe threads before installing threaded valves.

   c. Joints shall be watertight.

3. Flanged Connections

   a. Flanges shall be cleaned by wire brushing before installing flanged valves. Flange bolts and nuts shall be cleaned by wire brushing, and threads shall be coated with anti-seize compound. Nuts shall be tightened uniformly, and in the sequence pattern and torque setting recommended by the manufacturer. If flanges leak under pressure testing, nuts and bolts shall be loosened or removed, the gasket reseated or replaced, the bolts and nuts reinstalled or retightened, and joints retested. Joints shall be watertight.

### 3.02 MANHOLE RISER AND CONCRETE COLLAR

A. Air valve assembly manhole risers and concrete collars shall be as shown and specified in Section 03300 – Concrete and Section 03461 – Precast Concrete Manholes.

### 3.03 VALVE PRESSURE TESTING

A. Valves shall be pressure tested at the same time that the connecting pipelines are pressure tested. See Section 15042 – Hydrostatic Testing of Pressure Pipelines, for pressure testing requirements. Valves, operators, or control and instrumentation systems whose pressure rating is less than the test pressure shall be protected or isolated during pressure testing.

****END OF SECTION****

# SECTION 15100

# VALVES

## PART 1 GENERAL

### 1.01 DESCRIPTION

A. This section describes materials, testing, and installation of manually operated valves.

B. Provide materials, equipment and labor required to execute this work as indicated on the drawings, specified herein and necessary to complete the work of this section.

C. Unit Responsibility

1. The valve manufacturer shall be made responsible for coordination of design, assembly, testing, and installation of actuators on the valves; however, the Contractor shall be responsible to the Engineer for compliance of the valves, gates, and actuators with the Contract Documents.

### 1.02 RELATED SECTIONS

A. Section C General Conditions, Section D Special Conditions, and the Drawings shall apply to this section. This section may require direct correlation with the following sections of the contract:

1. Section 02578 – Pavement Removal and Replacement.
2. Section 03300 – Concrete.
3. Section 15042 – Hydrostatic Testing of Pressure Pipelines.
4. Section 15051 – Installation of Pressure Pipelines.
5. Section 15056 – Ductile Iron Pipe and Fittings.

### 1.03 REFERENCES

A. The following publications form a part of this specification to the extent referenced.

1. American National Standards Institute (ANSI):
   a. ANSI B16.1 – Grey Iron Pipe Flanges and Flanged Fittings Classes 25, 125, and 250.
2. American Society for Testing and Materials (ASTM):
   a. ASTM A 126 – Standard Specification for Gray Iron Castings for Valves, Flanges, and Pipe Fittings.

b. ASTM A 148 – Standard Specification for Steel Castings, High Strength, for Structural Purposes.

c. ASTM A 193 – Standard Specification for Alloy – Steel and Stainless Steel Bolting for High Temperature or High Pressure Services and Other Special Purpose Applications.

d. ASTM A 194 – Standard Specification for Carbon Steel, Alloy Steel, and Stainless Steel Nuts for Bolts for High Pressure or High Temperature Service, or Both.

e. ASTM A 276 – Standard Specification for Stainless Steel Bars and Shapes.

f. ASTM A 351 – Standard Specification for Castings, Austenitic, for Pressure-Containing Parts.

g. ASTM A 536 – Standard Specification for Ductile Iron Castings.

h. ASTM D 2000 – Standard Classification System for Rubber Products in Automotive Applications.

3. American Water Works Association (AWWA)

a. AWWA C 116 – Protective Fusion-Bonded Epoxy Coatings for the Interior and Exterior Surfaces of Ductile Iron and Gray Iron Fittings

b. AWWA C 504 – Rubber Seated Butterfly Valves, 3 in. through 72 in.

c. AWWA C 515 – Reduced-Wall, Resilient-Seated Gate Valves for Water Supply Service.

d. AWWA C 550 – Protective Interior Coatings for Valves and Hydrants.

## 1.04 SUBMITTALS

A. Shop drawings shall be submitted in accordance with Article D-8 of Section D and as specified herein.

B. Submittals shall include the following information at a minimum. Factory signed and dated certification of compliance shall accompany all submittals. Signatures of agents or distributors of the factory will not be accepted.

1. Manufacturer's catalog data and detail construction sheets showing all valve parts and describing materials of construction by material and specification (such as AISI, ASTM, SAE, or CDA).

2. Valve dimensions including lay lengths.

3. Dimensions and orientation of valve actuators as installed on the valves.

4. Valve name, size, Cv factor, pressure rating, identification number, and specification section number.

5. Shop drawing information for actuators shall be submitted together with the valve submittals as a complete package.
6. Valve linings and coatings.
7. Factory torque sheets minimally supplying actuator output and valve input torque requirements. Method for calculating input torque shall be the same as AWWA C150B designation.
8. Selection calculations showing dynamic seating and unseating torques versus output torque of actuator.
9. Operating thrust and torque calculations for each gate size and operating head.
10. Factory Test Data
    a. Where indicated, signed, dated, and certified factory test data for each valve requiring certification shall be submitted before shipment of the valve. The data shall also include certification and test results for factory applied coatings.

## 1.05 QUALITY ASSURANCE

A. ISO quality management system: Manufacturer shall have an ISO 9001 quality management system, certified by an accredited certifying agency within the four (4) years prior to the Notice to Proceed.

B. All valves shall be tested in accordance with manufacturer's recommended and applicable AWWA/ANSI specifications.

C. All valves of a particular type shall be by one manufacturer.

D. Contractor shall coordinate valves furnished with connecting pipe or equipment to ensure compatible end connections and proper valve operation.

## 1.06 DELIVERY, STORAGE, AND HANDLING

A. Shipping, handling, and storage shall be in accordance with the manufacturer instructions.

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 the Engineer. Any damage to the valve's coatings shall be repaired as acceptable to the Engineer at no additional cost to the District.

C. Valves shall be delivered and stored in accordance with AWWA C550. 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 valves are ready to be

installed. Valves shall not be stored in contact with bare ground. Valves shall not be stacked.

## PART 2 PRODUCTS

### 2.01 GENERAL

A. Valves shall be provided with 2-inch square operating nuts, unless otherwise shown.

B. Valves shall have the name of the manufacturer and size of the valve cast or molded onto the valve body or bonnet or shown on a permanently attached corrosion resistant plate.

C. Materials

1. Actuators shall be current models of the best commercial quality materials and be liberally-sized for the required torque. Materials shall be suitable for the environment in which the valve of gate is to be installed.

D. All nuts, bolts, washers, external fasteners, mounting hardware, and brackets shall be 316 stainless steel.

E. Valves shall be the same size as the piping in which they are to be installed unless otherwise called for on the Drawings.

F. Valve ends shall be compatible with the piping system or appurtenance in which they are to be installed or as called for on the Drawings.

G. Factory inspection, testing and correction of deficiencies shall be done in accordance with the referenced standards and as noted herein.

### 2.02 GATE VALVES (3-INCH AND SMALLER)

A. Gate valves shall be threaded end valves for water and air service.

B. Valves shall be rising stem, Class 150, having a minimum working pressure of 300 psi at a temperature of 150ºF.

C. Materials of construction shall be as follows:

| Component | Material | Specification |
|---|---|---|
| Body | Bronze | ASTM B62 |
| Bonnet | Bronze | ASTM B62 |
| Stem | Copper Silicon | ASTM B371 |
| Wedge | Bronze | ASTM B62 |

| | | |
|---|---|---|
| Union Ring | Bronze | ASTM B62 |
| Packing Ring | Graphite | - |
| Hand Wheel | Mailable Iron | ASTM A197 |

D. Valves shall be Stockham Figure B-120 as manufactured by Crane or approved equal.

## 2.03 RESILIENT SEATED GATE VALVES (4-INCH THROUGH 48-INCH)

A. Resilient seated gate valves shall be flanged type, non-rising stem, conforming to AWWA C515, Class 150B, having a minimum working pressure of 250 psi.

B. Valve ends shall have 150-pound flanges. Flanged ends shall be Class 125 drill pattern, ANSI B-16.1 unless otherwise specified.

C. Valves shall have a wedge-type resilient seat with the gate fully encapsulated in SBR rubber.

D. Valves shall have non-rising stems fabricated of high strength bronze alloy. Stem nuts shall be independent of the gate and shall be made of bronze.

E. Low friction, torque reduction thrust bearings shall be provided both above and below the stem collar. Stuffing boxes shall be O-ring seal type with two rings located in stem above and one below the thrust collar.

F. Each valve shall have a smooth unobstructed waterway free from any sediment pockets.

G. Prior to shipment from the factory, each valve shall be tested by hydrostatic pressure equal to the requirements of AWWA C515.

H. Materials of construction shall be as follows:

| **Component** | **Material** | **Specification** |
|---|---|---|
| Body/Bonnet | Ductile Iron | ASTM A536 |
| Operating Nut | Cast Iron | ASTM A536 |
| Wedge | Rubber Encapsulated Ductile Iron | ASTM D2000 /ASTM A536 |
| Stem | Manganese Bronze | ASTM B138 |
| Stem nut | Bronze | ASTM B62 |
| O Rings | BUNA-N or EPDM | ASTM D2000 |
| Hardware | Stainless Steel | ASTM A193 / A1594 |

I. Valves shall be as manufactured by Mueller A2361/2362, Clow Valve Model 2638, American Flow Control Series 2500 RW NRS, or approved equal.

## 2.04 BUTTERFLY VALVES (14-INCH AND LARGER)

A. Butterfly valves shall be short body, flange type, conforming to AWWA C504, Class 150B. Wafer style valves shall not be used.

B. Unless otherwise noted, minimum working differential pressure across the valve disc shall be 150 psi.

C. Valve ends shall have 150-pound flanges. Flanged ends shall be Class 125 drill pattern, ANSI B-16.1 unless otherwise specified.

D. Valve shafts shall be Type 304 or 316 stainless steel. Valve shafts may be stub shaft or one-piece units extending completely through the valve disc.

E. Valve discs shall be of the solid type without external ribs or vanes to obstruct flow.

F. Valve resilient seats shall be located on the valve disc and shall provide a 360-degree continuous, uninterrupted seating surface. Seats shall be mechanically retained with a stainless-steel retaining ring and stainless steel cap screws which shall pass through both the resilient seat and the retaining ring. The retaining ring shall be continuous or investment cast with overlapping sections, serrated grooves, and shoulders. The resilient seat's mating surface shall be to a 360-degree continuous, uninterrupted stainless steel body seat ring. Resilient seats shall be field adjustable and replaceable and shall not require epoxy, syringes, needles or pressure vessels to replace or adjust.

G. The thrust bearings shall be provided and shall be adjustable on valves 30-inch and larger.

H. The shaft seals shall be of the V-type and shall be replaceable without removal of the valve from the line or the shaft from the valve.

I. Materials of construction shall be as follows:

| Component | Material | Specification |
|---|---|---|
| Body | Cast iron | ASTM A126, Class B |
| Disc | Ductile iron | ASTM A536, Grade 65-45-12 |
| Shaft | Stainless Steel | ASTM A276, Type 304 or 316 |
| Seat Material | BUNA-N or EPDM mated to a Type 316 Stainless Steel body seat ring | |
| Hardware | Stainless Steel | ASTM A193/A194 |
| Handwheel | Steel | |

J. Valves shall be Pratt Groundhog or approved equal.

## 2.05 VALVE ACTUATORS

A. General Requirements for Gear Actuators

a. Gear actuators shall be enclosed, suitable for operating in grease with seals provided on shafts to prevent entry of dirt and water into the actuator.

1) External trim and all threaded parts of the actuator shall be Type 316 stainless steel material.

2. Gear actuators shall be of the totally enclosed design, proportioned to permit operation of the valve under full operating head in either direction, with a maximum pull of 80 pounds on the handwheel or with a maximum input of 150 ft-lbs applied to the AWWA wrench nut. Design and torque capacity shall consider flow and shut-off in "BOTH" directions.

3. Actuators shall be provided with "open" and "closed" position stop limiting devices. Actuators shall be of the self-locking type to prevent the valve disc or plug from creeping.

B. Standard Opening Direction

1. Valve actuators shall open by turning counterclockwise (commonly stated as, "open-left – close-right").

C. AWWA Wrench Nut

1. Valves for buried and submerged applications shall be provided with a 2-inch square AWWA wrench nut.

2. The wrench nut shall have an arrow cast thereon, indicating the direction of opening.

3. Operating Torque Requirement

a. The actuator shall be designed to produce the specified torque with a maximum input of 150-foot pounds applied to the wrench nut at the maximum rated pressure and velocity of 20 cubic feet per second.

D. Handwheels

1. Valves for aboveground applications shall be provided with a handwheel with a minimum diameter of 12-inches. The handwheel shall have an arrow thereon, indicating the direction of the opening. The handwheel shall be suitably fastened to the actuator input shaft.

2. Operating Torque Requirement

a. Actuators equipped with handwheels shall be designed to produce the specified torque with a maximum pull of 80 pounds of the handwheel rim.

E. Position Indicators

1. Valve position indicators shall be provided for all above ground or in vault valves.
2. Submerged and buried valves shall have a watertight seal plate in place of the valve position indictor. No rotating part indicating position shall be allowed for valves intended for buried service.

F. Operators for Exposed Valves Smaller than 6-inch

1. Unless otherwise called for on the plans or specifications, lever or wrench actuators having adjustable, open stop memory positions shall be provided for exposed valves smaller than 6 inches.

G. Actuators for Valves 4-inch and Larger

1. Butterfly Valves
   a. 14-inch through 36-inch diameter butterfly valves shall have gear actuators of the "traveling nut type". Traveling nut actuators shall be furnished on all valves in this size range unless torque or pressure conditions dictate a “worm gear type”.
   b. Butterfly valves larger than 36-inch diameter shall have gear actuators of the "worm gear type". Worm gear actuators shall be furnished on all valves in this size range.
2. Ball Valves
   a. Ball valves 6-inch and larger shall have actuators of the "worm gear type."
3. Gate Valves
   a. Gate valves 14-inch and larger shall be provided with bevel gears (horizontal) or spur gears (vertical) as directed by the Engineer.

H. Requirements for Traveling Nut Gear Actuators

1. Traveling nut actuators shall withstand 450-foot pounds of input torque against the stop limiting devices without causing damage.
2. Signed factory compliance shall accompany submittals stating that these specifications and applicable standards have been adhered to.
3. All exposed threaded parts, including cap screws, case bolts, carriage bolts, cover screws, machine screws, set screws, bonnet bolts on the housing or any other exterior location on the actuator, its cover or housing shall be Type 316 stainless steel.

4. Traveling nut type gear actuators shall be able to rotate the valve element (disc, plug, or ball) from the fully "closed" position to the fully "open" position with a number of turns of the actuator nut or wheel. For 4-inch through 10-inch valves, the number of turns shall not be fewer than twenty nine (29) turns. For 12-inch through 36-inch valves, the number of turns shall not be fewer than twenty nine (29) turns and not more than three (3) times the number of diameter inches.
5. Where the number of turns may fall outside of the range for turn limits, the use of a factory attached spur gear reducer shall be used to provide the appropriate number of rotations from the fully "open" to the fully "closed" position. Spur gear assemblies shall be mounted integrally to the actuator by approved means and shall meet all of the other component and torque requirements listed herein.
6. Traveling nut gear actuators shall be Pratt MDT, or equal.

I. Requirements for Worm Gear Actuators

1. Worm gears shall be of the "self-locking" one-piece design of gear bronze material (ASTM B 427), accurately machine cut.
2. The worm shall be hardened alloy steel (ASTM A 322, Grade G 41500; or ASTM A 148, Grade 105-85), with threads ground and polished.
    a. The reduction gearing shall run in a proper lubricant inside ductile iron housing.
3. All exposed (at the exterior of the actuator) threaded parts, including cap screws, case bolts, carriage bolts, cover screws, machine screws, set screws, bonnet bolts on the housing or any other exterior location on the actuator, its cover or housing shall be Type 316 stainless steel.
4. Actuator components shall be designed to withstand a pull of 200 pounds for handwheel or chain wheel actuators between the input and stop limiting devices without damage, and an input torque of 300-foot-pounds for operating nuts when operating against the stops.
5. Gear actuators shall be able to rotate the valve element (disc, plug, or ball) from the fully "closed" position to the fully "open" position with a number of turns of the actuator nut or wheel, not fewer than one-and-a-half (1.5) times the number of diameter inches and not more than three (3) times the number of diameter inches.
6. Where the number of turns may fall outside of the range for turn limits, the use of a factory attached spur gear reducer shall be used to provide the appropriate number of rotations from the fully "open" to the fully "closed" position. Spur gear assemblies shall be mounted integrally to the actuator by approved means and shall meet all of the other component and torque requirements listed herein.

7. Actuators shall be Auma GS Series; EIM Model WB Series; Limitorque Model HBC or PT Series; or equal.

## 2.06 VALVE BOXES, RISERS, AND LIDS FOR BURIED VALVES

A. Valve boxes shall be a traffic rated Christy G05 Valve Box marked “Water”.

B. Valve riser shall be 8-inch SDR 35 PVC Pipe.

C. A concrete support pad shall be placed as shown on the Drawings and in accordance Section 03300 – Concrete.

## 2.07 EXTENSION STEMS FOR BURIED VALVE OPERATORS

A. Where the depth of the valve is such that its operating nut is more than four (4) feet below finished grade, operating extension stems shall be provided to bring the operating nut to a point between 24 to 36 inches below the surface of the ground and/or box cover.

B. Extension stems shall be solid 1-1/4-inch round or square Type 316 stainless steel bar with a circular centering guide and shall be complete with 2-inch square operating nut. No pinned couplings are permitted.

## 2.08 BOLTS, NUTS, AND WASHERS FOR FLANGED VALVES

A. Bolts, nuts, and washers for flanges shall be in accordance with Section 15051 – Installation of Pressure Pipelines.

## 2.09 GASKETS FOR VALVES

A. Gaskets for flanged end valves shall be as described in the individual piping specifications.

## 2.10 PAINTING AND COATING FOR VALVES

A. Exterior

1. Exterior surfaces, except stainless steel or bronze, shall be coated with fusion bonded epoxy and holiday tested as specified in AWWA C116 or AWWA C550, with a dry film thickness of 12 mils.

B. Interior

1. All interior non-working ferrous surfaces, other than stainless steel, shall be given an epoxy coating unless specified otherwise.

2. All valves shall be fusion bonded epoxy coated (dry film thickness of 12 to 16 mils) and holiday tested in accordance with AWWA C550.

3. If small local repairs are necessary, they shall be made using a liquid epoxy recommended by the manufacturer of the epoxy with which the item was initially coated. The surface shall first be hand tool cleaned in accordance with SSPC-SP2. The repair epoxy material shall be applied in accordance with the manufacturer's instructions.

## PART 3 EXECUTION

### 3.01 JOINTS

A. Flanged Joints

1. Bolt holes of flanged valves shall straddle the horizontal and vertical centerlines of the pipe run to which the valves are attached.
2. Flanges shall be cleaned by wire brushing before installing flanged valves.
3. Flange bolts and nuts shall be cleaned by wire brushing, threads shall be lubricated with a nickel antiseize compound, approved for use with stainless steel, and nuts shall be tightened uniformly and progressively.
4. If flanges leak under pressure testing, nuts and bolts shall be loosened or removed, the gasket shall be reseated or replaced, and the bolts and nuts shall be reinstalled or re-tightened, and the joint retested. Joints shall be watertight.

B. Threaded Joints

1. Threaded joints shall be cleaned by wire brushing or swabbing. Teflon joint compound or Teflon tape shall be applied to pipe threads before installing threaded valves. Joints shall be watertight.

### 3.02 VALVE INSTALLATION

A. General

1. Valves and appurtenances shall be installed in accordance with manufacturer's installation instructions in the locations shown, true to alignment and rigidly supported. Valves shall be independently supported to prevent stresses on the pipe. Any damage to the above items shall be repaired to the satisfaction of the Engineer before they are installed, or the damaged items shall be replaced at no additional cost to the District.

B. Unless otherwise noted, all operational devices shall be installed with the units of the factory, as shown on the Drawings or as acceptable to the Engineer to allow accessibility to operate and maintain the item and to prevent interference with other piping, valves and appurtenances.

C. Access

1. Valves shall be installed to provide easy access for operation, removal, and maintenances and to prevent interferences between valve components and structural members or handrails.

D. Valve Supports

1. Concrete valve supports shall be provided for all buried valves as shown on the Plans.

2. Supports shall be installed prior to pressurizing the system.

E. For manually operated valves 3-in in diameter and smaller, valve operators and indicators shall be rotated to display toward normal operation locations.

## 3.03 VALVE BOXES

A. Valve boxes shall be firmly supported and shall be kept centered and plumb over the operating nut of the valve.

B. Beveled sections of pipe shall not be allowed at the top of the valve riser pipe. The top cut shall be square and machine made.

C. The final valve box elevation shall be 1/4 inch below the finished pavement surface, or at the level shown on the Drawings.

## 3.04 VALVE LEAKAGE TESTING

A. Field Hydrostatic Testing

1. Valves shall be tested for leakage at the same time that the connecting pipelines are hydrostatically tested. See Section 15042 – Hydrostatic Testing of Pressure Pipelines, for pressure testing requirements.

B. Pressure Testing

1. Valves shall be tested in a horizontal position.

2. All valves shall be tested bi-directionally after the actuator is installed and the adjustment stops are set. Each side of the valve shall be tested for a duration of at least five (5) minutes at the pressure class rating of the valve with zero loss or leakage. Valve bodies shall be tested at a pressure equal to twice the deign working pressure.

3. The pressure test shall be witnessed by the Engineer. Final tests shall be performed at the project site. The Contractor shall provide a minimum of 72 hours' notice to the District in advance of the pressure test.

4. Factory hydrostatic testing shall be conducted in advance of the final leakage testing.

5. The District shall be given an opportunity to send the Engineer to witness the factory test. The Contractor shall notify the Engineer in writing 28 days in advance of all factory leakage tests.

## 3.05 INSPECTION, TESTING AND CORRECTION OF DEFICIENCIES

A. Take care not to over pressure valves or appurtenances during pipe testing. If any unit proves to be defective, it shall be replaced or repaired to the satisfaction of the Engineer.

B. Actuators shall be located to be readily accessible for operation and maintenance without obstructing walkways. Actuators shall not be mounted where shock or vibrations will impair their operation, nor shall the support systems be attached to handrails, process piping, or mechanical equipment. Actuator orientation and placement is subject to Engineer approval. Contactor shall make all of the required Engineer adjustments at no extra cost.

C. Valves shall be set in true alignment straddling the centerline of pipe with the valve operator in the vertical position unless otherwise noted on the Drawings.

D. Valves shall be installed in accordance with the manufacturer's recommendations and the applicable section of these specifications for the piping material, joint type being used, and direction of flow.

E. All valves, including, but limited to non-buried valves and valves located in below grade vaults, shall be rigidly held in place using supports and hangers as shown on the Drawings. The stem orientation of all valves including, but limited to non-buried valves and valves located in below grade vaults shall be as approved by the Engineer for accessibility, except that no valves shall be installed with stems aligned below horizontal. Saddle type valve supports shall be provided. Supports shall be of rugged construction providing at least one hundred twenty degrees (120°) under support for the valve body. Valve supports shall be constructed of steel, and shall be anchored to the foundations using stainless steel anchor bolts.

F. Functional Test

1. Prior to startup, all items shall be inspected for proper alignment, quite operation, proper connection and satisfactory performance. All units shall be operated continuously while connected to the attached piping for at least forty eight (48) hours, without vibration, jamming, leakage, or overheating, and shall perform the specified function.

G. The various pipelines in which the valves and appurtenances are to be installed are specified to be field tested. During these tests any defective valve or appurtenance shall be adjusted, removed and replaced, or otherwise made acceptable to the Engineer.

H. Various regulating valves, strainers, or other appurtenances shall be tested to demonstrate their conformance with the specified operational capabilities and any deficiencies shall be corrected or the device replaced or otherwise made acceptable to the Engineer.

****END OF SECTION****

# SECTION 15151

# FACILITIES IDENTIFICATION

## PART 1 GENERAL

### 1.01 DESCRIPTION

A. This section describes the requirement for materials and installation of facilities identification for pipe and appurtenances.

B. Provide materials, equipment and labor required to execute this work as indicated on the drawings, specified herein and necessary to complete the work.

### 1.02 RELATED SECTIONS

A. Section C General Conditions, Section D Special Conditions, and the Drawings shall apply to this section. This section may require direct correlation with the following sections of the contract:

1. Section 09900 – Protective Coatings.

### 1.03 REFERENCES

Not Used

### 1.04 SUBMITTALS

A. Shop drawings shall be submitted in accordance with Article D-8 of Section D and as specified herein.

B. Submit material samples of locator tape and reflective tape for marker posts.

C. Submit marker post and concrete foundation drawing, locations, materials, and coating, including color chart.

D. Submit Tracer Wire Material and Testing Results

1. Material data sheets for wire, watertight connectors, tape, access box, and appurtenances
2. Location of all spliced connections
3. Testing procedure and results

## PART 2 PRODUCTS

### 2.01 BURIED PIPING LOCATOR TAPE

A. Locator Tape shall be aluminum foil core detectable purple warning tape and be installed for all pipelines, including farm turnouts.

B. The tape shall be 12-inches wide and have a minimum thickness of 5 mil.

C. Tape wording shall read “CAUTION NON-POTABLE LINE BURIED BELOW”

D. Tape shall be as manufactured by Trinity Tape & Marking, LLC, Christy’s Detectable Marking Tape, or approved equal.

### 2.02 TRACER WIRE

A. A purple 12 AWG high strength (452 lb break load, minimum) high carbon 1055 grade steel, high strength solid copper-clad steel conductor, with HDPE insulation (30 mil thickness minimum) tracer wire shall be installed with all pipelines for the purposes of providing a continuous signal path for the use of electronic pipe locators to determine the pipe alignment after installation. Tracer wire shall be Copperhead High Strength 1230 CCS Tracer Wire or approved equal.

B. The wire shall be electrically continuous throughout the entire piping system, including farm turnout assemblies.

C. All splices shall be 3M DBR direct bury watertight connectors or approved equal.

D. Tracer wire shall be properly grounded at all dead ends and stubs. Grounding of tracer wire shall be achieved by use of a drive-in magnesium grounding anode rod with a minimum of 20 feet of copper wire connected to an anode (minimum wight of 1.5 pound) specifically manufactured for this purpose and buried at the same elevation as the utility. The grounding rod shall be Copperhead 1.5 lb. drive-in magnesium anode, or approved equal.

E. Tracer wire shall be brought to the ground surface as shown on the plans.

F. At grade terminal boxes shall be traffic rated, constructed of a cast iron body with a purple resin two terminal switchable lid, and be equipped with an encapsulated magnet for easy detection. At grade terminal boxes shall be Copperhead SnakePit Roadway or approved equal.

### 2.03 DISTRICT MARKER POSTS

A. Marker posts shall be 4-inch diameter schedule 40 galvanized steel pipe meeting the requirements of ASTM A53.

B. Marker posts shall have a 4-inch wide color-coded reflective tape strip, adhering to the following color code:

| | | |
|---|---|---|
| 1. | Buried Valve | Red |
| 2. | Air Valve | Blue |
| 3. | Buried Manhole | Green |
| 4. | Blind Flange | Brown |
| 5. | Bumped Head | Pink |

C. Marker post shall be filled with cement mortar and placed in a concrete footing in accordance with Section 03300 – Concrete and the plans. Color shall be per the District.

D. Marker posts shall have 2-inch high black letters denoting the lateral and station number, and 1-inch black letters for the measured distances from the pole to the actual appurtenance. The letters shall be made of vinyl adhesive with 4 mil minimum thickness.

## PART 3 EXECUTION

### 3.01 INSTALLATION OF PIPE LOCATOR TAPE

A. Locator tape shall be installed 12-inches above the pipe and shall be centered over all pipelines, including farm turnouts.

### 3.02 INSTALLATION OF TRACER WIRE

A. Tracer wire shall be installed with all pipelines, centered on and just above the top or crown of the pipe.

B. Tracer wire shall be installed on all pipelines and turnout connections. The wire shall be installed in such a manner as to be able to properly trace all pipelines without loss or deterioration of signal or without the transmitted signal migrating off of the tracer wire.

C. The tracer wire shall be securely taped to the pipe every 8 to 10 feet, and on each side of a valve or fitting.

D. At each valve, air valve, blind flange, and connection to existing pipelines, the wire shall be brought up to the surface as shown on the Drawings.

E. Except for approved splice connections, the tracer wire shall be continuous and without splices from each tracer wire access point. Where any approved spliced-in connections occur, direct bury watertight connectors shall be used to provide electrical continuity.

F. Spliced connections between the main line tracer wire and branch connection tracer (e.g. farm turnouts) wire shall only be allowed at water main tees, crosses or at iron or copper

water services where a portion of the branch connection water main or water service is replaced with non-iron or non-copper material. The branch connection tracer wire shall be a single tracer wire properly spliced to the main line tracer wire. Where the existing branch connection is neither iron nor copper, then the new branch connection tracer wire shall be properly spliced to the existing tracer wire on the branch connection.

G. At tees, the three wires shall be joined using a single 3-way lockable connector. At crosses, the four wires shall be joined using a 4-way connector.

H. Tracer wire on all farm turnouts shall terminate above ground within the existing concrete turnout collar as shown on the Drawings.

I. Tracer Wire Access Points shall be as shown on the drawings.

J. Testing Requirements

1. The Contractor shall notify the District/Engineer that the tracer wire is ready for testing.
2. The Contractor shall retain a third-party specialist to facilitate a continuity test on the tracer wire. The Contractor shall submit a certified report by the third-party testing service stating that the tracer wire is performing satisfactorily.
3. The Contractor shall perform a continuity test on all tracer wire in the presence of the Engineer. This verification shall be performed upon completion of rough grading and prior to final pavement.
4. All tests made must be reviewed and approved by the Engineer before the work is accepted. The Engineer reserves the right to spot check any or all tests performed. All construction defects must be repaired and retested before the final acceptance is made.
5. If the tracer wire is found to be not continuous after testing, the Contractor shall repair or replace the failed segment of the wire as specified herein to the satisfaction of the Engineer at no additional cost to the District.

## 3.03 DISTRICT MARKER POSTS

A. Marker posts shall be located at each buried pipe appurtenance.

B. The District will determine the final placement at specific locations in the field.

C. Marker posts shall be constructed as shown on the Drawings.

****END OF SECTION****

# SECTION 15162

# PIPE COUPLINGS

## PART 1 GENERAL

### 1.01 DESCRIPTION

A. This section describes the requirement for materials and installation of pipe couplings for PVC, ACP, and RCP.

B. Provide materials, equipment and labor required to execute this work as indicated on the drawings, specified herein and necessary to complete the work of this section.

### 1.02 RELATED SECTIONS

A. Section C General Conditions, Section D Special Conditions, and the Drawings shall apply to this section. This section may require direct correlation with the following sections of the contract:

1. Section 02223 – Excavation, Backfilling, and Compacting.
2. Section 09900 – Protective Coatings.
3. Section 15042 – Hydrostatic Testing of Pressure Pipelines.
4. Section 15051 – Installation of Pressure Pipelines.
5. Section 15100 – Valves.

### 1.03 REFERENCES

A. The following publications form a part of this specification to the extent referenced.

1. American Society for Testing and Materials (ASTM)
    a. ASTM A 36 – Standard Specification for Carbon Structural Steel.
    b. ASTM A 193 – Standard Specification for Alloy-Steel and Stainless Steel Bolting for High Temperature or High Pressure Service and Other Special Purpose Applications.
    c. ASTM A 194 – Standard Specification for Carbon Steel, Alloy Steel, and Stainless Steel Nuts for Bolts for High Pressure or High Temperature Service, or Both.
    d. ASTM D 2000 – Standard Classification System for Rubber Products in Automotive Applications.
2. American Water Works Association (AWWA)
    a. AWWA C105 – Polyethylene Encasement for Ductile-Iron Pipe Systems

b. AWWA C207 – Steel Pipe Flanges for Waterworks Service – Sizes 4 in. through 144 in.

c. AWWA C213 – Fusion-Bonded Epoxy Coatings and Linings for Steel Water Pipe and Fittings

d. AWWA C219 – Bolted, Sleeve-Type Couplings for Plain-End Pipe

e. AWWA C223 – Fabricated Steel and Stainless-Steel Tapping Sleeves

## 1.04 SUBMITTALS

A. Shop drawings shall be submitted in accordance with Article D-8 of Section D, and as specified herein.

B. Affidavits of compliance with standards referenced in this specification shall be provided.

C. Submit the manufacturer's catalog data on pipe couplings. Show manufacture's model or figure number for each type of coupling or joint for each type of pipe material for which couplings are used.

D. Submit the manufacturer's recommended torques to which the coupling bolts shall be tightened for the flexible gasket sleeve-type compression pipe couplings.

E. Show materials of construction by ASTM reference and grade. Show dimensions.

F. Show number, size, and material of construction of the rods and lugs for each thrust harness.

G. Submit coating product information and data.

## 1.05 QUALITY ASSURANCE

A. Use adequate numbers of skilled workmen trained and experienced in necessary trades and crafts and completely familiar with specified requirements and methods for proper performance of Work of this section.

# PART 2 PRODUCTS

## 2.01 TRANSITION COUPLINGS

A. Connecting Existing Concrete Pipe to New PVC Irrigation Pipe

1. Transition couplings for connecting existing plain end concrete to plain end PVC Pipe having different outside diameters shall be manufactured in accordance with AWWA C219.

2. Transition couplings shall be fusion bonded epoxy lined and coated (12 mils DFT) per AWWA C213.

3. Materials of construction shall be as follows:

| Component | Material | Specification |
|---|---|---|
| Body | Steel | ASTM A 36 |
| End Ring | Steel | ASTM A 36 |
| Bolts and Nuts | 316 Stainless Steel | ASTM A 193/194, G9M |
| Gaskets | BUNA-N | ASTM D 2000 |

4. Manufacturers

   a. Transition Couplings shall be Baker Series 220, Romac RC400, Smith Blair 415 or equal.

## 2.02 RESTRAINED FLANGE COUPLING ADAPTER (FOR PVC PIPE)

A. Restrained flange coupling adapters shall be made of ductile iron conforming to ASTM A 536 and have flange bolt circles compatible with AWWA C900 PVC Pipe and AWWA C110 Ductile Iron Fittings.

B. Coupling shall be designed and manufactured in accordance with AWWA C219.

C. Restrained flange coupling adapters shall be fusion bonded epoxy lined and coated (12 mils DFT) per AWWA C213.

D. Materials of Construction shall be as follows:

| Component | Material | Specification |
|---|---|---|
| Flange Body | Ductile Iron | ASTM A 536 |
| Restraining Lugs | Ductile Iron | ASTM A 536 |
| Bolts | 316 Stainless Steel | ASTM A 193 |
| Gaskets | BUNA-N | ASTM D 2000 |

E. Restrained flange coupling adapters shall be EBAA Iron 2100 Megaflange, Romac RFCA-PVC, or approved equal.

## 2.03 WIDE RANGE FLANGE COUPLING ADAPTERS

A. Connecting Existing Asbestos Cement, Concrete Pipe to New PVC Irrigation Pipe

1. Wide range flange coupling adapters shall be made of steel conforming to ASTM A 36 and have flange bolt circles compatible with AWWA C900 PVC Pipe and AWWA C110 Ductile Iron Fittings.

2. Coupling shall be designed and manufactured in accordance with AWWA C219.

3. Flange coupling adapters shall be fusion bonded epoxy lined and coated (12 mils DFT) per AWWA C213.

4. Materials of Construction shall be as follows:

| Component | Material | Specification |
|---|---|---|
| Flange | Steel | ASTM A 36 |
| End Ring and Body | Steel | ASTM A 36 |
| Bolts | 316 Stainless Steel | ASTM A 193 |
| Gaskets | BUNA-N | ASTM D 2000 |

5. Wide range flange coupling adapters shall be Hymax flange adaptor or Hymax long body flange adaptor.

## PART 3 EXECUTION

### 3.01 INSTALLATION OF TRANSITION COUPLINGS

A. Connection to the existing concrete pipe shall be completed in the presence of the District. The Districts existing reinforced concrete pipe is known to be brittle. Extreme caution should be used while working on or near the existing pipe.

B. Couplings shall be installed in strict accordance with the manufacturer's recommendations and requirements.

C. Oil, scale, rust, and dirt shall be cleaned from pipe ends. Gaskets shall be cleaned before installing.

D. Bolt threads shall be lubricated with nickel based anti-seize compound, approved for use on stainless steel, prior to installation.

### 3.02 INSTALLATION OF RESTRAINED FLANGE COUPLING ADAPTERS

A. Couplings shall be installed in strict accordance with the manufacturer's recommendations and requirements.

B. Oil, scale, rust, and dirt shall be cleaned from pipe ends. Gaskets shall be cleaned before installing.

C. Bolt threads shall be lubricated with nickel based anti-seize compound, approved for use on stainless steel, prior to installation.

## 3.03 INSTALLATION OF WIDE RANGE FLANGE COUPLING ADAPTERS

A. Connection to the existing concrete pipe shall be completed in the presence of the District. The Districts existing reinforced concrete pipe is known to be brittle. Extreme caution should be used while working on or near the existing pipe.

B. Couplings shall be installed in strict accordance with the manufacturer's recommendations and requirements.

C. Oil, scale, rust, and dirt shall be cleaned from pipe ends. Gaskets shall be cleaned before installing.

D. Bolt threads shall be lubricated with nickel based anti-seize compound, approved for use on stainless steel, prior to installation.

## 3.04 PAINTING AND COATING

A. Exterior

1. Exterior surfaces of couplings shall be factory coated as specified herein. Field touchup and repair shall in accordance with applicable AWWA standards, the coating manufacturer's instructions, and per Section 09900 – Protective Coatings.
2. The Contractor shall apply an additional finish coat to exposed (atmosphere) items in accordance with Section 09900 – Protective Coatings – Coating System A. Color to be selected by the District. Submit color chart for review and approval.
3. After installation, buried couplings shall be wrapped with 8-mil polyethylene wrap per AWWA C105 in accordance with Section 15051 – Installation of Pressure Pipelines.

B. Interior

1. Exterior surfaces of couplings shall be factory coated as specified herein. Field touchup and repair shall in accordance with applicable AWWA standards, the coating manufacturer's instructions, and per Section 09900 – Protective Coatings.

## 3.05 HYDROSTATIC FIELD TESTING

A. Flexible pipe couplings and expansion joints shall be hydrostatically tested in place with the pipe being tested. Testing shall be performed in accordance with Section 15042 – Hydrostatic Testing of Pressure Pipelines.

****END OF SECTION****

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## Appendix A – Prevailing Wage Determination

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"General Decision Number: CA20250020 01/24/2025

Superseded General Decision Number: CA20240020

State: California

Construction Types: Building, Heavy (Heavy and Dredging) and Highway

Counties: Inyo, Kern and Mono Counties in California.

BUILDING CONSTRUCTION PROJECTS; DREDGING PROJECTS (does not include hopper dredge work); HEAVY CONSTRUCTION PROJECTS (does not include water well drilling); HIGHWAY CONSTRUCTION PROJECTS.

