

ENGINEER OF WORK

The engineering Specifications and Special Provisions contained herein have been prepared by or under the direction of the following Registered Engineer:

Samuel Lake McWhorter

1) Registered Engineer

3/4/21

Date

Seal:



Sheila Bose

2) For City Engineer

3/2/21

Date

Seal:



Brian Genovese

3) For City Engineer

3/2/2021

Date

Seal:



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REQUIRED DOCUMENTS SCHEDULE DURING BIDDING AND AWARDING

The Bidder's attention is directed to the City's Municipal Code §22.0807(e), (3)-(5) for important information regarding grounds for debarment for failure to submit required documentation.

The specified Equal Opportunity Contracting Program (EOCP) forms are available for download from the City's web site at:

<http://www.sandiego.gov/eoc/forms/index.shtml>

ITEM	DOCUMENT TO BE SUBMITTED	WHEN DUE	FROM
1.	Bid Bond (PDF via PlanetBids)	At Time of Bid	ALL BIDDERS
2.	Contractors Certification of Pending Actions	At Time of Bid	ALL BIDDERS
3.	List of Subcontractors for Alternate Items	At Time of Bid	ALL BIDDERS
4.	Mandatory Disclosure of Business Interests	At Time of Bid	ALL BIDDERS
5.	Debarment and Suspension Certification for Prime Contractors	At Time of Bid	ALL BIDDERS
6.	Debarment and Suspension Certification for Subcontractors, Suppliers & Mfgs	At Time of Bid	ALL BIDDERS
7.	Bid Bond (Original)	By 5 PM 3 working days after bid opening	ALL BIDDERS
8.	SLBE Good Faith Effort Documentation	By 5 PM 3 working days after bid opening	ALL BIDDERS
9.	Form AA60 – List of Work Made Available	By 5 PM 3 working days after bid opening with Good Faith Effort (GFE) documentation	ALL BIDDERS
10.	Contractor's Experience and Past Project Documentation. See SSP and 2018 WB Section 500-2.1, "Initial Submittals", 1. a)	At Time of Bid	ALL BIDDERS
11.	Manufacturer Authorized Installer Certification. See SSP and 2018 WB Section 500-2.1, "Initial Submittals", 1. b)	At Time of Bid	ALL BIDDERS

ITEM	DOCUMENT TO BE SUBMITTED	WHEN DUE	FROM
12.	Phased Funding Schedule Agreement (when required)	Within 10 working days of receipt by the bidder of the Notice of Intent to Award	AWARDED BIDDER
13.	If the Contractor is a Joint Venture: <ul style="list-style-type: none"> • Joint Venture Agreement • Joint Venture License 	Within 10 working days of receipt by bidder of contract forms	AWARDED BIDDER
14.	Payment & Performance Bond: Certificates of Insurance & Endorsements	Within 10 working days of receipt by bidder of contract forms and NOI	AWARDED BIDDER
15.	Signed Contract Agreement Page	Within 3 working days of receipt by bidder of Contract Agreement	AWARDED BIDDER
16.	Listing of "Other Than First Tier" Subcontractors	Within 10 working days of receipt by bidder of contract forms	AWARDED BIDDER

NOTICE INVITING BIDS

1. **SUMMARY OF WORK:** This is the City of San Diego's (City) solicitation process to acquire Construction services for **AC Water and Sewer Group 1056**. For additional information refer to Attachment A.
2. **FULL AND OPEN COMPETITION:** This solicitation is subject to full and open competition and may be bid by Contractors on the City's approved Prequalified Contractors List. For information regarding the Contractors Prequalified list visit the City's web site: <http://www.sandiego.gov>.
3. **ESTIMATED CONSTRUCTION COST:** The City's estimated construction cost for this project is **\$11,480,000**.
4. **BID DUE DATE AND TIME ARE: APRIL 16, 2021 at 2:00 PM**
5. **PREVAILING WAGE RATES APPLY TO THIS CONTRACT:** Refer to Attachment D.
6. **LICENSE REQUIREMENT:** To be eligible for award of this contract, Prime contractor must possess the following licensing classifications: **A** or [**C-34** and **C-42**]
 - 6.1. **ADDITIONAL LICENSE REQUIREMENTS:** See **Appendix P** - Long Term Plant Establishment Agreement for **C-27** requirement.
7. **SUBCONTRACTING PARTICIPATION PERCENTAGES:** Subcontracting participation percentages apply to this contract.
 - 7.1. The City has incorporated **mandatory** SLBE-ELBE subcontractor participation percentages to enhance competition and maximize subcontracting opportunities. For the purpose of achieving the mandatory subcontractor participation percentages, a recommended breakdown of the SLBE and ELBE subcontractor participation percentages based upon certified SLBE and ELBE firms has also been provided to achieve the mandatory subcontractor participation percentages:

1. SLBE participation	9.6%
2. ELBE participation	12.7%
3. Total mandatory participation	22.3%
 - 7.2. The Bid may be declared non-responsive if the Bidder fails to meet the following requirements:
 - 7.2.1. Include SLBE-ELBE certified subcontractors at the overall mandatory participation percentage identified in this document; OR
 - 7.2.2. Submit Good Faith Effort (GFE) documentation, saved in searchable Portable Document Format (PDF), demonstrating the Bidder made a good faith effort to **conduct** outreach to and include SLBE-ELBE Subcontractors as required in this solicitation by 5 PM 3 Working Days after the Bid opening if the overall mandatory participation percentage is not met.

All submittals in searchable PDF shall be submitted electronically within the prescribed time identified in the contract documents via PlanetBids by invitation to the point of contact named in the bid provided by the Contract Specialist to all bidders.

8. AWARD PROCESS:

- 8.1.** The Award of this contract is contingent upon the Contractor's compliance with all conditions of Award as stated within these documents and within the Notice of Intent to Award.
- 8.2.** Upon acceptance of bids and determination of the apparent low bidder, the City will prepare the contract documents for execution within approximately 21 days of the date of the bid opening. The City will then award the contract upon receipt of properly signed Contract, bonds, and insurance documents.
- 8.3.** This contract will be deemed executed and effective only upon the signing of the Contract by the Mayor or his designee and approval as to form by the City Attorney's Office.
- 8.4.** The low Bid will be determined by the Base Bid plus all the Alternates.
- 8.5.** Once the low bid has been determined, the City may, at its sole discretion, award the contract for the Base Bid plus one or more alternates.

9. SUBMISSION OF QUESTIONS:

- 9.1.** The Director (or Designee) of the Engineering & Capital Projects Department is the officer responsible for opening, examining, and evaluating the competitive Bids submitted to the City for the acquisition, construction and completion of any public improvement except when otherwise set forth in these documents. Any questions related to this solicitation shall be submitted to:

Engineering & Capital Projects Department, Contracts Division
525 B Street, Suite 750 (7th Floor)
San Diego, California, 92101
Attention: Brittany Friedenreich

OR:

BFriedenreich@sandiego.gov

- 9.2.** Questions received less than 14 days prior to the date for opening of Bids may not be considered.
- 9.3.** Questions or clarifications deemed by the City to be material shall be answered via issuance of an addendum and posted to the City's online bidding service.
- 9.4.** Only questions answered by formal written addenda shall be binding. Oral and other interpretations or clarifications shall be without legal effect. It is the Bidder's

responsibility to be informed of any addenda that have been issued and to include all such information in its Bid.

10. PHASED FUNDING: For Phased Funding Conditions, see Attachment B.

11. ADDITIVE/DEDUCTIVE ALTERNATES:

11.1. The additive/deductive alternates have been established to allow the City to compare the cost of specific portions of the Work with the Project's budget and enable the City to make a decision whether to incorporate these portions prior to award. The award will be established as described in the Bid. The City reserves the right to award the Contract for the Base Bid only or for the Base Bid plus one or more Alternates.