Note: Contracts subject to the Davis-Bacon Act are generally required to pay at least the applicable minimum wage rate required under Executive Order 14026 or Executive Order 13658. Please note that these Executive Orders apply to covered contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but do not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(1).

| | |
|---|---|
| If the contract is entered into on or after January 30, 2022, or the contract is renewed or extended (e.g., an option is exercised) on or after January 30, 2022: | . Executive Order 14026 generally applies to the contract.<br>. The contractor must pay all covered workers at least $17.75 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in 2025. |
| If the contract was awarded on or between January 1, 2015 and January 29, 2022, and the contract is not renewed or extended on or after January 30, 2022: | . Executive Order 13658 generally applies to the contract.<br>. The contractor must pay all covered workers at least $13.30 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on that contract in 2025. |

The applicable Executive Order minimum wage rate will be adjusted annually. If this contract is covered by one of the Executive Orders and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must still submit a conformance request.

Additional information on contractor requirements and worker protections under the Executive Orders is available at http://www.dol.gov/whd/govcontracts.

| Modification Number | Publication Date |
|---|---|
| 0 | 01/03/2025 |
| 1 | 01/10/2025 |
| 2 | 01/24/2025 |

ASBE0005-001 09/01/2023

INYO AND KERN

| | Rates | Fringes |
|---|---|---|
| Fire Stop Technician (Application of Firestopping Materials for wall openings and penetrations in walls, floors, ceilings and curtain walls) | $ 36.97 | 20.36 |
| Insulator/asbestos worker (Includes the application of all insulating materials, protective coverings, coatings & finishes to all types of mechanical systems) | $ 49.58 | 25.27 |

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ASBE0005-005 07/04/2022

INYO AND KERN

| | Rates | Fringes |
|---|---|---|
| Asbestos Removal worker/hazardous material handler (Includes preparation, wetting, stripping, removal, scrapping, vacuuming, bagging and disposing of all insulation materials from mechanical systems, whether they contain asbestos or not) | $ 23.52 | 13.37 |

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ASBE0016-003 01/01/2024

MONO

| | Rates | Fringes |
|---|---|---|
| Asbestos Workers/Insulator (Includes the application of all insulating materials, protective coverings, coatings, and finishes to all types of mechanical systems) | $ 64.56 | 25.07 |

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BOIL0092-005 01/01/2024

INYO AND KERN

| | Rates | Fringes |
|---|---|---|
| BOILERMAKER | $ 51.98 | 42.11 |

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BOIL0549-003 01/01/2021

MONO COUNTY

| | Rates | Fringes |
|---|---|---|
| BOILERMAKER | $ 45.60 | 38.99 |

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* BRCA0004-005 05/01/2024

| | Rates | Fringes |
|---|---|---|
| BRICKLAYER; MARBLE SETTER | $ 45.53 | 20.29 |

*The wage scale for prevailing wage projects performed in Blythe, China lake, Death Valley, Fort Irwin, Twenty-Nine Palms, Needles and 1-15 corridor (Barstow to the Nevada State Line) will be Three Dollars ($3.00) above the standard San Bernardino/Riverside County hourly wage rate

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BRCA0018-010 09/01/2023

| | Rates | Fringes |
|---|---|---|
| TERRAZZO FINISHER | $ 39.95 | 14.65 |
| TERRAZZO WORKER/SETTER | $ 47.85 | 15.14 |

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BRCA0018-011 06/01/2023

| | Rates | Fringes |
|---|---|---|
| TILE LAYER | $ 48.29 | 19.18 |

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BRCA0018-012 06/01/2023

KERN

| | Rates | Fringes |
|---|---|---|
| MARBLE FINISHER | $ 40.21 | 15.23 |
| TILE FINISHER | $ 34.78 | 13.64 |

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CARP0213-002 07/01/2021

| | Rates | Fringes |
|---|---|---|
| Diver | | |
| (1) Wet | $ 834.40 | 16.28 |
| (2) Standby | $ 445.84 | 16.28 |
| (3) Tender | $ 437.84 | 16.28 |
| (4) Assistant Tender | $ 413.84 | 16.28 |

Amounts in ""Rates' column are per day

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CARP0213-004 01/01/2024

| | Rates | Fringes |
|---|---|---|
| Drywall | | |
| DRYWALL INSTALLER/LATHER | $ 48.86 | 22.88 |
| STOCKER/SCRAPPER | $ 20.80 | 9.97 |

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CARP0661-001 07/01/2021

| | Rates | Fringes |
|---|---|---|
| CARPENTER | | |

(01) Carpenter, cabinet installer, insulation installer, floor worker and acoustical installer....$ 51.03 16.28
(02) Millwright.....$ 52.10 16.48
(03) Piledrivermen; Derrick barge; Bridge or Dock Carpenter; Heavy framer; Rockslinger; Rock Bargeman; Scowman.....$ 51.73 16.28
(04) Shingler (Commercial).$ 51.17 16.28
(05) Table Power Saw Operator.....$ 52.13 16.28
(06) Pneumatic Nailer or Power Stapler.....$ 51.29 16.28
(07) Roof Loader of Shingles (Commercial).....$ 38.92 16.28
(08) Saw Filer.....$ 51.03 16.28
(09) Scaffold Builder.....$ 42.80 16.28

FOOTNOTE: Work of forming in the construction of open cut sewers or storm drains, on operations in which horizontal lagging is used in conjunction with steel H-Beams driven or placed in pre-drilled holes, for that portion of a lagged trench against which concrete is poured, namely, as a substitute for back forms (which work is performed by piledrivers): $0.13 per hour additional.

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CARP0721-001 07/01/2021

| | Rates | Fringes |
|---|---|---|
| Modular Furniture Installer.....$ 21.85 | | 7.15 |

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ELEC0428-001 12/30/2024

| | Rates | Fringes |
|---|---|---|
| CABLE SPLICER | | |
| China Lake Naval Weapons Center, Edwards AFB..... | $ 71.07 | 3%+20.19 |
| Remainder of Kern County.... | $ 62.32 | 3%+20.19 |
| ELECTRICIAN | | |
| China Lake Naval Weapons Center, Edwards AFB..... | $ 65.40 | 3%+20.19 |
| Remainder of Kern County.... | $ 53.65 | 3%+20.19 |

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ELEC0428-003 12/31/2024

COMMUNICATIONS AND SYSTEMS WORK

KERN COUNTY

| | Rates | Fringes |
|---|---|---|
| Communications System Installer | | |
| China Lake Naval Weapons Center.....$ 54.30 | | 3%+19.64 |
| Edwards AFB..... | $ 50.79 | 3%+19.64 |
| KERN COUNTY..... | $ 44.66 | 3%+19.64 |

SCOPE OF WORK:
Installation, testing, service and maintenance of systems

utilizing the transmission and/or transference of voice, sound, vision and digital for commercial, educational, security and entertainment purposes for the following: TV monitoring and surveillance, background-foreground music, intercom and telephone interconnect, inventory control systems, microwave transmission, multi-media, multiplex, nurse call systems, radio page, school intercom and sound, burglar alarms, fire alarm (see last paragraph below) and low voltage master clock systems in commercial buildings. Communication Systems that transmit or receive information and/or control systems that are intrinsic to the above listed systems; inclusion or exclusion of terminations and testings of conductors determined by their function; excluding all other data systems or multiple systems which include control function or power supply; excluding installation of raceway systems, conduit systems, line voltage work, and energy management systems. Fire alarm work shall be performed at the current inside wireman total cost package.

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ELEC0477-001 06/01/2024

INYO AND MONO

| | Rates | Fringes |
|---|---|---|
| ELECTRICIAN | $ 53.15 | 3%+27.48 |

CABLE SPLICER: $1.50 above Electrician.
TUNNEL WORK: 10% above Electrician.

ZONE PAY:
Zone A - 80 road miles from Post Office, 455 Orange Show Lane, San Bernardino, will be a free zone for all contractors
Zone B - Any work performed outside Zone A's 80 road miles, shall add $12.00 per hour to the current wage scale.

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ELEC1245-001 06/01/2024

| | Rates | Fringes |
|---|---|---|
| LINE CONSTRUCTION | | |
| (1) Lineman; Cable splicer | $ 70.16 | 24.46 |
| (2) Equipment specialist (operates crawler tractors, commercial motor vehicles, backhoes, trenchers, cranes (50 tons and below), overhead & underground distribution line equipment) | $ 53.30 | 22.01 |
| (3) Groundman | $ 40.76 | 21.51 |
| (4) Powderman | $ 51.87 | 18.79 |

HOLIDAYS: New Year's Day, M.L. King Day, Memorial Day, Independence Day, Labor Day, Veterans Day, Thanksgiving Day and day after Thanksgiving, Christmas Day

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ELEV0018-001 01/01/2024

| | Rates | Fringes |
|---|---|---|

ELEVATOR MECHANIC.....$ 66.63 37.885+a+b

FOOTNOTE:
a. PAID VACATION: Employer contributes 8% of regular hourly rate as vacation pay credit for employees with more than 5 years of service, and 6% for 6 months to 5 years of service.

b. PAID HOLIDAYS: New Year's Day, Memorial Day, Independence Day, Labor Day, Veterans' Day, Thanksgiving Day, Friday after Thanksgiving, and Christmas Day.

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ENGI0012-004 08/01/2024

| | Rates | Fringes |
|---|---|---|
| OPERATOR: Power Equipment (DREDGING) | | |
| (1) Leverman | $ 64.10 | 38.75 |
| (2) Dredge dozer | $ 58.13 | 38.75 |
| (3) Deckmate | $ 58.02 | 38.75 |
| (4) Winch operator (stern winch on dredge) | $ 57.47 | 38.75 |
| (5) Fireman-Oiler, Deckhand, Bargeman, Leveehand | $ 56.93 | 38.75 |
| (6) Barge Mate | $ 57.54 | 38.75 |

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ENGI0012-024 07/01/2023

| | Rates | Fringes |
|---|---|---|
| OPERATOR: Power Equipment (All Other Work) | | |
| GROUP 1 | $ 53.90 | 32.80 |
| GROUP 2 | $ 54.68 | 32.80 |
| GROUP 3 | $ 54.97 | 32.80 |
| GROUP 4 | $ 56.46 | 32.80 |
| GROUP 6 | $ 56.68 | 32.80 |
| GROUP 8 | $ 56.79 | 32.80 |
| GROUP 10 | $ 56.91 | 32.80 |
| GROUP 12 | $ 57.08 | 32.80 |
| GROUP 13 | $ 57.18 | 32.80 |
| GROUP 14 | $ 57.21 | 32.80 |
| GROUP 15 | $ 57.29 | 32.80 |
| GROUP 16 | $ 57.41 | 32.80 |
| GROUP 17 | $ 57.58 | 32.80 |
| GROUP 18 | $ 57.68 | 32.80 |
| GROUP 19 | $ 57.79 | 32.80 |
| GROUP 20 | $ 57.91 | 32.80 |
| GROUP 21 | $ 58.08 | 32.80 |
| GROUP 22 | $ 58.18 | 32.80 |
| GROUP 23 | $ 58.29 | 32.80 |
| GROUP 24 | $ 58.41 | 32.80 |
| GROUP 25 | $ 58.58 | 32.80 |
| OPERATOR: Power Equipment (Cranes, Piledriving & Hoisting) | | |
| GROUP 1 | $ 55.25 | 32.80 |
| GROUP 2 | $ 56.03 | 32.80 |
| GROUP 3 | $ 56.32 | 32.80 |
| GROUP 4 | $ 56.46 | 32.80 |
| GROUP 5 | $ 56.68 | 32.80 |
| GROUP 6 | $ 56.79 | 32.80 |

| | | | |
|---|---|---|---|
| GROUP | 7 | $ 56.91 | 32.80 |
| GROUP | 8 | $ 57.08 | 32.80 |
| GROUP | 9 | $ 57.25 | 32.80 |
| GROUP | 10 | $ 58.25 | 32.80 |
| GROUP | 11 | $ 59.25 | 32.80 |
| GROUP | 12 | $ 60.25 | 32.80 |
| GROUP | 13 | $ 61.25 | 32.80 |

OPERATOR: Power Equipment
(Tunnel Work)

| | | | |
|---|---|---|---|
| GROUP | 1 | $ 55.75 | 32.80 |
| GROUP | 2 | $ 56.53 | 32.80 |
| GROUP | 3 | $ 56.82 | 32.80 |
| GROUP | 4 | $ 56.96 | 32.80 |
| GROUP | 5 | $ 57.18 | 32.80 |
| GROUP | 6 | $ 57.29 | 32.80 |
| GROUP | 7 | $ 57.41 | 32.80 |

PREMIUM PAY:
$10.00 per hour shall be paid on all Power Equipment Operator work on the followng Military Bases: China Lake Naval Reserve, Vandenberg AFB, Point Arguello, Seely Naval Base, Fort Irwin, Nebo Annex Marine Base, Marine Corp Logistics Base Yermo, Edwards AFB, 29 Palms Marine Base and Camp Pendleton

Workers required to suit up and work in a hazardous material environment: $2.00 per hour additional. Combination mixer and compressor operator on gunite work shall be classified as a concrete mobile mixer operator.

SEE ZONE DEFINITIONS AFTER CLASSIFICATIONS

POWER EQUIPMENT OPERATORS CLASSIFICATIONS

GROUP 1: Bargeman; Brakeman; Compressor operator; Ditch Witch, with seat or similar type equipment; Elevator operator-inside; Engineer Oiler; Forklift operator (includes loed, lull or similar types under 5 tons; Generator operator; Generator, pump or compressor plant operator; Pump operator; Signalman; Switchman

GROUP 2: Asphalt-rubber plant operator (nurse tank operator);Coil Tubing Rig Operator, Concrete mixer operator-skip type; Conveyor operator; Fireman; Forklift operator (includes loed, lull or similar types over 5 tons; Hydrostatic pump operator; oiler crusher (asphalt or concrete plant); Petromat laydown machine; PJU side dum jack; Screening and conveyor machine operator (or similar types); Skiploader (wheel type up to 3/4 yd. without attachment); Tar pot fireman; Temporary heating plant operator; Trenching machine oiler

GROUP 3: Asphalt-rubber blend operator; Bobcat or similar type (Skid steer); Equipment greaser (rack); Ford Ferguson (with dragtype attachments); Helicopter radioman (ground); Stationary pipe wrapping and cleaning machine operator

GROUP 4: Asphalt plant fireman; Backhoe operator (mini-max or similar type); Boring machine operator; Boxman or mixerman (asphalt or concrete); Chip spreading machine operator; Concrete cleaning decontamination machine operator; Concrete Pump Operator (small portable);Direct Push Operator (Geoprobe or similar types) Drilling machine operator, small auger types (Texoma super economatic or similar types - Hughes 100 or 200 or similar types -

drilling depth of 30' maximum); Equipment greaser (grease truck); Guard rail post driver operator; Highline cableway signalman; Hydra-hammer-aero stomper; Micro Tunneling (above ground tunnel); Power concrete curing machine operator; Power concrete saw operator; Power-driven jumbo form setter operator; Power sweeper operator; Rock Wheel Saw/Trencher; Roller operator (compacting); Screed operator (asphalt or concrete); Trenching machine operator (up to 6 ft.); Vacuum or much truck

GROUP 6: Articulating material hauler; Asphalt plant engineer; Batch plant operator; Bit sharpener; Concrete joint machine operator (canal and similar type); Concrete planer operator; Dandy digger; Deck engine operator; Derrickman (oilfield type); Drilling machine operator, bucket or auger types (Calweld 100 bucket or similar types - Watson 1000 auger or similar types - Texoma 330, 500 or 600 auger or similar types - drilling depth of 45' maximum); Drilling machine operator; Hydrographic seeder machine operator (straw, pulp or seed), Jackson track maintainer, or similar type; Kalamazoo Switch tamper, or similar type; Machine tool operator; Maginnis internal full slab vibrator, Mechanical berm, curb or gutter(concrete or asphalt); Mechanical finisher operator (concrete, Clary-Johnson-Bidwell or similar); Micro tunnel system (below ground); Pavement breaker operator (truck mounted); Road oil mixing machine operator; Roller operator (asphalt or finish), rubber-tired earth moving equipment (single engine, up to and including 25 yds. struck); Self-propelled tar pipelining machine operator; Skiploader operator (crawler and wheel type, over 3/4 yd. and up to and including 1-1/2 yds.); Slip form pump operator (power driven hydraulic lifting device for concrete forms); Tractor operator-bulldozer, tamper-scraper (single engine, up to 100 h.p. flywheel and similar types, up to and including D-5 and similar types); Tugger hoist operator (1 drum); Ultra high pressure waterjet cutting tool system operator; Vacuum blasting machine operator

GROUP 8: Asphalt or concrete spreading operator (tamping or finishing); Asphalt paving machine operator (Barber Greene or similar type); Asphalt-rubber distribution operator; Backhoe operator (up to and including 3/4 yd.), small ford, Case or similar types; Cable Bundling Machine Operator (excluding handheld); Cable Trenching Machine Operator (Spider Plow or similar types) Cast-in-place pipe laying machine operator; Combination mixer and compressor operator (gunite work); Compactor operator (self-propelled); Concrete mixer operator (paving); Crushing plant operator; Drill Doctor; Drilling machine operator, Bucket or auger types (Calweld 150 bucket or similar types - Watson 1500, 2000 2500 auger or similar types - Texoma 700, 800 auger or similar types - drilling depth of 60' maximum); Elevating grader operator; Grade checker; Gradall operator; Grouting machine operator; Heavy-duty repairman; Heavy equipment robotics operator; Kalamazoo balliste regulator or similar type; Kolman belt loader and similar type; Le Tourneau blob compactor or similar type; Loader operator (Athey, Euclid, Sierra and similar types); Mobark Chipper or similar; Ozzie padder or similar types; P.C. slot saw; Pneumatic concrete placing machine operator (Hackley-Presswell or similar type); Pumpcrete gun operator; RCM Cementing Unit Operator, Rail/Switch Grinder Operator (Harsco or similar types) Rock Drill or similar types; Rotary drill operator

(excluding caisson type); Rubber-tired earth-moving equipment operator (single engine, caterpillar, Euclid, Athey Wagon and similar types with any and all attachments over 25 yds. up to and including 50 cu. yds. struck); Rubber-tired earth-moving equipment operator (multiple engine up to and including 25 yds. struck); Rubber-tired scraper operator (self-loading paddle wheel type-John Deere, 1040 and similar single unit); Self- propelled curb and gutter machine operator; Shuttle buggy; Skiploader operator (crawler and wheel type over 1-1/2 yds. up to and including 6-1/2 yds.); Soil remediation plant operator; Surface heaters and planer operator; Tractor compressor drill combination operator; Tractor operator (any type larger than D-5 - 100 flywheel h.p. and over, or similar-bulldozer, tamper, scraper and push tractor single engine); Tractor operator (boom attachments), Traveling pipe wrapping, cleaning and bendng machine operator; Trenching machine operator (over 6 ft. depth capacity, manufacturer's rating); trenching Machine with Road Miner attachment (over 6 ft depth capacity): Ultra high pressure waterjet cutting tool system mechanic; Water pull (compaction) operator

GROUP 10: Drilling machine operator, Bucket or auger types (Calweld 200 B bucket or similar types-Watson 3000 or 5000 auger or similar types-Texoma 900 auger or similar types-drilling depth of 105' maximum); Dual drum mixer, dynamic compactor LDC350 (or similar types); Monorail locomotive operator (diesel, gas or electric); Motor patrol-blade operator (single engine); Multiple engine tractor operator (Euclid and similar type-except Quad 9 cat.); Rubber-tired earth-moving equipment operator (single engine, over 50 yds. struck); Pneumatic pipe ramming tool and similar types; Prestressed wrapping machine operator; Rubber-tired earth-moving equipment operator (single engine, over 50 yds. struck); Rubber tired earth moving equipment operator (multiple engine, Euclid, caterpillar and similar over 25 yds. and up to 50 yds. struck), Tower crane repairman; Tractor loader operator (crawler and wheel type over 6-1/2 yds.); Woods mixer operator (and similar Pugmill equipment)

GROUP 12: Auto grader operator; Automatic slip form operator; Drilling machine operator, bucket or auger types (Calweld, auger 200 CA or similar types - Watson, auger 6000 or similar types - Hughes Super Duty, auger 200 or similar types - drilling depth of 175' maximum); Hoe ram or similar with compressor; Mass excavator operator less tha 750 cu. yards; Mechanical finishing machine operator; Mobile form traveler operator; Motor patrol operator (multi-engine); Pipe mobile machine operator; Rubber-tired earth- moving equipment operator (multiple engine, Euclid, Caterpillar and similar type, over 50 cu. yds. struck); Rubber-tired self- loading scraper operator (paddle-wheel-auger type self-loading - two (2) or more units)

GROUP 13: Rubber-tired earth-moving equipment operator operating equipment with push-pull system (single engine, up to and including 25 yds. struck)

GROUP 14: Canal liner operator; Canal trimmer operator; Remote- control earth-moving equipment operator (operating a second piece of equipment: $1.00 per hour additional); Wheel excavator operator (over 750 cu. yds.)

GROUP 15: Rubber-tired earth-moving equipment operator, operating equipment with push-pull system (single engine, Caterpillar, Euclid, Athey Wagon and similar types with any and all attachments over 25 yds. and up to and including 50 yds. struck); Rubber-tired earth-moving equipment operator, operating equipment with push-pull system (multiple engine-up to and including 25 yds. struck)

GROUP 16: Rubber-tired earth-moving equipment operator, operating equipment with push-pull system (single engine, over 50 yds. struck); Rubber-tired earth-moving equipment operator, operating equipment with push-pull system (multiple engine, Euclid, Caterpillar and similar, over 25 yds. and up to 50 yds. struck)

GROUP 17: Rubber-tired earth-moving equipment operator, operating equipment with push-pull system (multiple engine, Euclid, Caterpillar and similar, over 50 cu. yds. struck); Tandem tractor operator (operating crawler type tractors in tandem - Quad 9 and similar type)

GROUP 18: Rubber-tired earth-moving equipment operator, operating in tandem (scrapers, belly dumps and similar types in any combination, excluding compaction units - single engine, up to and including 25 yds. struck)

GROUP 19: Rotex concrete belt operator (or similar types); Rubber-tired earth-moving equipment operator, operating in tandem (scrapers, belly dumps and similar types in any combination, excluding compaction units - single engine, Caterpillar, Euclid, Athey Wagon and similar types with any and all attachments over 25 yds.and up to and including 50 cu. yds. struck); Rubber-tired earth-moving equipment operator, operating in tandem (scrapers, belly dumps and similar types in any combination, excluding compaction units - multiple engine, up to and including 25 yds. struck)

GROUP 20: Rubber-tired earth-moving equipment operator, operating in tandem (scrapers, belly dumps and similar types in any combination, excluding compaction units - single engine, over 50 yds. struck); Rubber-tired earth-moving equipment operator, operating in tandem (scrapers, belly dumps, and similar types in any combination, excluding compaction units - multiple engine, Euclid, Caterpillar and similar, over 25 yds. and up to 50 yds. struck)

GROUP 21: Rubber-tired earth-moving equipment operator, operating in tandem (scrapers, belly dumps and similar types in any combination, excluding compaction units - multiple engine, Euclid, Caterpillar and similar type, over 50 cu. yds. struck)

GROUP 22: Rubber-tired earth-moving equipment operator, operating equipment with the tandem push-pull system (single engine, up to and including 25 yds. struck)

GROUP 23: Rubber-tired earth-moving equipment operator, operating equipment with the tandem push-pull system (single engine, Caterpillar, Euclid, Athey Wagon and similar types with any and all attachments over 25 yds. and up to and including 50 yds. struck); Rubber-tired earth-moving equipment operator, operating with the tandem push-pull system (multiple engine, up to and including 25 yds. struck)

GROUP 24: Rubber-tired earth-moving equipment operator, operating equipment with the tandem push-pull system (single engine, over 50 yds. struck); Rubber-tired earth-moving equipment operator, operating equipment with the tandem push-pull system (multiple engine, Euclid, Caterpillar and similar, over 25 yds. and up to 50 yds. struck)

GROUP 25: Concrete pump operator-truck mounted; Rubber-tired earth-moving equipment operator, operating equipment with the tandem push-pull system (multiple engine, Euclid, Caterpillar and similar type, over 50 cu. yds. struck); Spyder Excavator Operator, with all attachments

CRANES, PILEDRIVING AND HOISTING EQUIPMENT CLASSIFICATIONS

GROUP 1: Engineer oiler; Fork lift operator (includes loed, lull or similar types)

GROUP 2: Truck crane oiler

GROUP 3: A-frame or winch truck operator; Ross carrier operator (jobsite)

GROUP 4: Bridge-type unloader and turntable operator; Helicopter hoist operator

GROUP 5: Hydraulic boom truck; Stinger crane (Austin-Western or similar type); Tugger hoist operator (1 drum)

GROUP 6: Bridge crane operator; Cretor crane operator; Hoist operator (Chicago boom and similar type); Lift mobile operator; Lift slab machine operator (Vagtborg and similar types); Material hoist and/or manlift operator; Polar gantry crane operator; Self Climbing scaffold (or similar type); Shovel, backhoe, dragline, clamshell operator (over 3/4 yd. and up to 5 cu. yds. mrc); Tugger hoist operator

GROUP 7: Pedestal crane operator; Shovel, backhoe, dragline, clamshell operator (over 5 cu. yds. mrc); Tower crane repair; Tugger hoist operator (3 drum)

GROUP 8: Crane operator (up to and including 25 ton capacity); Crawler transporter operator; Derrick barge operator (up to and including 25 ton capacity); Hoist operator, stiff legs, Guy derrick or similar type (up to and including 25 ton capacity); Shovel, backhoe, dragline, clamshell operator (over 7 cu. yds., M.R.C.)

GROUP 9: Crane operator (over 25 tons and up to and including 50 tons mrc); Derrick barge operator (over 25 tons up to and including 50 tons mrc); Highline cableway operator; Hoist operator, stiff legs, Guy derrick or similar type (over 25 tons up to and including 50 tons mrc); K-crane operator; Polar crane operator; Self erecting tower crane operator maximum lifting capacity ten tons

GROUP 10: Crane operator (over 50 tons and up to and including 100 tons mrc); Derrick barge operator (over 50 tons up to and including 100 tons mrc); Hoist operator, stiff legs, Guy derrick or similar type (over 50 tons up to and including 100 tons mrc), Mobile tower crane operator (over 50 tons, up to and including 100 tons M.R.C.);

GROUP 11: Crane operator (over 100 tons and up to and including 200 tons mrc); Derrick barge operator (over 100 tons up to and including 200 tons mrc); Hoist operator, stiff legs, Guy derrick or similar type (over 100 tons up to and including 200 tons mrc); Mobile tower crane operator (over 100 tons up to and including 200 tons mrc) ; Tower crane operator and tower gantry

GROUP 12: Crane operator (over 200 tons up to and including 300 tons mrc); Derrick barge operator (over 200 tons up to and including 300 tons mrc); Hoist operator, stiff legs, Guy derrick or similar type (over 200 tons, up to and including 300 tons mrc); Mobile tower crane operator (over 200 tons, up to and including 300 tons mrc)

GROUP 13: Crane operator (over 300 tons); Derrick barge operator (over 300 tons); Helicopter pilot; Hoist operator, stiff legs, Guy derrick or similar type (over 300 tons); Mobile tower crane operator (over 300 tons)

TUNNEL CLASSIFICATIONS

GROUP 1: Skiploader (wheel type up to 3/4 yd. without attachment)

GROUP 2: Power-driven jumbo form setter operator

GROUP 3: Dinkey locomotive or motorperson (up to and including 10 tons)

GROUP 4: Bit sharpener; Equipment greaser (grease truck); Slip form pump operator (power-driven hydraulic lifting device for concrete forms); Tugger hoist operator (1 drum); Tunnel locomotive operator (over 10 and up to and including 30 tons)

GROUP 5: Backhoe operator (up to and including 3/4 yd.); Small Ford, Case or similar; Drill doctor; Grouting machine operator; Heading shield operator; Heavy-duty repairperson; Loader operator (Athey, Euclid, Sierra and similar types); Mucking machine operator (1/4 yd., rubber-tired, rail or track type); Pneumatic concrete placing machine operator (Hackley-Presswell or similar type); Pneumatic heading shield (tunnel); Pumpcrete gun operator; Tractor compressor drill combination operator; Tugger hoist operator (2 drum); Tunnel locomotive operator (over 30 tons)

GROUP 6: Heavy Duty Repairman

GROUP 7:  Tunnel mole boring machine operator

ENGINEERS ZONES

$1.00 additional per hour for all of IMPERIAL County and the portions of KERN, RIVERSIDE & SAN BERNARDINO Counties as defined below:

That area within the following Boundary:  Begin in San Bernardino County, approximately 3 miles NE of the intersection of I-15 and the California State line at that point which is the NW corner of Section 1, T17N,m R14E, San Bernardino Meridian.  Continue W in a straight line to that point which is the SW corner of the northwest quarter of Section 6, T27S, R42E, Mt. Diablo Meridian.  Continue North to the intersection with the Inyo County Boundary at that point which is the NE

corner of the western half of the northern quarter of Section 6, T25S, R42E, MDM. Continue W along the Inyo and San Bernardino County boundary until the intersection with Kern County, as that point which is the SE corner of Section 34, T24S, R40E, MDM. Continue W along the Inyo and Kern County boundary until the intersection with Tulare County, at that point which is the SW corner of the SE quarter of Section 32, T24S, R37E, MDM. Continue W along the Kern and Tulare County boundary, until that point which is the NW corner of T25S, R32E, MDM. Continue S following R32E lines to the NW corner of T31S, R32E, MDM. Continue W to the NW corner of T31S, R31E, MDM. Continue S to the SW corner of T32S, R31E, MDM. Continue W to SW corner of SE quarter of Section 34, T32S, R30E, MDM. Continue S to SW corner of T11N, R17W, SBM. Continue E along south boundary of T11N, SBM to SW corner of T11N, R7W, SBM. Continue S to SW corner of T9N, R7W, SBM. Continue E along south boundary of T9N, SBM to SW corner of T9N, R1E, SBM. Continue S along west boundary of R1E, SMB to Riverside County line at the SW corner of T1S, R1E, SBM. Continue E along south boundary of T1s, SBM (Riverside County Line) to SW corner of T1S, R10E, SBM. Continue S along west boundary of R10E, SBM to Imperial County line at the SW corner of T8S, R10E, SBM. Continue W along Imperial and Riverside county line to NW corner of T9S, R9E, SBM. Continue S along the boundary between Imperial and San Diego Counties, along the west edge of R9E, SBM to the south boundary of Imperial County/California state line. Follow the California state line west to Arizona state line, then north to Nevada state line, then continuing NW back to start at the point which is the NW corner of Section 1, T17N, R14E, SBM

$1.00 additional per hour for portions of SAN LUIS OBISPO, KERN, SANTA BARBARA & VENTURA as defined below:

That area within the following Boundary: Begin approximately 5 miles north of the community of Cholame, on the Monterey County and San Luis Obispo County boundary at the NW corner of T25S, R16E, Mt. Diablo Meridian. Continue south along the west side of R16E to the SW corner of T30S, R16E, MDM. Continue E to SW corner of T30S, R17E, MDM. Continue S to SW corner of T31S, R17E, MDM. Continue E to SW corner of T31S, R18E, MDM. Continue S along West side of R18E, MDM as it crosses into San Bernardino Meridian numbering area and becomes R30W. Follow the west side of R30W, SBM to the SW corner of T9N, R30W, SBM. Continue E along the south edge of T9N, SBM to the Santa Barbara County and Ventura County boundary at that point whch is the SW corner of Section 34.T9N, R24W, SBM, continue S along the Ventura County line to that point which is the SW corner of the SE quarter of Section 32, T7N, R24W, SBM. Continue E along the south edge of T7N, SBM to the SE corner to T7N, R21W, SBM. Continue N along East side of R21W, SBM to Ventura County and Kern County boundary at the NE corner of T8N, R21W. Continue W along the Ventura County and Kern County boundary to the SE corner of T9N, R21W. Continue North along the East edge of R21W, SBM to the NE corner of T12N, R21W, SBM. Continue West along the north edge of T12N, SBM to the SE corner of T32S, R21E, MDM. [T12N SBM is a think strip between T11N SBM and T32S MDM]. Continue North along the East side of R21E, MDM to the Kings County and Kern County border at the NE corner of T25S, R21E, MDM, continue West along the Kings County and Kern County Boundary until the intersection of San Luis Obispo County. Continue west along the Kings County and San Luis Obispo County boundary until the intersection with Monterey County. Continue West along the Monterey County and San Luis Obispo County boundary to the beginning point at the NW corner

of T25S, R16E, MDM.

$2.00 additional per hour for INYO and MONO Counties and the Northern portion of SAN BERNARDINO County as defined below:

That area within the following Boundary: Begin at the intersection of the northern boundary of Mono County and the California state line at the point which is the center of Section 17, T10N, R22E, Mt. Diablo Meridian. Continue S then SE along the entire western boundary of Mono County, until it reaches Inyo County at the point which is the NE corner of the Western half of the NW quarter of Section 2, T8S, R29E, MDM. Continue SSE along the entire western boundary of Inyo County, until the intersection with Kern County at the point which is the SW corner of the SE 1/4 of Section 32, T24S, R37E, MDM. Continue E along the Inyo and Kern County boundary until the intersection with San Bernardino County at that point which is the SE corner of section 34, T24S, R40E, MDM. Continue E along the Inyo and San Bernardino County boundary until the point which is the NE corner of the Western half of the NW quarter of Section 6, T25S, R42E, MDM. Continue S to that point which is the SW corner of the NW quarter of Section 6, T27S, R42E, MDM. Continue E in a straight line to the California and Nevada state border at the point which is the NW corner of Section 1, T17N, R14E, San Bernardino Meridian. Then continue NW along the state line to the starting point, which is the center of Section 18, T10N, R22E, MDM.

REMAINING AREA NOT DEFINED ABOVE RECIEVES BASE RATE

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IRON0155-002 01/01/2024

INYO and MONO COUNTIES

| | Rates | Fringes |
|---|---|---|
| IRONWORKER | $ 41.00 | 34.20 |

PREMIUM PAY:

$9.00 additional per hour at the following locations:

China Lake Naval Test Station, Edwards AFB

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IRON0155-003 01/01/2024

KERN COUNTY

| | Rates | Fringes |
|---|---|---|
| IRONWORKER | $ 47.45 | 34.90 |

PREMIUM PAY:

$9.00 additional per hour at the following locations:

China Lake Naval Test Station, Edwards AFB

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LABO0220-002 07/01/2022

KERN COUNTY

| | Rates | Fringes |
|---|---|---|
| LABORER (TUNNEL) | | |
| GROUP 1 | $ 45.68 | 23.30 |
| GROUP 2 | $ 46.00 | 23.30 |
| GROUP 3 | $ 46.46 | 23.30 |
| GROUP 4 | $ 47.15 | 23.30 |
| LABORER | | |
| GROUP 1 | $ 36.39 | 21.04 |
| GROUP 2 | $ 36.94 | 21.04 |
| GROUP 3 | $ 37.49 | 21.04 |
| GROUP 4 | $ 39.04 | 21.04 |
| GROUP 5 | $ 39.39 | 21.04 |

LABORER CLASSIFICATIONS

GROUP 1: Cleaning and handling of panel forms; Concrete screeding for rough strike-off; Concrete, water curing; Demolition laborer, the cleaning of brick if performed by a worker performing any other phase of demolition work, and the cleaning of lumber; Fire watcher, limber, brush loader, piler and debris handler; Flag person; Gas, oil and/or water pipeline laborer; Laborer, asphalt-rubber material loader; Laborer, general or construction; Laborer, general clean-up; Laborer, landscaping; Laborer, jetting; Laborer, temporary water and air lines; Material hose operator (walls, slabs, floors and decks); Plugging, filling of shee bolt holes; Dry packing of concrete; Railroad maintenance, repair track person and road beds; Streetcar and railroad construction track laborers; Rigging and signaling; Scaler; Slip form raiser; Tar and mortar; Tool crib or tool house laborer; Traffic control by any method; Window cleaner; Wire mesh pulling - all concrete pouring operations

GROUP 2: Asphalt shoveler; Cement dumper (on 1 yd. or larger mixer and handling bulk cement); Cesspool digger and installer; Chucktender; Chute handler, pouring concrete, the handling of the chute from readymix trucks, such as walls, slabs, decks, floors, foundation, footings, curbs, gutters and sidewalks; Concrete curer, impervious membrane and form oiler; Cutting torch operator (demolition); Fine grader, highways and street paving, airport, runways and similar type heavy construction; Gas, oil and/or water pipeline wrapper - pot tender and form person; Guinea chaser; Headerboard person - asphalt; Laborer, packing rod steel and pans; Membrane vapor barrier installer; Power broom sweeper (small); Riprap stonepaver, placing stone or wet sacked concrete; Roto scraper and tiller; Sandblaster (pot tender); Septic tank digger and installer(lead); Tank scaler and cleaner; Tree climber, faller, chain saw operator, Pittsburgh chipper and similar type brush shredder; Underground laborer, including caisson bellower

GROUP 3: Buggymobile person; Concrete cutting torch; Concrete pile cutter; Driller, jackhammer, 2-1/2 ft. drill steel or longer; Dri-pak-it machine; Gas, oil and/or water pipeline wrapper, 6-in. pipe and over, by any method, inside and out; High scaler (including drilling of same); Hydro seeder and similar type; Impact wrench multi-plate; Kettle person, pot person and workers applying asphalt, lay-kold, creosote, lime caustic and similar type materials

(""applying"" means applying, dipping, brushing or handling of such materials for pipe wrapping and waterproofing); Operator of pneumatic, gas, electric tools, vibrating machine, pavement breaker, air blasting, come-alongs, and similar mechanical tools not separately classified herein; Pipelayer's backup person, coating, grouting, making of joints, sealing, caulking, diapering and including rubber gasket joints, pointing and any and all other services; Rock slinger; Rotary scarifier or multiple head concrete chipping scarifier; Steel headerboard and guideline setter; Tamper, Barko, Wacker and similar type; Trenching machine, hand-propelled

GROUP 4: Asphalt raker, lute person, ironer, asphalt dump person, and asphalt spreader boxes (all types); Concrete core cutter (walls, floors or ceilings), grinder or sander; Concrete saw person, cutting walls or flat work, scoring old or new concrete; Cribber, shorer, lagging, sheeting and trench bracing, hand-guided lagging hammer; Head rock slinger; Laborer, asphalt- rubber distributor boot person; Laser beam in connection with laborers' work; Oversize concrete vibrator operator, 70 lbs. and over; Pipelayer performing all services in the laying and installation of pipe from the point of receiving pipe in the ditch until completion of operation, including any and all forms of tubular material, whether pipe, metallic or non-metallic, conduit and any other stationary type of tubular device used for the conveying of any substance or element, whether water, sewage, solid gas, air, or other product whatsoever and without regard to the nature of material from which the tubular material is fabricated; No-joint pipe and stripping of same; Prefabricated manhole installer; Sandblaster (nozzle person), water blasting, Porta Shot-Blast

GROUP 5: Blaster powder, all work of loading holes, placing and blasting of all powder and explosives of whatever type, regardless of method used for such loading and placing; Driller: All power drills, excluding jackhammer, whether core, diamond, wagon, track, multiple unit, and any and all other types of mechanical drills without regard to the form of motive power; Toxic waste removal

TUNNEL LABORER CLASSIFICATIONS

GROUP 1: Batch plant laborer; Changehouse person; Dump person; Dump person (outside); Swamper (brake person and switch person on tunnel work); Tunnel materials handling person; Nipper; Pot tender, using mastic or other materials (for example, but not by way of limitation, shotcrete, etc.)

GROUP 2: Chucktender, cabletender; Loading and unloading agitator cars;  Vibrator person, jack hammer, pneumatic tools (except driller);  Bull gang mucker, track person; Concrete crew, including rodder and spreader

GROUP 3: Blaster, driller, powder person; Chemical grout jet person; Cherry picker person; Grout gun person; Grout mixer person; Grout pump person; Jackleg miner; Jumbo person; Kemper and other pneumatic concrete placer operator; Miner, tunnel (hand or machine); Nozzle person; Operating of troweling and/or grouting machines; Powder person (primer house); Primer person; Sandblaster; Shotcrete person; Steel form raiser and setter; Timber person, retimber person, wood or steel; Tunnel Concrete finisher

GROUP 4: Diamond driller; Sandblaster; Shaft and raise work

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LABO0220-005 07/01/2022

KERN COUNTY

| | Rates | Fringes |
|---|---|---|
| Brick Tender | $ 37.32 | 21.45 |

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LABO0300-005 07/01/2024

| | Rates | Fringes |
|---|---|---|
| Asbestos Removal Laborer | $ 43.88 | 25.13 |

SCOPE OF WORK: Includes site mobilization, initial site cleanup, site preparation, removal of asbestos-containing material and toxic waste, encapsulation, enclosure and disposal of asbestos- containing materials and toxic waste by hand or with equipment or machinery; scaffolding, fabrication of temporary wooden barriers and assembly of decontamination stations.

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* LABO0345-001 07/01/2024

| | Rates | Fringes |
|---|---|---|
| LABORER (GUNITE) | | |
| GROUP 1 | $ 53.48 | 22.77 |
| GROUP 2 | $ 52.53 | 22.77 |
| GROUP 3 | $ 48.99 | 22.77 |

FOOTNOTE: GUNITE PREMIUM PAY: Workers working from a Bosn'n's Chair or suspended from a rope or cable shall receive 40 cents per hour above the foregoing applicable classification rates. Workers doing gunite and/or shotcrete work in a tunnel shall receive 35 cents per hour above the foregoing applicable classification rates, paid on a portal-to-portal basis. Any work performed on, in or above any smoke stack, silo, storage elevator or similar type of structure, when such structure is in excess of 75'-0"" above base level and which work must be performed in whole or in part more than 75'-0"" above base level, that work performed above the 75'-0"" level shall be compensated for at 35 cents per hour above the applicable classification wage rate.

GUNITE LABORER CLASSIFICATIONS

GROUP 1: Rodmen, Nozzlemen

GROUP 2: Gunmen

GROUP 3: Reboundmen

---

LABO0783-001 07/01/2022

INYO AND MONO COUNTIES

| | Rates | Fringes |
|---|---|---|

LABORER (TUNNEL)

| | | |
|---|---|---|
| GROUP 1 | $ 45.68 | 23.30 |
| GROUP 2 | $ 46.00 | 23.30 |
| GROUP 3 | $ 46.46 | 23.30 |
| GROUP 4 | $ 47.15 | 23.30 |

LABORER

| | | |
|---|---|---|
| GROUP 1 | $ 36.39 | 21.04 |
| GROUP 2 | $ 36.94 | 21.04 |
| GROUP 3 | $ 37.49 | 21.04 |
| GROUP 4 | $ 39.04 | 21.04 |
| GROUP 5 | $ 39.39 | 21.04 |

LABORER CLASSIFICATIONS

GROUP 1: Cleaning and handling of panel forms; Concrete screeding for rough strike-off; Concrete, water curing; Demolition laborer, the cleaning of brick if performed by a worker performing any other phase of demolition work, and the cleaning of lumber; Fire watcher, limber, brush loader, piler and debris handler; Flag person; Gas, oil and/or water pipeline laborer; Laborer, asphalt-rubber material loader; Laborer, general or construction; Laborer, general clean-up; Laborer, landscaping; Laborer, jetting; Laborer, temporary water and air lines; Material hose operator (walls, slabs, floors and decks); Plugging, filling of shee bolt holes; Dry packing of concrete; Railroad maintenance, repair track person and road beds; Streetcar and railroad construction track laborers; Rigging and signaling; Scaler; Slip form raiser; Tar and mortar; Tool crib or tool house laborer; Traffic control by any method; Window cleaner; Wire mesh pulling - all concrete pouring operations

GROUP 2: Asphalt shoveler; Cement dumper (on 1 yd. or larger mixer and handling bulk cement); Cesspool digger and installer; Chucktender; Chute handler, pouring concrete, the handling of the chute from readymix trucks, such as walls, slabs, decks, floors, foundation, footings, curbs, gutters and sidewalks; Concrete curer, impervious membrane and form oiler; Cutting torch operator (demolition); Fine grader, highways and street paving, airport, runways and similar type heavy construction; Gas, oil and/or water pipeline wrapper - pot tender and form person; Guinea chaser; Headerboard person - asphalt; Laborer, packing rod steel and pans; Membrane vapor barrier installer; Power broom sweeper (small); Riprap stonepaver, placing stone or wet sacked concrete; Roto scraper and tiller; Sandblaster (pot tender); Septic tank digger and installer(lead); Tank scaler and cleaner; Tree climber, faller, chain saw operator, Pittsburgh chipper and similar type brush shredder; Underground laborer, including caisson bellower

GROUP 3: Buggymobile person; Concrete cutting torch; Concrete pile cutter; Driller, jackhammer, 2-1/2 ft. drill steel or longer; Dri-pak-it machine; Gas, oil and/or water pipeline wrapper, 6-in. pipe and over, by any method, inside and out; High scaler (including drilling of same); Hydro seeder and similar type; Impact wrench multi-plate; Kettle person, pot person and workers applying asphalt, lay-kold, creosote, lime caustic and similar type materials (""applying"" means applying, dipping, brushing or handling of such materials for pipe wrapping and waterproofing); Operator of pneumatic, gas, electric tools, vibrating machine, pavement breaker, air blasting, come-alongs, and similar mechanical tools not separately classified herein; Pipelayer's backup person, coating, grouting, making of

joints, sealing, caulking, diapering and including rubber gasket joints, pointing and any and all other services; Rock slinger; Rotary scarifier or multiple head concrete chipping scarifier; Steel headerboard and guideline setter; Tamper, Barko, Wacker and similar type; Trenching machine, hand-propelled

GROUP 4: Asphalt raker, lute person, ironer, asphalt dump person, and asphalt spreader boxes (all types); Concrete core cutter (walls, floors or ceilings), grinder or sander; Concrete saw person, cutting walls or flat work, scoring old or new concrete; Cribber, shorer, lagging, sheeting and trench bracing, hand-guided lagging hammer; Head rock slinger; Laborer, asphalt- rubber distributor boot person; Laser beam in connection with laborers' work; Oversize concrete vibrator operator, 70 lbs. and over; Pipelayer performing all services in the laying and installation of pipe from the point of receiving pipe in the ditch until completion of operation, including any and all forms of tubular material, whether pipe, metallic or non-metallic, conduit and any other stationary type of tubular device used for the conveying of any substance or element, whether water, sewage, solid gas, air, or other product whatsoever and without regard to the nature of material from which the tubular material is fabricated; No-joint pipe and stripping of same; Prefabricated manhole installer; Sandblaster (nozzle person), water blasting, Porta Shot-Blast

GROUP 5: Blaster powder, all work of loading holes, placing and blasting of all powder and explosives of whatever type, regardless of method used for such loading and placing; Driller: All power drills, excluding jackhammer, whether core, diamond, wagon, track, multiple unit, and any and all other types of mechanical drills without regard to the form of motive power; Toxic waste removal

TUNNEL LABORER CLASSIFICATIONS

GROUP 1: Batch plant laborer; Changehouse person; Dump person; Dump person (outside); Swamper (brake person and switch person on tunnel work); Tunnel materials handling person; Nipper; Pot tender, using mastic or other materials (for example, but not by way of limitation, shotcrete, etc.)

GROUP 2: Chucktender, cabletender; Loading and unloading agitator cars; Vibrator person, jack hammer, pneumatic tools (except driller); Bull gang mucker, track person; Concrete crew, including rodder and spreader;

GROUP 3: Blaster, driller, powder person; Chemical grout jet person; Cherry picker person; Grout gun person; Grout mixer person; Grout pump person; Jackleg miner; Jumbo person; Kemper and other pneumatic concrete placer operator; Miner, tunnel (hand or machine); Nozzle person; Operating of troweling and/or grouting machines; Powder person (primer house); Primer person; Sandblaster; Shotcrete person; Steel form raiser and setter; Timber person, retimber person, wood or steel; Tunnel Concrete finisher

GROUP 4: Diamond driller; Sandblaster; Shaft and raise work

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LABO0783-004 07/01/2022

INYO AND MONO COUNTIES

| | Rates | Fringes |
|---|---|---|
| Brick Tender | $ 37.32 | 21.45 |

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LABO1184-001 07/01/2022

| | Rates | Fringes |
|---|---|---|
| Laborers: (HORIZONTAL DIRECTIONAL DRILLING) | | |
| (1) Drilling Crew Laborer | $ 40.69 | 18.25 |
| (2) Vehicle Operator/Hauler | $ 40.86 | 18.25 |
| (3) Horizontal Directional Drill Operator | $ 42.71 | 18.25 |
| (4) Electronic Tracking Locator | $ 44.71 | 18.25 |
| Laborers: (STRIPING/SLURRY SEAL) | | |
| GROUP 1 | $ 41.90 | 21.32 |
| GROUP 2 | $ 43.20 | 21.32 |
| GROUP 3 | $ 45.21 | 21.32 |
| GROUP 4 | $ 46.95 | 21.32 |

LABORERS - STRIPING CLASSIFICATIONS

GROUP 1: Protective coating, pavement sealing, including repair and filling of cracks by any method on any surface in parking lots, game courts and playgrounds; carstops; operation of all related machinery and equipment; equipment repair technician

GROUP 2: Traffic surface abrasive blaster; pot tender - removal of all traffic lines and markings by any method (sandblasting, waterblasting, grinding, etc.) and preparation of surface for coatings. Traffic control person: controlling and directing traffic through both conventional and moving lane closures; operation of all related machinery and equipment

GROUP 3: Traffic delineating device applicator: Layout and application of pavement markers, delineating signs, rumble and traffic bars, adhesives, guide markers, other traffic delineating devices including traffic control. This category includes all traffic related surface preparation (sandblasting, waterblasting, grinding) as part of the application process. Traffic protective delineating system installer: removes, relocates, installs, permanently affixed roadside and parking delineation barricades, fencing, cable anchor, guard rail, reference signs, monument markers; operation of all related machinery and equipment; power broom sweeper

GROUP 4: Striper: layout and application of traffic stripes and markings; hot thermo plastic; tape traffic stripes and markings, including traffic control; operation of all related machinery and equipment

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PAIN0036-009 09/01/2024

| | Rates | Fringes |
|---|---|---|
| DRYWALL FINISHER/TAPER | $ 45.20 | 26.82 |

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PAIN0036-021 07/01/2023

| | Rates | Fringes |
|---|---|---|
| Painters: (Including Lead Abatement) | | |
| (1) Journeyman Painter | $ 34.08 | 18.50 |
| (2) Repaint | $ 26.40 | 17.02 |
| (4) All other work | $ 34.08 | 18.50 |
| (5) Industrial | $ 41.42 | 19.04 |

REPAINT of any previously painted structure. Exceptions: work involving the aerospace industry, breweries, commercial recreational facilities, hotels which operate commercial establishments as part of hotel service, and sports facilities.
HIGH IRON & STEEL:

Aerial towers, towers, radio towers, smoke stacks, flag poles (any flag poles that can be finished from the ground with a ladder excluded), elevated water towers, steeples and domes in their entirety and any other extremely high and hazardous work, cooning steel, bos'n chair, or other similar devices, painting in other high hazardous work shall be classified as high iron & steel

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PAIN0169-002 01/01/2023

| | Rates | Fringes |
|---|---|---|
| GLAZIER | $ 44.33 | 28.88 |

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* PAIN1247-001 01/01/2025

| | Rates | Fringes |
|---|---|---|
| SOFT FLOOR LAYER | $ 45.15 | 19.43 |

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PLAS0200-007 08/03/2022

| | Rates | Fringes |
|---|---|---|
| PLASTERER | $ 47.37 | 19.64 |

U.S. MARINE CORPS-PICKLE MEADOW & MOUNTAIN WARFARE TRAINING CENTER:
$3.00 additional per hour.

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PLAS0500-002 07/01/2023

| | Rates | Fringes |
|---|---|---|
| CEMENT MASON/CONCRETE FINISHER | $ 44.00 | 27.11 |

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PLUM0345-001 09/01/2023

| | Rates | Fringes |
|---|---|---|
| PLUMBER | | |
| Landscape/Irrigation Fitter | $ 40.20 | 25.90 |
| Sewer & Storm Drain Work | $ 44.29 | 23.28 |

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PLUM0460-002 09/01/2024

| | Rates | Fringes |
|---|---|---|
| PLUMBER (Plumber, Pipefitter, Steamfitter, Refrigeration) | $ 59.48 | 26.61 |
| China Lake, Marine Warfare Training Center | $ 69.98 | 26.61 |
| Edwards Air Force Base | $ 66.48 | 26.61 |

FOOTNOTE: Work from a swinging scaffold, swinging basket, spider or from a bosun chair: 10% above the regular rate of pay for that day.

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ROOF0027-001 09/01/2024

| | Rates | Fringes |
|---|---|---|
| ROOFER | $ 45.76 | 16.86 |

FOOTNOTE: Work with pitch, pitch base of pitch impregnated products or any material containing coal tar pitch, on any building old or new, where both asphalt and pitchers are used in the application of a built-up roof or tear off: $2.00 per hour additional.

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SFCA0669-007 01/01/2024

| | Rates | Fringes |
|---|---|---|
| SPRINKLER FITTER | $ 45.31 | 27.91 |

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SHEE0105-003 07/01/2024

LOS ANGELES (South of a straight line drawn between Gorman and Big Pines)and Catalina Island, INYO, KERN (Northeast part, East of Hwy 395), MONO ORANGE, RIVERSIDE, AND SAN BERNARDINO COUNTIES

| | Rates | Fringes |
|---|---|---|
| SHEET METAL WORKER | | |
| (1) Commercial - New Construction and Remodel work | $ 59.40 | 30.34 |
| (2) Industrial work including air pollution control systems, noise abatement, hand rails, guard rails, excluding aritechtural sheet metal work, excluding A-C, heating, ventilating systems for human comfort | $ 56.95 | 30.04 |

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SHEE0105-004 07/01/2023

KERN (Excluding portion East of Hwy 395) & LOS ANGELES (North of a straight line drawn between Gorman and Big Pines including Cities of Lancaster and Palmdale) COUNTIES

| | Rates | Fringes |
|---|---|---|

SHEET METAL WORKER.....$ 45.98 29.24

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TEAM0011-002 07/01/2024

| | Rates | Fringes |
|---|---|---|
| TRUCK DRIVER | | |
| GROUP 1 | $ 39.59 | 34.34 |
| GROUP 2 | $ 39.74 | 34.34 |
| GROUP 3 | $ 39.87 | 34.34 |
| GROUP 4 | $ 40.06 | 34.34 |
| GROUP 5 | $ 40.09 | 34.34 |
| GROUP 6 | $ 40.12 | 34.34 |
| GROUP 7 | $ 40.37 | 34.34 |
| GROUP 8 | $ 40.62 | 34.34 |
| GROUP 9 | $ 40.82 | 34.34 |
| GROUP 10 | $ 41.12 | 34.34 |
| GROUP 11 | $ 41.62 | 34.34 |
| GROUP 12 | $ 42.05 | 34.34 |

WORK ON ALL MILITARY BASES:
PREMIUM PAY: $3.00 per hour additional.
[29 palms Marine Base, Camp Roberts, China Lake, Edwards AFB, El Centro Naval Facility, Fort Irwin, Marine Corps Logistics Base at Nebo & Yermo, Mountain Warfare Training Center, Bridgeport, Point Arguello, Point Conception, Vandenberg AFB]

TRUCK DRIVERS CLASSIFICATIONS

GROUP 1: Truck driver

GROUP 2: Driver of vehicle or combination of vehicles - 2 axles; Traffic control pilot car excluding moving heavy equipment permit load; Truck mounted broom

GROUP 3: Driver of vehicle or combination of vehicles - 3 axles; Boot person; Cement mason distribution truck; Fuel truck driver; Water truck - 2 axle; Dump truck, less than 16 yds. water level; Erosion control driver

GROUP 4: Driver of transit mix truck, under 3 yds.; Dumpcrete truck, less than 6-1/2 yds. water level

GROUP 5: Water truck, 3 or more axles; Truck greaser and tire person ($0.50 additional for tire person); Pipeline and utility working truck driver, including winch truck and plastic fusion, limited to pipeline and utility work; Slurry truck driver

GROUP 6: Transit mix truck, 3 yds. or more; Dumpcrete truck, 6-1/2 yds. water level and over; Vehicle or combination of vehicles - 4 or more axles; Oil spreader truck; Dump truck, 16 yds. to 25 yds. water level

GROUP 7: A Frame, Swedish crane or similar; Forklift driver; Ross carrier driver

GROUP 8: Dump truck, 25 yds. to 49 yds. water level; Truck repair person; Water pull - single engine; Welder

GROUP 9: Truck repair person/welder; Low bed driver, 9 axles or over

GROUP 10: Dump truck - 50 yds. or more water level; Water pull - single engine with attachment

GROUP 11: Water pull - twin engine; Water pull - twin engine with attachments; Winch truck driver - $1.25 additional when operating winch or similar special attachments

GROUP 12: Boom Truck 17K and above

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WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at https://www.dol.gov/agencies/whd/government-contracts.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (iii)).

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The body of each wage determination lists the classifications and wage rates that have been found to be prevailing for the type(s) of construction and geographic area covered by the wage determination. The classifications are listed in alphabetical order under rate identifiers indicating whether the particular rate is a union rate (current union negotiated rate), a survey rate, a weighted union average rate, a state adopted rate, or a supplemental classification rate.

Union Rate Identifiers

A four-letter identifier beginning with characters other than ""SU"", ""UAVG"", ?SA?, or ?SC? denotes that a union rate was prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2024. PLUM is an identifier of the union whose collectively bargained rate prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. The date, 07/01/2024 in the

example, is the effective date of the most current negotiated rate.

Union prevailing wage rates are updated to reflect all changes over time that are reported to WHD in the rates in the collective bargaining agreement (CBA) governing the classification.

Union Average Rate Identifiers

The UAVG identifier indicates that no single rate prevailed for those classifications, but that 100% of the data reported for the classifications reflected union rates. EXAMPLE: UAVG-OH-0010 01/01/2024. UAVG indicates that the rate is a weighted union average rate. OH indicates the State of Ohio. The next number, 0010 in the example, is an internal number used in producing the wage determination. The date, 01/01/2024 in the example, indicates the date the wage determination was updated to reflect the most current union average rate.

A UAVG rate will be updated once a year, usually in January, to reflect a weighted average of the current rates in the collective bargaining agreements on which the rate is based.

Survey Rate Identifiers

The ""SU"" identifier indicates that either a single non-union rate prevailed (as defined in 29 CFR 1.2) for this classification in the survey or that the rate was derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As a weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SUFL2022-007 6/27/2024. SU indicates the rate is a single non-union prevailing rate or a weighted average of survey data for that classification. FL indicates the State of Florida. 2022 is the year of the survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. The date, 6/27/2024 in the example, indicates the survey completion date for the classifications and rates under that identifier.

?SU? wage rates typically remain in effect until a new survey is conducted. However, the Wage and Hour Division (WHD) has the discretion to update such rates under 29 CFR 1.6(c)(1).

State Adopted Rate Identifiers

The ""SA"" identifier indicates that the classifications and prevailing wage rates set by a state (or local) government were adopted under 29 C.F.R 1.3(g)-(h). Example: SAME2023-007 01/03/2024. SA reflects that the rates are state adopted. ME refers to the State of Maine. 2023 is the year during which the state completed the survey on which the listed classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. The date, 01/03/2024 in the example, reflects the date on which the classifications and rates under the ?SA? identifier took effect under state law in the state from which the rates were adopted.

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WAGE DETERMINATION APPEALS PROCESS

1) Has there been an initial decision in the matter? This can be:

a) a survey underlying a wage determination
b) an existing published wage determination
c) an initial WHD letter setting forth a position on a wage determination matter
d) an initial conformance (additional classification and rate) determination

On survey related matters, initial contact, including requests for summaries of surveys, should be directed to the WHD Branch of Wage Surveys. Requests can be submitted via email to davisbaconinfo@dol.gov or by mail to:

Branch of Wage Surveys
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

Regarding any other wage determination matter such as conformance decisions, requests for initial decisions should be directed to the WHD Branch of Construction Wage Determinations. Requests can be submitted via email to BCWD-Office@dol.gov or by mail to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2) If an initial decision has been issued, then any interested party (those affected by the action) that disagrees with the decision can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Requests for review and reconsideration can be submitted via email to dba.reconsideration@dol.gov or by mail to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210.

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END OF GENERAL DECISION"

# Appendix B – Soils Report

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# GEOTECHNICAL ENGINEERING INVESTIGATION REPORT
# GIUMARRA PIPELINE PROJECT
# DELANO, KERN COUNTY, CALIFORNIA

BSK PROJECT G00000-017

PREPARED FOR:

GEI CONSULTANTS
99 S. LAKE AVENUE, SUITE 300
PASADENA, CA 91101

JANUARY 18, 2023

# GEOTECHNICAL ENGINEERING INVESTIGATION REPORT
# GIUMARRA PIPELINE PROJECT
# DELANO, KERN COUNTY, CALIFORNIA

Prepared for:

Ms. Monique Marino, PE
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99 S. Lake Avenue, Suite 300
Pasadena, CA 91101

Bakersfield Project: G00000-017

January 18, 2023

Prepared by:


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Bakersfield, California 93301
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## Appendices

**Appendix A: Field Exploration**



**Appendix B: Laboratory Testing**

# 1. INTRODUCTION

This report presents the results of a Geotechnical Engineering Investigation Report conducted by BSK Associates (BSK), for the proposed Giumarra Pipeline Project near Delano, Kern County, California (Site), as shown on the Site Vicinity Map, Figure A-1. The geotechnical engineering investigation was conducted in accordance with BSK Proposal GB22-23202, dated January 10, 2022.

This report provides a description of the geotechnical conditions at the Site and provides specific recommendations for the planned improvements at the Site. In the event that changes occur in the design of the project, this report's conclusions and recommendations will not be considered valid unless the changes are reviewed with BSK and the conclusions and recommendations are modified or verified in writing.

## 1.1 Planned Construction

BSK understands that the proposed project site is located east of Delano, California. BSK understands that a new PVC pipeline will be installed 4 feet below ground surface along Driver Road from Avenue O to 9$^{th}$ Avenue with an approximate length of 8,114.5 feet and extend approximately 1,450 feet along 9$^{th}$ Avenue to the west from the intersection with Driver Road. BSK understands that the pipeline support design will include thrust blocks and mechanical joint restraint. The two crossings of Cecil Avenue and 9$^{th}$ Avenue will be done by open cut installation.

In the event that significant changes occur in the design of the proposed improvements, this report's conclusions and recommendations will not be considered valid unless the changes are reviewed with BSK, and the conclusions and recommendations are modified or verified in writing.

## 1.2 Purpose and Scope of Services

The objective of this geotechnical investigation was to characterize the subsurface conditions in the areas of the proposed improvements and provide geotechnical engineering recommendations for the preparation of plans and specifications and bearing and lateral earth pressure conditions. The scope of the investigation included a field exploration, laboratory testing, engineering analyses, and preparation of this report.

# 2. FIELD INVESTIGATION AND LABORATORY TESTING

## 2.1 Field Exploration

The field exploration for this investigation was conducted under the oversight of a BSK staff member. A total of eight (8) total borings were drilled at the Sites to a maximum depth of 16.5 feet beneath the existing ground surface (bgs) on June 3, 2022 using a CME 75 drill rig provided by Baja Exploration.

The soil materials encountered in the Borings were visually classified in the field, and the logs were recorded during the drilling and sampling operations. Visual classifications of the materials encountered in the borings were made in general accordance with the Unified Soil Classification System (ASTM D 2488). A soil classification chart is presented in Appendix A.

Boring logs are presented in Appendix A and should be consulted for more details concerning subsurface conditions. Stratification lines were approximated by the field staff based on observations made at the time of drilling, while the actual boundaries between soil types may be gradual and soil conditions may vary at other locations.

### 2.2 Laboratory Testing

Laboratory tests were performed on selected soil samples to evaluate moisture content, dry density, shear strength, collapse potential, moisture-density relationship, corrosion, Atterberg limits, and gradation. A description of the laboratory test methods and results are presented in Appendix B.

## 3. SITE AND GEOLOGY/SEISMICITY CONDITIONS

The following sections address the Site descriptions and surface conditions, regional geology and seismic hazards, subsurface conditions, and groundwater conditions at the Site. This information is based on BSK's field exploration and published maps and reports.

### 3.1 Site Description

The Site is located near Delano, Kern County, CA on the dirt shoulder to the west of Driver Road and to the north of 9th Avenue. The Site is located in east half of Sections 6 and 7 of Township 25 South, Range 26 East of the Mount Diablo Meridian. The WGS84 coordinates for the center of the Site are 35.7794 degrees North latitude and 119.2054 degrees West longitude.

### 3.2 Regional Geology and Seismic Hazards Assessment

Our Scope of services included a review of published maps and reports to assess the regional geology and potential for seismic hazards.

#### *3.2.1 Regional Geology*

The site is located in the southern section of the Great Valley geomorphic province. The Great Valley is an alluvial plain about 50 miles wide and 400 miles long in the central part of California. Its northern part is the Sacramento Valley, drained by the Sacramento River and its southern part is the San Joaquin Valley drained by the San Joaquin River. The Great Valley is a trough in which sediments have been deposited almost continuously since the Jurassic (about 160 million years ago). Great oil fields have been found in southernmost San Joaquin Valley and along anticlinal uplifts on its southwestern margin. In the Sacramento Valley, the Sutter Buttes, the remnants of an isolated Pliocene volcano, rise above the valley floor.

#### *3.2.2 Seismic Hazards Assessment*

The types of geologic and seismic hazards assessed include surface ground fault rupture, liquefaction, seismically induced settlement, slope failure, flood hazards and inundation hazards.

The purpose of the Alquist-Priolo Geologic Hazards Zones Act, as summarized in CDMG Special Publication 42 (SP 42), is to "prohibit the location of most structures for human occupancy across the traces of active faults and to mitigate thereby the hazard of fault-rupture." As indicated by SP 42, "the State Geologist is required to delineate "earthquake fault zones" (EFZs) along known active faults in California. Cities and

counties affected by the zones must regulate certain development 'projects' within the zones. They must withhold development permits for sites within the zones until geologic investigations demonstrate that the sites are not threatened by surface displacement from future faulting.

The Site is not located within an Alquist-Priolo Geologic Hazard Zone (A-P Zone). The closest fault zone is associated with the Pond Fault, located approximately 6.7 miles southwest of the site.

Zones of Required Investigation referred to as "Seismic Hazard Zones" in CCR Article 10, Section 3722, are areas shown on Seismic Hazard Zone Maps where site investigations are required to determine the need for mitigation of potential liquefaction and/or earthquake-induced landslide ground displacements. There are no mapped areas that have Seismic Hazard Zones in the project area.

### 3.3 Subsurface Conditions

At the borings, the subsurface material generally consisted of silty sand and clay in the upper 10 feet and silty sand and sands with silt below 10 feet throughout the borehole. The boring logs in Appendix A provide a more detailed description of the materials encountered, including the applicable Unified Soil Classification System symbols.

Based on the results of the consolidation test, the on-site soils below 5-feet are considered to have a low potential for hydrocompaction and a moderate potential for hydrocompaction at boring B-1.

### 3.4 Groundwater Conditions

Groundwater was not encountered at the Site during drilling on June 3, 2022. Based on the groundwater elevation data from the California Department of Water Resources (DWR), the historic high groundwater depth in the vicinity of the pipeline approximately 78.5 feet below ground surface (bgs) on January 27, 1965 from State Well 25S26E06H001M, located approximately 90 feet west of the site.

Please note that the groundwater level may fluctuate both seasonally and from year to year due to variations in rainfall, temperature, pumping from wells and possibly as the result of other factors such as irrigation, that were not evident at the time of our investigation.

## 4. CONCLUSIONS AND RECOMMENDATIONS

Based upon the data collected during this investigation, and from a geotechnical engineering standpoint, it is our opinion that the soil conditions would not preclude the construction of the proposed improvements. The contractor should be advised that caving soils on loose sandy material may be a factor during construction.

### 4.1 Seismic Design Criteria

Based on Section 1613.2.2 of the 2019 CBC, the project Site shall be classified as Site Class A, B, C, D, E or F based on the Site soil properties and in accordance with Chapter 20 of ASCE 7-16. Based on our soil boring blow counts and experience with projects in the area, as per Table 20.3-1 of ASCE 7-16, the Site is Class D (15<N <50).

The 2019 California Building Code (CBC) utilizes ground motion based on the Risk-Targeted Maximum Considered Earthquake ($MCE_R$) that is defined in the 2019 CBC as the most severe earthquake effects considered by this code, determined for the orientation that results in the largest maximum response to horizontal ground motions and with adjustment for targeted risk. Ground motion parameters in the 2019 CBC are based on ASCE 7-16, Chapter 11.

The Structural Engineers Associates of California (SEAOC) has prepared maps presenting the Risk-Targeted MCE spectral acceleration (5 percent damping) for periods of 0.2 seconds ($S_S$) and 1.0 seconds ($S_1$). The values of $S_S$ and $S_1$ can be obtained from the Occupational Safety Health Planning and Development (OSHPD) Seismic Design Maps Tool at: https://seismicmaps.org/.

Table 1 below presents the spectral acceleration parameters produced for an assumed Site Class D by OSHPD Seismic Design Maps Application and Chapter 16 of the 2019 CBC based on ASCE 7-16.

**Table 1: Seismic Design Parameters**

| Seismic Design Parameter | 2019 CBC Value | | Reference |
|---|---|---|---|
| MCE Mapped Spectral Acceleration (g) | $S_S$ = 0.700 | $S_1$ = 0.264 | USGS Mapped Value |
| Amplification Factors (Site Class D) | $F_a$ = 1.240 | $F_v$ = null[1](2.072)[2] | ASCE Table 11.4 |
| Site Adjusted MCE Spectral Acceleration (g) | $S_{MS}$ = 0.868 | $S_{M1}$ = null[1](0.547)[2] | ASCE Equations 11.4.1-2 |
| Design Spectral Acceleration (g) | $S_{DS}$ = 0.579 | $S_{D1}$ = null[1](0.365)[2] | ASCE Equations 11.4.3-4 |
| Geometric Mean PGA (g) | $PGA_M$ = 0.396 | | Section 11.8.3, ASCE 7-16 |
| Site Short Period – $T_s$ (seconds) | $T_s$ = 0.630 | | $T_s = S_{D1}/S_{DS}$ |
| Site Long Period – $T_L$ (seconds) | $T_L$ = 12 | | USGS Mapped Value |

Notes: [1] Requires site-specific ground motion procedure or exception as per ASCE 7-16 Section 11.48
[2] Values from ASCE 7-16 supplement, shall only be used to calculate $T_s$

## 4.2 Soil Corrosivity

Soil samples obtained from the Site were tested to provide a preliminary screening of the potential for concrete deterioration or steel corrosion due to attack by soil-borne soluble salts. The test results are presented in Appendix B.

The corrosivity evaluation was performed by BSK on a bulk soil sample obtained at the time of drilling. The bulk soil samples were evaluated for minimum resistivity (CT 643), pH (ASTM D4972), oxidation-reduction potential (ASTM D1498), and soluble sulfate and chlorides (CT 417 and CT 422). At Boring B-2, the minimum resistivity was 1,400 ohm-cm, pH was 6.99, sulfate was detected at 50 parts per million (ppm), and chloride was not detected. At Boring B-7, the minimum resistivity was 920 ohm-cm, pH was 6.91, sulfate was detected at 50 ppm, and chloride was detected at 25 ppm.

The water-soluble sulfate content severity class is considered negligible to concrete (Exposure Category S0 per Table 19.3.1.1 of ACI 318-14). Representative samples of the Site soil have a minimum resistivity ranging from 920 to 1,400 ohm-cm; values less than or equal to 1,500 indicate the presence of high quantities of soluble salts and a higher propensity for corrosion according to Caltrans guidelines. Therefore, buried metal conduits, ferrous metal pipes, and exposed steel should have a protective coating in accordance with the manufacturer's specification.

## 4.3 Site Preparation Recommendations Above Grade Structures

The following procedures must be implemented during Site preparation for the proposed earthwork operations. References to maximum dry density, optimum moisture content, and relative compaction are based on ASTM D 1557 (latest test revision) laboratory test procedures.

1. The areas of proposed improvements must be cleared of surface vegetation and debris. Materials resulting from the clearing and stripping operations must be removed and properly disposed of off-site. Stripping depth should be approximately 1 to 2 inches if vegetation is encountered. In addition, all undocumented fills should be removed where encountered and where fills or structural improvements will be placed.
2. Where existing utilities, inlets, or underground tanks are present, they should be removed to a point at least 3 feet horizontally outside the proposed improvement areas. Resultant cavities must be backfilled with engineered fill compacted in accordance with the recommendations presented in this report. Alternatively, controlled low-strength material (CLSM) may be used for backfill of voids and obstructions. BSK recommends a CLSM mix with a minimum 2-sack cementitious material be used for this condition.
3. Following the stripping operations, the areas where mat foundations are proposed must be overexcavated to a minimum depth of one foot below the bottom of the footing elevation. After overexcavation, the bottom of the exposed soil should be scarified 12 inches, moisturized to optimum moisture content, and compacted to 90% of ASTM D1557. Over excavation should extend laterally three feet beyond the edge of foundations. Yielding areas should be observed by the geotechnical consultant and removed and recompacted if necessary.
4. Following the required stripping and overexcavation, in the areas of proposed mat foundations, the exposed ground surface at the bottom of the overexcavation must be inspected by the Geotechnical Engineer to evaluate if loose or soft zones are present that will require additional overexcavation.
5. Imported soil or native excavated soils, free of organic materials or deleterious substances, may be placed as compacted engineered fill. The material must be free of oversized fragments greater than 3-inches in greatest dimension. Engineered fill must be placed in uniform layers not exceeding 8-inches in loose thickness, moisture conditioned to within 2 to 4 percent above optimum moisture content, and compacted to at least 90 percent relative compaction. The on-site soil is suitable as trench backfill. For pipe embedment considerations, on-site soils classified as Class III, per Table 4-1 *Soil Classes for Pipe Installation* of AWWA Manual M23 may be used.
6. BSK must be called to the site to verify the import material properties through laboratory testing.

7. If possible, backfill operations should be scheduled during a dry, warm period of the year. Should these operations be performed during or shortly following periods of inclement weather, unstable soil conditions may result in the soils exhibiting a "pumping" condition. This condition is caused by excess moisture in combination with moving construction equipment, resulting in saturation and zero air voids in the soils. If this condition occurs, the adverse soils will need to be over-excavated to the depth at which stable soils are encountered, and replaced with suitable soils compacted as engineered fill. Alternatively, the Contractor may proceed with grading operations after utilizing a method to stabilize the soil subgrade, which should be subject to review and approval by BSK prior to implementation.
8. Import fill materials must be free from organic materials or deleterious substances. The project specifications must require the contractor to contact BSK to review the proposed import fill materials for conformance with these recommendations at least one week prior to importing to the Site, whether from on-site or off-site borrow areas. Imported fill soils must be non-hazardous and derived from a single, consistent soil type source conforming to the following criteria:

| | |
|---|---|
| Plasticity Index: | < 12 |
| Expansion Index: | < 20 (Very Low Expansion Potential) |
| Maximum Particle Size: | 3 inches |
| Percent Passing #4 Sieve: | 65 - 100 |
| Percent Passing #200 Sieve: | 20 - 45 |
| Low Corrosion Potential: | Soluble Sulfates < 1,500 ppm |
| | Soluble Chlorides < 150 ppm |
| | Minimum Resistivity > 3,000 ohm-cm |

## 4.4 Foundations

Provided the recommendations contained in this report are implemented during design and construction, it is our opinion that the equipment can be supported on mat foundations. A structural engineer should evaluate reinforcement and foundation dimensions based on the requirements for the structural loadings, shrinkage and temperature stresses.

### *4.4.1 Mat Foundations*

We understand that equipment may be supported on a concrete mat foundation. The mat foundation may be designed to impose a maximum allowable pressure of 2,500 pounds per square foot (psf) due to dead plus live loads. This bearing value applies to the dead load plus live load (DL + LL) condition, and may be increased by 1/3 for short duration wind or seismic loads. The concrete mat foundation should be embedded at least 8 inches below the lowest adjacent grade. The concrete mat foundation must be at least 12 inches thick and satisfy structural considerations.

Settlements: Based on the results of our laboratory tests and analyses, total static settlements of the mat foundation under the allowable bearing pressure are expected to be less than 1-inch, and maximum differential settlements are expected to be about 0.5-inch.

## 4.5 Lateral Earth Pressures, Horizontal Bearing Capacity, and Frictional Resistance for Shoring & Thrust Block Design

The following earth pressure parameters for shallow foundations design and design of thrust blocks may be used for design purposes. The parameters shown in the table below are for drained conditions of select engineered fill or undisturbed native soil.

**Table 2: Recommended Static Lateral Earth Pressures for Shallow Foundations**

| Lateral Pressure Condition | Equivalent Fluid Density (pcf) Drained Condition |
|---|---|
| Active Pressure | 30 |
| At Rest Pressure | 50 |
| Passive Pressure | 370 |

The lateral earth pressures for the pipeline crossings listed herein are obtained by the conventional equation for active, at rest, and passive conditions assuming level backfill and a bulk unit weight of 120 pcf for the Site soils. A coefficient of friction of 0.35 may be used between soil sub-grade and the bottom of excavation.

The coefficient of friction and passive earth pressure values given above represent ultimate soil strength values. BSK recommends that a safety factor consistent with the design conditions be included in their usage in accordance with Sections 1806.3.1 through 1806.3.3 of the 2019 CBC.

### *4.5.1 Horizontal Bearing Capacity-Thrust Blocks*

We recommend that thrust block size determinations, in cases when force mains stabilization is required at pipe direction changes, be based on the bearing values for shallow and deep thrust blocks presented in Table 3. Shallow thrust blocks have a height greater than 70% of depth to center of pipeline. Deep thrust blocks have a height less than 70% of the depth to the pipe center.