11.2. For water pipeline projects, the Plans typically show all cut and plug and connection work to be performed by City Forces. However, Bidders shall refer to Bidding Documents to see if all or part of this work will be performed by the Contractor.

INSTRUCTIONS TO BIDDERS

1. PREQUALIFICATION OF CONTRACTORS:

- 1.1. Contractors submitting a Bid must be pre-qualified for the total amount proposed, including all alternate items, prior to the date of submittal. Bids from contractors who have not been pre-qualified as applicable and Bids that exceed the maximum dollar amount at which contractors are pre-qualified may be deemed **non-responsive** and ineligible for award.
- 1.2. The completed application must be submitted online no later than 2 weeks prior to the bid opening.
- 1.3. **Joint Venture Bidders Cumulative Maximum Bidding Capacity:** For projects with an engineer's estimate of \$30,000,000 or greater, Joint Ventures submitting bids may be deemed responsive and eligible for award if the cumulative maximum bidding capacity of the individual Joint Venture entities is equal to or greater than the total amount proposed.
 - 1.3.1. Each of the entities of the Joint Venture must have been previously prequalified at a minimum of \$15,000,000.
 - 1.3.2. Bids submitted with a total amount proposed of less than \$30,000,000 are not eligible for Cumulative Maximum Bidding Capacity prequalification. To be eligible for award in this scenario, the Joint Venture itself or at least one of the Joint Venture entities must have been prequalified for the total amount proposed.
 - 1.3.3. Bids submitted by Joint Ventures with a total amount proposed of \$30,000,000 or greater on a project with an engineer's estimate of less than \$30,000,000 are not eligible for Cumulative Maximum Bidding Capacity prequalification.
 - 1.3.4. The Joint Venture designated as the Apparent Low Bidder shall provide evidence of its corporate existence and furnish good and approved bonds in the name of the Joint Venture within 14 Calendar Days of receipt by the Bidder of a form of contract for execution.
- 1.4. Complete information and links to the on-line prequalification application are available at:

<http://www.sandiego.gov/cip/bidopps/prequalification>
- 1.5. Due to the City's responsibility to protect the confidentiality of the contractors' information, City staff will not be able to provide information regarding contractors' prequalification status over the telephone. Contractors may access real-time information about their prequalification status via their vendor profile on [PlanetBids™](#).

2. **ELECTRONIC FORMAT RECEIPT AND OPENING OF BIDS:** Bids will be received in electronic format (eBids) EXCLUSIVELY at the City of San Diego's electronic bidding (eBidding) site, at: <http://www.sandiego.gov/cip/bidopps/index.shtml> and are due by the date, and time shown on the cover of this solicitation.
- 2.1. **BIDDERS MUST BE PRE-REGISTERED** with the City's bidding system and possess a system-assigned Digital ID in order to submit an electronic bid.
- 2.2. The City's bidding system will automatically track information submitted to the site including IP addresses, browsers being used and the URLs from which information was submitted. In addition, the City's bidding system will keep a history of every login instance including the time of login, and other information about the user's computer configuration such as the operating system, browser type, version, and more. Because of these security features, Contractors who disable their browsers' cookies will not be able to log in and use the City's bidding system.
- 2.3. The City's electronic bidding system is responsible for bid tabulations. Upon the bidder's or proposer's entry of their bid, the system will ensure that all required fields are entered. **The system will not accept a bid for which any required information is missing.** This includes all necessary pricing, subcontractor listing(s) and any other essential documentation and supporting materials and forms requested or contained in these solicitation documents.
- 2.4. **BIDS REMAIN SEALED UNTIL BID DEADLINE.** eBids are transmitted into the City's bidding system via hypertext transfer protocol secure (https) mechanism using SSL 128-256 bit security certificates issued from Verisign/Thawte which encrypts data being transferred from client to server. Bids submitted prior to the "Bid Due Date and Time" are not available for review by anyone other than the submitter who has until the "Bid Due Date and Time" to change, rescind or retrieve its proposal should it desire to do so.
- 2.5. **BIDS MUST BE SUBMITTED BY BID DUE DATE AND TIME.** Once the bid deadline is reached, no further submissions are accepted into the system. Once the Bid Due Date and Time has lapsed, bidders, proposers, the general public, and City staff are able to immediately see the results on line. City staff may then begin reviewing the submissions for responsiveness, EOCB compliance and other issues. The City may require any Bidder to furnish statement of experience, financial responsibility, technical ability, equipment, and references.
- 2.6. **RECAPITULATION OF THE WORK.** Bids shall not contain any recapitulation of the Work. Conditional Bids may be rejected as being non-responsive. Alternative proposals will not be considered unless called for.

2.7. BIDS MAY BE WITHDRAWN by the Bidder only up to the bid due date and time.

2.7.1. Important Note: Submission of the electronic bid into the system may not be instantaneous. Due to the speed and capabilities of the user's internet service provider (ISP), bandwidth, computer hardware and other variables, it may take time for the bidder's submission to upload and be received by the City's eBidding system. It is the bidder's sole responsibility to ensure their bids are received on time by the City's eBidding system. The City of San Diego is not responsible for bids that do not arrive by the required date and time.

2.8. ACCESSIBILITY AND AMERICANS WITH DISABILITIES ACT (ADA) COMPLIANCE: To request a copy of this solicitation in an alternative format, contact the Engineering & Capital Projects Department Contract Specialist listed on the cover of this solicitation at least five (5) working days prior to the Bid/Proposal due date to ensure availability.

3. ELECTRONIC BID SUBMISSIONS CARRY FULL FORCE AND EFFECT:

3.1. The bidder, by submitting its electronic bid, acknowledges that doing so carries the same force and full legal effect as a paper submission with a longhand (wet) signature.

3.2. By submitting an electronic bid, the bidder certifies that the bidder has thoroughly examined and understands the entire Contract Documents (which consist of the plans and specifications, drawings, forms, affidavits and the solicitation documents), and that by submitting the eBid as its bid proposal, the bidder acknowledges, agrees to and is bound by the entire Contract Documents, including any addenda issued thereto, and incorporated by reference in the Contract Documents.

3.3. The Bidder, by submitting its electronic bid, agrees to and certifies under penalty of perjury under the laws of the State of California, that the certification, forms and affidavits submitted as part of this bid are true and correct.

3.4. The Bidder agrees to the construction of the project as described in Attachment "A-Scope of Work" for the City of San Diego, in accordance with the requirements set forth herein for the electronically submitted prices. The Bidder guarantees the Contract Price for a period of 120 days from the date of Bid opening. The duration of the Contract Price guarantee shall be extended by the number of days required for the City to obtain all items necessary to fulfill all conditions precedent.

4. BIDS ARE PUBLIC RECORDS: Upon receipt by the City, Bids shall become public records subject to public disclosure. It is the responsibility of the respondent to clearly identify any confidential, proprietary, trade secret or otherwise legally privileged information contained within the Bid. General references to sections of the California Public Records Act (PRA) will not suffice. If the Contractor does not provide applicable case law that clearly establishes that the requested information is exempt from the disclosure requirements of the PRA, the City shall be free to release the information when required in accordance with the PRA, pursuant

to any other applicable law, or by order of any court or government agency, and the Contractor will hold the City harmless for release of this information.

5. CONTRACTOR REGISTRATION AND ELECTRONIC REPORTING SYSTEM:

5.1. Prior to the Award of the Contract or Task Order, you and your Subcontractors and Suppliers must register with the City's web-based vendor registration and bid management system. For additional information go to:

<http://www.sandiego.gov/purchasing/bids-contracts/vendorreg>

5.2. The City may not award the contract until registration of all subcontractors and suppliers is complete. In the event this requirement is not met within the time frame specified in the Notice of Intent to Award letter, the City reserves the right to rescind the Notice of Award / Intent to Award and to make the award to the next responsive and responsible bidder / proposer.

6. JOINT VENTURE CONTRACTORS: Provide a copy of the Joint Venture agreement and the Joint Venture license to the City within 14 Calendar Days after receiving the Contract forms.

7. INSURANCE REQUIREMENTS:

7.1. All certificates of insurance and endorsements required by the contract are to be provided upon issuance of the City's Notice of Intent to Award letter.

7.2. Refer to sections 5-4, "INSURANCE" of the Supplementary Special Provisions (SSP) for the insurance requirements which must be met.

8. REFERENCE STANDARDS: Except as otherwise noted or specified, the Work shall be completed in accordance with the following standards:

Title	Edition	Document Number
Standard Specifications for Public Works Construction ("The GREENBOOK") http://www.greenbookspecs.org/	2018	PWPI010119-01
City of San Diego Standard Specifications for Public Works Construction ("The WHITEBOOK")* https://www.sandiego.gov/ecp/edocref/greenbook	2018	PWPI010119-02
City of San Diego Standard Drawings* https://www.sandiego.gov/ecp/edocref/standarddraw	2018	PWPI010119-03
Citywide Computer Aided Design and Drafting (CADD) Standards https://www.sandiego.gov/ecp/edocref/drawings	2018	PWPI010119-04
California Department of Transportation (CALTRANS) Standard Specifications https://dot.ca.gov/programs/design/ccs-standard-plans-and-standard-specifications	2018	PWPI030119-05
CALTRANS Standard Plans https://dot.ca.gov/programs/design/ccs-standard-plans-and-standard-specifications	2018	PWPI030119-06

Title	Edition	Document Number
California Manual on Uniform Traffic Control Devices Revision 5 (CA MUTCD 2014 Rev 5) http://www.dot.ca.gov/programs/safety-programs/camutcd/camutcd-rev5	2014	PWPI042220-09
<p>NOTE: *Available online under Engineering Documents and References at: https://www.sandiego.gov/ecp/edocref/</p> <p>*Electronic updates to the Standard Drawings may also be found in the link above</p>		

9. **CITY'S RESPONSES AND ADDENDA:** The City, at its discretion, may respond to any or all questions submitted in writing via the City's eBidding web site in the **form of an addendum**. No other responses to questions, oral or written shall be of any force or effect with respect to this solicitation. The changes to the Contract Documents through addenda are made effective as though originally issued with the Bid. The Bidders shall acknowledge the receipt of Addenda at the time of bid submission.
10. **CITY'S RIGHTS RESERVED:** The City reserves the right to cancel the Notice Inviting Bids at any time, and further reserves the right to reject submitted Bids, without giving any reason for such action, at its sole discretion and without liability. Costs incurred by the Bidder(s) as a result of preparing Bids under the Notice Inviting Bids shall be the sole responsibility of each bidder. The Notice Inviting Bids creates or imposes no obligation upon the City to enter a contract.
11. **CONTRACT PRICING:** This solicitation is for a Lump Sum contract with Unit Price provisions as set forth herein. The Bidder agrees to perform construction services for the City of San Diego in accordance with these contract documents for the prices listed below. The Bidder further agrees to guarantee the Contract Price for a period of 120 days from the date of Bid opening. The duration of the Contract Price guarantee may be extended, by mutual consent of the parties, by the number of days required for the City to obtain all items necessary to fulfill all contractual conditions.
12. **SUBCONTRACTOR INFORMATION:**
- 12.1. **LISTING OF SUBCONTRACTORS.** In accordance with the requirements provided in the "Subletting and Subcontracting Fair Practices Act" of the California Public Contract Code, the Bidder shall provide the **NAME** and **ADDRESS** of each Subcontractor who will perform work, labor, render services or who specially fabricates and installs a portion [type] of the work or improvement, in an amount in excess of 0.5% of the Contractor's total Bid. The Bidder shall also state within the description, whether the subcontractor is a **CONSTRUCTOR, CONSULTANT** or **SUPPLIER**. The Bidder shall state the **DIR REGISTRATION NUMBER** for all subcontractors and shall further state within the description, the **PORTION** of the work which will be performed by each subcontractor under this Contract. The Contractor shall list only one Subcontractor for each portion of the Work. The **DOLLAR VALUE** of the total Bid to be performed shall be stated for all subcontractors listed. Failure to comply with this requirement may result in the Bid being rejected as **non-responsive** and ineligible for award. The Bidder's attention is directed to the Special Provisions – Section 3-2, "SELF-PERFORMANCE", which stipulates the percent of the Work to be performed with the

Bidders' own forces. The Bidder shall list all SLBE, ELBE, DBE, DVBE, MBE, WBE, OBE, SDB, WoSB, HUBZone, and SDVOSB Subcontractors for which Bidders are seeking recognition towards achieving any mandatory, voluntary (or both) subcontracting participation goals.

Additionally, pursuant to California Senate Bill 96 and in accordance with the requirements of Labor Code sections 1771.1 and 1725.5, by submitting a bid or proposal to the City, Contractor is certifying that he or she has verified that all subcontractors used on this public work project are registered with the California Department of Industrial Relations (DIR). **The Bidder shall provide the name, address, license number, DIR registration number of any Subcontractor - regardless of tier** - who will perform work, labor, render services or specially fabricate and install a portion [type] of the work or improvement pursuant to the contract.

12.2. LISTING OF SUPPLIERS. Any Bidder seeking the recognition of Suppliers of equipment, materials, or supplies obtained from third party Suppliers towards achieving any mandatory or voluntary (or both) subcontracting participation goals shall provide, at a minimum, the **NAME, LOCATION (CITY), DIR REGISTRATION NUMBER** and the **DOLLAR VALUE** of each supplier. The Bidder will be credited up to 60% of the amount to be paid to the Suppliers for materials and supplies unless vendor manufactures or substantially alters materials and supplies, in which case, 100% will be credited. The Bidder is to indicate within the description whether the listed firm is a supplier or manufacturer. If no indication is provided, the listed firm will be credited at 60% of the listed dollar value for purposes of calculating the Subcontractor Participation Percentage.

12.3. LISTING OF SUBCONTRACTORS OR SUPPLIERS FOR ALTERNATES. For subcontractors or suppliers to be used on additive or deductive alternate items, in addition to the above requirements, bidder shall further note "ALTERNATE" and alternate item number within the description.

13. SUBMITTAL OF "OR EQUAL" ITEMS: See Section 4-6, "Trade Names" in The WHITEBOOK and as amended in the SSP.

14. AWARD:

14.1. The Award of this contract is contingent upon the Contractor's compliance with all conditions precedent to Award.

14.2. Upon acceptance of a Bid, the City will prepare contract documents for execution within approximately 21 days of the date of the Bid opening and award the Contract approximately within 7 days of receipt of properly executed Contract, bonds, and insurance documents.

14.3. This contract will be deemed executed and effective only upon the signing of the Contract by the Mayor or his designee and approval as to form the City Attorney's Office.