**Table 3: Horizontal Bearing Capacity Thrust Blocks**

| Loading | Thrust Block | Design Horizontal Bearing Capacity (psf) |
|---|---|---|
| Sustained | Shallow<br>Deep | 350 psf/ft of depth<br>2400H psf |
| Test | Shallow<br>Deep | 470 psf/ft of depth<br>3700H psf |

Note: H is block height in feet

The thrust blocks must be cast between the pipe and undisturbed soil at the trench sidewalls. The horizontal deformation associated with the available capacity of shallow thrust blocks is 0.005D for test and sustained loading, where D is the depth to the bottom of the thrust block (NAVFAC, 1986). It is anticipated the lateral movement associated with the available lateral bearing of deep thrust blocks under

sustained or test loading is about 0.50 inch per 1,000 psf of horizontal loading. The thrust blocks may have a vertical bearing capacity of 1,500 psf.

### *4.5.2 Temporary Shoring*

Where there is insufficient space to layback slopes, temporary shoring will be necessary. Lateral earth pressures for cantilevered or braced shoring supporting level ground are presented in the following table.

**Table 4: Lateral Earth Pressures for Temporary Shoring**

| Parameter | Pressure |
|---|---|
| Active Pressure | 35 psf/ft |
| Braced Pressure | 23H psf |
| **Allowable Passive Pressure** | |
| Solid Sheeting | 350 psf/ft |
| Isolated Soldier Pile | 610 psf/ft |

Notes: [1] H is shored height in feet

[2] Values for isolated soldier piles already include an increase for arching, no further consideration should be applied.

In areas where the stability of adjoining improvements could be compromised by excavation operations, support systems such as shoring, bracing or underpinning may be required to provide stability and to protect personnel working within the excavation. Shoring, bracing, or underpinning required for the project (if any), should be designed by a professional engineer registered in the State of California.

### *4.5.3 Frictional Resistance*

BSK recommends using equation 11-11 from AWWA Manual M23 to calculate frictional resistance. Soil group values found on Table 11-*2 Pipe to Soil Interface Properties Used to Calculate Rs and Fs* of the AWWA 23 manual should be selected based on bedding soil class to be used.

$$F_s = A_P(f_cC) + W\tan(f_\varphi\varphi) \quad \text{(Eq 11-11)}$$

$F_s$ = unit length frictional resistance based on half the pipe circumference, lb/ft
$A_P$= area of pipe surface bearing against the soil (one-half the pipe circumference, $ft^2$)
$f_c$ = pipe to soil cohesion modifier
C = cohesion of the soil
W = normal force per unit length, lb/ft = $2W_e + W_p + W_w$
$2W_e$= vertical load on top and bottom surfaces of the pipe taken as the prism load, lb/ft
$W_P + W_P$ = weight of pipe plus weight of water, lb/ft
$f_\varphi$ = pipe to soil friction angle modifier
φ = angle of internal friction of the soil

## 4.6 Pipe Trench Backfill and Compaction

Per Figure 7-2 *Standard Trench Types for PVC and PVCO Pipe* of AWWA Manual M23, bedding depth should be 1/8 of pipe diameter or 4 inches minumum, whichever is greater, for pipe installations. Per AWWA C605, bedding should be loosely placed type I or II soils. Trench width should be atleast 18 inches plus the diameter of pipe, wide enough to accomodate compaction equipment in the embedment zone, per AWWA Manual M23. Provided the bottom of trench soil subgrade is not disturbed, compaction is not required. The on-site soil is suitable as trench backfill. For pipe envelope area, selective on-site material classified as Type II, III, or IV per Table 4-1 *Soil Classes for Pipe Installation* of AWWA Manual M23, with fines no greater than 70% passing the #200 sieve should be used.

Bedding must be placed in loose thickness. Pipe envelope must be placed in loose thickness not exceeding 10-inches and compacted to at least 90 percent of the maximum dry density of ASTM D1557. Soil backfill moisture content during compaction must be maintained within two percent (2 percent) of optimum. Water jetting to attain compaction should not be allowed. Class 2 Aggregate Base, when used for bedding or pipe envelope must be compacted to at least 92 percent of ASTM D1557. Although not anticipated, for minor unstable soil conditions, Mirafi 600X or equivalent may be used for subgrade stabilization. For this condition, recommendations for overexcavation and geotextile placements should be made by BSK on a case by case basis.

Processed on-Site soils, which are free of organic material, are suitable for use as general trench backfill above the pipe envelope. Native soil with particles less than three inches in the greatest dimension may be incorporated into the backfill and compacted as specified above, provided they are properly mixed into a matrix of friable soils. The backfill must be placed in thin layers not exceeding 12 inches in loose thickness, be well-blended and consistent texture, moisture conditioned to at least optimum moisture content, and compacted to at least 90 percent of the maximum dry density as determined by the ASTM D1557. The uppermost 12 inches of trench backfill below pavement sections must be compacted to at least 95 percent of the maximum dry density as determined by ASTM D1557. Moisture content within two percent of optimum must be maintained while compacting this upper 12-inch trench backfill zone.

We recommend that trench backfill be tested for compliance with the recommended Relative Compaction and moisture conditions. Field density testing should conform to ASTM Test Methods D1556 or D6938. We recommend that field density tests be performed in the utility trench bedding, envelope and backfill for every vertical lift, at an approximate longitudinal spacing of not greater than 150 feet. Backfill that does not conform to the criteria specified in this section should be removed or reworked, as applicable over the trench length represented by the failing test so as to conform to BSK recommendations.

## 4.7 Modulus of Soil Reaction

The elastic modulus of the undisturbed native soils was determined using SPT blow counts (Walker, 2020) and the results are presented in Table 5 Elastic Modulus of Undisturbed Native Soils.

**Table 5: Modulus of Soil Reaction of Undisturbed Native Soils (psi)**

| Boring | Depth Range (ft) | | Thickness (ft) | Total Unit Weight, γ (pcf) | Friction Angle (degrees)[3] | Cohesion (psf)[3] | Soil Class[1] | Modulus of Soil Reaction, E' (psi)[2] |
|---|---|---|---|---|---|---|---|---|
| B-1 | 0 | 10 | 10 | 120 | 30 | 190 | III | 850 |
| | 10 | 15 | 5 | 115 | | | III | 1,500 |
| B-2 | 0 | 15 | 15 | 123 | 30 | 190 | III | 850 |
| B-3 | 0 | 10 | 10 | 122 | 30 | 190 | III | 1,000 |
| | 10 | 15 | 5 | 115 | | | II | 2,000 |
| B-4 | 0 | 10 | 10 | 123 | 31 | 180 | III | 750 |
| | 10 | 15 | 5 | 119 | | | III | 1,250 |
| B-5 | 0 | 15 | 15 | 119 | 31 | 180 | III | 1,100 |
| B-6 | 0 | 10 | 10 | 127 | 31 | 180 | III | 1,000 |
| | 10 | 15 | 5 | 118 | | | II | 1,750 |
| B-7 | 0 | 15 | 15 | 120 | 42 | 0 | III | 1,300 |
| B-8 | 0 | 10 | 10 | 124 | 31 | 180 | IV | 500 |
| | 10 | 15 | 5 | 112 | | | III | 2,000 |

Notes: [1] Soil class per Table 4.1 in AWWA Manual M23

[2] Modulus of soil reaction, E', per Table 4.6 in AWWA Manual M23 using SPT blow counts

[3] Value per ASTM D3080, undrained

## 4.8 Pipe Boring and Jacking

Based on the information provided to us, BSK understands that a cased pipeline installation method is the desired method of installation at the pipeline crossing on Driver Road at Cecil Avenue and 9th Avenue while cut and cover method of installation is anticipated for the the pipeline. For cased installation methods, BSK recommends a minimum cover of 4 feet between the bottom of any improvements (e.g. perpendicular pipelines and pavement) and the top of the water main line to reduce the potential for utility or infrastructure distress.

Based on the findings of our exploratory borings, soil conditions at that depth are anticipated to consist of silty sands. For the Cecil Avenue crossing, direct shear test results indicate an average friction angle of 31 degrees and average cohesion of 180 pounds per square foot (psf) for the upper 10 feet of soil. For the 9th Road crossing, direct shear test results indicate an average friction angle of 42 degrees and average cohesion of 0 pounds per square foot (psf) for the upper 10 feet of soil.

We recommend that these test results be used for the purpose of estimating the frictional resistance to jacking of the steel casing for the pipeline. After the casing has been installed and the plastic pipe installed, the annular space between the two pipes should be grouted full with neat cement.

It is anticipated that excavation for the jacking and receiving pits may be made by open cut sloped in accordance with the OSHA guidelines. Alternatively, the excavations may be cut near-vertical provided they are properly shored by driven sheet piles. Design of sheet pile shoring should be made the responsibility of the pipeline contractor.

### 4.9 Excavation Stability

Soils encountered within the depth explored are generally classified as Type C soils in accordance with OSHA (Occupational Safety and Health Administration). The slopes surrounding or along temporary excavations may be vertical for excavations that are less than five feet deep and exhibit no indication of potential caving, but should be no steeper than 1.5H:1V for excavations that are deeper than five feet, up to a maximum depth of 15 feet. Certified trench shields or boxes may also be used to protect workers during construction in excavations that have vertical sidewalls and are greater than 5 feet deep. Temporary excavations for the project construction should be left open for as short a time as possible and should be protected from water runoff. In addition, equipment and/or soil stockpiles must be maintained at least 10 feet away from the top of the excavations. Because of variability in soils, BSK must be afforded the opportunity to observe and document sloping and shoring conditions at the time of construction. Slope height, slope inclination, and excavation depths (including utility trench excavations) must in no case exceed those specified in local, state, or federal safety regulations, (e.g., OSHA Health and Safety Standards for Excavations, 29 CFR Part 1926, or successor regulations).

### 4.10 Drainage Considerations

The control surface drainage in the project areas is an important design consideration. BSK recommends that final grading around shallow foundations must provide for positive and enduring drainage away from the structures, and ponding of water must not be allowed around, or near the shallow foundations. Ground surface profiles next to the shallow foundations must have at least a 2 percent gradient away from the structures.

## 5. PLANS AND SPECIFICATIONS REVIEW

BSK recommends that it be retained to review the draft plans and specifications for the project, with regard to drilling operations and earthwork, prior to their being finalized and issued for construction.

## 6. CONSTRUCTION TESTING AND OBSERVATIONS

Geotechnical testing and observation during construction is a vital extension of this geotechnical investigation. BSK recommends that it be retained for those services. Field review during Site preparation and drilling allows for evaluation of the exposed soil conditions and confirmation or revision of the assumptions and extrapolations made in formulating the design parameters and recommendations.

If a firm other than BSK is retained for these services during construction, then that firm must notify the owner, project designers, governmental building officials, and BSK that the firm has assumed the responsibility for all phases (i.e., both design and construction) of the project within the purview of the geotechnical engineer. Notification must indicate that the firm has reviewed this report and any subsequent addenda, and that it either agrees with BSK's conclusions and recommendations, or that it will provide independent recommendations.

## 7. LIMITATIONS

The analyses and recommendations submitted in this report are based upon the data obtained from the Borings performed at the locations shown on the Boring Location Map, Figure A-2. The report does not reflect variations which may occur between or beyond the Borings. The nature and extent of such variations may not become evident until construction is initiated. If variations then appear, a re-evaluation of the recommendations of this report will be necessary after performing on-Site observations during the excavation period and noting the characteristics of the variations.

The validity of the recommendations contained in this report is also dependent upon an adequate testing and observation program during the construction phase. BSK assumes no responsibility for construction compliance with the design concepts or recommendations unless it has been retained to perform the testing and observation services during construction as described above.

The findings of this report are valid as of the present. However, changes in the conditions of the Site can occur with the passage of time, whether caused by natural processes or the work of man, on this property or adjacent property. In addition, changes in applicable or appropriate standards may occur, whether they result from legislation, governmental policy or the broadening of knowledge.

BSK has prepared this report for the exclusive use of the Client and members of the project design team. The report has been prepared in accordance with generally accepted geotechnical engineering practices which existed in Kern County at the time the report was written. No other warranties either expressed or implied are made as to the professional advice provided under the terms of BSK's agreement with Client and included in this report.

## 8. REFERENCES

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# APPENDIX A

# FIELD EXPLORATION

## APPENDIX A

## FIELD EXPLORATION

The field exploration for this investigation was conducted under the oversight of a BSK staff member. A total of eight (8) total borings were drilled at the Sites to a maximum depth of 16.5 feet beneath the existing ground surface (bgs) on June 3, 2022 using a CME 75 drill rig provided by Baja Exploration.

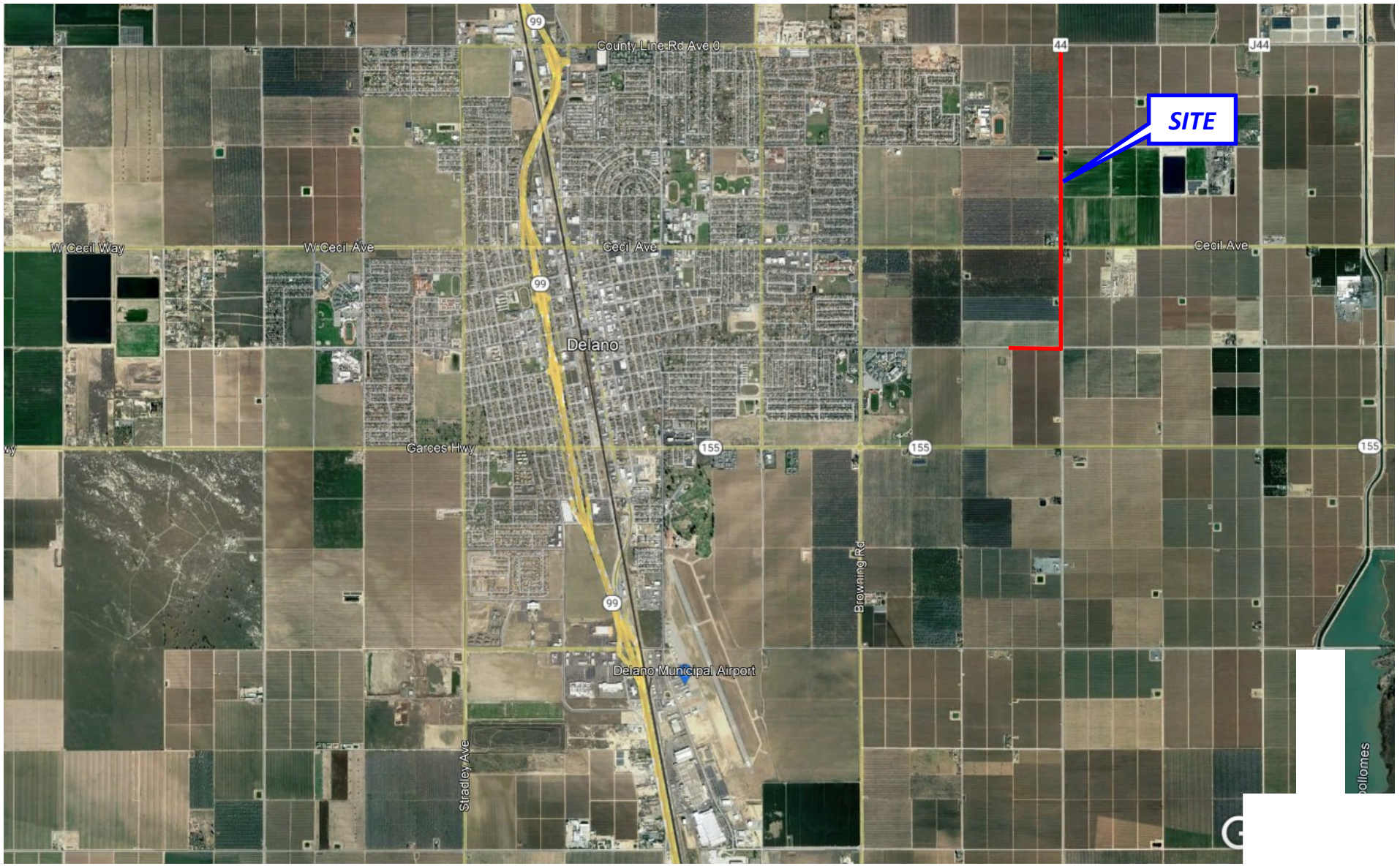
The soil materials encountered in the test borings were visually classified in the field, and the logs were recorded during the drilling and sampling operations. Visual classification of the materials encountered in the test borings was made in general accordance with the Unified Soil Classification System (ASTM D 2488). A soil classification chart is presented herein. Boring logs are presented herein and should be consulted for more details concerning subsurface conditions. Stratification lines were approximated by the field staff based on observations made at the time of drilling, while the actual boundaries between soil types may be gradual and soil conditions may vary at other locations.

Subsurface samples were obtained at the successive depths shown on the boring logs by driving samplers which consisted of a 2.5-inch inside diameter (I.D.) California Sampler and a 1.4-inch I.D. Standard Penetration Test (SPT) Sampler. The samplers were driven 18 inches using a 140-pound hammer dropped from a height of 30 inches by means of either an automatic hammer or a down-hole safety hammer. The number of blows required to drive the last 12 inches was recorded as the blow count (blows/foot) on the boring logs. The relatively undisturbed soil core samples were capped at both ends to preserve the samples at their natural moisture content. Soil samples were also obtained using the SPT Sampler lined with metal tubes or unlined in which case the samples were placed and sealed in polyethylene bags. At the completion of the field exploration, the test borings were backfilled with the excavated soil cuttings.

It should be noted that the use of terms such as “loose”, “medium dense”, “dense” or “very dense” to describe the consistency of a soil is based on sampler blow count and is not necessarily reflective of the in-place density or unit weight of the soils being sampled. The relationship between sampler blow count and consistency is provided in the following Tables A-1 and A-2 for coarse-grained (sandy and gravelly) soils and fine grained (silty and clayey) soils, respectively.

| Table A 1: Consistency of Coarse Grained Soil by Sampler Blow Count | | |
|---|---|---|
| **Consistency Descriptor** | **SPT Blow Count (#Blows / Foot)** | **2.5" I.D. California Sampler Blow Count (#Blows / Foot)** |
| Very Loose | <4 | <6 |
| Loose | 4 – 10 | 6 – 15 |
| Medium Dense | 10 – 30 | 15 – 45 |
| Dense | 30 – 50 | 45 – 80 |
| Very Dense | >50 | >80 |

| Table A 2: Consistency of Fine Grained Soil by Sampler Blow Count | | |
|---|---|---|
| **Consistency Descriptor** | **SPT Blow Count (#Blows / Foot)** | **2.5" I.D. California Sampler Blow Count (#Blows / Foot)** |
| Very Soft | <2 | <3 |
| Soft | 2 – 4 | 3 – 6 |
| Medium Stiff | 4 – 8 | 6 – 12 |
| Stiff | 8 – 15 | 12 – 24 |
| Very Stiff | 15 – 30 | 24 – 45 |
| Hard | >30 | >45 |




REFERENCE IMAGE: Google Earth 2022

APPROXIMATE SITE LOCATION

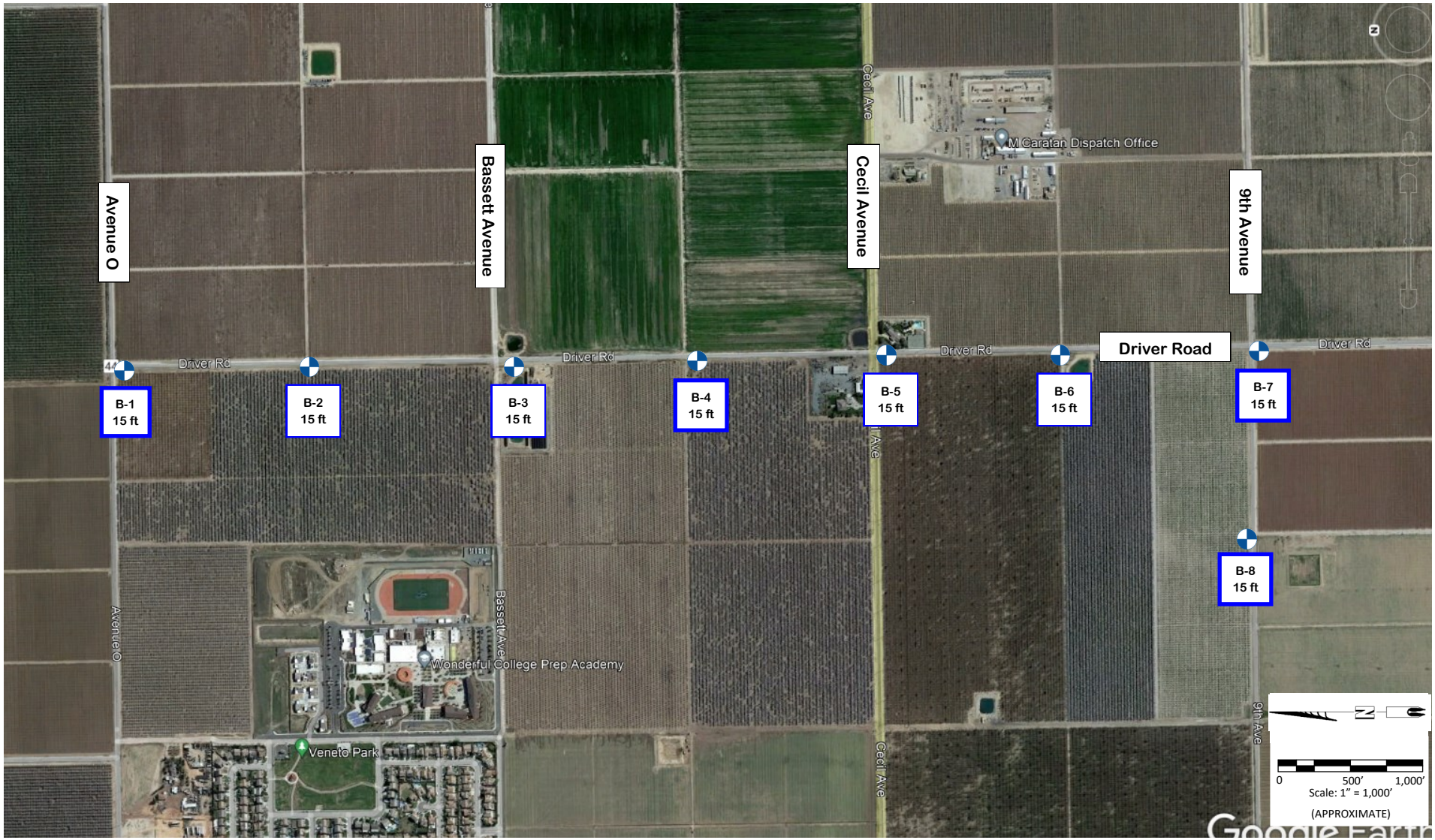
BSK ASSOCIATES
700 22nd Street
Bakersfield, California 93301
Tel. (661) 327-0671

# SITE VICINITY MAP

Giumarra Pipeline Project
Driver Rd
Delano, Kern County, California

FIGURE A-1

JOB NO. G00000017
DATE April 2022
DR. BY YX
CH. BY AXT
SCALE AS SHOWN
SHEET NO. 1 OF 1 SHEETS




REFERENCE IMAGE: Google Earth 2022

LEGEND:

APPROXIMATE BORING LOCATION


BSK ASSOCIATES
700 22nd Street
Bakersfield, California 93301
Tel. (661) 327-0671

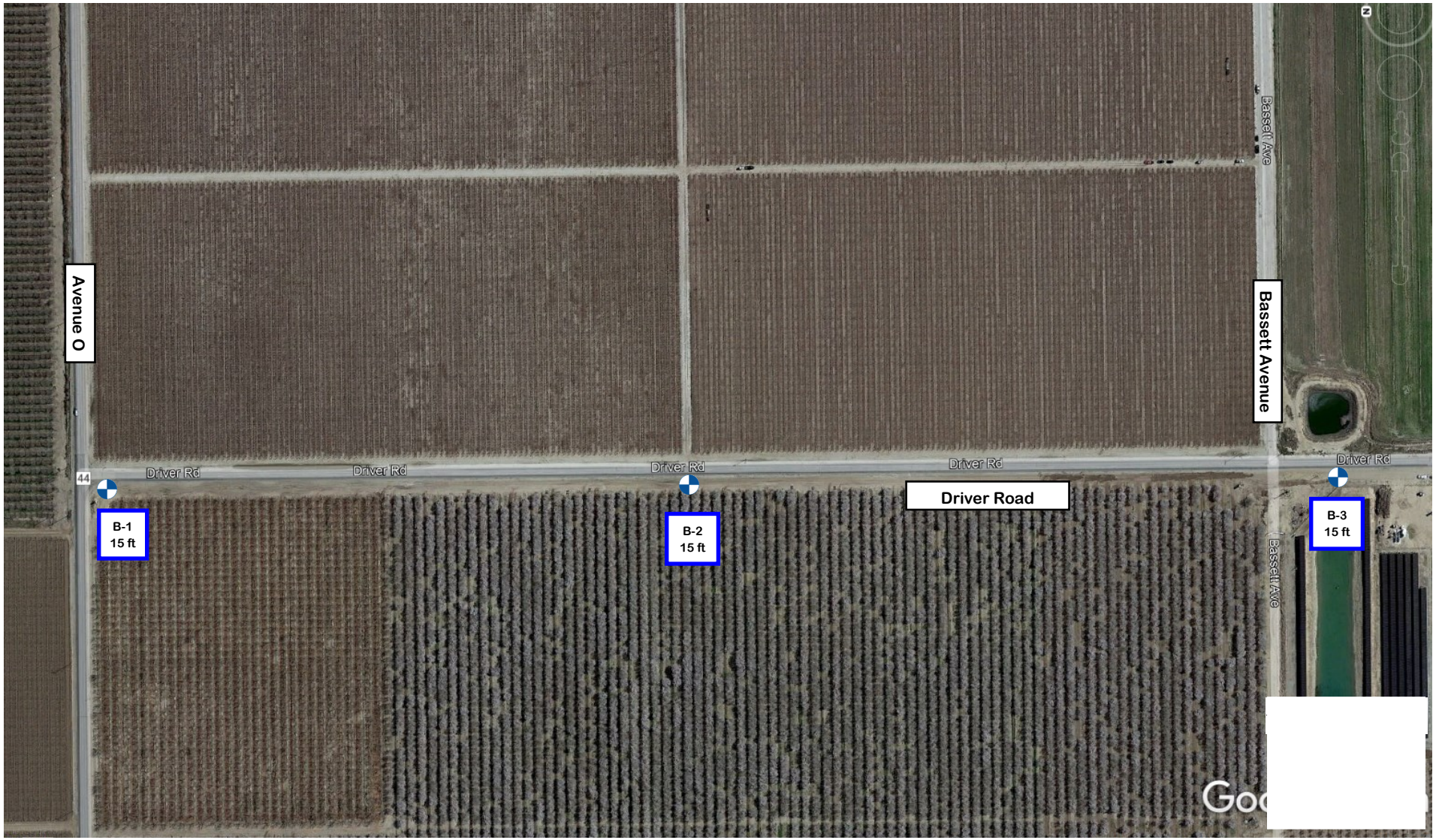

**BORING LOCATIONS MAP**
**B-1 to B-8**

Giumarra Pipeline Project
Driver Rd
Delano, Kern County, California

FIGURE A-2

JOB NO. G00-000-017
DATE May 2022
DR. BY YX
CH. BY AXT
SCALE AS SHOWN

SHEET NO. 1
OF 1 SHEETS




REFERENCE IMAGE: Google Earth 2022

LEGEND:

APPROXIMATE BORING LOCATION

BSK ASSOCIATES
700 22nd Street
Bakersfield, California 93301
Tel. (661) 327-0671

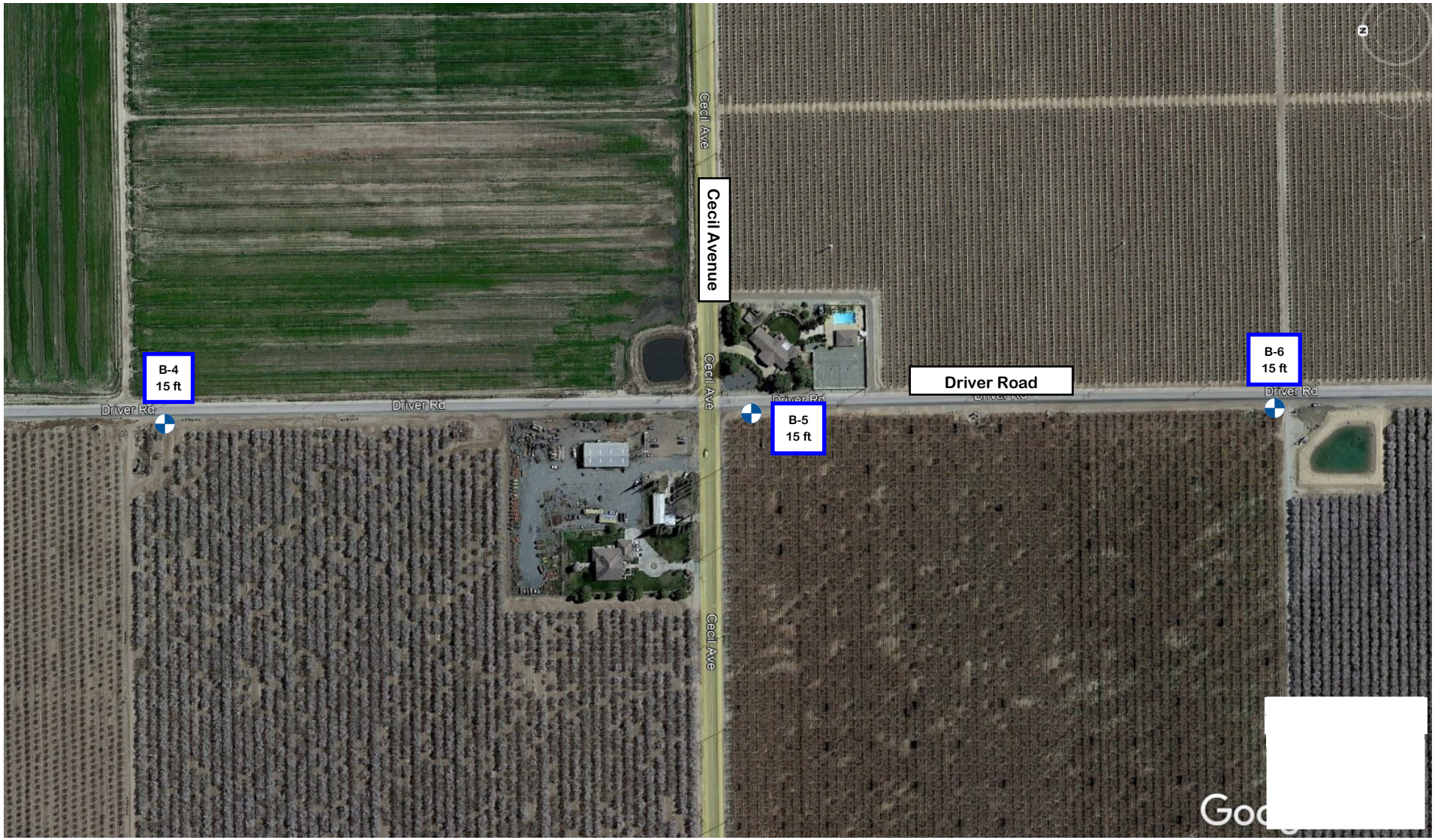
**BORING LOCATIONS MAP**
**B-1 to B-3**

Giumarra Pipeline Project
Driver Rd
Delano, Kern County, California

FIGURE A-3

JOB NO. G00-000-017
DATE May 2022
DR. BY YX
CH. BY AXT
SCALE AS SHOWN

SHEET NO. 1
OF 1 SHEETS




REFERENCE IMAGE: Google Earth 2022

LEGEND:

APPROXIMATE BORING LOCATION

BSK ASSOCIATES
700 22nd Street
Bakersfield, California 93301
Tel. (661) 327-0671

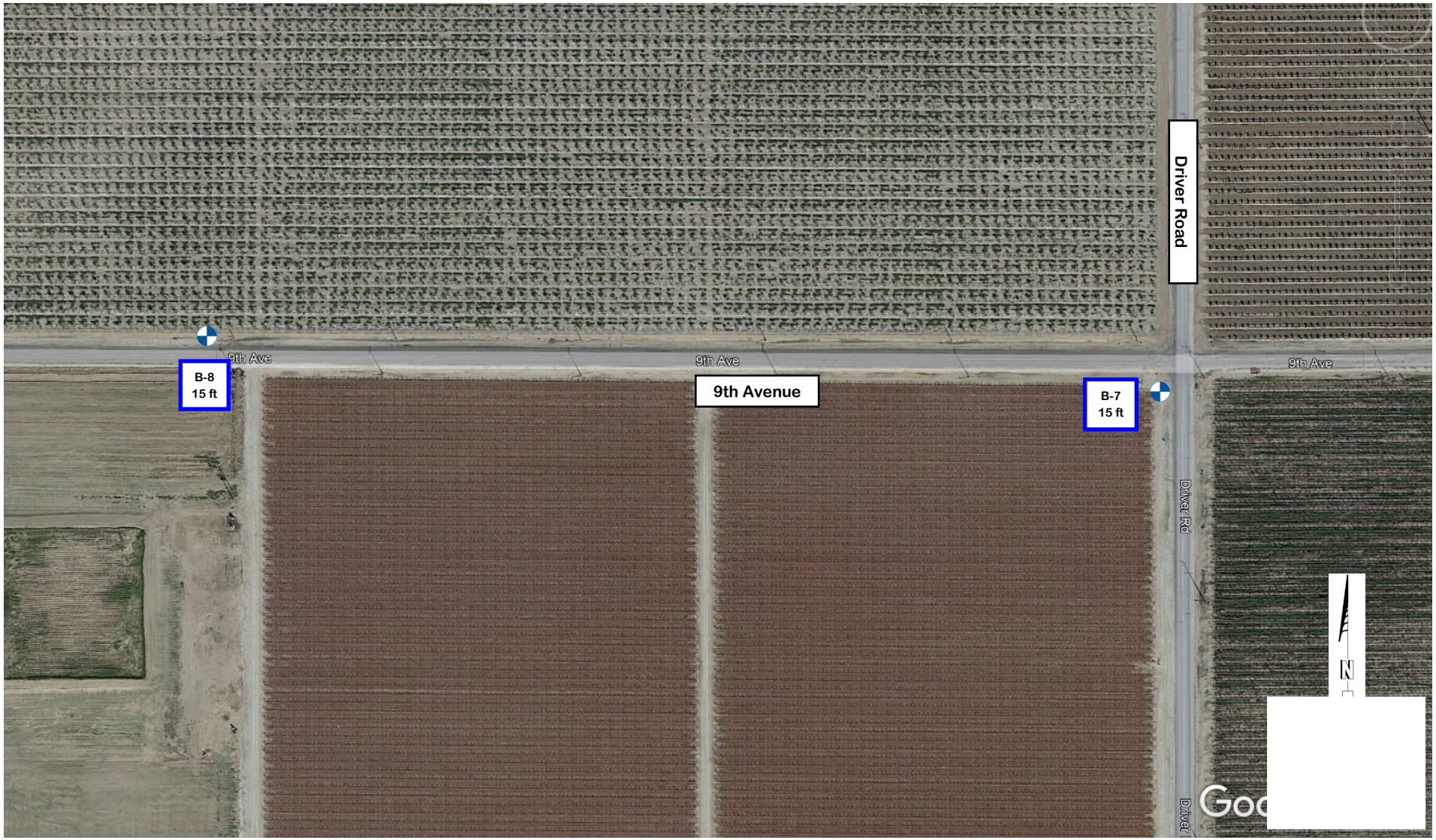
**BORING LOCATIONS MAP**
**B-4 to B-6**

Giumarra Pipeline Project
Driver Rd
Delano, Kern County, California

FIGURE A-4

JOB NO. G00-000-017
DATE May 2022
DR. BY YX
CH. BY AXT
SCALE AS SHOWN

SHEET NO. 1
OF 1 SHEETS




REFERENCE IMAGE: Google Earth 2022

LEGEND:

APPROXIMATE BORING LOCATION

BSK ASSOCIATES
700 22nd Street
Bakersfield, California 93301
Tel. (661) 327-0671

**BORING LOCATIONS MAP**
**B-7 and B-8**

Giumarra Pipeline Project
Driver Rd
Delano, Kern County, California

FIGURE A-5

JOB NO. G00-000-017
DATE May 2022
DR. BY YX
CH. BY AXT
SCALE AS SHOWN

SHEET NO. 1
OF 1 SHEETS

| MAJOR DIVISIONS | | | | | TYPICAL NAMES |
|---|---|---|---|---|---|
| COARSE GRAINED SOILS More than Half >#200 | GRAVELS MORE THAN HALF COARSE FRACTION IS LARGER THAN NO. 4 SIEVE | CLEAN GRAVELS WITH LITTLE OR NO FINES | GW |  | WELL GRADED GRAVELS, GRAVEL-SAND MIXTURES |
| | | | GP |  | POORLY GRADED GRAVELS, GRAVEL- SAND MIXTURES |
| | | GRAVELS WITH OVER 15% FINES | GM |  | SILTY GRAVELS, POORLY GRADED GRAVEL-SAND-SILT MIXTURES |
| | | | GC |  | CLAYEY GRAVELS, POORLY GRADED GRAVEL-SAND-CLAY MIXTURES |
| | SANDS MORE THAN HALF COARSE FRACTION IS SMALLER THAN NO. 4 SIEVE | CLEAN SANDS WITH LITTLE OR NO FINES | SW |  | WELL GRADED SANDS, GRAVELLY SANDS |
| | | | SP |  | POORLY GRADED SANDS, GRAVELLY SANDS |
| | | SANDS WITH OVER 15% FINES | SM |  | SILTY SANDS, POORLY GRADED SAND-SILT MIXTURES |
| | | | SC |  | CLAYEY SANDS, POORLY GRADED SAND-CLAY MIXTURES |
| FINE GRAINED SOILS More than Half <#200 sieve | SILTS AND CLAYS LIQUID LIMIT LESS THAN 50 | | ML |  | INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS, OR CLAYEY SILTS WITH SLIGHT PLASTICITY |
| | | | CL |  | INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS |
| | | | OL |  | ORGANIC CLAYS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY |
| | SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50 | | MH |  | INORGANIC SILTS , MICACEOUS OR DIATOMACIOUS FINE SANDY OR SILTY SOILS, ELASTIC SILTS |
| | | | CH |  | INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS |
| | | | OH |  | ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS |
| HIGHLY ORGANIC SOILS | | | Pt |  | PEAT AND OTHER HIGHLY ORGANIC SOILS |

Note: Dual symbols are used to indicate borderline soil classifications.

| | | | |
|---|---|---|---|
|  | Pushed Shelby Tube | RV | R-Value |
|  | Standard Penetration Test | SA | Sieve Analysis |
|  | Modified California | SW | Swell Test |
|  | Auger Cuttings | TC | Cyclic Triaxial |
|  | Grab Sample | TX | Unconsolidated Undrained Triaxial |
|  | Sample Attempt with No Recovery | TV | Torvane Shear |
| CA | Chemical Analysis | UC | Unconfined Compression |
| CN | Consolidation | (1.2) | (Shear Strength, ksf) |
| CP | Compaction | WA | Wash Analysis |
| DS | Direct Shear | (20) | (with % Passing No. 200 Sieve) |
| PM | Permeability |  | Water Level at Time of Drilling |
| PP | Pocket Penetrometer |  | Water Level after Drilling (with date measured) |

**SOIL CLASSIFICATION CHART AND KEY TO TEST DATA**
**Unified Soil Classification System**

BSK ASSOCIATES

PLATE: Figure A-6

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Bakersfield, CA 93301
Telephone: (661) 327-0671

# LOG OF BORING NO. B-01

Project Name: **Giurrama Pipeline Project**
Project Number: **G00-000-017**
Project Location: **Delano, Kern County, California**
Logged by: **Y.Xu/A.Cuevas**
Checked by: **A. Terronez**

Surface El.:
Location:

| Depth, feet | Graphic Log | MATERIAL DESCRIPTION | Samples | Sample Number | Penetration Blows / Foot | Pocket Penetrometer, TSF | % Passing No. 200 Sieve | In-Situ Dry Weight (pcf) | In-Situ Moisture Content (%) | Liquid Limit | Plastic Limit | Plasticity Index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | **SURFACE:** dirt shoulder | | | | | | | | | | |
| | | **SC: CLAYEY SAND:** brown, fine to medium, slight moisture. | | | | | 50 | | | 28 | 17 | 11 |
| | | | | | 11 | | | 107 | 7 | | | |
| | | **CL: CLAY w/ SAND:** brown, fine grained sand, slightly moist, firm. | | | | | | | | | | |
| 5 | | | | | 10 | | | 113 | 5 | | | |
| | | **SM: SILTY SAND:** light brown, fine grained sand, loose, slightly moist. | | | | | | | | | | |
| | | **SM: CLAYEY SILTY SAND:** fine to coarse grained, trace fine gravel, sub angular. loose | | | 16 | | | 118 | 3 | | | |
| | | **SM: SILTY SAND:** medium dense, light yellowish brown, fine to coarse grained. yellowish brown, decrease in silt, trace fine gravel, subangular. | | | | | | | | | | |
| 10 | | | | | 26 | | | 111 | 3 | | | |
| | | **SP: POORLY-GRADED SAND:** light brown, fine to coarse grained, medium dense, moist, trace silt. | | | | | | | | | | |
| | | **SP-SC: POORLY-GRADEDSAND with CLAY, yellowish brown, moist, trace fine gravel, subangular, medium dense.** | | | | | | | | | | |
| 15 | | **SM: SILTY SAND:** yellowish brown, fine grained sand, medium dense, slightly moist | | | 26 | | | | 3 | | | |
| | | decrease in silt, fine to medium grained | | | | | | | | | | |
| | | End of Boring. | | | | | | | | | | |
| 20 | | | | | | | | | | | | |

**Completion Depth:** 16.5
**Date Started:** 6/3/22
**Date Completed:** 6/3/22
**California Sampler:** 2.4" inner diameter
**SPT Sampler:** 1.4" inner diameter

**Drilling Equipment:** CME 75
**Drilling Method:** Hollow Stem Auger
**Drive Weight:** 140 pounds
**Hole Diameter:** 8 inches
**Drop:** 30 inches
**Remarks:** Borings backfilled with soil cuttings

GEO_TARGET GIURRAMA BORING LOGS.GPJ GEOTECHNICAL 08.GDT 6/24/22

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Bakersfield, CA 93301
Telephone: (661) 327-0671

# LOG OF BORING NO. B-02

Project Name: **Giurrama Pipeline Project**
Project Number: **G00-000-017**
Project Location: **Delano, Kern County, California**
Logged by: **Y.Xu/A.Cuevas**
Checked by: **A. Terronez**

Surface El.:
Location:

| Depth, feet | Graphic Log | MATERIAL DESCRIPTION | Samples | Sample Number | Penetration Blows / Foot | Pocket Penetrometer, TSF | % Passing No. 200 Sieve | In-Situ Dry Weight (pcf) | In-Situ Moisture Content (%) | Liquid Limit | Plastic Limit | Plasticity Index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | **SURFACE:** dirt shoulder | | | | | | | | | | |
| | | **SC: CLAYEY SAND:** clayey silty sand/clayey sand, yellowish brown,fine to medium sand, moist | | | | | | | | | | |
| | | | | | 7 | | | 112 | 8 | | | |
| | | **SM: SILTY SAND:** yellowish brown, fine to medium grained, moist, trace of fine gravel, loose | | | | | | | | | | |
| 5 | | | | | 10 | | | 114 | 9 | | | |
| | | ...with clay, loose | | | | | | | | | | |
| 10 | | **CL: SANDY CLAY:** olive brown, fine to coarse grained, very firm, moist | | | | | | | | | | |
| | | **SM: SILTY SAND:** yellowish brown, fine to coarse grained, moist, subangular, trace of fine gravel, trace of clay | | | 8 | | | | 8 | | | |
| 15 | | **SC/CL: CLAYEY SAND/SANDY CLAY:** olive brown, fine to medium, medium dense, moist [no recovery] | | | 23 | | | | | | | |
| | | **SP: POORLY-GRADED SAND:** fine to coarse grained, moist, trace fine gravel, subangular, trace of silt, trace of clay | | | | | | | | | | |
| 20 | | End of Boring | | | | | | | | | | |

**Completion Depth:** 16.5
**Date Started:** 6/3/22
**Date Completed:** 6/3/22
**California Sampler:** 2.4" inner diameter
**SPT Sampler:** 1.4" inner diameter

**Drilling Equipment:** CME 75
**Drilling Method:** Hollow Stem Auger
**Drive Weight:** 140 pounds
**Hole Diameter:** 8 inches
**Drop:** 30 inches
**Remarks:** Borings backfilled with soil cuttings

GEO_TARGET GIURRAMA BORING LOGS.GPJ GEOTECHNICAL 08.GDT 6/24/22

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Bakersfield, CA 93301
Telephone: (661) 327-0671

# LOG OF BORING NO. B-03

Project Name: **Giurrama Pipeline Project**
Project Number: **G00-000-017**
Project Location: **Delano, Kern County, California**
Logged by: **Y.Xu/A.Cuevas**
Checked by: **A. Terronez**

Surface El.:
Location:

| Depth, feet | Graphic Log | MATERIAL DESCRIPTION | Samples | Sample Number | Penetration Blows / Foot | Pocket Penetrometer, TSF | % Passing No. 200 Sieve | In-Situ Dry Weight (pcf) | In-Situ Moisture Content (%) | Liquid Limit | Plastic Limit | Plasticity Index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | **SURFACE:** dirt shoulder | | | | | | | | | | |
| | | **SM: CLAYEY SILTY SAND:** yellowish brown, fine to medium grained, moist | | | | | 38 | | | | | |
| | | ...loose, increase in fines | | | 7 | | | 109 | 7 | | | |
| 5 | | **SM: SILTY SAND:** yellowish brown, fine to coarse grained, trace of clay, trace of gravel, loose | | | 6 | | | 105 | 16 | | | |
| | | **CL: CLAY w/ SAND:** yellowish brown, fine grained, moist, hard | | | 30 | | | 110 | 16 | 33 | 16 | 17 |
| 10 | | **CL-ML: SILTY CLAY:** yellowish brown, fine grained, moist, hard | | | | | | | | | | |
| | | **SP-SM: POORLY GRADED SAND w/ SILT:** light yellowish brown, fine to coarse grained, moist, trace of gravel, loose | | | 9 | | | | 3 | | | |
| 15 | | increase in fines, trace of clay, medium dense | | | 25 | | | | 5 | | | |
| | | End of Boring | | | | | | | | | | |
| 20 | | | | | | | | | | | | |

**Completion Depth:** 16.5
**Date Started:** 6/3/22
**Date Completed:** 6/3/22
**California Sampler:** 2.4" inner diameter
**SPT Sampler:** 1.4" inner diameter

**Drilling Equipment:** CME 75
**Drilling Method:** Hollow Stem Auger
**Drive Weight:** 140 pounds
**Hole Diameter:** 8 inches
**Drop:** 30 inches
**Remarks:** Borings backfilled with soil cuttings

GEO_TARGET GIURRAMA BORING LOGS.GPJ GEOTECHNICAL 08.GDT 6/24/22

BSK Associates
700 22nd Street
Bakersfield, CA 93301
Telephone: (661) 327-0671

# LOG OF BORING NO. B-04

Project Name: **Giurrama Pipeline Project**
Project Number: **G00-000-017**
Project Location: **Delano, Kern County, California**
Logged by: **Y.Xu/A.Cuevas**
Checked by: **A. Terronez**

Surface El.:
Location:

| Depth, feet | Graphic Log | MATERIAL DESCRIPTION | Samples | Sample Number | Penetration Blows / Foot | Pocket Penetrometer, TSF | % Passing No. 200 Sieve | In-Situ Dry Weight (pcf) | In-Situ Moisture Content (%) | Liquid Limit | Plastic Limit | Plasticity Index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | **SURFACE:** dirt shoulder | | | | | | | | | | |
| | | **SM: SILTY SAND:** yellowish brown, fine to medium grained, moist, trace of clay | | | | | | | | | | |
| | | | | | 10 | | | 119 | 4 | | | |
| | | loose | | | | | | | | | | |
| 5 | | | | | 8 | | | 116 | 6 | | | |
| | | decrease in silt, fine to coarse grained, trace of fine gravel, loose | | | | | | | | | | |
| 10 | | **CL: SANDY CLAY:** olive brown, fine to medium grained, moist, very stiff | | | 22 | | | | 10 | | | |
| | | **SM: SILTY SAND:** yellowish brown, fine to coarse grained, trace of fine gravel, subangular, moist | | | | | | | | | | |
| | | **ML: SILT with SAND, yellowish brown, fine grained sand, moist, very stiff** | | | | | | | | | | |
| 15 | | | | | 13 | | | 109 | 9 | | | |
| | | **CL: CLAY:** brown, fine to grain sand, moist, trace of sand, stiff | | | | | | | | | | |
| | | **SM: SILTY SAND:** fine to coarse grained, trace of fine gravel, loose | | | | | | | | | | |
| | | End of Boring | | | | | | | | | | |
| 20 | | | | | | | | | | | | |

**Completion Depth:** 16.5
**Date Started:** 6/3/22
**Date Completed:** 6/3/22
**California Sampler:** 2.4" inner diameter
**SPT Sampler:** 1.4" inner diameter

**Drilling Equipment:** CME 75
**Drilling Method:** Hollow Stem Auger
**Drive Weight:** 140 pounds
**Hole Diameter:** 8 inches
**Drop:** 30 inches
**Remarks:** Borings backfilled with soil cuttings

GEO_TARGET GIURRAMA BORING LOGS.GPJ GEOTECHNICAL 08.GDT 6/24/22

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Telephone: (661) 327-0671

# LOG OF BORING NO. B-05

Project Name: **Giurrama Pipeline Project**
Project Number: **G00-000-017**
Project Location: **Delano, Kern County, California**
Logged by: **Y.Xu/A.Cuevas**
Checked by: **A. Terronez**

Surface El.:
Location:

| Depth, feet | Graphic Log | MATERIAL DESCRIPTION | Samples | Sample Number | Penetration Blows / Foot | Pocket Penetrometer, TSF | % Passing No. 200 Sieve | In-Situ Dry Weight (pcf) | In-Situ Moisture Content (%) | Liquid Limit | Plastic Limit | Plasticity Index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | **SURFACE:** change to dirt shoulder | | | | | | | | | | |
| | | **SM: SILTY SAND w/ CLAY:** light brown, fine to coarse, dry, | | | | | 39 | | | | | |
| | | loose | | | 11 | | | 117 | 4 | | | |
| 5 | | **SM: CLAYEY SILTY SAND:** light brown, fine to coarse, dry, medium dense | | | 20 | | | 115 | 4 | | | |
| | | **SM: SILTY SAND:** light brown, fine to coarse grained, dry, medium dense | | | 31 | | | 117 | 2 | | | |
| 10 | | increase in sand, trace of clay, medium dense | | | 19 | | | 114 | 2 | | | |
| 15 | | **SP-SM: POORLY GRADED SAND w/ SILT:** yellowish brown, fine to coarse grained, dry, medium dense | | | 11 | | | | 2 | | | |
| | | End of Boring | | | | | | | | | | |
| 20 | | | | | | | | | | | | |

**Completion Depth:** 16.5
**Date Started:** 6/3/22
**Date Completed:** 6/3/22
**California Sampler:** 2.4" inner diameter
**SPT Sampler:** 1.4" inner diameter

**Drilling Equipment:** CME 75
**Drilling Method:** Hollow Stem Auger
**Drive Weight:** 140 pounds
**Hole Diameter:** 8 inches
**Drop:** 30 inches
**Remarks:** Borings backfilled with soil cuttings

GEO_TARGET GIURRAMA BORING LOGS.GPJ GEOTECHNICAL 08.GDT 6/24/22

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Telephone: (661) 327-0671

# LOG OF BORING NO. B-06

Project Name: **Giurrama Pipeline Project**
Project Number: **G00-000-017**
Project Location: **Delano, Kern County, California**
Logged by: **Y.Xu/A.Cuevas**
Checked by: **A. Terronez**

Surface El.:
Location:

| Depth, feet | Graphic Log | MATERIAL DESCRIPTION | Samples | Sample Number | Penetration Blows / Foot | Pocket Penetrometer, TSF | % Passing No. 200 Sieve | In-Situ Dry Weight (pcf) | In-Situ Moisture Content (%) | Liquid Limit | Plastic Limit | Plasticity Index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | **SURFACE:** dirt shoulder | | | | | | | | | | |
| | | **SC: CLAYEY SAND:** light yellowish brown, fine to coarse grained, dry/slightly moist | | | | | | | | | | |
| | | | | | 18 | | | 123 | 6 | | | |
| | | medium dense | | | | | | | | | | |
| 5 | | | | | 13 | | | 115 | 7 | | | |
| | | loose | | | | | | | | | | |
| | | **SM: SILTY SAND:** light yellowish brown, fine to medium grained, slightly moist, loose | | | | | | | | | | |
| 10 | | **SP: POORLY- GRADED SAND:** light yellowish brown, fine to coarse grained, slightly moist, medium dense, trace of fine gravel, | | | 10 | | | | 2 | | | |
| 15 | | | | | 36 | | | 118 | 5 | | | |
| | | **SM: SILTY SAND** yellowish brown, slightly moist, trace of clay, trace of fine gravel, medium dense | | | | | | | | | | |
| | | End of Boring | | | | | | | | | | |
| 20 | | | | | | | | | | | | |

**Completion Depth:** 16.5
**Date Started:** 6/3/22
**Date Completed:** 6/3/22
**California Sampler:** 2.4" inner diameter
**SPT Sampler:** 1.4" inner diameter

**Drilling Equipment:** CME 75
**Drilling Method:** Hollow Stem Auger
**Drive Weight:** 140 pounds
**Hole Diameter:** 8 inches
**Drop:** 30 inches
**Remarks:** Borings backfilled with soil cuttings

GEO_TARGET GIURRAMA BORING LOGS.GPJ GEOTECHNICAL 08.GDT 6/24/22

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# LOG OF BORING NO. B-07

Project Name: **Giurrama Pipeline Project**
Project Number: **G00-000-017**
Project Location: **Delano, Kern County, California**
Logged by: **Y.Xu/A.Cuevas**
Checked by: **A. Terronez**

Surface El.:
Location:

| Depth, feet | Graphic Log | MATERIAL DESCRIPTION | Samples | Sample Number | Penetration Blows / Foot | Pocket Penetrometer, TSF | % Passing No. 200 Sieve | In-Situ Dry Weight (pcf) | In-Situ Moisture Content (%) | Liquid Limit | Plastic Limit | Plasticity Index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | **SURFACE:** dirt shoulder | | | | | | | | | | |
| | | **SM: SILTY SAND:** yellowish brown, slightly moist, fine to medium grained, trace gravel, trace clay | | | | | 31 | | | | | |
| | | medium dense, increase in clay | | | 18 | | | 118 | 7 | | | |
| 5 | | loose, light yellowish brown, fine to coarse grained, dry, trace of clay | | | 12 | | | 116 | 4 | | | |
| | | fine grained sand, trace coarse grained sand, decrease in fines, slightly moist, medium dense | | | 22 | | | 109 | 5 | | | |
| 10 | | increase in silt, trace of clay, medium dense | | | 41 | | | 115 | 4 | | | |
| 15 | | **SP-SM: POORLY-GRADED SAND w/ SILT:** yellowish brown, fine to coarse grained, trace of fine gravel, moist, medium dense | | | 20 | | | | 2 | | | |
| | | End of Boring | | | | | | | | | | |
| 20 | | | | | | | | | | | | |

**Completion Depth:** 16.5
**Date Started:** 6/3/22
**Date Completed:** 6/3/22
**California Sampler:** 2.4" inner diameter
**SPT Sampler:** 1.4" inner diameter

**Drilling Equipment:** CME 75
**Drilling Method:** Hollow Stem Auger
**Drive Weight:** 140 pounds
**Hole Diameter:** 8 inches
**Drop:** 30 inches
**Remarks:** Borings backfilled with soil cuttings

GEO_TARGET GIURRAMA BORING LOGS.GPJ GEOTECHNICAL 08.GDT 6/24/22

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Bakersfield, CA 93301
Telephone: (661) 327-0671

# LOG OF BORING NO. B-08

Project Name: **Giurrama Pipeline Project**
Project Number: **G00-000-017**
Project Location: **Delano, Kern County, California**
Logged by: **Y.Xu/A.Cuevas**
Checked by: **A. Terronez**

Surface El.:
Location:

| Depth, feet | Graphic Log | MATERIAL DESCRIPTION | Samples | Sample Number | Penetration Blows / Foot | Pocket Penetrometer, TSF | % Passing No. 200 Sieve | In-Situ Dry Weight (pcf) | In-Situ Moisture Content (%) | Liquid Limit | Plastic Limit | Plasticity Index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | **SURFACE:** dirt shoulder | | | | | | | | | | |
| | | **SC: CLAYEY SAND:** brown, fine to medium grained, moist | | | 5 | | | 112 | 10 | | | |
| | | **CL-ML: SILTY CLAY w/ SAND:** yellowish brown, soft, moist | | | | | | | | | | |
| 5 | | trace of sand, increase in clay, medium stiff | | | 11 | | | 115 | 9 | | | |
| 10 | | **ML: SILT with SAND:** yellowish brown, fine grained sand, moist, medium stiff, with clay | | | | | | | | | | |
| | | **SM: SILTY SAND:** yellowish brown, fine to medium grained sand, moist, loose<br>increase in silt, fine to coarse grained, subangular | | | 5 | | | | 6 | | | |
| 15 | | light brown, fine to medium, dry, dense<br>light yellowish brown, decrease in silt, increase in sand, more coarse grained, slightly moist, trace of gravel, | | | 48 | | | 110 | 2 | | | |
| 20 | | End of Boring | | | | | | | | | | |

**Completion Depth:** 16.5
**Date Started:** 6/3/22
**Date Completed:** 6/3/22
**California Sampler:** 2.4" inner diameter
**SPT Sampler:** 1.4" inner diameter

**Drilling Equipment:** CME 75
**Drilling Method:** Hollow Stem Auger
**Drive Weight:** 140 pounds
**Hole Diameter:** 8 inches
**Drop:** 30 inches
**Remarks:** Borings backfilled with soil cuttings

# APPENDIX B

# LABORATORY TESTING RESULTS

# APPENDIX B
# LABORATORY TESTING

**Moisture-Density Tests**

The field moisture content, as a percentage of dry weight of the soils, was determined by weighing the samples before and after oven drying in accordance with ASTM D 2216 test procedures. Dry densities, in pounds per cubic foot, were also determined for undisturbed core samples in general accordance with ASTM D 2937 test procedures. Test results are presented on the boring logs in Appendix A.

**Direct Shear Test**

Three (3) Direct Shear Tests were performed on in-situ soil samples from selected Borings. The tests were conducted to determine the soil strength characteristics. The standard test method is ASTM D 3080, Direct Shear Test for Soil under Consolidated Drained Conditions. The results of the direct shear test are presented graphically on Figures B-1 through B-3.

**Collapse Potential Test**

One (1) Collapse Potential Test was performed on a relatively undisturbed soil samples to evaluate collapse potential characteristics. The test was performed in general accordance with ASTM D-5333. The sample was initially loaded under as-received moisture conditions to a selected stress level, loaded to a maximum load of 1,300 psf and then saturated. The test results are presented on Figures B-4 through B-6.

**Moisture-Density Relationship Test**

Two (2) Moisture-Density Relationship Tests were performed on bulk samples obtained at the time of drilling in the area of planned construction. The bulk samples were tested for optimum moisture content and maximum dry density per Test Method ASTM D1557. The test results are presented on Figures B-7 and B-8.

**Sieve Analysis Test**

Four (4) Sieve Analysis Tests were performed on selected soil samples in the area of planned construction. The tests were performed in general accordance with Test Method ASTM D-422. The test results are presented on Figures B-9 through B-12.

**Plasticity Index Test**

Three (3) Plasticity index tests were performed on samples obtained at the time of drilling in the area of planned construction. The samples were tested for the liquid limits and plastic limits to determine the plasticity index of each sample using Test Method ASTM D 4318. The test results are presented in Table B-2 and on Figure B-13.

**Corrosivity**

Two (2) Corrosivity Evaluations were performed on bulk soil samples obtained at the time of drilling in the area of planned construction. The soil samples were evaluated for minimum resistivity (ASTM G57), sulfate ion concentration (CT 417), chloride ion concentration (CT 422), pH of soil (ASTM D4972), and Redox Potential (ASTM G200). The test results are presented in Table B-1.

| Table B 1: Summary of Corrosion Test Results | | | | |
|---|---|---|---|---|
| **Sample Location** | **Minimum Resistivity (ohm-cm)** | **Sulfate (ppm)** | **Chloride (ppm)** | **pH** |
| B-2 @ 0-5 feet bgs | 1,400 | 50 | Not Detected | 6.99 |
| B-7 @ 0-5 feet bgs | 920 | 50 | 25 | 6.91 |

| Table B 2: Summary of Plasticity Index Test Results | | | |
|---|---|---|---|
| **Sample Location** | **Liquid Limit (%)** | **Plastic Limit (%)** | **Plasticity Index (%)** |
| B-1 @ 0-5 feet bgs | 28 | 17 | 11 |
| B-3 @ 8.5-9 feet bgs | 33 | 16 | 17 |
| B-8 @ 10-11.5 feet bgs | Non-Plastic | | |

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# Direct Shear Test

**ASTM D 3080**

| | | | |
|---|---|---|---|
| **Project Name:** | **Giumarra Pipeline Project** | **Sample Date:** | 6/3/2022 |
| **Project Number:** | G00-000-017 | **Test Date:** | 6/14/2022 |
| **Lab Tracking ID:** | B22-105 | **Report Date:** | 6/14/2022 |
| **Sample Location:** | B-3 @ 6.0-6.5 Feet Bgs | **Sampled By:** | Y.Xu |
| **Sample Description:** | SM: Silty Sand: Yellowish Brown; F-C; Moist; Trace of Clay and Gravel | **Tested By:** | C. Irving |

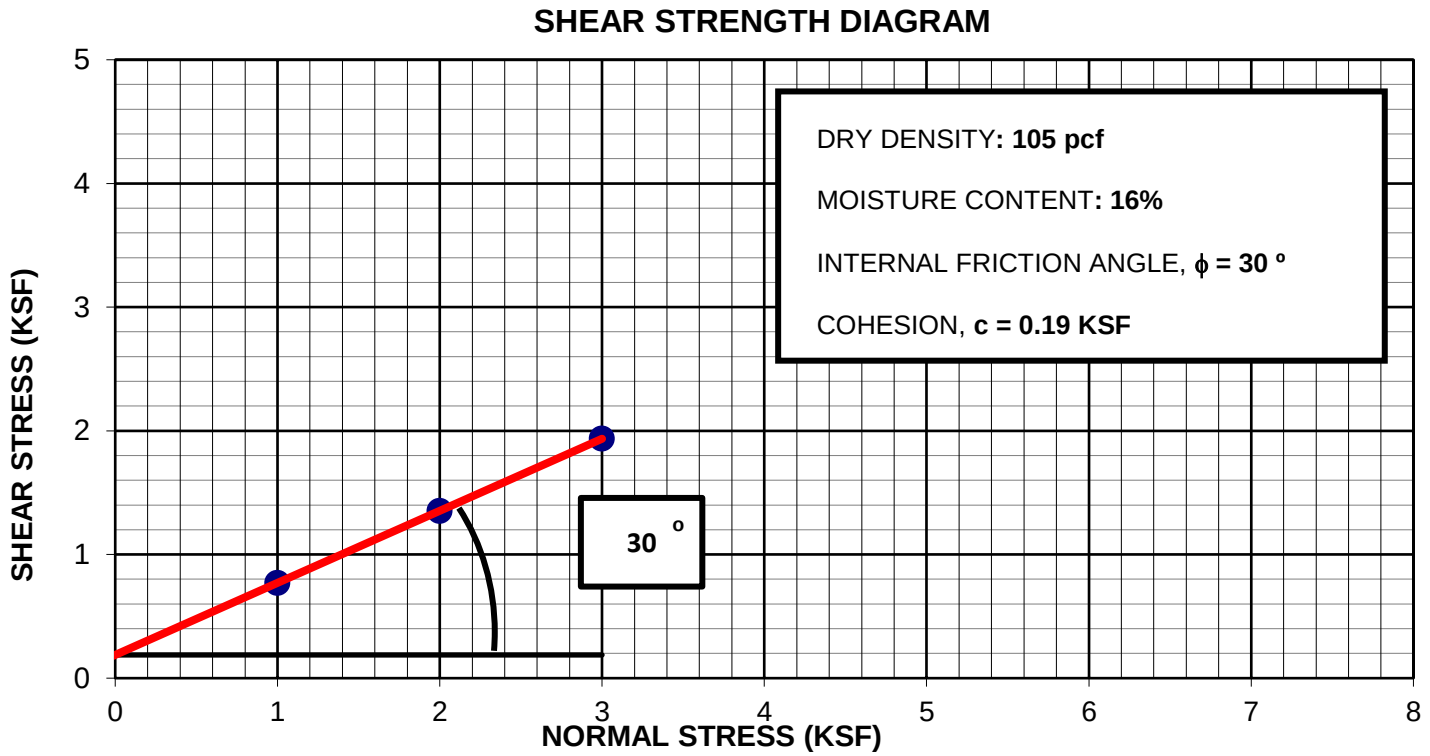


**Figure B-1**

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# Direct Shear Test

**ASTM D 3080**

| | | | |
|---|---|---|---|
| **Project Name:** | **Giumarra Pipeline Project** | **Sample Date:** | 6/3/2022 |
| **Project Number:** | G00-000-017 | **Test Date:** | 6/14/2022 |
| **Lab Tracking ID:** | B22-105 | **Report Date:** | 6/14/2022 |
| **Sample Location:** | B-5 @ 6.0-6.5 Feet Bgs | **Sampled By:** | Y.Xu |
| **Sample Description:** | SM:Clayey Silty Sand: Light Brown; fine to coarse; dry | **Tested By:** | C. Irving |

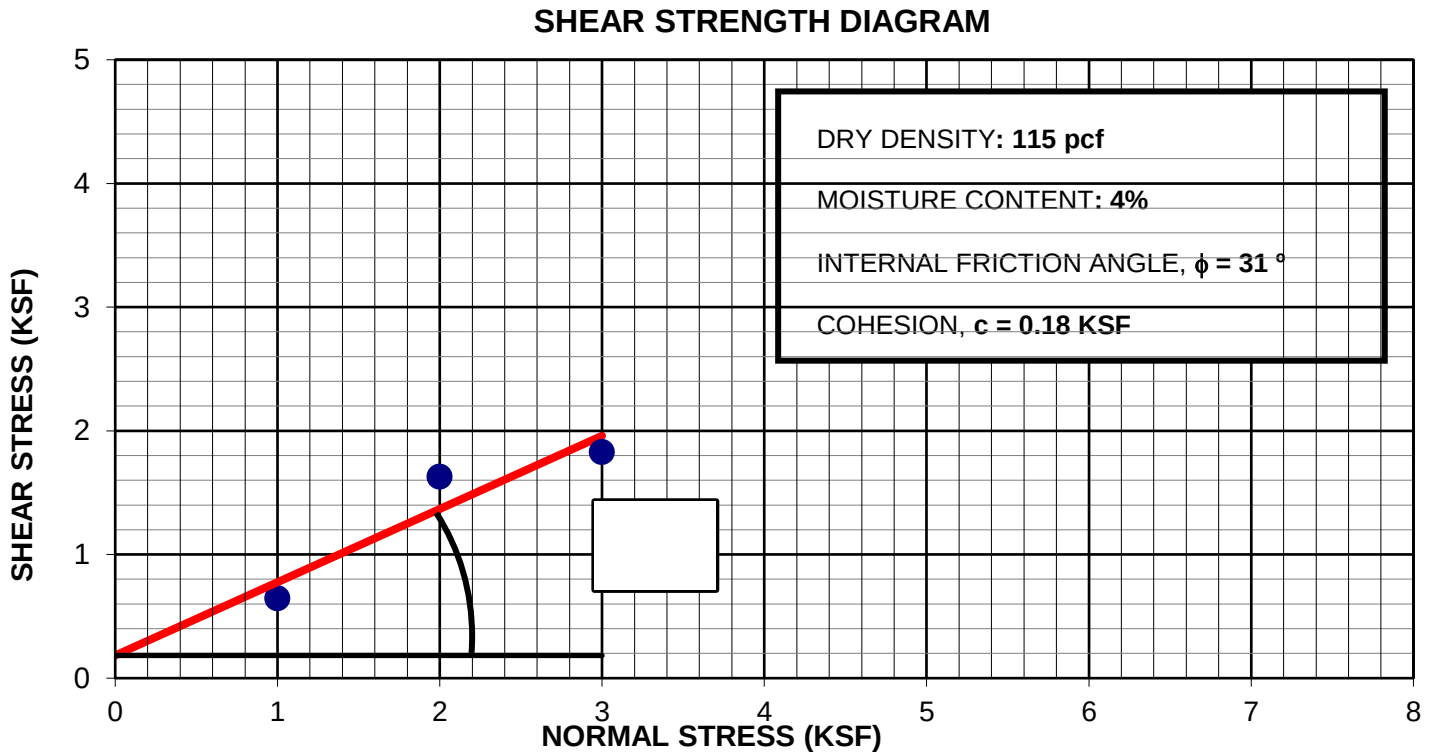


**Figure B-2**

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# Direct Shear Test

**ASTM D 3080**

| | | | |
|---|---|---|---|
| **Project Name:** | **Giumarra Pipeline Project** | **Sample Date:** | 6/3/2022 |
| **Project Number:** | G00-000-017 | **Test Date:** | 6/14/2022 |
| **Lab Tracking ID:** | B22-105 | **Report Date:** | 6/14/2022 |
| **Sample Location:** | B-7 @ 6.0-6.5 Feet Bgs | **Sampled By:** | Y.Xu |
| **Sample Description:** | SM: Silty Sand: Light Yellowish Brown; F to C; dry; trace clay | **Tested By:** | C. Irving |

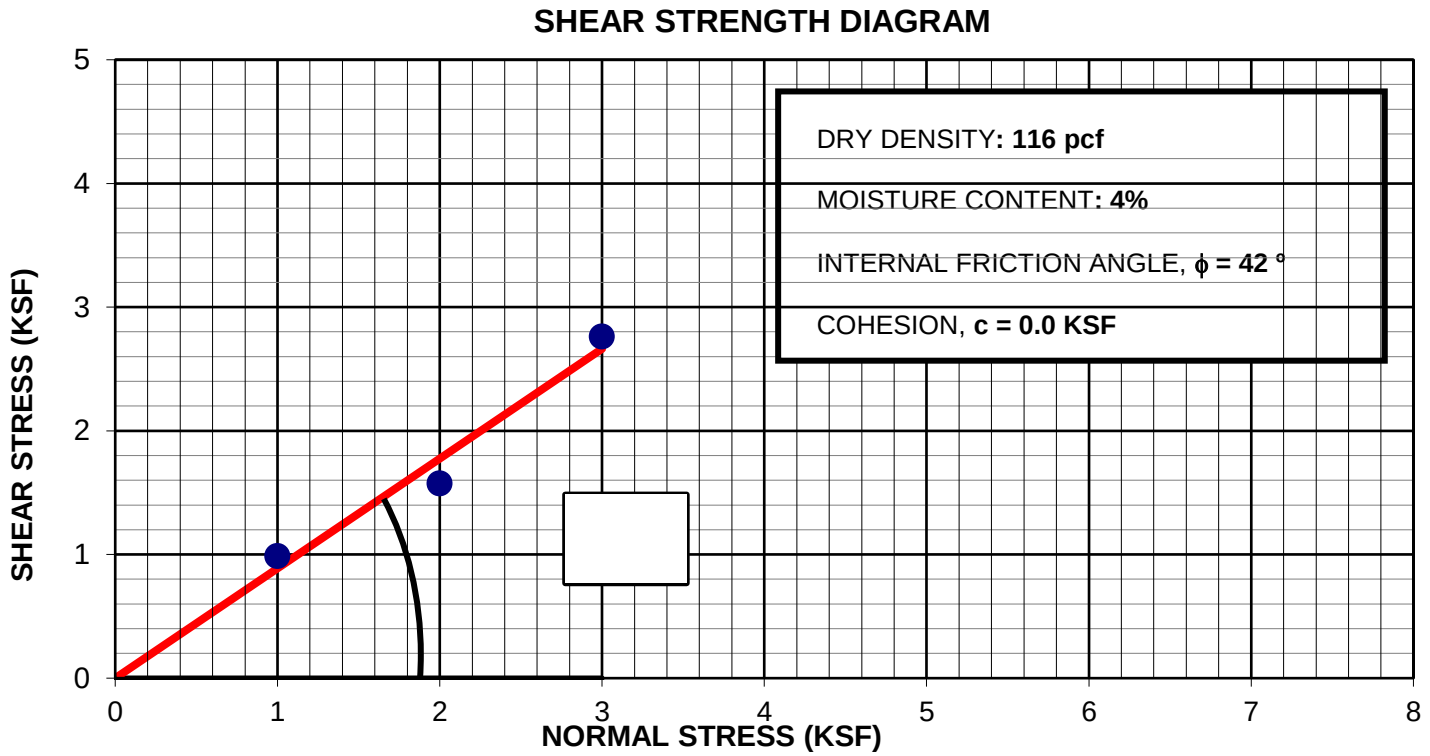


**Figure B-3**

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# Collapse Potential Test

**ASTM D 5333, One-Dimensional Analysis**

| | | | |
|---|---|---|---|
| **Project Name:** | Giumarra Pipeline Project | **Sample Date:** | 6/3/2022 |
| **Project Number:** | G00-000-017 | **Test Date:** | 6/8/2022 |
| **Sample Location:** | B-1 @ 8.5-9.0 feet Bsg | **Sampled By:** | Y.Xu |
| **Sample Description:** | SM: Silty Sand: Light Yellowish Brown; Fine to coarse; Dry; trace gravel | **Tested By:** | C. Irivng |
| **Collapse Potential:** | 3.46 percent collapse at 1300 psf | **Dry Density (pcf):** | 118 |
| **Peak Load (psf):** | 1300 | **Initial Moisture Content (%):** | 3 |

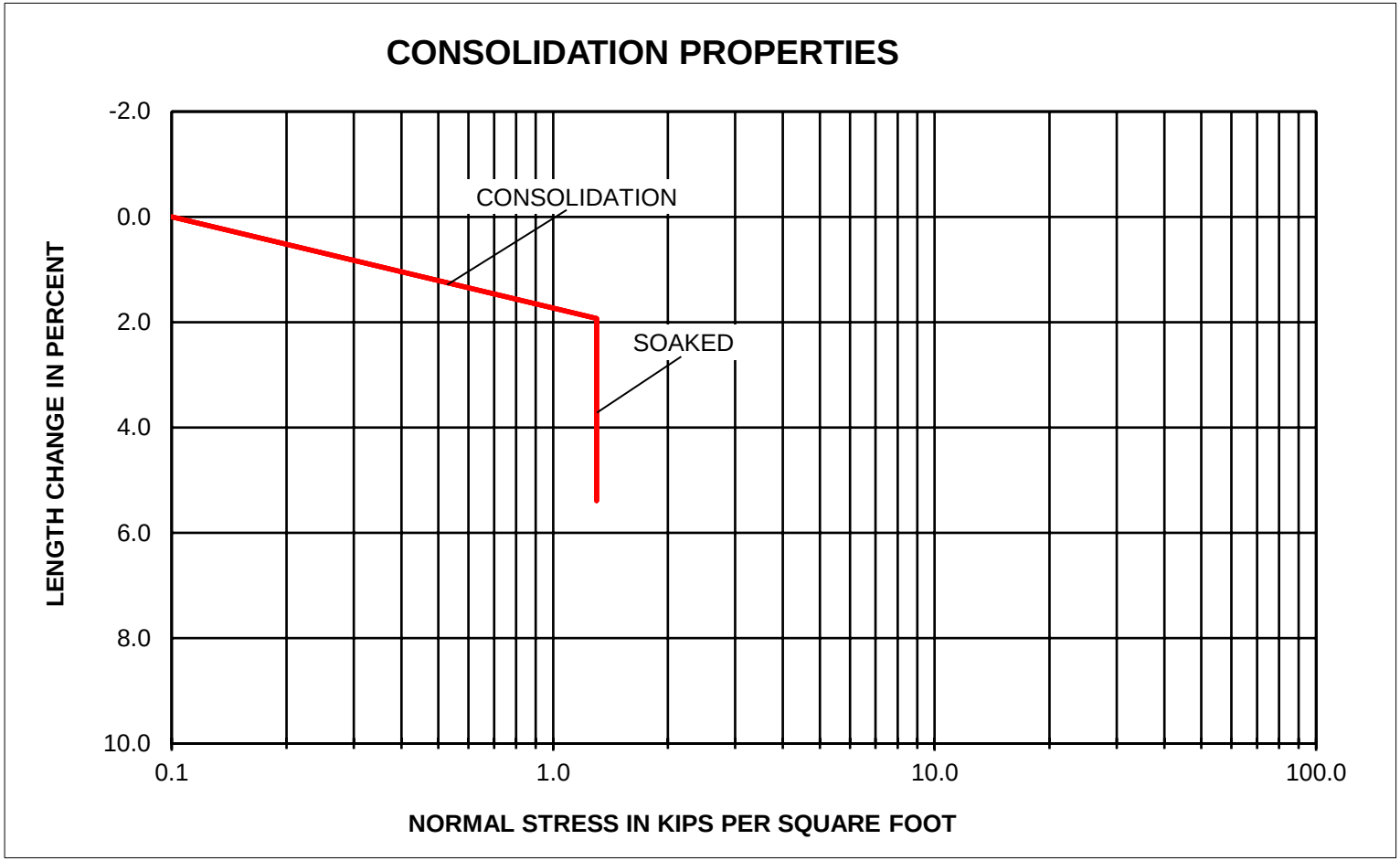


**Figure B-4**

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# Collapse Potential Test

**ASTM D 5333, One-Dimensional Analysis**

| | | | |
|---|---|---|---|
| **Project Name:** | Giumarra Pipeline Project | **Sample Date:** | 6/3/2022 |
| **Project Number:** | G00-000-017 | **Test Date:** | 6/8/2022 |
| **Sample Location:** | B-5 @ 8.5-9.0 feet Bsg | **Sampled By:** | Y.Xu |
| **Sample Description:** | SM: Silty Sand: Light Brown; Fine to Coarse; Dry | **Tested By:** | C. Irivng |
| **Collapse Potential:** | 1.33 percent collapse at 1300 psf | **Dry Density (pcf):** | 117 |
| **Peak Load (psf):** | 1300 | **Initial Moisture Content (%):** | 2 |