15. **SUBCONTRACT LIMITATIONS:** The Bidder's attention is directed to Standard Specifications for Public Works Construction, Section 3-2, "SELF-PERFORMANCE" in The GREENBOOK and as amended in the SSP which requires the Contractor to self-perform not less than the specified amount. Failure to comply with this requirement shall render the bid **non-responsive** and ineligible for award.
16. **AVAILABILITY OF PLANS AND SPECIFICATIONS:** Contract Documents may be obtained by visiting the City's website: <http://www.sandiego.gov/cip/>. Plans and Specifications for this contract are also available for review in the office of the City Clerk or Engineering & Capital Projects Department, Contracts Division.
17. **ONLY ONE BID PER CONTRACTOR SHALL BE ACCEPTED:** No person, firm, or corporation shall be allowed to make, file, or be interested in more than one (1) Bid for the same work unless alternate Bids are called for. A person, firm or corporation who has submitted a sub-proposal to a Bidder, or who has quoted prices on materials to a Bidder, is not hereby disqualified from submitting a sub-proposal or quoting prices to other Bidders or from submitting a Bid in its own behalf. Any Bidder who submits more than one bid will result in the rejection of all bids submitted.
18. **SAN DIEGO BUSINESS TAX CERTIFICATE:** The Contractor and Subcontractors, not already having a City of San Diego Business Tax Certificate for the work contemplated shall secure the appropriate certificate from the City Treasurer, Civic Center Plaza, First floor and submit to the Contract Specialist upon request or as specified in the Contract Documents. Tax Identification numbers for both the Bidder and the listed Subcontractors must be submitted on the City provided forms within these documents.
19. **BIDDER'S GUARANTEE OF GOOD FAITH (BID SECURITY) FOR DESIGN-BID-BUILD CONTRACTS:**
 - 19.1. For bids \$250,000 and above, bidders shall submit Bid Security at bid time. Bid Security shall be in one of the following forms: a cashier's check, or a properly certified check upon some responsible bank; or an approved corporate surety bond payable to the City of San Diego for an amount of not less than 10% of the total bid amount.
 - 19.2. This check or bond, and the monies represented thereby, will be held by the City as a guarantee that the Bidder, if awarded the contract, will in good faith enter into the contract and furnish the required final performance and payment bonds.
 - 19.3. The Bidder agrees that in the event of the Bidder's failure to execute this contract and provide the required final bonds, the money represented by the cashier's or certified check will remain the property of the City; and the Surety agrees that it will pay to the City the damages, not exceeding the sum of 10% of the amount of the Bid, that the City may suffer as a result of such failure.
 - 19.4. At the time of bid submission, bidders must upload and submit an electronic PDF copy of the aforementioned bid security. Whether in the form of a cashier's check, a properly certified check or an approved corporate surety bond payable to the City of San Diego, the bid security must be uploaded to the City's eBidding system. By 5PM,

3 working days after the bid opening date, all bidders must provide the City with the original bid security.

- 19.5.** Failure to submit the electronic version of the bid security at the time of bid submission AND failure to provide the original by 5PM, 3 working days after the bid opening date shall cause the bid to be rejected and deemed **non-responsive**.

Due to circumstances related to Covid-19, until further notice, all original bid bond submittals must be received by 5 PM, 3 working days after bid opening.

Upon circumstances returning to normal business as usual, the original bid bond shall once again be due by 5 PM the day after bid opening.

Original Bid Bond shall be submitted to:
Engineering & Capital Projects Department, Contracts Division
525 B Street, Suite 750 (7th Floor)
San Diego, California, 92101
To the Attention of the Contract Specialist on the Front Page of this solicitation.

20. AWARD OF CONTRACT OR REJECTION OF BIDS:

- 20.1.** This contract may be awarded to the lowest responsible and reliable Bidder.
- 20.2.** Bidders shall complete ALL eBid forms as required by this solicitation. Incomplete eBids will not be accepted.
- 20.3.** The City reserves the right to reject any or all Bids, to waive any informality or technicality in Bids received, and to waive any requirements of these specifications as to bidding procedure.
- 20.4.** Bidders will not be released on account of their errors of judgment. Bidders may be released only upon receipt by the City within 3 Working Days of the bid opening, written notice from the Bidder which shows proof of honest, credible, clerical error of a material nature, free from fraud or fraudulent intent; and of evidence that reasonable care was observed in the preparation of the Bid.
- 20.5.** A bidder who is not selected for contract award may protest the award of a contract to another bidder by submitting a written protest in accordance with the San Diego Municipal Code.
- 20.6.** The City of San Diego will not discriminate in the award of contracts with regard to race, religion creed, color, national origin, ancestry, physical handicap, marital status, sex or age.
- 20.7.** Each Bid package properly signed as required by these specifications shall constitute a firm offer which may be accepted by the City within the time specified herein.

20.8. The City reserves the right to evaluate all Bids and determine the lowest Bidder on the basis of the base bid and any proposed alternates or options as detailed herein.

21. BID RESULTS:

21.1. The availability of the bids on the City's eBidding system shall constitute the public announcement of the apparent low bidder. In the event that the apparent low bidder is subsequently deemed non-responsive or non-responsible, a notation of such will be made on the eBidding system. The new ranking and apparent low bidder will be adjusted accordingly.

21.2. To obtain the bid results, view the results on the City's web site, or request the results by U.S. mail and provide a self-addressed, stamped envelope. If requesting by mail, be sure to reference the bid name and number. The bid tabulations will be mailed to you upon their completion. The results will not be given over the telephone.

22. THE CONTRACT:

22.1. The Bidder to whom award is made shall execute a written contract with the City of San Diego and furnish good and approved bonds and insurance certificates specified by the City within 14 days after receipt by Bidder of a form of contract for execution unless an extension of time is granted to the Bidder in writing.

22.2. If the Bidder takes longer than 14 days to fulfill these requirements, then the additional time taken shall be added to the Bid guarantee. The Contract shall be made in the form adopted by the City, which includes the provision that no claim or suit whatsoever shall be made or brought by Contractor against any officer, agent, or employee of the City for or on account of anything done or omitted to be done in connection with this contract, nor shall any such officer, agent, or employee be liable hereunder.

22.3. If the Bidder to whom the award is made fails to enter into the contract as herein provided, the award may be annulled and the Bidder's Guarantee of Good Faith will be subject to forfeiture. An award may be made to the next lowest responsible and reliable Bidder who shall fulfill every stipulation embraced herein as if it were the party to whom the first award was made.

22.4. Pursuant to the San Diego City Charter section 94, the City may only award a public works contract to the lowest responsible and reliable Bidder. The City will require the Apparent Low Bidder to (i) submit information to determine the Bidder's responsibility and reliability, (ii) execute the Contract in form provided by the City, and (iii) furnish good and approved bonds and insurance certificates specified by the City within 14 Days, unless otherwise approved by the City, in writing after the Bidder receives notification from the City, designating the Bidder as the Apparent Low Bidder and formally requesting the above mentioned items.

- 22.5.** The award of the Contract is contingent upon the satisfactory completion of the above-mentioned items and becomes effective upon the signing of the Contract by the Mayor or designee and approval as to form by the City Attorney's Office. If the Apparent Low Bidder does not execute the Contract or submit required documents and information, the City may award the Contract to the next lowest responsible and reliable Bidder who shall fulfill every condition precedent to award. A corporation designated as the Apparent Low Bidder shall furnish evidence of its corporate existence and evidence that the officer signing the Contract and bond for the corporation is duly authorized to do so.
- 23. EXAMINATION OF PLANS, SPECIFICATIONS, AND SITE OF WORK:** The Bidder shall examine carefully the Project Site, the Plans and Specifications, other materials as described in the Special Provisions, Section 3-9, "TECHNICAL STUDIES AND SUBSURFACE DATA", and the proposal forms (e.g., Bidding Documents). The submission of a Bid shall be conclusive evidence that the Bidder has investigated and is satisfied as to the conditions to be encountered, as to the character, quality, and scope of work, the quantities of materials to be furnished, and as to the requirements of the Bidding Documents Proposal, Plans, and Specifications.
- 24. CITY STANDARD PROVISIONS:** This contract is subject to the following standard provisions. See The WHITEBOOK for details.
- 24.1.** The City of San Diego Resolution No. R-277952 adopted on May 20, 1991 for a Drug-Free Workplace.
- 24.2.** The City of San Diego Resolution No. R-282153 adopted on June 14, 1993 related to the Americans with Disabilities Act.
- 24.3.** The City of San Diego Municipal Code §22.3004 for Contractor Standards.
- 24.4.** The City of San Diego's Labor Compliance Program and the State of California Labor Code §§1771.5(b) and 1776.
- 24.5.** Sections 1777.5, 1777.6, and 1777.7 of the State of California Labor Code concerning the employment of apprentices by contractors and subcontractors performing public works contracts.
- 24.6.** The City's Equal Benefits Ordinance (EBO), Chapter 2, Article 2, Division 43 of The San Diego Municipal Code (SDMC).
- 24.7.** The City's Information Security Policy (ISP) as defined in the City's Administrative Regulation 90.63.
- 25. PRE-AWARD ACTIVITIES:**
- 25.1.** The contractor selected by the City to execute a contract for this Work shall submit the required documentation as specified herein and in the Notice to Intent of Award.

Failure to provide the information as specified may result in the Bid being rejected as **non-responsive**.

- 25.2.** The decision that bid is non-responsive for failure to provide the information required within the time specified shall be at the sole discretion of the City.

PERFORMANCE BOND, LABOR AND MATERIALMEN'S BOND

FAITHFUL PERFORMANCE BOND AND LABOR AND MATERIALMEN'S BOND:

TC Construction Company, Inc., a corporation, as principal, and Liberty Mutual Insurance Company, a corporation authorized to do business in the State of California, as Surety, hereby obligate themselves, their successors and assigns, jointly and severally, to The City of San Diego a municipal corporation in the sum of Eight Million Eight Hundred Ninety Nine Thousand One Hundred Six Dollars and Thirty Two Cents (\$8,899,106.32) for the faithful performance of the annexed contract, and in the sum of Eight Million Eight Hundred Ninety Nine Thousand One Hundred Six Dollars and Thirty Two Cents (\$8,899,106.32) for the benefit of laborers and materialmen designated below.

Conditions:

If the Principal shall faithfully perform the annexed contract with the City of San Diego, California, then the obligation herein with respect to a faithful performance shall be void; otherwise it shall remain in full force.

If the Principal shall promptly pay all persons, firms and corporations furnishing materials for or performing labor in the execution of this contract, and shall pay all amounts due under the California Unemployment Insurance Act then the obligation herein with respect to laborers and materialmen shall be void; otherwise it shall remain in full force.

The obligation herein with respect to laborers and materialmen shall inure to the benefit of all persons, firms and corporations entitled to file claims under the provisions of Article 2. Claimants, (iii) public works of improvement commencing with Civil Code Section 9100 of the Civil Code of the State of California.

Changes in the terms of the annexed contract or specifications accompanying same or referred to therein shall not affect the Surety's obligation on this bond, and the Surety hereby waives notice of same.

The Surety expressly agrees that the City of San Diego may reject any contractor or subcontractor which may be proposed by Surety in fulfillment of its obligations in the event of default by the Principal.

The Surety shall not utilize the Principal in completing the improvements and work specified in the Agreement in the event the City terminates the Principal for default.

PERFORMANCE BOND, LABOR AND MATERIALMEN'S BOND (continued)

Dated June 15, 2021

Approved as to Form

TC Construction Company, Inc.

Principal

By [Signature]

Austin Cameron, president

Printed Name of Person Signing for Principal

Mara W. Elliott, City Attorney

By [Signature]
Deputy City Attorney

Date 9/17/21

Liberty Mutual Insurance Company

Surety

By [Signature]

Tara Bacon, Attorney-in-fact



Approved:

By [Signature]
Cindy Crocker
Acting Deputy Director
Purchasing & Contracting Department
Public Works Division

Date 9/13/2021

790 The City Drive South, Suite 200

Local Address of Surety

Orange, CA 92868

Local Address (City, State) of Surety

Michael Forman (714) 634-5719

Local Telephone No. of Surety

Premium \$ 53,232.00

Bond No. 024253762

ATTACHMENTS

ATTACHMENT A
SCOPE OF WORK

SCOPE OF WORK

1. **SCOPE OF WORK:** Construction of AC Water and Sewer Group 1056 consists of the installation of 17,128 LF (3.24 miles) 8-inch and 12-inch water mains, replacement of three (3) pressure reducing stations, replacement of 311 LF (0.06 miles) of 8-inch sewer mains, and rehabilitation of 1,031 LF (0.20 miles) existing VC sewer mains, including all associated water services, fire hydrants, laterals, manholes, curb ramps, traffic control, trench restoration, pavement resurfacing, striping, and all other associated work.
 - 1.1. The Work shall be performed in accordance with:
 - 1.1.1. The Notice Inviting Bids and Plans numbered **41288-01-D** through **41288-72-D**, **42147-1-D** through **42147-39-D**, inclusive.
2. **LOCATION OF WORK:** The location of the Work is as follows:

See **Appendix E – Location Map**.
3. **CONTRACT TIME:** The Contract Time for completion of the Work, including the Plant Establishment Period, shall be **470 Working Days**.

ATTACHMENT B
PHASED FUNDING PROVISIONS

PHASED FUNDING PROVISIONS

1. PRE-AWARD

- 1.1. Within 10 Working Days of the Notice of Intent to Award, the Contractor must contact the Project Manager to discuss fund availability for each phase and shall also submit the following:
 - 1.1.1. Construction Cost Loaded Schedule in accordance with 6-1, "CONSTRUCTION SCHEDULE AND COMMENCEMENT OF THE WORK" and 7-3, "PAYMENT."
- 1.2. Contractor's failure to perform any of the following may result cancelling the award of the Contract:
 - 1.2.1. Meeting with the City's Project Manager to discuss the Phased Funding Schedule.
 - 1.2.2. Agreeing to a Phased Funding Schedule within **thirty** days of meeting with the City's Project Manager.

2. POST-AWARD

- 2.1. Do not start any construction activities for the next phase until the Notice to Proceed (NTP) has been issued by the City. The City will issue a separate NTP for each phase.
- 2.2. The City may issue the NTP for a subsequent phase before the completion of the preceding phase.

PHASED FUNDING SCHEDULE AGREEMENT

BID NUMBER: K-21-2000-DBB-3

CONTRACT OR TASK TITLE: AC Water & Sewer Group 1056

CONTRACTOR: TC Construction

Funding Phase	Phase Description	Phase Start	Phase Finish	Not-to-Exceed Amount
1	Work to be completed in Phase 1 shall include: bonds, mobilization, videotaping of existing conditions, 311 LF of sewer replacement on Sheet 3; 17,128 LF of water main replacement on Sheets 4-29; PRS installation on Sheets 56-72; in accordance with specifications and plans numbered 41288-01-D through 41288-72-D.	Notice to Proceed	6/30/2022	B18181 (W) <u>\$7,009,827.49</u> B18182 (S) <u>\$140,528.70</u> <i>Phase 1 subtotal:</i> <u>\$7,150,356.19</u>
2	Work to be completed in Phase 2 shall include 1031 LF of sewer rehabilitation on Sheet 30, 9,692 LF of water abandonment on Sheet 34 and the striping and signing improvement plans on 42147-01-D through 42147-22-D and street resurfacing and curb ramp activities on 41288-01-D through 41288-72-D.	7/01/2022	Notice of Completion	B18181 (W) <u>\$1,456,573.76</u> B18182 (S) <u>\$228,176.37</u> B21136 (TSW) <u>\$64,000.00</u> <i>Phase 2 subtotal:</i> <u>\$1,748,750.13</u>
Contract Total				\$8,899,106.32

Notes: WHITEBOOK section 7-3.10, "Phased Funding Compensation" applies.

1) The total of all funding phases shall be equal to the TOTAL BID PRICE as shown on BID SCHEDULE 1 - PRICES.

2) This PHASED FUNDING SCHEDULE AGREEMENT will be incorporated into the CONTRACT and shall only be revised by written modifications to the CONTRACT.