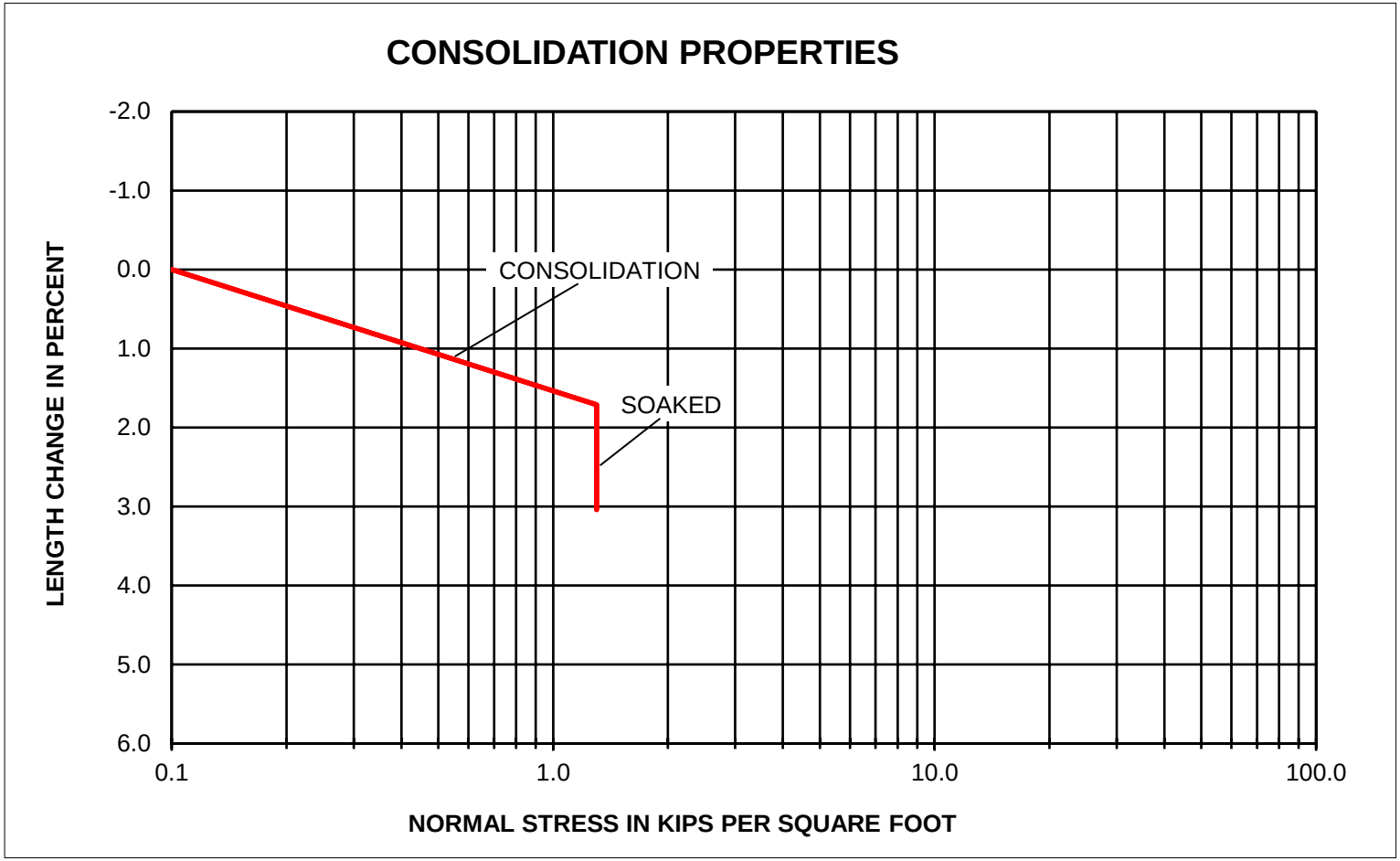


**Figure B-5**

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# Collapse Potential Test

**ASTM D 5333, One-Dimensional Analysis**

| | | | |
|---|---|---|---|
| **Project Name:** | Giumarra Pipeline Project | **Sample Date:** | 6/3/2022 |
| **Project Number:** | G00-000-017 | **Test Date:** | 6/8/2022 |
| **Sample Location:** | B-7 @ 8.5-9.0 feet Bsg | **Sampled By:** | Y.Xu |
| **Sample Description:** | SM: Silty Sand: Light Yellowish Brown; fine grained; slightly moist | **Tested By:** | C. Irivng |
| **Collapse Potential:** | 0.75 percent collapse at 1300 psf | **Dry Density (pcf):** | 109 |
| **Peak Load (psf):** | 1300 | **Initial Moisture Content (%):** | 5 |

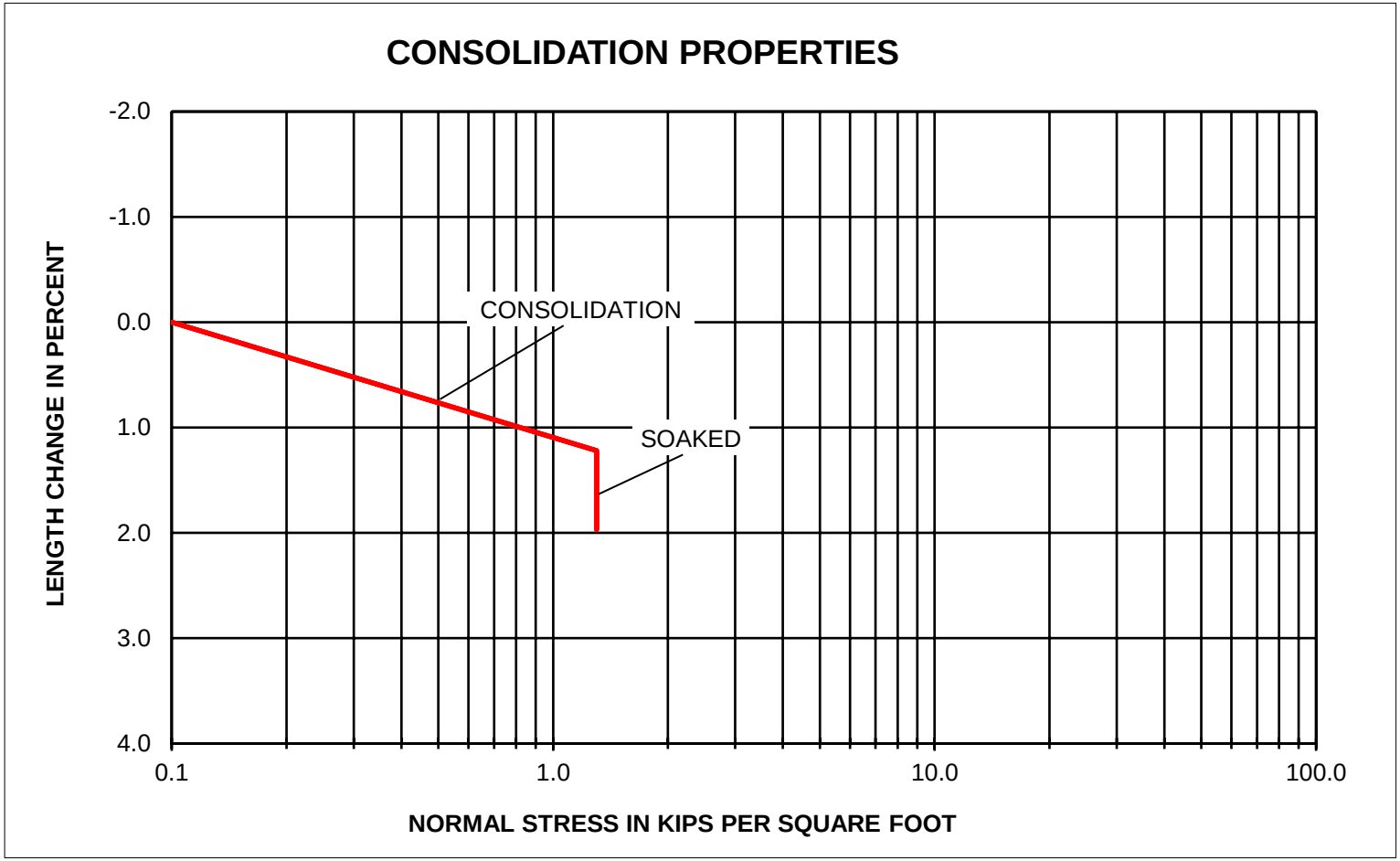


**Figure B-6**

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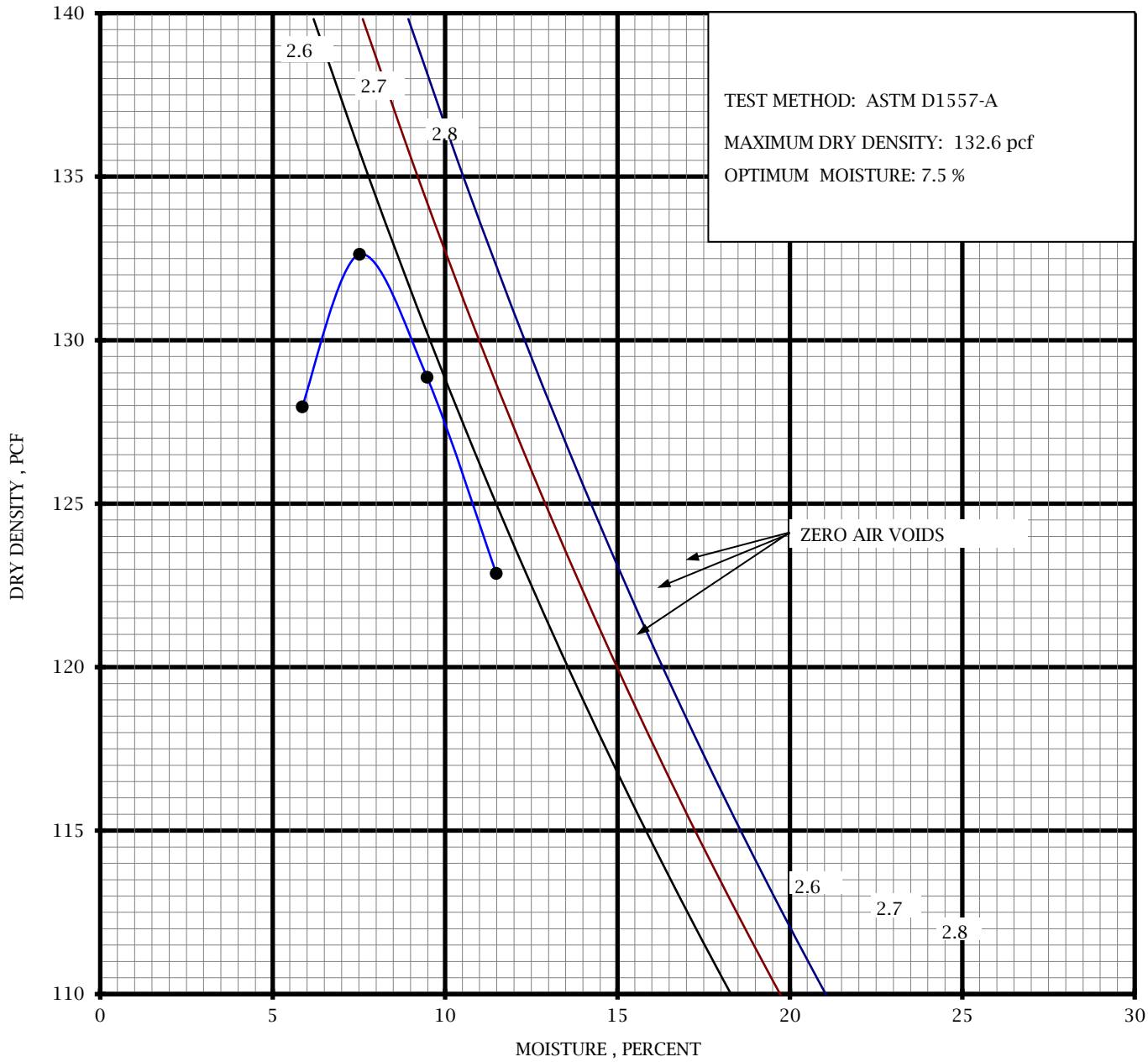
# MOISTURE DENSITY RELATIONSHIP
# ASTM D1557

| | | | |
|---|---|---|---|
| **Project Name:** | Giumarra Pipeline Project | **Project Number:** | G00-000-017 |
| **Project Manager:** | Adam Terronez | **Lab Number:** | B22-105 |
| **Sample Location:** | B-1 @ 0.0-5.0 feet bgs | **Sample Date:** | 6/3/2022 |
| **Sample Description:** | SC: CLAYEY SAND; brown; fine to medium grained; | | |
| **Tested By:** | J. Buenrostro **Tested Date:** 6/14/2022 | **Sample By:** | Y. Xu / A. Cuevas |




Reviewed by: I. Remotigue

**Figure B-7**

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# MOISTURE DENSITY RELATIONSHIP
# ASTM D1557

| | | | |
|---|---|---|---|
| **Project Name:** | Giumarra Pipeline Project | **Project Number:** | G00-000-017 |
| **Project Manager:** | Adam Terronez | **Lab Number:** | B22-105 |
| **Sample Location:** | B-7 @ 0.0-5.0 feet bgs | **Sample Date:** | 6/3/2022 |
| **Sample Description:** | SM: SILTY SAND; brown; fine to meium grained; trace gravel | | |
| **Tested By:** | J. Buenrostro **Tested Date:** 6/14/2022 | **Sample By:** | Y. Xu / A. Cuevas |

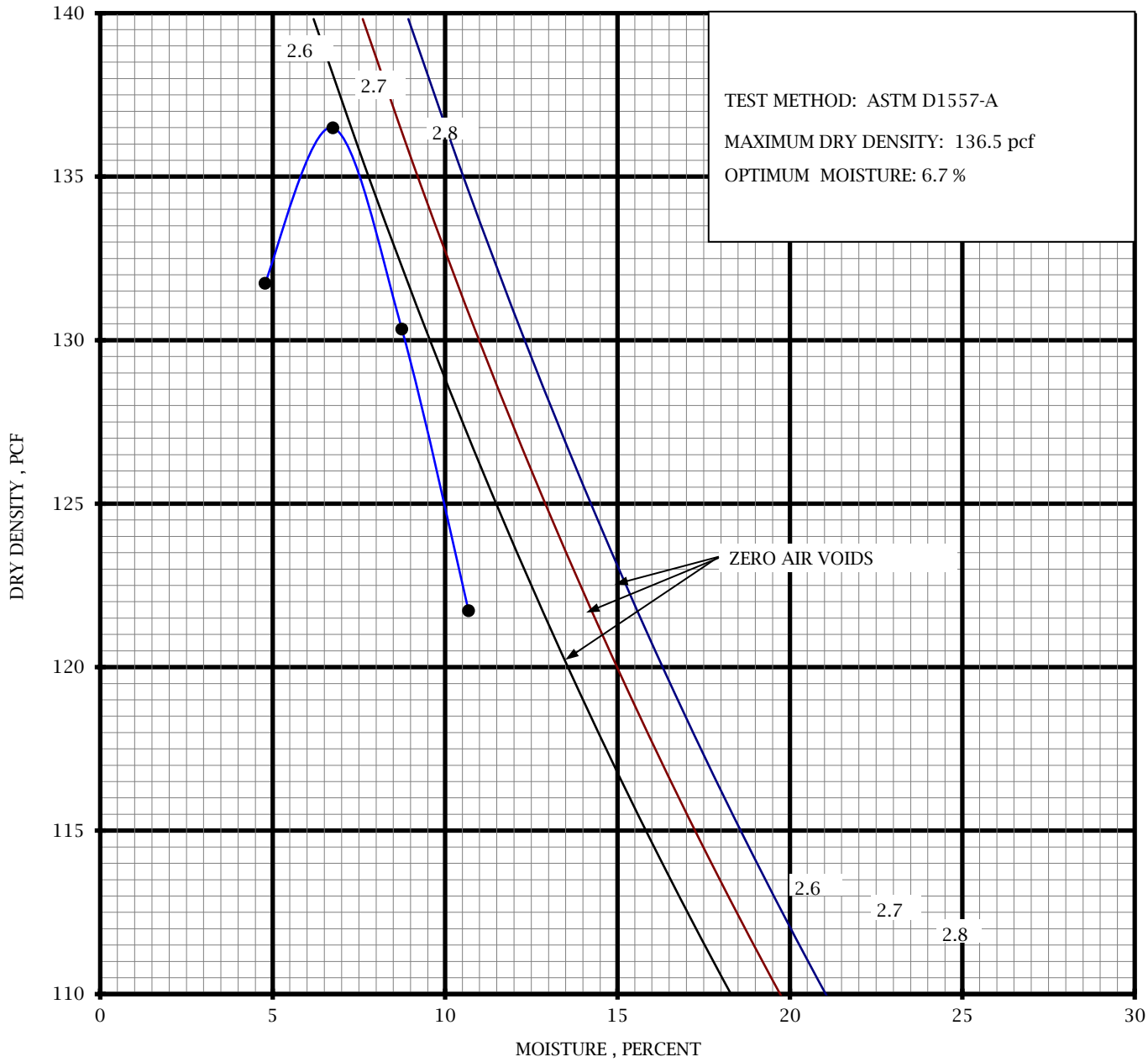


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**Figure B-8**

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# Sieve Analysis

○ CTM 202 ○ D422 ○ T88 ○ T27 ○ T30 ◉ C136

**Project Name:** Giumarra Pipeline Project
**Project Number:** G00-000-017
**Lab Tracking ID:** B22-105
**Sample Location:** B-1 @ 0-5'
**Sample Source:** Native

**Sample Date:** 6/3/2022
**Sample by:** Y. Xu/A. Cueves
**Test Date:** 6/10/2022
**Tested By:** A. Bartole

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| A. Total Wt of Sample(g): | | 1063.7 | Wt. Before 200 Wash(g): | | | 509.4 | | % Gravel: | |
| | | | Wt. After 200 Wash (g): | | | 255.3 | | % Coarse: | |
| | | | | | | | | % Fine: | |

| Sieve Size | Sieve Size (mm) | WT. RETAINED | | % RETAINED | | Passing | Combined % Passing | Project Specification | Pass/Fail |
|---|---|---|---|---|---|---|---|---|---|
| | | Ind. | Cumulative | Ind. | Cumulative | | | | |
| 3" | 75mm | | | | | | | | |
| $2^1/_2$" | 63mm | | | | | | | | |
| 2" | 50mm | | | | | | | | |
| 1 ½" | 37.5mm | | | | | | | | |
| 1" | 25mm | | | | | | | | |
| 3/4" | 19mm | | | | | | | | |
| 1/2" | 12.5mm | | | | | | | | |
| 3/8" | 9.5mm | | 2.8 | | 0 | | 100 | | |
| #4 | 4.75mm | | 12.7 | | 1 | | 99 | | |
| #8 | 2.36mm | | 13.5 | | 3 | | 96 | | |
| #10 | 2.00mm | | | | | | | | |
| #16 | 1.18mm | | 44.0 | | 9 | | 90 | | |
| #20 | 850mm | | | | | | | | |
| #30 | 600mm | | 80.2 | | 16 | | 83 | | |
| #40 | 425mm | | | | | | | | |
| #50 | 300mm | | 124.5 | | 24 | | 75 | | |
| #80 | 180mm | | | | | | | | |
| #100 | 150mm | | 179.9 | | 35 | | 64 | | |
| #200 | 75mm | | 253.2 | | 50 | | 50 | | |
| PAN | | | | | | | | | |
| Weight after sieving | | | | | | | | | |

Remarks:

**Figure B-9**

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# Sieve Analysis

○ CTM 202 ○ D422 ○ T88 ○ T27 ○ T30 ◉ C136

**Project Name:** Giumarra Pipeline Project
**Project Number:** G00-000-017
**Lab Tracking ID:** B22-105
**Sample Location:** B-3 @ 0-5'
**Sample Source:** Native

**Sample Date:** 6/3/2022
**Sample by:** Y. Xu/A. Cueves
**Test Date:** 6/10/2022
**Tested By:** A. Bartole

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| A. Total Wt of Sample(g): | | 1146.2 | Wt. Before 200 Wash(g): | | | 419.2 | | % Gravel: | |
| | | | Wt. After 200 Wash (g): | | | 258.7 | | % Coarse: | |
| | | | | | | | | % Fine: | |

| Sieve Size | Sieve Size (mm) | WT. RETAINED | | % RETAINED | | Passing | Combined % Passing | Project Specification | Pass/Fail |
|---|---|---|---|---|---|---|---|---|---|
| | | Ind. | Cumulative | Ind. | Cumulative | | | | |
| 3" | 75mm | | | | | | | | |
| $2^1/_2$" | 63mm | | | | | | | | |
| 2" | 50mm | | | | | | | | |
| 1 ½" | 37.5mm | | | | | | | | |
| 1" | 25mm | | | | | | | | |
| 3/4" | 19mm | | | | | | | | |
| 1/2" | 12.5mm | | | | | | | | |
| 3/8" | 9.5mm | | 6.9 | | 1 | | 99 | | |
| #4 | 4.75mm | | 23.9 | | 2 | | 98 | | |
| #8 | 2.36mm | | 14.9 | | 4 | | 94 | | |
| #10 | 2.00mm | | | | | | | | |
| #16 | 1.18mm | | 46.3 | | 11 | | 87 | | |
| #20 | 850mm | | | | | | | | |
| #30 | 600mm | | 86.4 | | 21 | | 78 | | |
| #40 | 425mm | | | | | | | | |
| #50 | 300mm | | 140.3 | | 33 | | 65 | | |
| #80 | 180mm | | | | | | | | |
| #100 | 150mm | | 201.8 | | 48 | | 51 | | |
| #200 | 75mm | | 256.0 | | 61 | | 38 | | |
| PAN | | | | | | | | | |
| Weight after sieving | | | | | | | | | |

Remarks:

**Figure B-10**

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# Sieve Analysis

○ CTM 202 ○ D422 ○ T88 ○ T27 ○ T30 ◉ C136

**Project Name:** Giumarra Pipeline Project
**Project Number:** G00-000-017
**Lab Tracking ID:** B22-105
**Sample Location:** B-5 @ 0-5'
**Sample Source:** Native

**Sample Date:** 6/3/2022
**Sample by:** Y. Xu/A. Cueves
**Test Date:** 6/10/2022
**Tested By:** A. Bartole

| A. Total Wt of Sample(g): | 2009.4 | Wt. Before 200 Wash(g): | 513.7 | | % Gravel: | |
|---|---|---|---|---|---|---|
| | | Wt. After 200 Wash (g): | 309.3 | | % Coarse: | |
| | | | | | % Fine: | |

| Sieve Size | Sieve Size (mm) | WT. RETAINED Ind. | WT. RETAINED Cumulative | % RETAINED Ind. | % RETAINED Cumulative | Passing | Combined % Passing | Project Specification | Pass/Fail |
|---|---|---|---|---|---|---|---|---|---|
| 3" | 75mm | | | | | | | | |
| $2^1/_2$" | 63mm | | | | | | | | |
| 2" | 50mm | | | | | | | | |
| 1 ½" | 37.5mm | | | | | | | | |
| 1" | 25mm | | | | | | | | |
| 3/4" | 19mm | | | | | | | | |
| 1/2" | 12.5mm | | | | | | | | |
| 3/8" | 9.5mm | | 2.6 | | 0 | | 100 | | |
| #4 | 4.75mm | | 53.3 | | 3 | | 97 | | |
| #8 | 2.36mm | | 15.0 | | 3 | | 95 | | |
| #10 | 2.00mm | | | | | | | | |
| #16 | 1.18mm | | 53.1 | | 10 | | 87 | | |
| #20 | 850mm | | | | | | | | |
| #30 | 600mm | | 105.4 | | 21 | | 77 | | |
| #40 | 425mm | | | | | | | | |
| #50 | 300mm | | 170.7 | | 33 | | 65 | | |
| #80 | 180mm | | | | | | | | |
| #100 | 150mm | | 237.4 | | 46 | | 52 | | |
| #200 | 75mm | | 307.4 | | 60 | | 39 | | |
| PAN | | | | | | | | | |
| Weight after sieving | | | | | | | | | |

Remarks:

**Figure B-11**

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# Sieve Analysis

○ CTM 202 ○ D422 ○ T88 ○ T27 ○ T30 ◉ C136

**Project Name:** Giumarra Pipeline Project
**Project Number:** G00-000-092
**Lab Tracking ID:** B22-105
**Sample Location:** B-7 @ 0-5'
**Sample Source:** Native

**Sample Date:** 6/3/2022
**Sample by:** Y. Xu/A. Cueves
**Test Date:** 6/10/2022
**Tested By:** A. Bartole

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| A. Total Wt of Sample(g): | | | Wt. Before 200 Wash(g): | | | 521.3 | | % Gravel: | |
| | | | Wt. After 200 Wash (g): | | | 360.7 | | % Coarse: | |
| | | | | | | | | % Fine: | |
| Sieve Size | Sieve Size (mm) | WT. RETAINED | | % RETAINED | | Passing | Combined % Passing | Project Specification | Pass/Fail |
| | | Ind. | Cumulative | Ind. | Cumulative | | | | |
| 3" | 75mm | | | | | | | | |
| $2^1/_2$" | 63mm | | | | | | | | |
| 2" | 50mm | | | | | | | | |
| 1 ½" | 37.5mm | | | | | | | | |
| 1" | 25mm | | | | | | | | |
| 3/4" | 19mm | | | | | | | | |
| 1/2" | 12.5mm | | | | | | | | |
| 3/8" | 9.5mm | | | | | | | | |
| #4 | 4.75mm | | 7.2 | | 1 | | 99 | | |
| #8 | 2.36mm | | 38.1 | | 7 | | 93 | | |
| #10 | 2.00mm | | | | | | | | |
| #16 | 1.18mm | | 100.6 | | 19 | | 80 | | |
| #20 | 850mm | | | | | | | | |
| #30 | 600mm | | 177.3 | | 34 | | 65 | | |
| #40 | 425mm | | | | | | | | |
| #50 | 300mm | | 254.8 | | 49 | | 51 | | |
| #80 | 180mm | | | | | | | | |
| #100 | 150mm | | 314.1 | | 60 | | 39 | | |
| #200 | 75mm | | 359.7 | | 69 | | 31 | | |
| PAN | | | | | | | | | |
| Weight after sieving | | | | | | | | | |

Remarks:

**Figure B-12**

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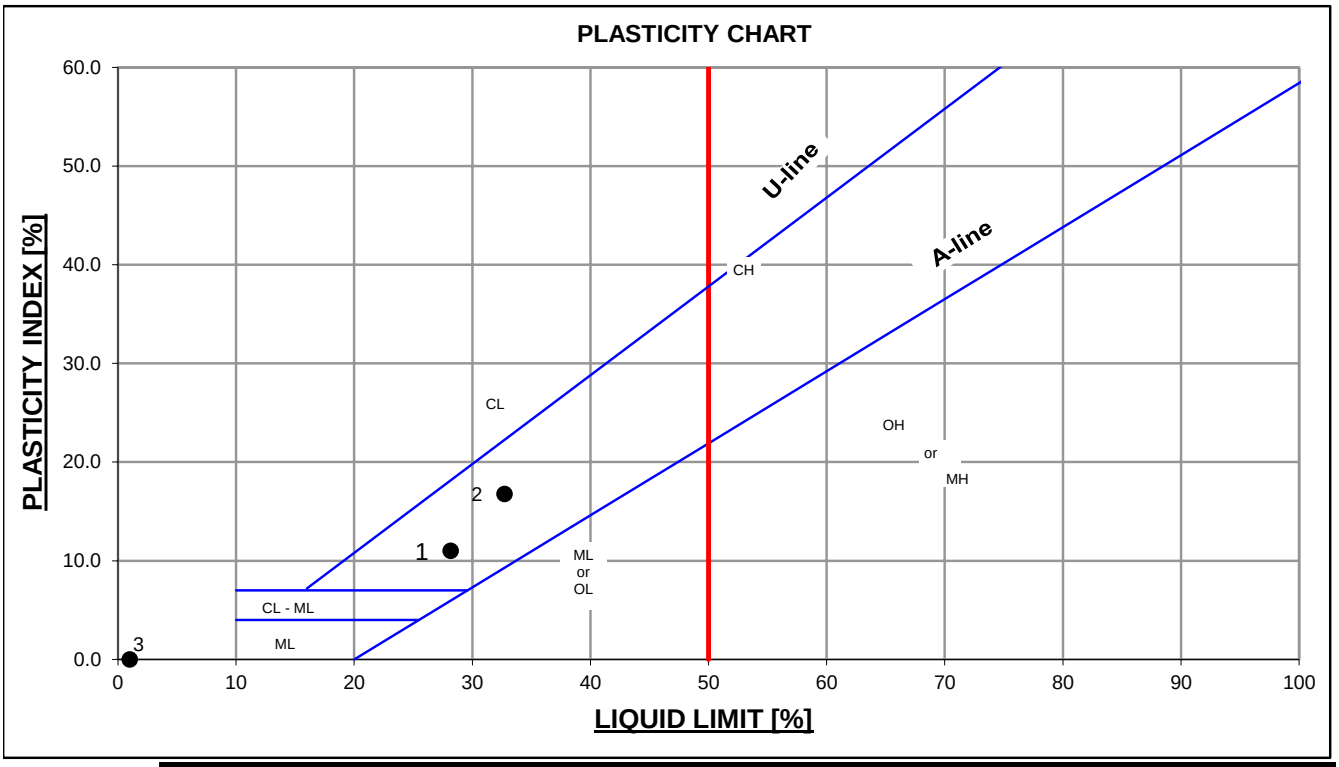
# Atterberg Limits
## Liquid Limit (LL), Plastic Limit(PL), Plastic Index (PI)
**ASTM D4318**

| | | | |
|---|---|---|---|
| **Project Name:** | Giumarra Pipeline Project | **Sample Date:** | 6/3/2022 |
| **Project Number:** | G00-000-017 | **Test Date:** | 6/15/2022 |
| **Sampled By:** | Y. Xu / A. Cuevas | **Tested By:** | C. Irving |




| Sample # | 1 | | | 2 | | | 3 | | |
|---|---|---|---|---|---|---|---|---|---|
| **Sample ID** | B22-105 | | | B22-105 | | | B22-105 | | |
| **Location** | B-1 @ 0.0-5.0 ft bgs | | | B-3 @ 8.5-9 ft bgs | | | B-8 @ 10.0-11.5 ft bgs | | |
| **Description** | SC: CLAYEY SAND | | | CL: CLAY with Sand | | | ML: SANDY SILT | | |
| | **Liquid Limit Data** | | | | | | | | |
| Wet+Tare (g) | 28.92 | 31.68 | 30.93 | 36.30 | 45.44 | 39.20 | | | |
| Dry+Tare (g) | 25.82 | 27.76 | 26.93 | 31.04 | 37.74 | 32.55 | | | |
| Tare (g) | 14.09 | 13.81 | 13.94 | 13.91 | 14.06 | 14.00 | | | |
| No. of Blows | 34 | 25 | 15 | 35 | 25 | 15 | | | |
| LL | 26.4 | 28.1 | 30.8 | 30.7 | 32.5 | 35.8 | | | |
| Corrected LL | 27.4 | 28.1 | 28.9 | 32.0 | 32.5 | 33.7 | | | |
| | **Plastic Limit Data** | | | | | | | | |
| Wet+Tare (g) | 16.41 | 18.20 | 18.44 | 18.78 | 17.08 | 18.23 | | | |
| Dry+Tare (g) | 16.16 | 17.67 | 17.86 | 18.13 | 16.75 | 17.74 | | | |
| Tare (g) | 14.68 | 14.70 | 14.40 | 14.40 | 14.66 | 14.40 | | | |
| M.C. | 16.9 | 17.8 | 16.8 | 17.4 | 15.8 | 14.7 | | | |
| | **Results** | **Specification** | | **Results** | **Specification** | | **Results** | **Specification** | |
| AVG L.L. | 28.2 | | | 32.7 | | | | | |
| AVG P.L. | 17.2 | | | 16.0 | | | | | |
| P.I. | 11 | | | 17 | | | | | |
| USCS Symbol | CL | | | CL | | | Non-Plastic | | |

Remarks:

**Figure B-13**

Reviewed By: Ian T. Remotigue

## Project Drawings

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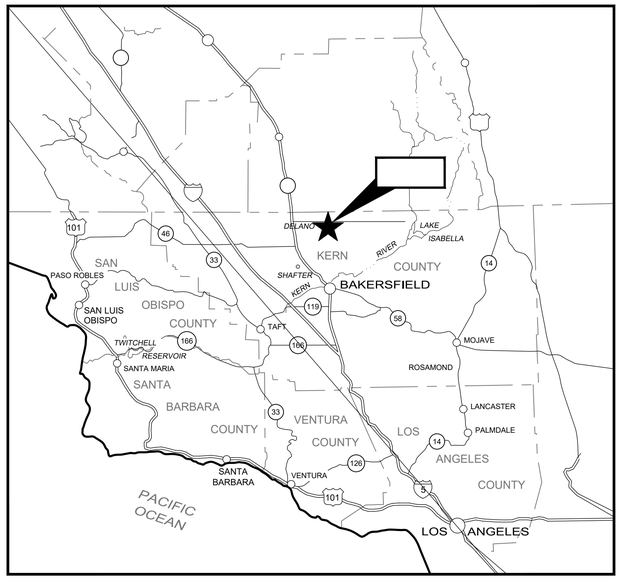
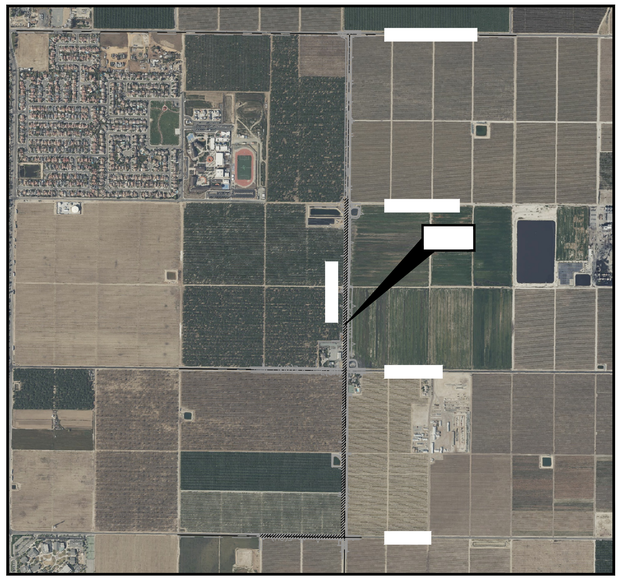



VICINITY MAP
(NOT TO SCALE)




PREPARED FOR:

SOUTHERN SAN JOAQUIN MUNICIPAL

11281 GARZOLI AVE
DELANO CA, 93215



Attention:
0 1"
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REGISTERED PROFESSIONAL ENGINEER
SAMUEL W. SCHAEFER
C 66337
Exp. 6-30-26
STATE OF CALIFORNIA

| | |
|---|---|
| *Designed:* | S. SHAEFER |
| *Drawn:* | K. TRAN & L. FLORES |
| *Checked:* | M. MARTIN |
| *Approved:* | S. SCHAEFER |
| *P.E. No:* | 66337 |
| *GEI Project* | 2201103 |

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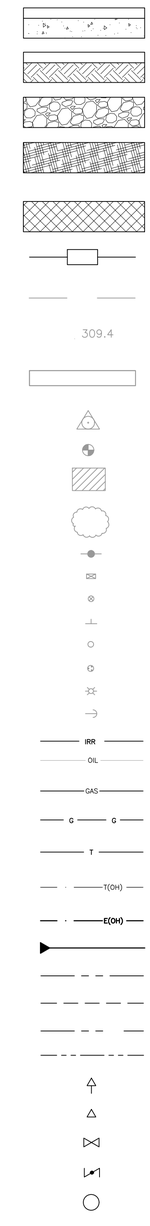
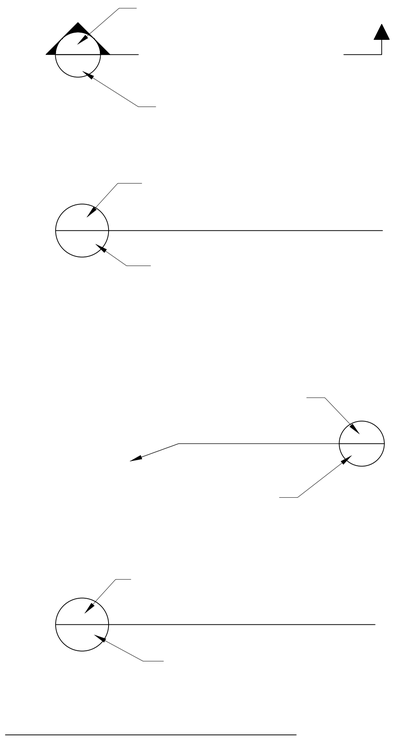
| | |
|---|---|
| EA | EACH |
| EC | END CURVE |
| ECR | END CURVE RETURN |
| EF | EACH FACE |
| EGF | ELK GROVE - FLORIN |
| EL | ELEVATION |
| ELEC | ELECTRICAL OR ELECTRONIC |
| EVC | END VERTICAL CURVE |
| EW | EACH WAY |
| EXIST | EXISTING |
| EXP JT | EXPANSION JOINT |
| FBEL & C | FUSION BONDED EPOXY LINED AND COATED |
| FCA | FLEXIBLE COUPLING ADAPTER |
| FG | FINISH GRADE |
| FIG | FIGURE |
| FIN | FINISHED |
| FL | FLOWLINE OR FLOOR |
| FLG | FLANGE, FLANGED |
| 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 |
| HORIZ | HORIZONTAL |
| HPI | HORIZONTAL POINT OF INTERSECTION |
| HWY | HIGHWAY |
| ID | INSIDE DIAMETER |
| IN | INCH |
| INV | INVERT |
| IRR,IRRG | IRRIGATION |
| JT | JOINT |
| L | LENGTH |
| LAT | LATERAL |
| L/D | LIMITS OF DISTURBANCE |
| LS | LIFT STATION |
| LT | LEFT |
| MAX | MAXIMUM |
| MH | MANHOLE |
| MIN | MINIMUM |
| MISC | MISCELLANEOUS |
| MJ | MECHANICAL JOINT |

| | |
|---|---|
| RCCP | REINFORCED CONCRETE CYLINDER PIPE |
| RD | ROAD |
| REF | REFERENCE |
| REQD | REQUIRED |
| REV | REVISION |
| RFCA | RESTRAINED FLANGED COUPLING ADAPTER |
| RR | RAILROAD |
| RTE | ROUTE |
| RT | RIGHT |
| R/W | RIGHT OF WAY |
| S | SLOPE (ALSO SIGN SYMBOL), SOUTH |
| S/E | SEWER EASEMENT |
| SCG | SOUTHERN CALIFORNIA GAS COMPANY |
| SCH | SCHEDULE |
| SEC | SECTION |
| SHT | SHEET |
| SPECS | SPECIFICATIONS |
| SP | STEEL PIPE |
| SS | SANITARY SEWER, STAINLESS STEEL |
| SSP | STATE STANDARD PLANS |
| STA | STATION |
| STL | STEEL |
| SSJMUD | SOUTHERN SAN JOAQUIN MUNICIPAL UTILITY DISTRICT |
| T | TELEPHONE, TOWNSHIP |
| TB | THRUST BLOCK |
| TBM | TEMPORARY BENCH MARK |
| TBC | TOP BACK CURB |
| TCE | TEMPORARY CONSTRUCTION EASEMENT |
| TEMP | TEMPORARY |
| TW | TOP OF WALL |
| TYP | TYPICAL |
| UG | UNDERGROUND |
| U.N.O | UNLESS NOTED OTHERWISE |
| VAR | VARIES OR VARIABLE |
| VERT | VERTICAL |
| VPI | VERTICAL POINT OF INTERSECTION |
| W | WATER, WEST |
| W/ | WITH |
| WP | WORK POINT |
| WWF | WELDED WIRE FABRIC |
| WWM | WELDED WIRE MESH |



Attention:

0 1"

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REGISTERED PROFESSIONAL ENGINEER SAMUEL W. SCHAEFER C 66337 Exp. 6-30-26 STATE OF CALIFORNIA

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| *Designed:* | S. SHAEFER |
| *Drawn:* | K. TRAN & L. FLORES |
| *Checked:* | M. MARTIN |
| *Approved:* | S. SCHAEFER |
| *P.E. No:* | 66337 |
| *GEI Project* | 2201103 |

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FACILITATE DRAINAGE AND AVOID PONDING AND SHALL BE RESTORED TO NEAR NATURAL OR PRE-CONSTRUCTION CONDITIONS.