CITY OF SAN DIEGO

PRINT NAME: Nabil Batta

Construction Manager

Signature: Nabil Batta

Date: 8/19/2021

PRINT NAME: Sheila Bose

Project Manager

Signature: Sheila Bose

Date: 8/19/21

CONTRACTOR

PRINT NAME: Austin Cameron

Title: President

Signature: Austin Cameron

Date: 8/20/21

ATTACHMENT C

RESERVED

ATTACHMENT D
PREVAILING WAGE

PREVAILING WAGE

1. **PREVAILING WAGE RATES:** Pursuant to San Diego Municipal Code section 22.3019, construction, alteration, demolition, repair and maintenance work performed under this Contract is subject to State prevailing wage laws. For construction work performed under this Contract cumulatively exceeding \$25,000 and for alteration, demolition, repair and maintenance work performed under this Contract cumulatively exceeding \$15,000, the Contractor and its subcontractors shall comply with State prevailing wage laws including, but not limited to, the requirements listed below.
 - 1.1. **Compliance with Prevailing Wage Requirements.** Pursuant to sections 1720 through 1861 of the California Labor Code, the Contractor and its subcontractors shall ensure that all workers who perform work under this Contract are paid not less than the prevailing rate of per diem wages as determined by the Director of the California Department of Industrial Relations (DIR). This includes work performed during the design and preconstruction phases of construction including, but not limited to, inspection and land surveying work.
 - 1.1.1. Copies of such prevailing rate of per diem wages are on file at the City and are available for inspection to any interested party on request. Copies of the prevailing rate of per diem wages also may be found at <http://www.dir.ca.gov/OPRL/DPreWageDetermination.htm>. Contractor and its subcontractors shall post a copy of the prevailing rate of per diem wages determination at each job site and shall make them available to any interested party upon request.
 - 1.1.2. The wage rates determined by the DIR refer to expiration dates. If the published wage rate does not refer to a predetermined wage rate to be paid after the expiration date, then the published rate of wage shall be in effect for the life of this Contract. If the published wage rate refers to a predetermined wage rate to become effective upon expiration of the published wage rate and the predetermined wage rate is on file with the DIR, such predetermined wage rate shall become effective on the date following the expiration date and shall apply to this Contract in the same manner as if it had been published in said publication. If the predetermined wage rate refers to one or more additional expiration dates with additional predetermined wage rates, which expiration dates occur during the life of this Contract, each successive predetermined wage rate shall apply to this Contract on the date following the expiration date of the previous wage rate. If the last of such predetermined wage rates expires during the life of this Contract, such wage rate shall apply to the balance of the Contract.
 - 1.2. **Penalties for Violations.** Contractor and its subcontractors shall comply with California Labor Code section 1775 in the event a worker is paid less than the prevailing wage rate for the work or craft in which the worker is employed. This shall be in addition to any other applicable penalties allowed under Labor Code sections 1720 – 1861.

- 1.3. Payroll Records.** Contractor and its subcontractors shall comply with California Labor Code section 1776, which generally requires keeping accurate payroll records, verifying and certifying payroll records, and making them available for inspection. Contractor shall require its subcontractors to also comply with section 1776. Contractor and its subcontractors shall submit weekly certified payroll records online via the City's web-based Labor Compliance Program. Contractor is responsible for ensuring its subcontractors submit certified payroll records to the City.
- 1.3.1.** Contractor and their subcontractors shall also furnish records specified in Labor Code section 1776 directly to the Labor Commissioner in the manner required by Labor Code section 1771.4.
- 1.4. Apprentices.** Contractor and its subcontractors shall comply with California Labor Code sections 1777.5, 1777.6 and 1777.7 concerning the employment and wages of apprentices. Contractor is held responsible for the compliance of their subcontractors with sections 1777.5, 1777.6 and 1777.7.
- 1.5. Working Hours.** Contractor and their subcontractors shall comply with California Labor Code sections 1810 through 1815, including but not limited to: (i) restrict working hours on public works contracts to eight hours a day and forty hours a week, unless all hours worked in excess of 8 hours per day are compensated at not less than 1½ times the basic rate of pay; and (ii) specify penalties to be imposed on contractors and subcontractors of \$25 per worker per day for each day the worker works more than 8 hours per day and 40 hours per week in violation of California Labor Code sections 1810 through 1815.
- 1.6. Required Provisions for Subcontracts.** Contractor shall include at a minimum a copy of the following provisions in any contract they enter into with a subcontractor: California Labor Code sections 1771, 1771.1, 1775, 1776, 1777.5, 1810, 1813, 1815, 1860 and 1861.
- 1.7. Labor Code Section 1861 Certification.** Contractor in accordance with California Labor Code section 3700 is required to secure the payment of compensation of its employees and by signing this Contract, Contractor certifies that "I am aware of the provisions of Section 3700 of the California 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."
- 1.8. Labor Compliance Program.** The City has its own Labor Compliance Program authorized in August 2011 by the DIR. The City will withhold contract payments when payroll records are delinquent or deemed inadequate by the City or other governmental entity, or it has been established after an investigation by the City or other governmental entity that underpayment(s) have occurred. For questions or assistance, please contact the City of San Diego's Prevailing Wage Unit at 858-627-3200.

- 1.9. Contractor and Subcontractor Registration Requirements.** This project is subject to compliance monitoring and enforcement by the DIR. A contractor or subcontractor shall not be qualified to bid on, be listed in a bid or proposal, subject to the requirements of section 4104 of the Public Contract Code, or engage in the performance of any contract for public work, unless currently registered and qualified to perform public work pursuant to Labor Code section 1725.5. It is not a violation of this section for an unregistered contractor to submit a bid that is authorized by Section 7029.1 of the Business and Professions code or by Section 10164 or 20103.5 of the Public Contract Code, provided the contractor is registered to perform public work pursuant to Section 1725.5 at the time the contract is awarded.
- 1.9.1.** A Contractor's inadvertent error in listing a subcontractor who is not registered pursuant to Labor Code section 1725.5 in response to a solicitation shall not be grounds for filing a bid protest or grounds for considering the bid non-responsive provided that any of the following apply: (1) the subcontractor is registered prior to bid opening; (2) within twenty-four hours after the bid opening, the subcontractor is registered and has paid the penalty registration fee specified in Labor Code section 1725.5; or (3) the subcontractor is replaced by another registered subcontractor pursuant to Public Contract Code section 4107.
- 1.9.2.** By submitting a bid or proposal to the City, Contractor is certifying that he or she has verified that all subcontractors used on this public work project are registered with the DIR in compliance with Labor Code sections 1771.1 and 1725.5, and Contractor shall provide proof of registration for themselves and all listed subcontractors to the City at the time of bid or proposal due date or upon request.
- 1.10. Stop Order.** For Contractor or its subcontractors engaging in the performance of any public work contract without having been registered in violation of Labor Code sections 1725.5 or 1771.1, the Labor Commissioner shall issue and serve a stop order prohibiting the use of the unregistered contractors or unregistered subcontractor(s) on ALL public works until the unregistered contractor or unregistered subcontractor(s) is registered. Failure to observe a stop order is a misdemeanor.
- 1.11. List of all Subcontractors.** The Contractor shall provide the list of subcontractors (regardless of tier), along with their DIR registration numbers, utilized on this Contract prior to any work being performed; and the Contractor shall provide a complete list of all subcontractors with each invoice. Additionally, Contractor shall provide the City with a complete list of all subcontractors (regardless of tier) utilized on this contract within ten working days of the completion of the contract, along with their DIR registration numbers. The City shall withhold final payment to Construction Management Professional until at least thirty (30) days after this information is provided to the City.
- 1.12. Exemptions for Small Projects.** There are limited exemptions for installation, alteration, demolition, or repair work done on projects of \$25,000 or less. The

Contractor shall still comply with Labor Code sections 1720 et. seq. The only recognized exemptions are listed below:

- 1.12.1.** Registration. The Contractor will not be required to register with the DIR for small projects. (Labor Code section 1771.1).
- 1.12.2.** Certified Payroll Records. The records required in Labor Code section 1776 shall be required to be kept and submitted to the City of San Diego, but will not be required to be submitted online with the DIR directly. The Contractor will need to keep those records for at least three years following the completion of the Contract. (Labor Code section 1771.4).
- 1.12.3.** List of all Subcontractors. The Contractor shall not be required to hire only registered subcontractors and is exempt from submitting the list of all subcontractors that is required in section 1.11 above. (Labor code section 1773.3).

ATTACHMENT E
SUPPLEMENTARY SPECIAL PROVISIONS

SUPPLEMENTARY SPECIAL PROVISIONS

The following Supplementary Special Provisions (SSP) modifies the following documents:

1. The **2018 Edition** of the Standard Specifications for Public Works Construction (The "GREENBOOK").
2. The **2018 Edition** of the City of San Diego Standard Specifications for Public Works Construction (The "WHITEBOOK"), including the following:
 - a) General Provisions (A) for all Construction Contracts.

PART 0 – EQUAL OPPORTUNITY CONTRACTING PROGRAM (EOCP)

SECTION A – GENERAL REQUIREMENTS

0-12 CONTRACT RECORDS AND REPORTS. To the "WHITEBOOK", DELETE in its entirety and SUBSTITUTE with the following:

1. You shall maintain records of all subcontracts and invoices from your Subcontractors and Suppliers for work on this project. Records shall show name, telephone number including area code, and business address of each Subcontractor, Supplier, and joint venture partner, and the total amount actually paid to each firm. Project relevant records, regardless of tier, may be periodically reviewed by the City.
2. You shall retain all records, books, papers, and documents pertinent to the Contract for a period of not less than 5 years after Notice of Completion and allow access to said records by the City's authorized representatives.
3. You shall submit the following reports using the City's web-based contract compliance (Prism® portal):
 - a) **Monthly Payment.** You shall submit Monthly Payment Reporting by the 10th day of the subsequent month. Incomplete and/or delinquent reporting may cause payment delays, non-payment of invoices, or both.
4. The records maintained under item 1, described above, shall be consolidated into a Final Summary Report, certified as correct by an authorized representative of the Contractor. The Final Summary Report shall include all subcontracting activities and be sent to the EOCP Program Manager prior to Acceptance. Failure to comply may result in assessment of liquidated damages or withholding of retention. The City will review and verify 100% of subcontract participation reported in the Final Summary Report prior to approval and release of final retention to you. In the event your Subcontractors are owed money for completed Work, the City may authorize payment to subcontractor via a joint check from the withheld retention.

**SECTION 1 – GENERAL, TERMS, DEFINITIONS, ABBREVIATIONS, UNITS OF MEASURE, AND
SYMBOLS**

1-2 TERMS AND DEFINITIONS. To the “WHITEBOOK”, items 43, 56, 69, and 102, DELETE in their entirety and SUBSTITUTE with the following:

- 43. **Field Order** - A Field Order is a written agreement by the Engineer to compensate you for Work items in accordance with 2-8, “EXTRA WORK” or 2-9, “CHANGED CONDITIONS”. A Field Order does not change the Contract Price, Contract Time, or the scope intent of the Contract. The unused portion of the Field Order shall revert to the City upon Acceptance.
- 56. **Notice of Completion (NOC)** - A document recorded with the County of San Diego to signify that the Contract Work has been completed and accepted by the City.
- 69. **Punchlist** - A list of items of Work or corrections generated after a Walk-through that is conducted when you consider that the Work and Services are complete, and as verified by the Owner. The Punchlist may be completed in phases if defined in the Contract.
- 102. **Walk-through** - An inspection the City uses to verify the completion of the Project or phase of the Project and to generate a Punchlist prior to Acceptance.

To the “WHITEBOOK”, item 54, “Normal Working Hours”, ADD the following:

The **Normal Working Hours** are **8:30 AM to 3:30 PM**.

To the “WHITEBOOK”, ADD the following:

- 108. **Acceptance** – When all of the Contract Work, including all Punchlist items, is deemed officially complete by the City Asset Owning Department or Deputy City Engineer.
- 109. **Occupancy** – When the Owner deems a building is ready for use, the Owner will issue a certificate of Occupancy in writing.
- 110. **Substantial Completion** – When all Contract Work is deemed complete by the Contractor in writing, and as verified by the Owner. Substantial Completion may be completed in phases if defined in the Contract.

1-7.1.3 Requests for Information (RFI). To the “WHITEBOOK”, DELETE in its entirety and SUBSTITUTE with the following:

- 1. Should You discover a conflict, omission, errors in the Contract Documents, differences with existing field conditions, or have any questions concerning interpretation or clarification of Contract Documents, or when you propose deviations to the standards or design, you shall submit a Request for Information (RFI) to the City regarding your question or clarification within **1 Working Day**.

2. Your RFI shall meet the following requirements:
 - a) All RFIs, whether by You or your Subcontractor or supplier at any tier, shall be submitted by You to the City.
 - b) RFIs shall be numbered sequentially.
 - c) You shall clearly and concisely set forth the single issue for which interpretation or clarification is sought, indicate Specification Section numbers, Contract Drawing numbers, and details, or other items involved, and state why a response is required from the City.
 - d) RFIs shall be submitted within **1 Working Day** in order that they may be adequately researched and answered before the response affects any critical activity of the Work.
 - e) Should You believe that a response to an RFI causes a change to the requirements of the Contract, You shall, before proceeding, give written notice to the City, indicating that You believe that City response to the RFI to be a Change Order. Failure to give such written notice within **5 Working Days** of receipt of the City's response to the RFI shall waive Your right to seek additional time or cost.
3. The City will respond to RFIs within **5 Working Days** unless the City notifies You in writing that a response will take longer. The **5 Working Days** shall begin when the RFI is received and dated by the City. Responses from the City will not change any requirement of the Contract unless so noted by the City in the response to the RFI. The City will not issue a Change Order for Extra Work or additional time when the issue raised in the RFI was due to your fault, neglect, or any unauthorized deviations from the project design or specifications.
4. If You proceed in resolving a conflict, omission, or any error in the Contract Documents without sending the City an RFI in accordance with the requirements stated above, the City may require You to remove such work at Your cost or back charge You the cost to remove this work.

1-7.2 Contract Bonds. To the "WHITEBOOK", item 1, DELETE in its entirety and SUBSTITUTE with the following:

1. Before execution of the Contract, file payment and performance bonds with the City to be approved by the Board in the amounts and for the purposes noted. Bonds shall be executed by a responsible surety as follows:
 - a) If the Work is being funded with state or local money, consistent with California Code of Civil Procedure §995.670, the Surety shall be an "admitted surety" authorized by the State of California Department of Insurance to transact surety insurance in the State.
 - b) If the Work is being funded with federal money, the Surety shall be listed in the U.S. Treasury Department Circular 570 and shall be in conformance with the specified Underwriting Limitations.

To the "WHITEBOOK", item 2, subsection "a", subsection "i", DELETE in its entirety and SUBSTITUTE with the following:

- i. A "Payment Bond" (Materials and Labor Bond) is optional. If no bond is submitted, no payment shall be made until 35 Calendar Days after Acceptance and any lien requirements have been fulfilled. If a bond is submitted, progress payments shall be made in accordance with these Specifications.

To the "WHITEBOOK", item 2, subsection "d", DELETE in its entirety and SUBSTITUTE with the following:

- d) For Contracts over \$100,000:
 - i. A "Payment Bond" (Materials and Labor Bond) for 100% of the Contract Price to satisfy claims of material Suppliers and of mechanics and laborers employed on the Work. You shall maintain the bond in full force and effect until Acceptance and until all claims for materials and labor are paid and shall otherwise comply with the Government Code.
 - ii. A "Faithful Performance Bond" for 100% of the Contract Price to guarantee faithful performance of Work, within the time prescribed and in a manner satisfactory to the City, that materials and workmanship shall be free from original or developed defects.