8. HAZARDOUS MATERIALS SHALL BE RECOVERED AND DISPOSED OF IN ACCORDANCE WITH ALL APPLICABLE FEDERAL, STATE, AND LOCAL HAZARDOUS WASTE AND HAZARDOUS SUBSTANCES LAWS AND REGULATIONS, SECTION C OF THE GENERAL CONDITIONS, AND SECTION D OF THE SPECIAL CONDITIONS.
9. ALL NATURAL AND EXISTING GROUND ELEVATIONS SHOWN ARE APPROXIMATE. ALL ELEVATIONS ARE PRESENTED IN US CUSTOMARY UNITS (FEET).
10. THE LOCATION, PIPE DIAMETER, MATERIAL, AND/OR ELEVATIONS OF UNDERGROUND UTILITIES SHOWN ON THESE DRAWINGS ARE APPROXIMATE ONLY. THIS DATA IS PROVIDED SOLELY AS AN AID TO BIDDING AND SHALL NOT SUBSTITUTE FOR THE CONTRACTOR'S OWN UTILITY LOCATION RESPONSIBILITIES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING ALL UTILITY COMPANIES SO THAT THOSE COMPANIES MAY MARK THE LOCATIONS OF THEIR UTILITIES PRIOR TO THE START OF THE WORK. PURSUANT TO STATE LAW, THE CONTRACTOR SHALL NOTIFY UNDERGROUND SERVICE ALERT (USA) AT (800) 642-2444 OR (811) AT LEAST TWO (2) FULL WORKING DAYS PRIOR TO EXCAVATION. THE CONTRACTOR SHALL MARK OUT THE APPROXIMATE LIMITS OF THE PROPOSED EXCAVATION PRIOR TO CALLING USA IN ORDER TO ASSIST THE EXISTING UTILITY OWNERS IN UNDERSTANDING THE LIMITS OF THE REQUIRED PRE-MARK SERVICES.
11. THE TYPES, EXTENTS, LOCATIONS, SIZES, AND /OR DEPTHS OF EXISTING UNDERGROUND UTILITIES, AS SHOWN ON THESE PLANS, WERE OBTAINED FROM SOURCES OF VARYING RELIABILITY. EXISTING UTILITIES AND STRUCTURES (UNDERGROUND, SURFACE, OR OVERHEAD) ARE INDICATED ONLY TO THE EXTENT THAT SUCH INFORMATION WAS KNOWN, OR MADE AVAILABLE TO, OR DISCOVERED BY THE ENGINEER IN PREPARING THE DRAWINGS. THE LOCATIONS, CONFIGURATIONS, AND ELEVATIONS OF SUBSURFACE FACILITIES AND UTILITIES ARE APPROXIMATE, AND NOT ALL UTILITIES, SERVICE LATERALS AND FACILITIES MAY BE INDICATED. OVERHEAD UTILITIES ARE SHOWN ON THE PLAN BUT NOT THE PROFILE OR SECTION DRAWINGS. THE CONTRACTOR IS CAUTIONED THAT ONLY ACTUAL EXCAVATION WILL REVEAL THE TYPES, EXTENT, SIZES, MATERIALS, LOCATIONS, AND DEPTHS OF SUCH UNDERGROUND UTILITIES. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR THE COMPLETENESS OR ACCURACY OF ITS DELINEATION OF SUCH UNDERGROUND UTILITIES NOR FOR THE EXISTENCE OF OTHER BURIED OBJECTS OR UTILITIES WHICH MAY BE ENCOUNTERED BUT WHICH ARE NOT SHOWN ON THESE DRAWINGS. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO LOCATE AND PROTECT UNDISCLOSED SERVICE LATERALS.

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COUNTY LINE RD

BASSETT AVE

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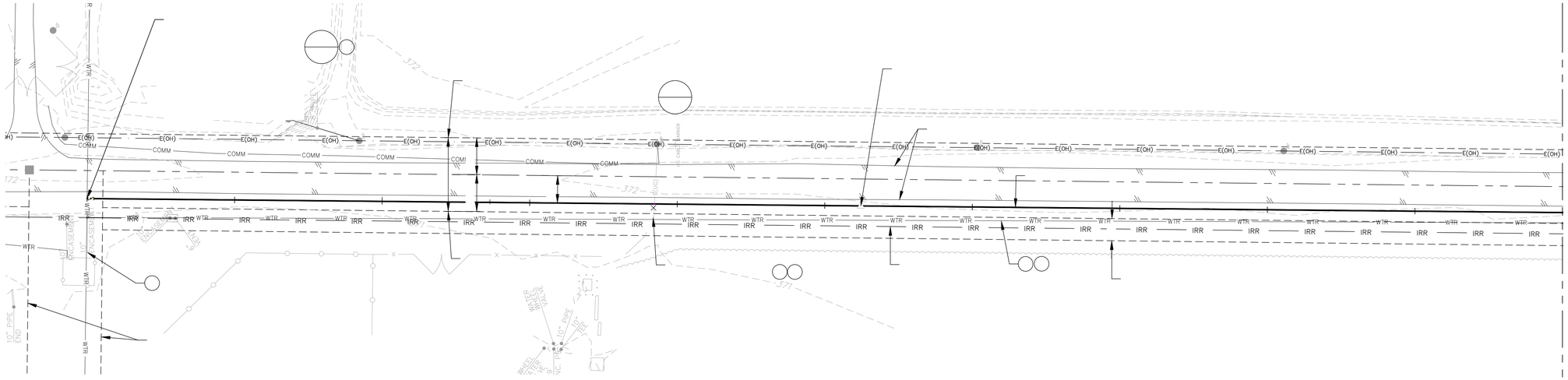


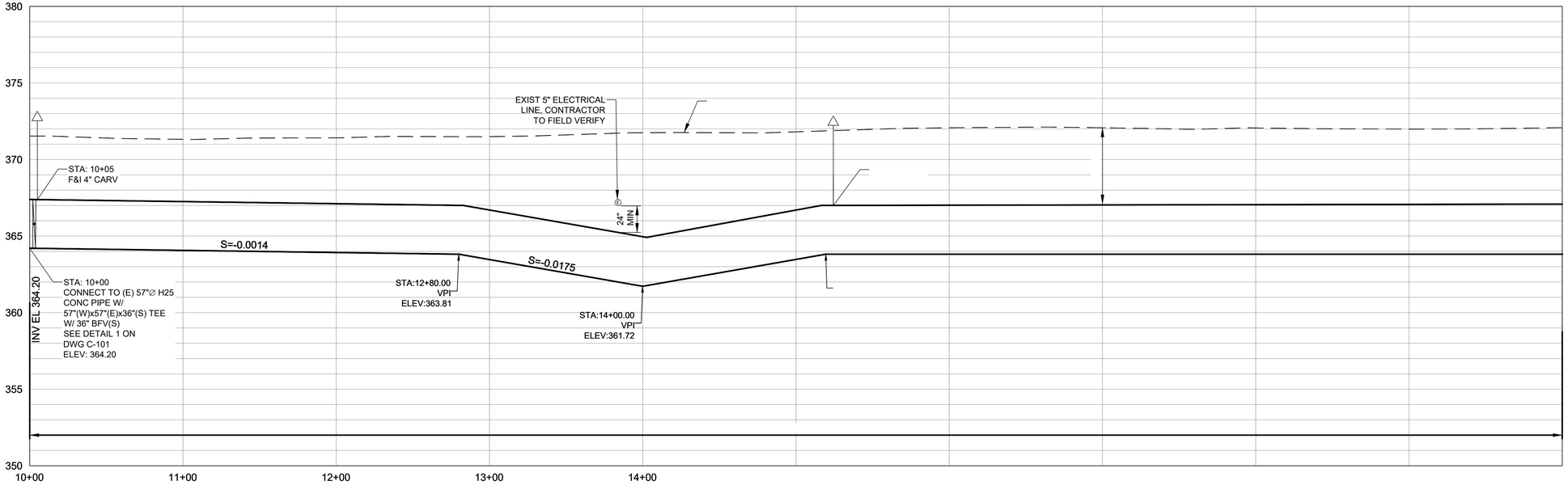


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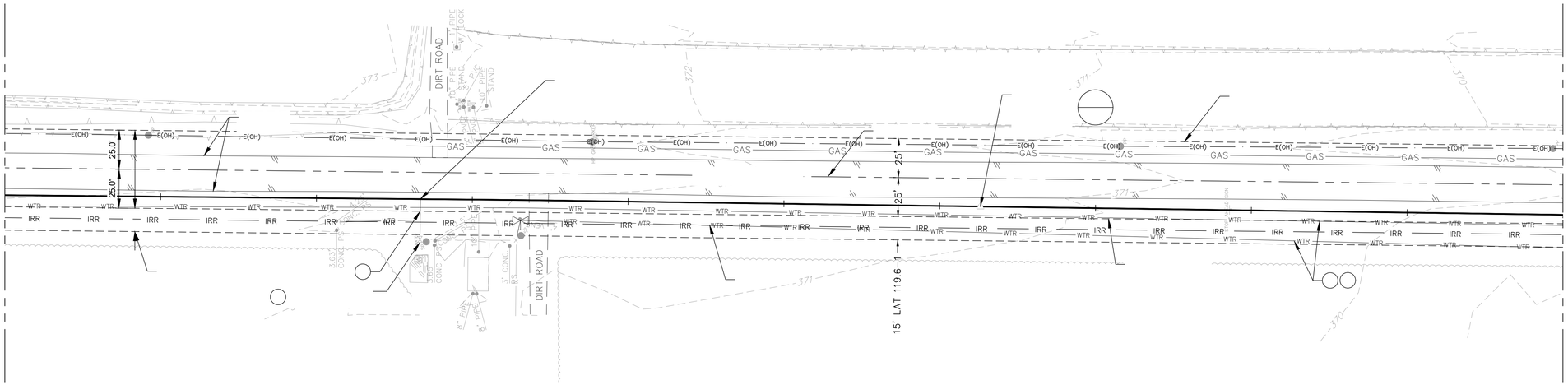


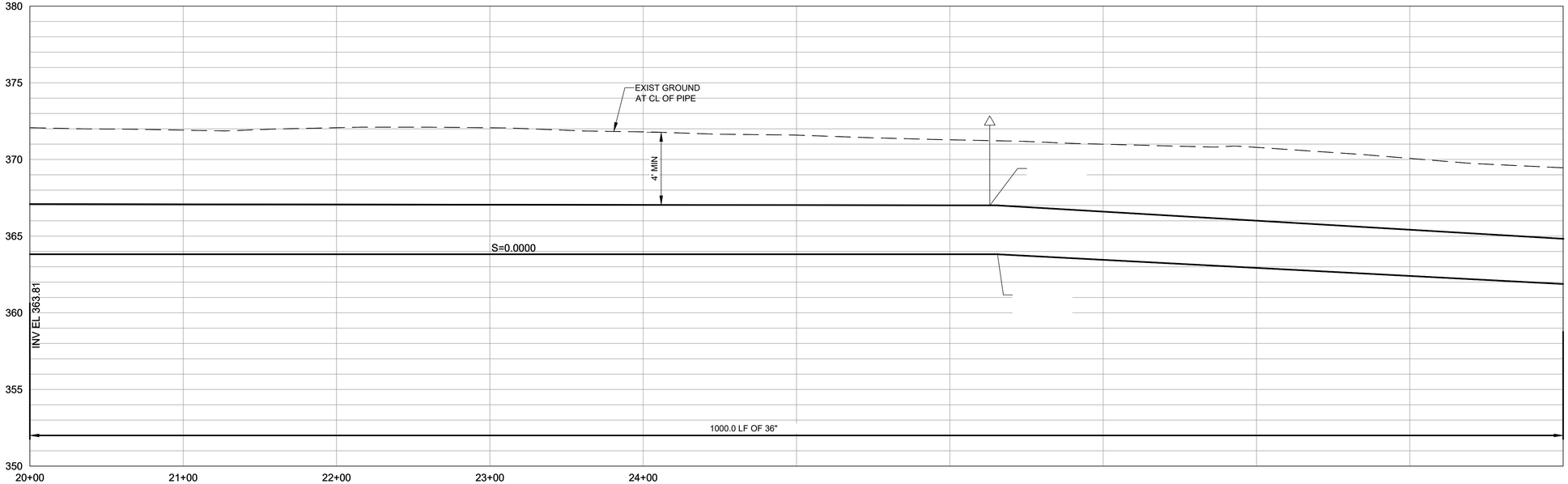


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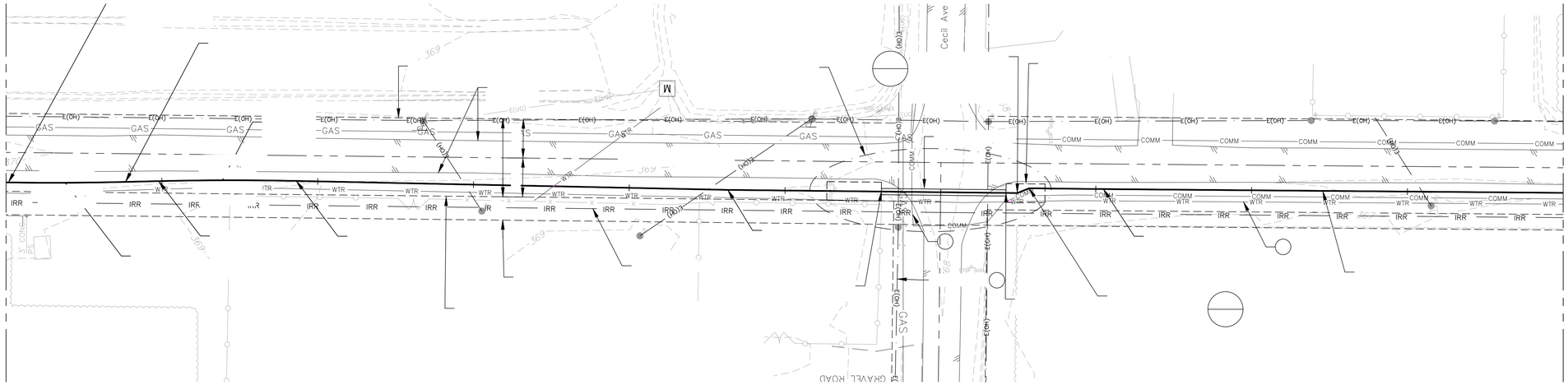



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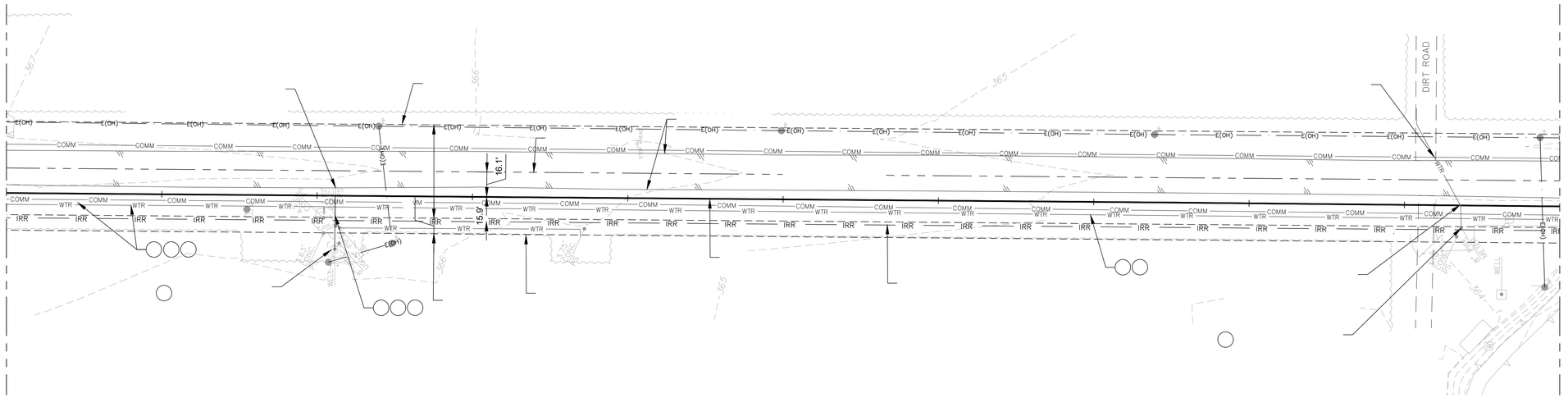


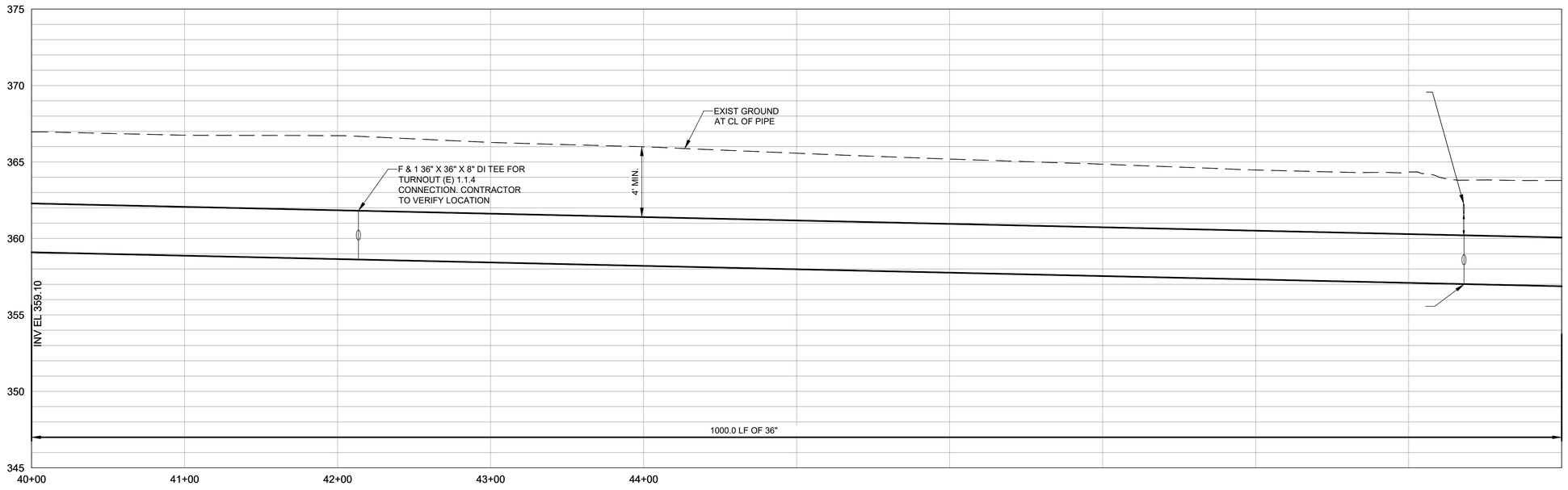


Know what's below. Call before you dig.

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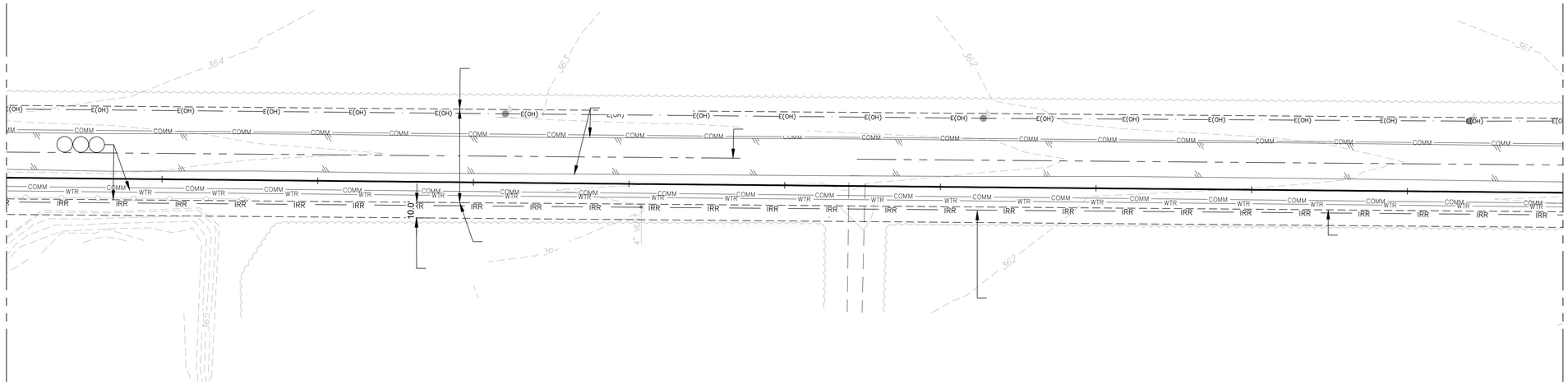





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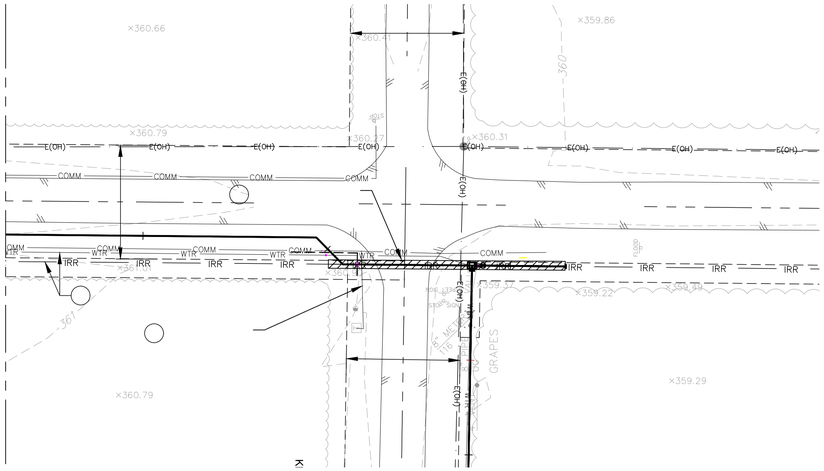
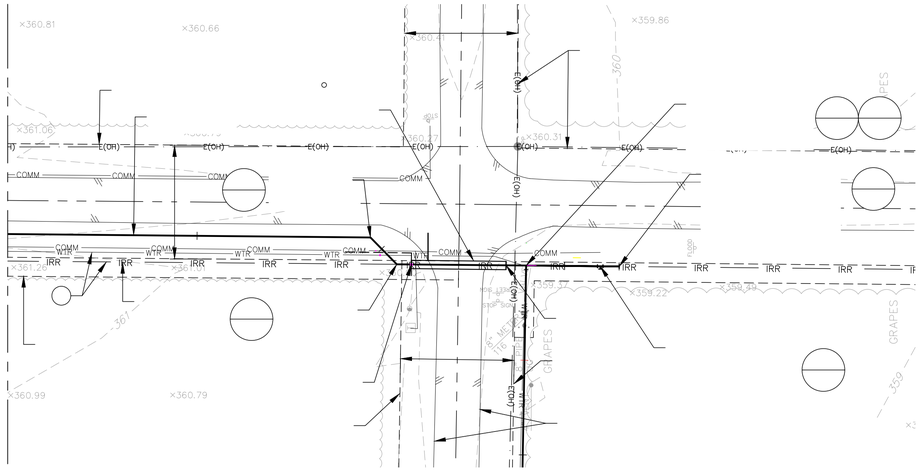
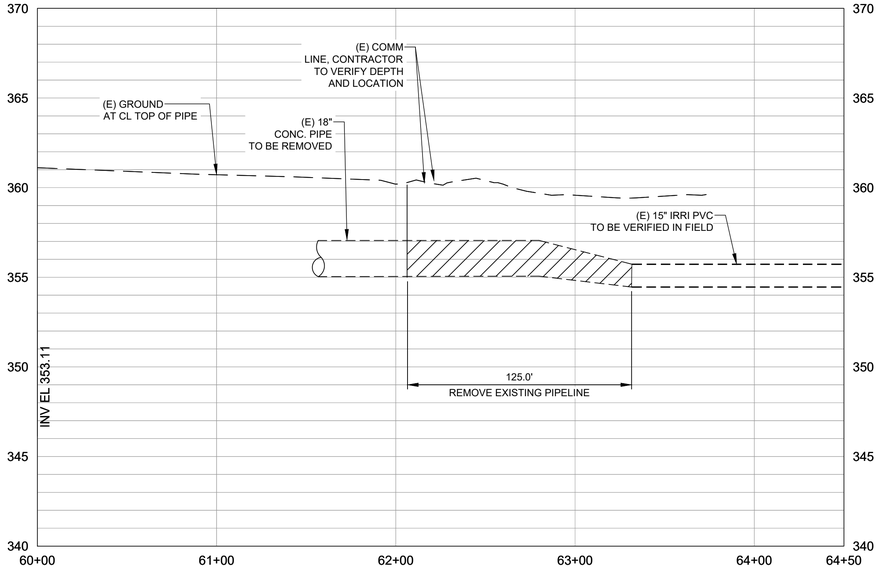
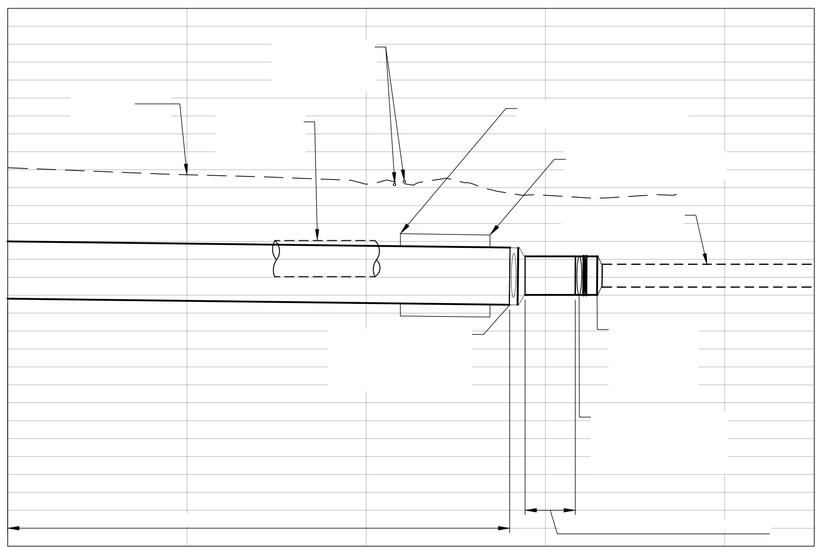



REMOVAL PROFILE



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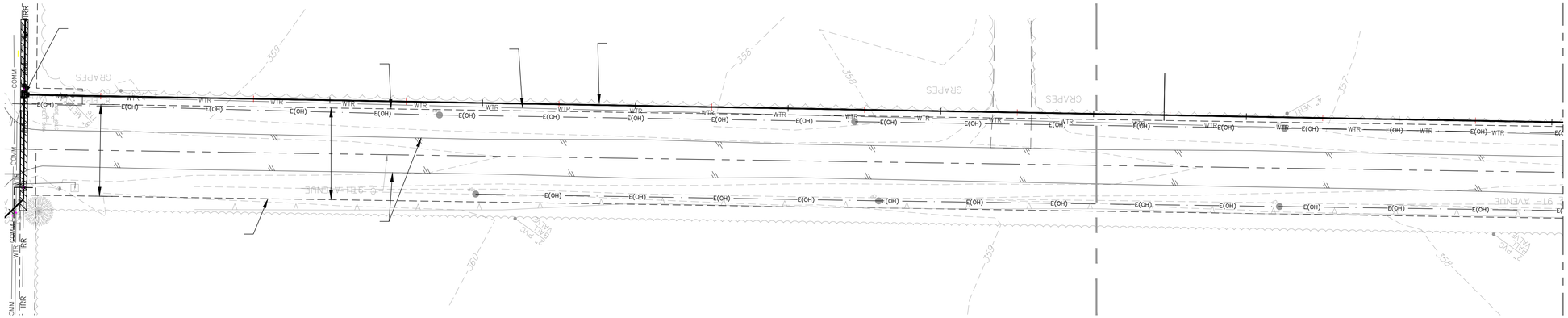


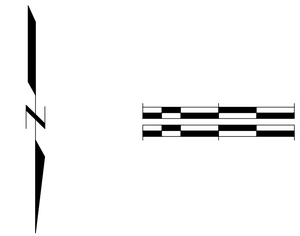

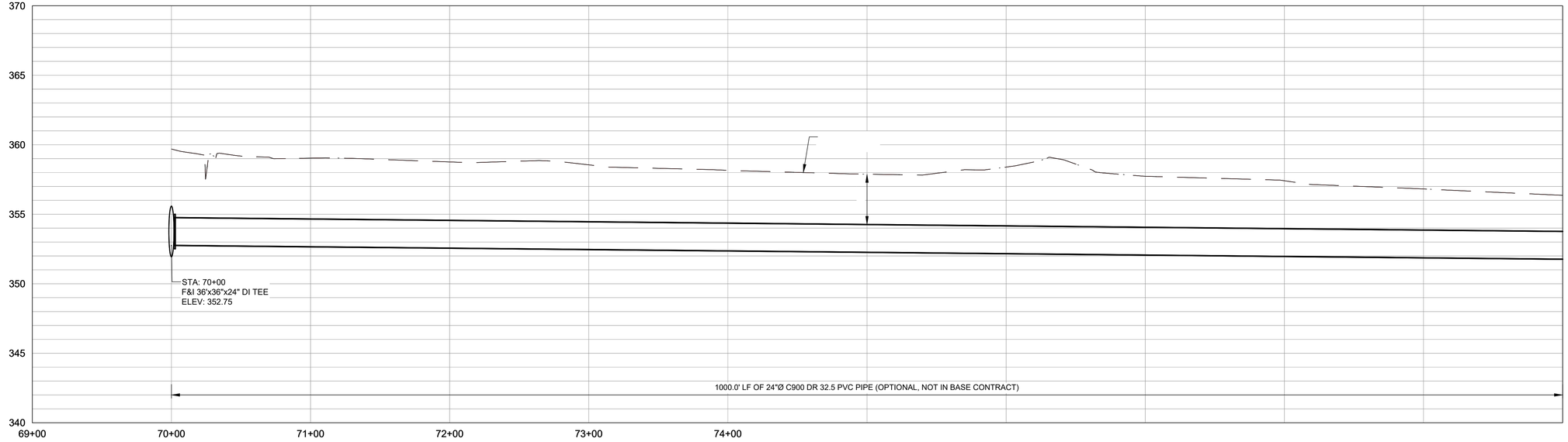


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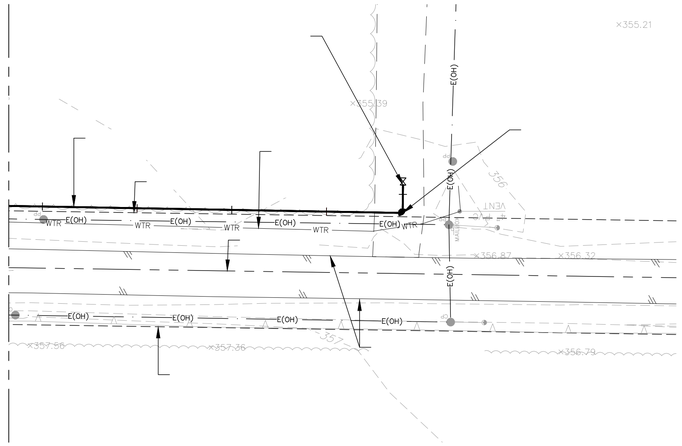


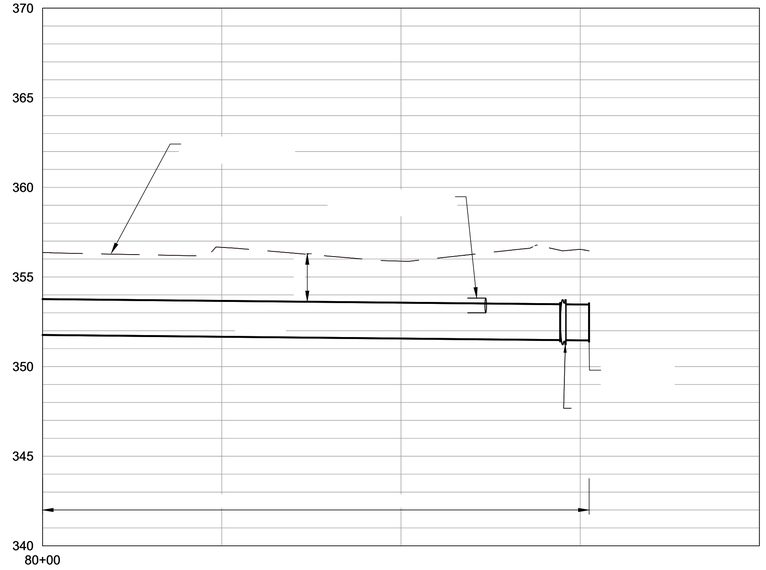


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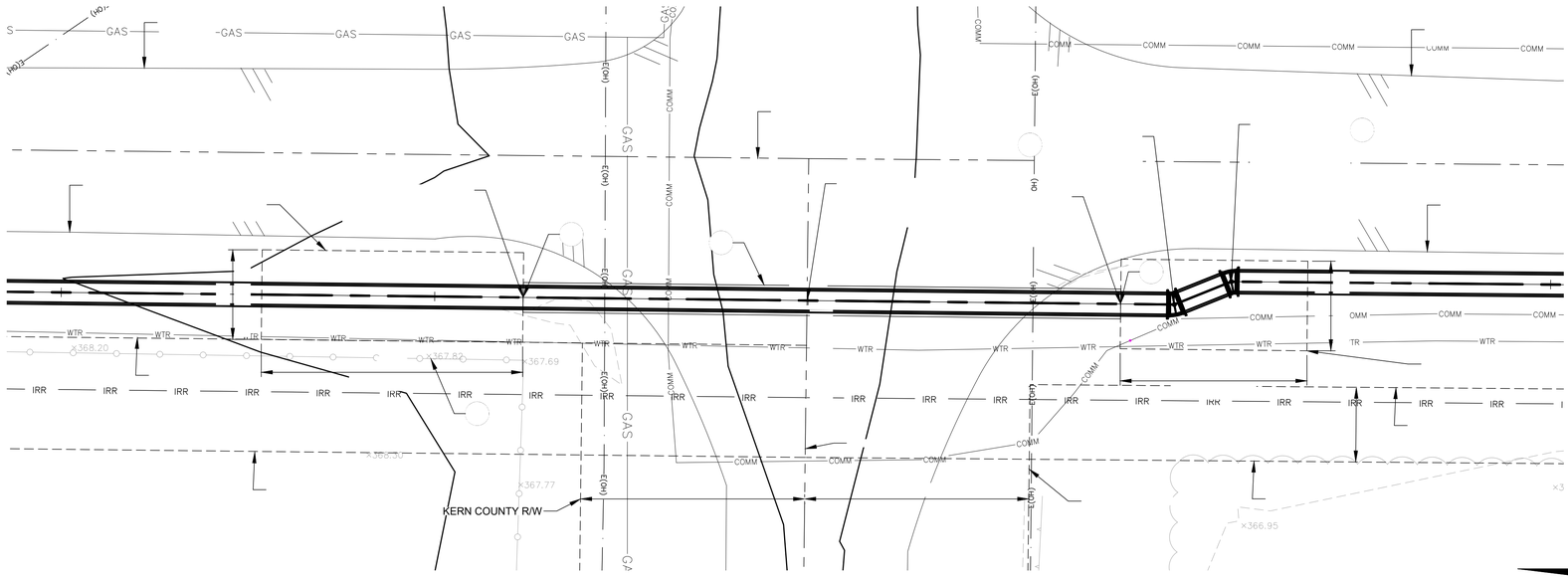


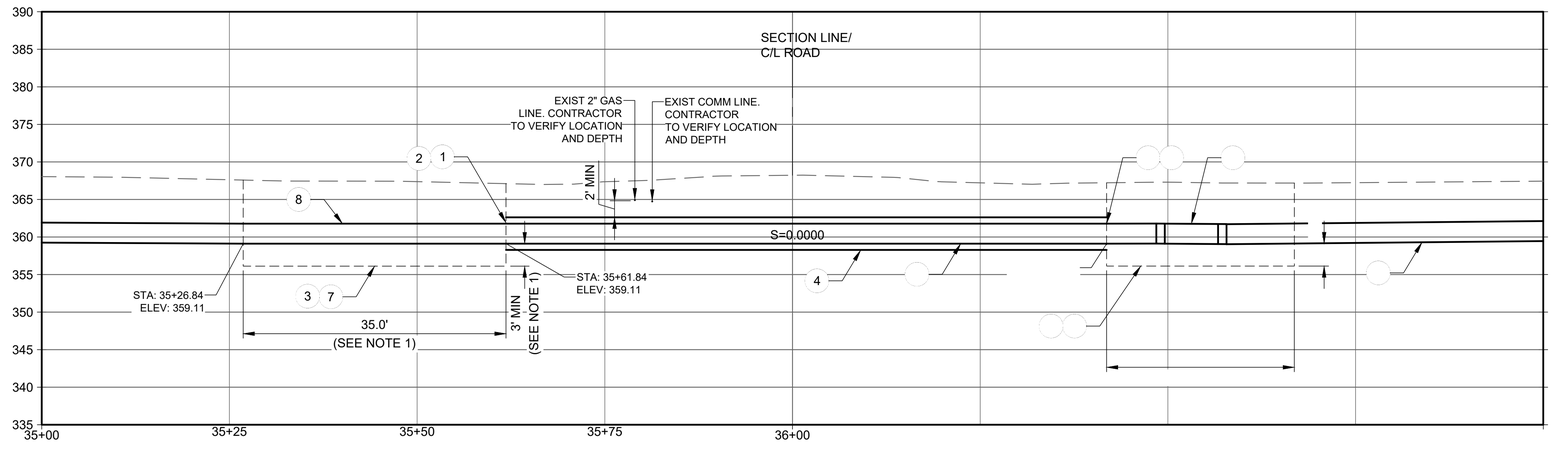


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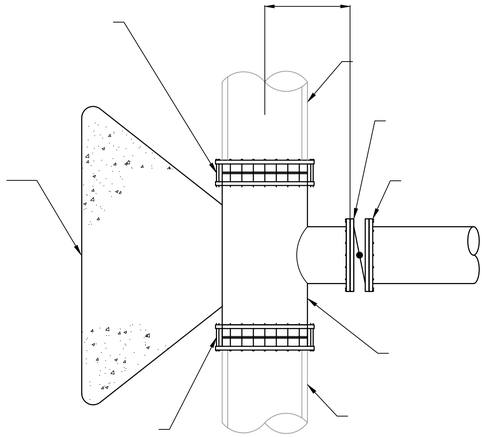
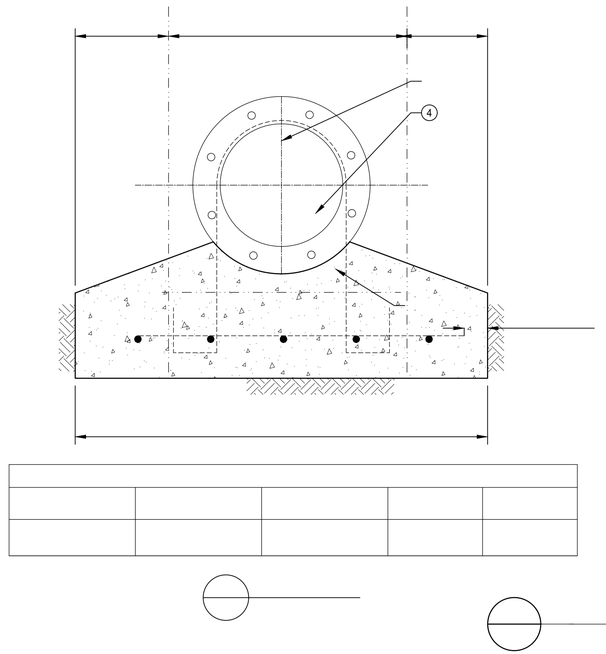
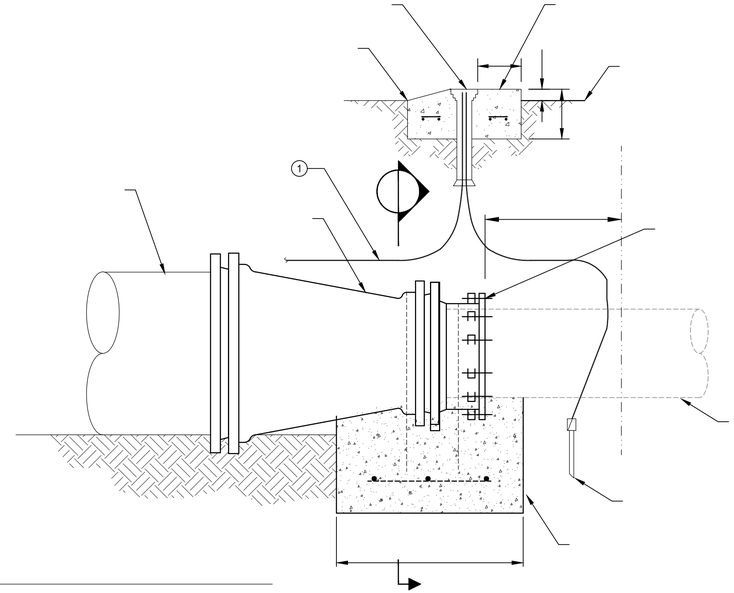


1 / - LAT 119.6 CONNECTION DETAIL
NO SCALE




NOTES:

1. THE CONTRACTOR SHALL DETERMINE THE LENGTH OF THE NEW TEE SECTION.
2. THE GAP BETWEEN THE NEW STEEL PIPE AND EXISTING RCP SHALL NOT EXCEED THE TOLERANCE FOR THE REDUCING COUPLING.
3. COAT THE EXPOSED END OF THE EXISTING RCP WITH AN EPOXY COATING.

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| *Designed:* | S. SHAEFER |
| *Drawn:* | K. TRAN & L. FLORES |
| *Checked:* | M. MARTIN |
| *Approved:* | S. SCHAEFER |
| *P.E. No:* | 66337 |
| *GEI Project* | 2201103 |

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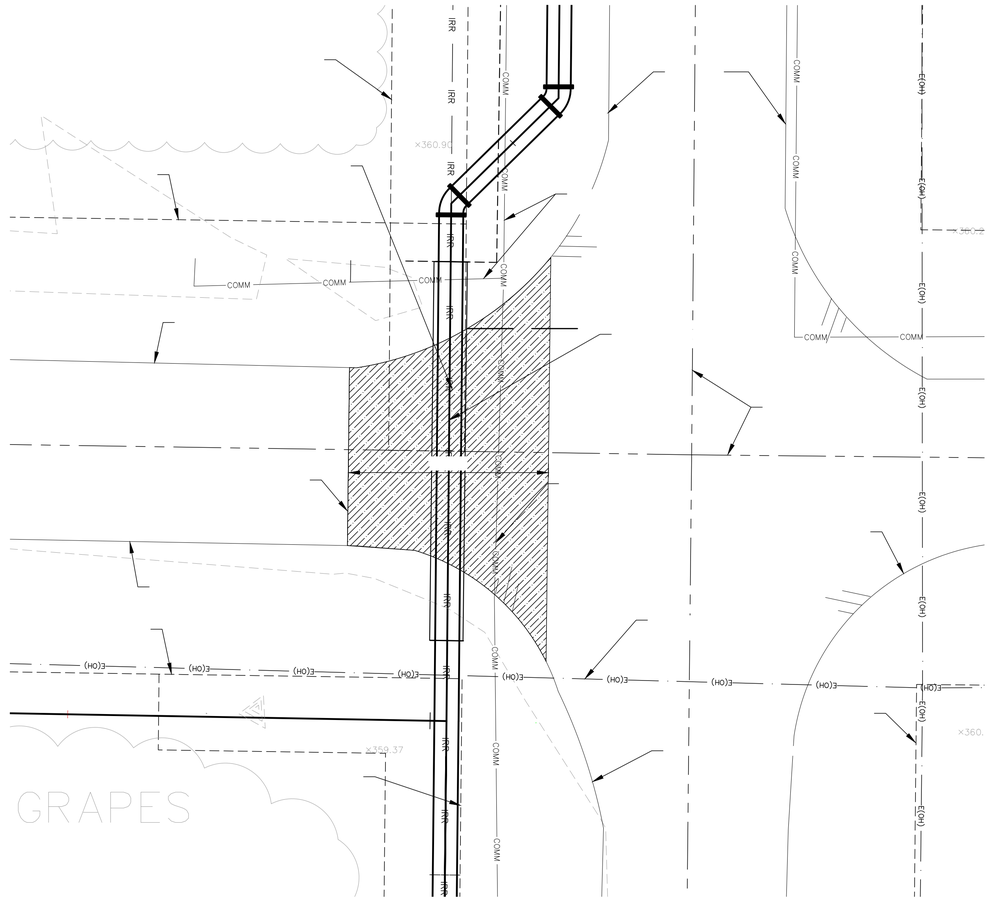


Attention:

0 1"

If this scale bar does not measure 1" then drawing is not original scale.

REGISTERED PROFESSIONAL ENGINEER
SAMUEL W. SCHAEFER
C 66337
Exp. 6-30-26
STATE OF CALIFORNIA

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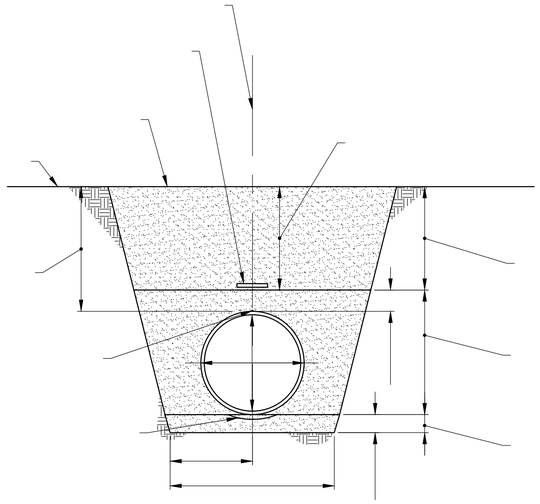
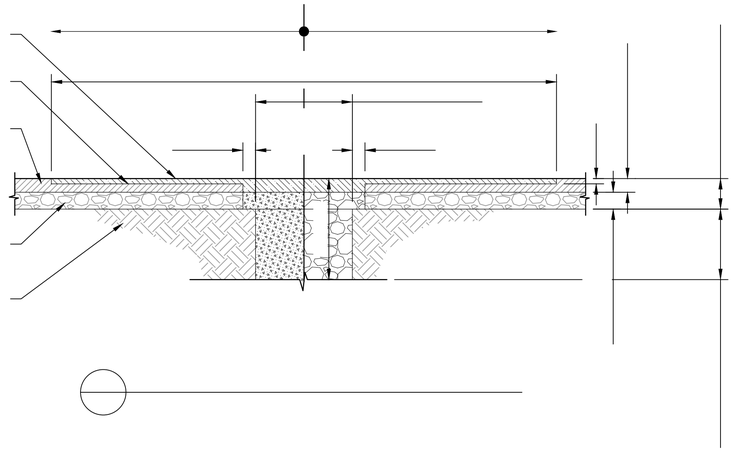
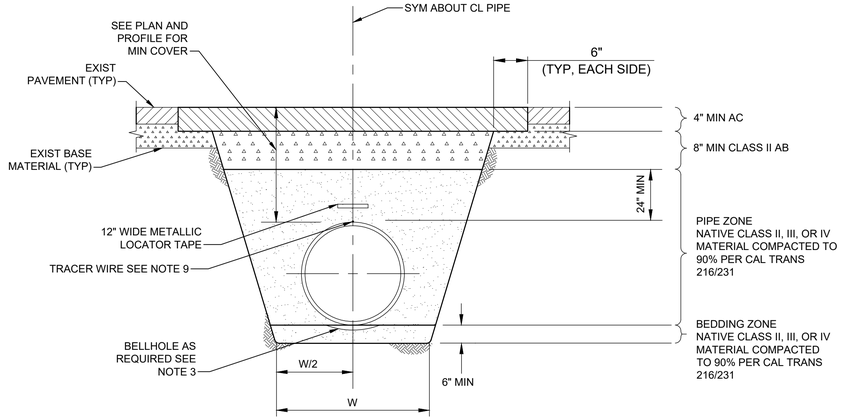


1 / VAR — ALL TYPES AND SIZES OF PIPE IN UNPAVED AREAS
NO SCALE






2 / VAR — ALL TYPES AND SIZES OF PIPE IN PAVED ROADWAY
NO SCALE

Attention:
0 1"
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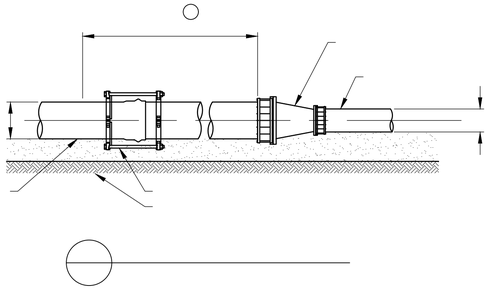
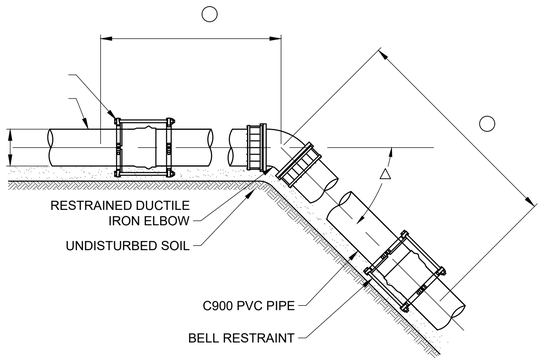


TABLE I
MINIMUM RESTRAINED LENGTHS (LR)
REDUCERS

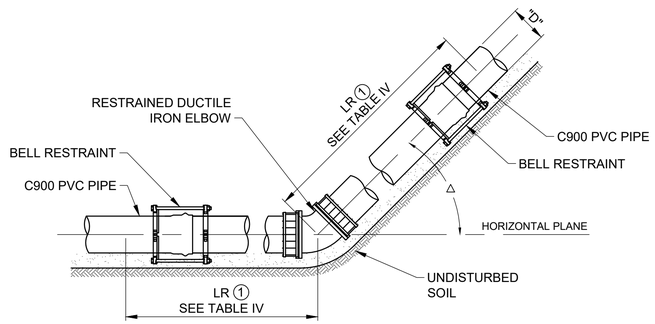
| "D" | "d" | | | | | | |
|---|---|---|---|---|---|---|---|
| | 36 | 30 | 24 | 20 | 16 | 12 | 10 |
| 42 | 30'-0" | 50'-0" | 60'-0" | 70'-0" | 80'-0" | 90'-0" | 90'-0" |
| 36 | N/A | 30'-0" | 50'-0" | 60'-0" | 70'-0" | 80'-0" | 80'-0" |
| 30 | N/A | N/A | 30'-0" | 40'-0" | 50'-0" | 60'-0" | 70'-0" |
| 24 | N/A | N/A | N/A | 20'-0" | 40'-0" | 50'-0" | 50'-0" |
| 20 | N/A | N/A | N/A | N/A | 20'-0" | 40'-0" | 40'-0" |
| 16 | N/A | N/A | N/A | N/A | N/A | 20'-0" | 30'-0" |
| 12 | N/A | N/A | N/A | N/A | N/A | N/A | 10'-0" |
| 10 | N/A | N/A | N/A | N/A | N/A | N/A | N/A |




3 - DETAIL - UPPER VERTICAL BENDS
NOT TO SCALE

TABLE III
MINIMUM RESTRAINED LENGTHS (LR)
UPPER VERTICAL BENDS

| "D" | Δ = 90° | Δ = 60° | Δ = 45° | Δ = 30° | Δ = 22.5° | Δ = 11.25° |
|---|---|---|---|---|---|---|
| 42 | 100'-0" | 60'-0" | 40'-0" | 30'-0" | 20'-0" | 10'-0" |
| 36 | 90'-0" | 50'-0" | 40'-0" | 30'-0" | 20'-0" | 10'-0" |
| 30 | 70'-0" | 50'-0" | 30'-0" | 20'-0" | 20'-0" | 10'-0" |
| 24 | 60'-0" | 40'-0" | 30'-0" | 20'-0" | 20'-0" | 10'-0" |
| 20 | 50'-0" | 30'-0" | 30'-0" | 20'-0" | 10'-0" | 10'-0" |
| 16 | 50'-0" | 30'-0" | 20'-0" | 20'-0" | 10'-0" | 10'-0" |
| 12 | 40'-0" | 20'-0" | 20'-0" | 10'-0" | 10'-0" | 10'-0" |
| 10 | 30'-0" | 20'-0" | 20'-0" | 10'-0" | 10'-0" | 10'-0" |




4 - DETAIL - LOWER VERTICAL BENDS
NOT TO SCALE

TABLE IV
MINIMUM RESTRAINED LENGTHS (LR)
LOWER VERTICAL BENDS

| "D" | Δ = 90° | Δ = 60° | Δ = 45° | Δ = 30° | Δ = 22.5° | Δ = 11.25° |
|---|---|---|---|---|---|---|
| 42 | 40'-0" | 20'-0" | 20'-0" | 10'-0" | 10'-0" | 10'-0" |
| 36 | 30'-0" | 20'-0" | 20'-0" | 10'-0" | 10'-0" | 10'-0" |
| 30 | 30'-0" | 20'-0" | 20'-0" | 10'-0" | 10'-0" | 10'-0" |
| 24 | 30'-0" | 20'-0" | 10'-0" | 10'-0" | 10'-0" | 10'-0" |
| 20 | 20'-0" | 20'-0" | 10'-0" | 10'-0" | 10'-0" | 10'-0" |
| 16 | 20'-0" | 10'-0" | 10'-0" | 10'-0" | 10'-0" | 10'-0" |
| 12 | 20'-0" | 10'-0" | 10'-0" | 10'-0" | 10'-0" | 10'-0" |
| 10 | 20'-0" | 10'-0" | 10'-0" | 10'-0" | 10'-0" | 10'-0" |

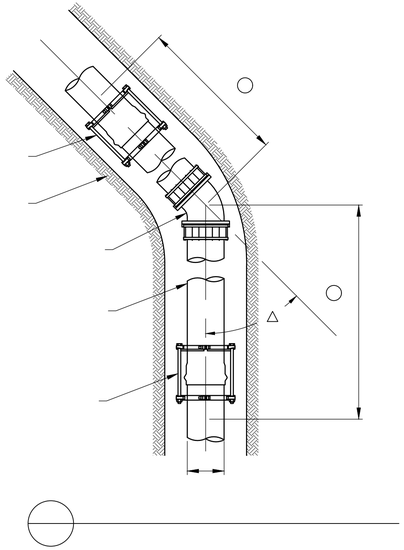


TABLE II
MINIMUM RESTRAINED LENGTHS (LR)
HORIZONTAL BENDS

| "D" | Δ = 90° | Δ = 60° | Δ = 45° | Δ = 30° | Δ = 22.5° | Δ = 11.25° |
|---|---|---|---|---|---|---|
| 42 | 40'-0" | 20'-0" | 20'-0" | 10'-0" | 10'-0" | 10'-0" |
| 36 | 30'-0" | 20'-0" | 20'-0" | 10'-0" | 10'-0" | 10'-0" |
| 30 | 30'-0" | 20'-0" | 20'-0" | 10'-0" | 10'-0" | 10'-0" |
| 24 | 30'-0" | 20'-0" | 10'-0" | 10'-0" | 10'-0" | 10'-0" |
| 20 | 20'-0" | 20'-0" | 10'-0" | 10'-0" | 10'-0" | 10'-0" |
| 16 | 20'-0" | 10'-0" | 10'-0" | 10'-0" | 10'-0" | 10'-0" |
| 12 | 20'-0" | 10'-0" | 10'-0" | 10'-0" | 10'-0" | 10'-0" |
| 10 | 20'-0" | 10'-0" | 10'-0" | 10'-0" | 10'-0" | 10'-0" |

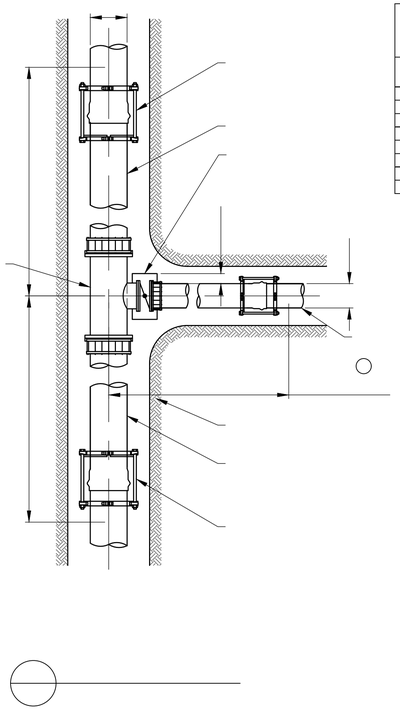
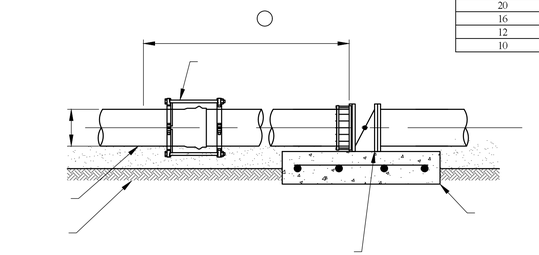


TABLE V
MINIMUM RESTRAINED LENGTHS (LR)
TEES (LRN = 10 FEET)

| RUN "D" | BRANCH "d" | | | | | | |
|---|---|---|---|---|---|---|---|
| | 42 | 36 | 30 | 24 | 20 | 16 | 12 | 10 |
| 42 | 40'-0" | 20'-0" | 10'-0" | 10'-0" | 10'-0" | 10'-0" | 10'-0" | 10'-0" |
| 36 | 50'-0" | 30'-0" | 10'-0" | 10'-0" | 10'-0" | 10'-0" | 10'-0" | 10'-0" |
| 30 | 60'-0" | 50'-0" | 30'-0" | 10'-0" | 10'-0" | 10'-0" | 10'-0" | 10'-0" |
| 24 | 70'-0" | 60'-0" | 40'-0" | 10'-0" | 10'-0" | 10'-0" | 10'-0" | 10'-0" |
| 20 | 70'-0" | 60'-0" | 40'-0" | 20'-0" | 10'-0" | 10'-0" | 10'-0" | 10'-0" |
| 16 | 80'-0" | 70'-0" | 50'-0" | 30'-0" | 20'-0" | 10'-0" | 10'-0" | 10'-0" |
| 12 | 80'-0" | 70'-0" | 60'-0" | 40'-0" | 30'-0" | 10'-0" | 10'-0" | 10'-0" |
| 10 | 90'-0" | 70'-0" | 60'-0" | 50'-0" | 30'-0" | 20'-0" | 10'-0" | 10'-0" |

TABLE VI
MINIMUM RESTRAINED LENGTHS (LR)
DEAD END AND ISOLATION VALVES

| "D" | LR |
|---|---|
| 42 | 100'-0" |
| 36 | 90'-0" |
| 30 | 70'-0" |
| 24 | 60'-0" |
| 20 | 50'-0" |
| 16 | 50'-0" |
| 12 | 40'-0" |
| 10 | 30'-0" |



Attention:
0 1"
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C 66337
Exp. 6-30-26
STATE OF CALIFORNIA

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| *Drawn:* | K. TRAN & L. FLORES |
| *Checked:* | M. MARTIN |
| *Approved:* | S. SCHAEFER |
| *P.E. No:* | 66337 |
| *GEI Project* | 2201103 |

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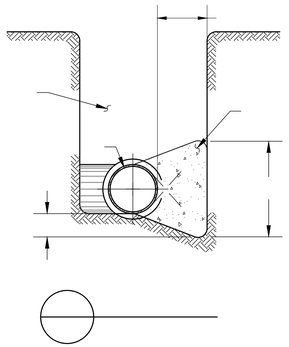

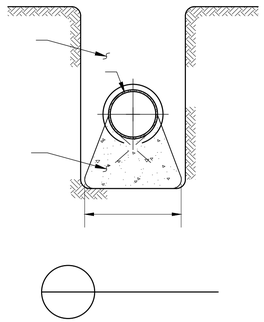

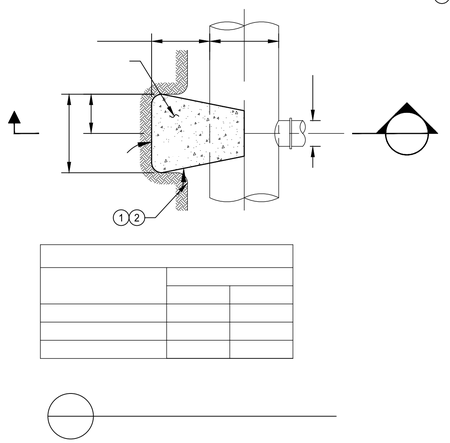


| | | |
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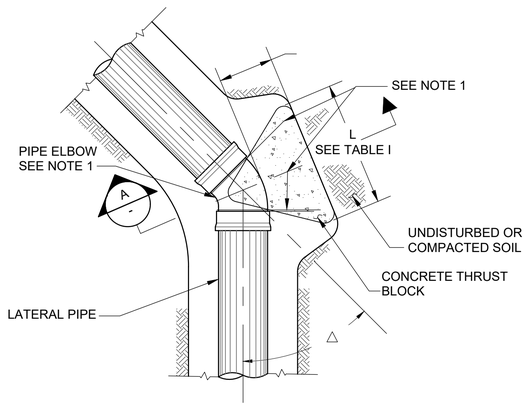
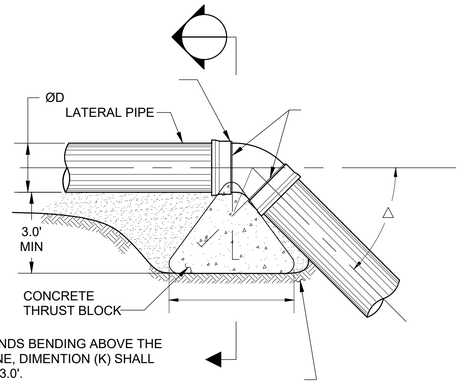
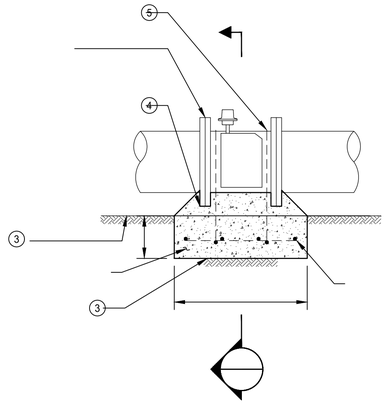
1 —
2 —
3 —
4 —
5 —

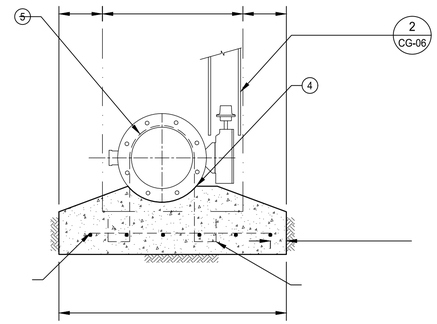



PLAN - HORIZONTAL THRUST BLOCK




ELEVATION - VERTICAL THRUST BLOCK




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

TABLE I

| HORIZONTAL THRUST BLOCKS | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| FOR△EQUALS 90° OR LESS | | | | | FOR△EQUALS 45° OR LESS | | | | |
| D (IN.) | H (FT.) | L (FT.) | MIN. X (FT.) | APPROX. VOL. (CU. YDS.) | D (IN.) | H (FT.) | L (FT.) | MIN. X (FT.) | APPROX. VOL. (CU. YDS.) |
| 12 | 3.0' | 2.4 | 1 | 0.2 | 12 | 2.0 | 2.0 | 1 | 0.1 |
| 15 | 3.0' | 4.2 | 1 | 0.3 | 15 | 2.0 | 3.5 | 1 | 0.2 |
| 18 | 3.0' | 5.4 | 1.2 | 0.8 | 18 | 3.0 | 2.9 | 1 | 0.4 |
| 21 | 3.0' | 9.5 | 2.8 | 1.2 | 21 | 3.0 | 5.2 | 1 | 0.7 |
| 24 | 3.5' | 10.5 | 3.5 | | 24 | 3.5 | 6.0 | 1.5 | |
| 30 | 4.0' | 12.5 | 4.0 | | 30 | 4.0 | 8.0 | 2.0 | |
| 36 | 4.0' | 16'-6" | 4.0 | | 30 | 4.0 | 9.0 | 4.0 | |

TABLE II

| VERTICAL THRUST BLOCKS | | | | | | |
|---|---|---|---|---|---|---|
| D (IN.) | VOLUME (CU.YDS.) △ < 6° | △ < 12° | △ < 23° | △ | △ | △ |
| 12 | 0.2 | 0.4 | 0.8 | | | |
| 15 | 0.3 | 0.7 | 1.3 | | | |
| 18 | 0.5 | 0.9 | 1.7 | | | |
| 21 | 0.8 | 1.6 | 3.0 | | | |
| 24 | | | | | | |
| 30 | | | | | | |

1 DETAIL
- THRUST BLOCK FOR HORIZONTAL BENDS
NO SCALE

2 DETAIL
- THRUST BLOCK FOR VERTICAL BENDS
NO SCALE

Attention:
0 1"
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REGISTERED PROFESSIONAL ENGINEER
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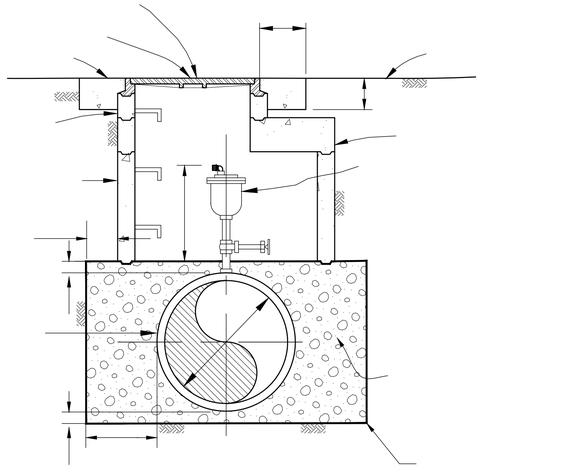
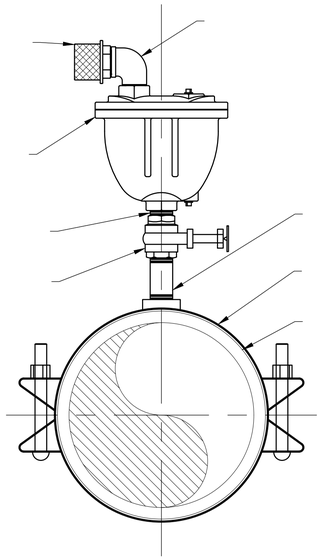
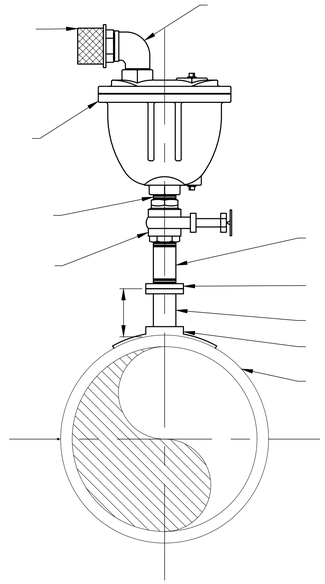
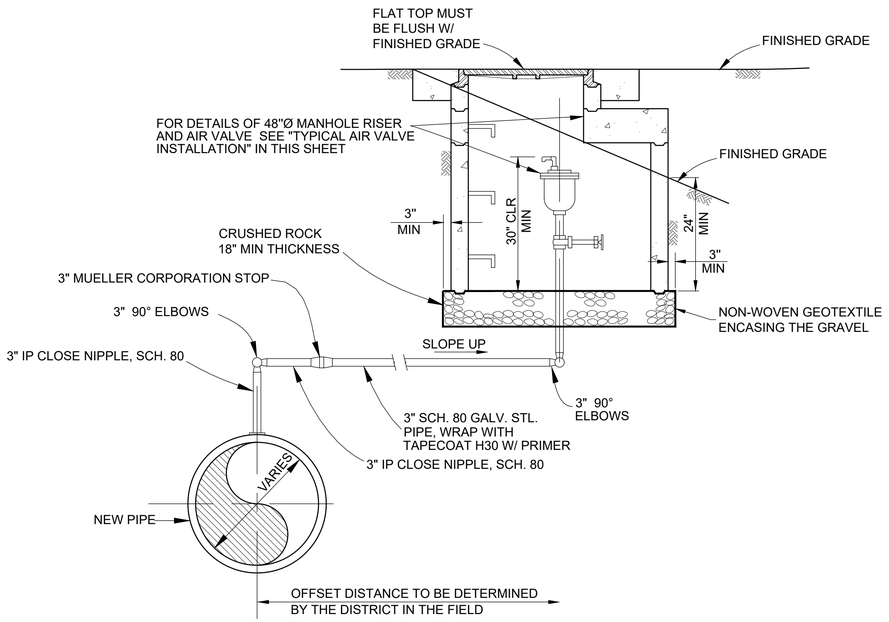


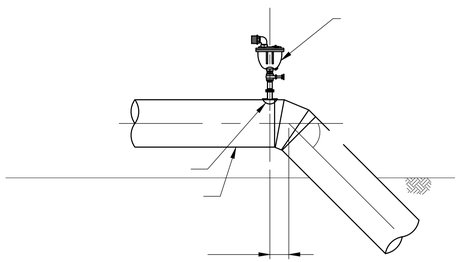

1 / - TYPICAL CAV INSTALLATION
NO SCALE








4 / - TYPICAL CAV INSTALLATION OFFSET FROM PIPELINE
NO SCALE



| PIPE DIAMETER (IN) | FLOW (CFS) |
|---|---|
| 16 | 6 |
| 20 | 12 |
| 24 | 18 |
| 30 | 24 |
| 36 | 30 |
| 42 | 45 |

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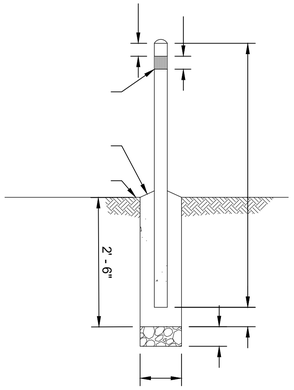


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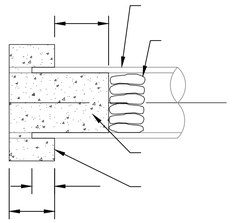

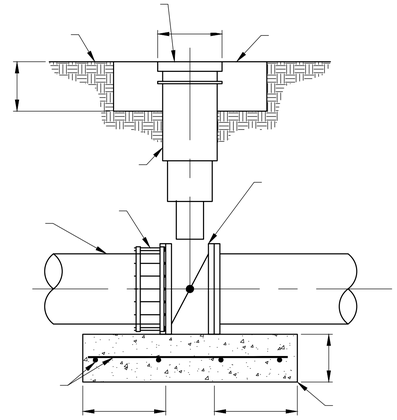

Attention:

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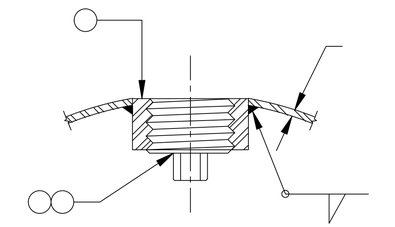
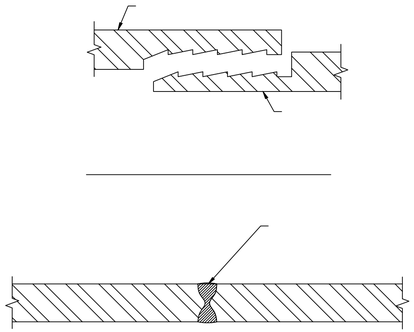
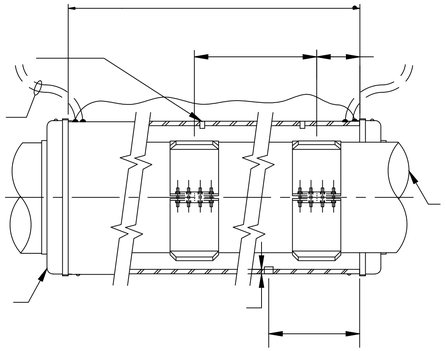
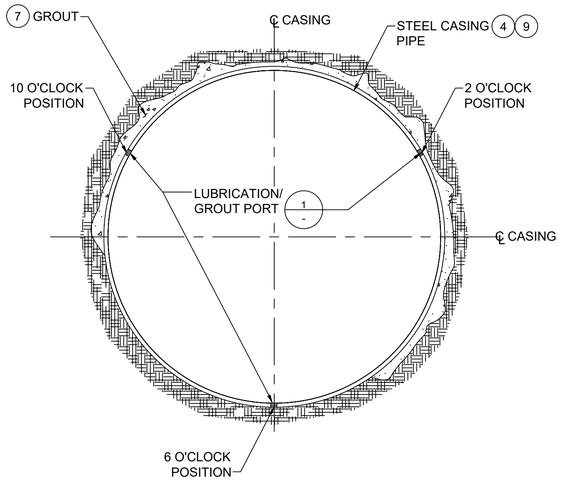




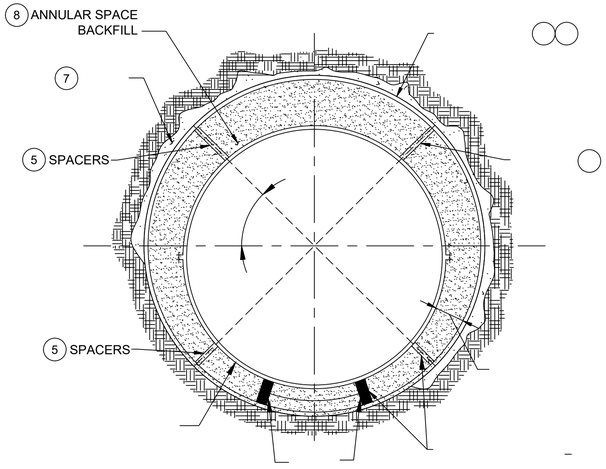





3 VAR **DETAIL**

CROSS SECTION OF JACKING\ STEEL PIPE CASING

NOT TO SCALE




| STEEL CASING SCHEDULE | | |
|---|---|---|
| NOMINAL CARRIER PIPE SIZE | MINIMUM CASING SIZE (NOMINAL) | MINIMUM WALL THICKNESS |
| 30" | 42" | 3/8" |
| 36" | 48" | 1/2" |

Attention:

0 1"

If this scale bar does not measure 1" then drawing is not original scale.

REGISTERED PROFESSIONAL ENGINEER SAMUEL W. SCHAEFER C 66337 Exp. 6-30-26 STATE OF CALIFORNIA

| | |
|---|---|
| *Designed:* | S. SHAEFER |
| *Drawn:* | K. TRAN & L. FLORES |
| *Checked:* | M. MARTIN |
| *Approved:* | S. SCHAEFER |
| *P.E. No:* | 66337 |
| *GEI Project* | 2201103 |

GEI

ACUNA, FABIAN B:\Working\SOUTHERN SAN JOAQUIN MUNICIPAL UTILITY DIST\2201103 Driver Road Pipeline\00_CAD\Design\Sheets\CG-01_06.dwg - 12/20/2024