To the "WHITEBOOK", item 7, DELETE in its entirety and SUBSTITUTE with the following:

7. You shall require the Surety to mail its standard "Bond Status" form to the Engineer at the following address:

Deputy Director
Construction Management and Field Engineering Division
9573 Chesapeake Drive San Diego, CA 92123

SECTION 3 – CONTROL OF THE WORK

3-2 SELF-PERFORMANCE. To the "GREENBOOK", DELETE in its entirety and SUBSTITUTE with the following:

1. You shall perform, with your own organization, Contract Work amounting to at least 50% of the base Bid.

3-3 SUBCONTRACTORS. To the "WHITEBOOK", ADD the following:

6. When a Subcontractor fails to prosecute a portion of the Work in a manner satisfactory to the City, you shall remove such Subcontractor immediately upon written request of the City, and shall request approval of a replacement Subcontractor to perform the Work in accordance with California Public Contract Code (PCC), Subletting and Subcontracting, Section 4107, at no added cost to the City.

3-8.4 Supporting Information. To the “WHITEBOOK”, ADD the following:

4. You shall collect and submit rehabilitation data spreadsheets along with monthly invoices for the following rehabilitation Work (see **Appendix J, Rehab Data Collection – Sewer Mains Sample Data Template, Appendix K, Rehab Data Collection – Manholes Sample Data Template and Appendix L, Rehab Data Collection – Laterals Sample Data Template**).
 - a) Laterals
 - b) Sewer Mains
 - c) Manholes

3-8.7 Contractor’s Quality Control Plan (QCP). To the “WHITEBOOK”, ADD the following:

7. The establishment and implementation of a Quality Control Plan (QCP), as defined in the standard specifications, shall be required for this Contract. See example in **Appendix G - Sample Contractor’s Daily Quality Control Inspection Report**.

3-8.7.1 QCP Submittal. To the “WHITEBOOK”, item 2, DELETE in its entirety and SUBSTITUTE with the following:

2. The QCP shall be organized to address, at a minimum, the following items:
 - a) Quality Control Administrator
 - b) Surface preparation and paving schedule
 - c) Inspection and documentation requirements (Daily Quality Control Inspection Report)
 - d) Material quality control testing plan
 - e) Documentation of quality control activities
 - f) Procedures for corrective action when quality control and/or acceptance criteria are not met
 - g) If paving Work will be in areas prone to shade, provide curing time of product

3-8.7.4 Documentation. To the “WHITEBOOK”, item 3, section “a”, subsection “viii”, DELETE in its entirety and SUBSTITUTE with the following:

- viii. Documentation that the following have been verified to be in compliance:
 - Proper storage of materials and equipment.
 - Proper operation of all equipment.
 - Adherence to plans and technical specifications.
 - Review of quality control tests.
 - Safety inspection.
 - Mixing properties of products against the approved submittal limits.

3-10 SURVEYING. To the "GREENBOOK" and "WHITEBOOK", DELETE in its entirety and SUBSTITUTE with the following:

3-10 SURVEYING (DESIGN-BID-BUILD).

3-10.1 General.

1. You shall provide all required site layout and general grade checking work not specified in 3-10.2, "Survey Services Provided by City".
2. Notify the City, in writing, at least 2 Working Days prior to requesting survey services provided by the City.

3-10.2 Survey Services Provided by City.

1. Monument Perpetuation, including mark-outs. You are responsible for requesting the coordination of these services.
 - a) If at any time a monument will be destroyed or covered, such monument shall be perpetuated in accordance with state law. Inform the City Engineering Support & Technical Services Division's Land Survey Section (LSS), via project Resident Engineer, if any monument will be destroyed or covered during any construction activity.
2. The following surveying services (including construction staking), as defined in California Business & Professions Code §8726, shall be provided by the City:
 - a) Locating or establishing alignment or elevations of all features or structures shown on project Plans.
 - b) Locating or establishing geodetic control points for all site feature or structure locations.
 - c) Produce topographic as-built data.
 - d) Locating, establishing, or re-establishing monuments, property lines, right-of-way lines, or easement lines.
 - e) Verifying structure finish grade elevations.
3. All construction survey stakes, control points, and other survey related marks provided by the City shall be preserved for the duration of the Project. If any construction survey stakes, control points, or other survey related marks are lost or disturbed and need to be replaced, such replacement shall be performed at your expense.

3-10.3 Payment.

The payment for site layout and general grade checking Work, coordination, and preservation of all survey related marks shall be included in the Contract Price

3-12.1 General. To the "WHITEBOOK", ADD the following:

2. You shall provide a PM-10 certified self-loading motorized street sweeper equipped with a functional water spray system for this project.

3. You shall sweep all paved areas within the Work site and all paved haul routes as specified below:
 - a) Every Friday on a weekly basis.
 - b) 1 Working Day prior to each rain event.
 - c) As directed by the Engineer.

If these requirements would require you to sweep on a Holiday or Weekend, then you shall sweep the next available Working Day prior to that Holiday or Weekend.

3-12.7 Drinking Water Discharges Requirements. To the "WHITEBOOK", ADD the following:

1. You shall record the results for each discharge event on the City's Drinking Water Discharge Monitoring form included as **Appendix H - Monthly Drinking Water Discharge Monitoring Form.**

3-12.8.7 Hazardous Waste Operations and Emergency Response (HAZWOPER) Certificate. To the "WHITEBOOK", item 1, DELETE in its entirety and SUBSTITUTE with the following:

1. If flammable liquids or other hazardous wastes are encountered during dewatering activities, construction staff shall be required to have a HAZWOPER certificate in accordance with 5-15.1, "General" and in compliance with CCR Title 8, Section 5192 and 29 CFR, Part 1910.

3-12.8.8 Payment. To the "WHITEBOOK", item 3, ADD the following:

5. Submit supporting invoices and a Schedule of Values for the Lump Sum Bid item for "Dewatering Hazardous Contaminated Water" in accordance with 7-2.1, "Schedule of Values (SOV)". The SOV shall itemize the Work to show the following:
 - i. All costs associated with handling contaminated groundwater specified in 3-12.8.6, "Dewatering System", and 3-12.8.7, "Hazardous Waste Operations and Emergency Response (HAZWOPER) Certificate".
 - ii. All costs associated with equipment used for dewatering hazardous contaminated groundwater, including costs for mobilization and demobilization.
 - iii. All rental and operating costs for equipment used for dewatering contaminated groundwater.

ADD the following:

6. The payment for Hazardous Waste Operations and Emergency Response (HAZWOPER) certification and training for construction staff shall be paid in accordance with 5-15.17, "Payment".

3-13.1 Completion. To the "GREENBOOK", DELETE in its entirety and SUBSTITUTE with the following:

1. You shall submit a written assertion that the Work has been completed and is ready for Owner Acceptance. If, in the Engineer's judgment, the Work has been completed in accordance with the Contract Documents,

the Engineer will set forth in writing the date the Work was completed. This will be the date that you are relieved from responsibility to protect and maintain the Work and to which liquidated damages will be computed.

3-13.1.1 Requirements Before Requesting a Walk-through. To the "WHITEBOOK", DELETE in its entirety and SUBSTITUTE with the following:

3-13.1.1 Requirements Before Requesting Substantial Completion.

1. The following items are required prior to requesting a Substantial Completion:
 - a) Remove temporary facilities from the Site.
 - b) Thoroughly cleaning the Site and removing all mark outs and construction staking.
 - c) Provide completed and signed Red-lines in accordance with 3-7.3 "Redlines and Record Documents".
 - d) Provide all material and equipment maintenance and operation instructions and/or manuals.
 - e) Provide all tools which are permanent parts of the equipment installed in the Project.
 - f) Provide and properly identify all keys for construction and all keys for permanent Work.
 - g) Provide all final Special Inspection reports required by the applicable building Code.
 - h) Provide all items specified to be supplied as extra stock. Wrap, seal, or place in a container all items as necessary to allow for storage by the City for future use. Verify the specified quantities.
 - i) Ensure that all specified EOCP and certified wage rate documentations covering the Contract Time have been submitted.
 - j) If the Work includes installing an irrigation system, provide the spare parts for the proposed irrigation system as specified in the Special Provisions.
 - k) If the Work includes sewer and storm drain installations, the inspection shall include televising in accordance with 306-18, "VIDEO INSPECTION".
 - l) If the Work includes a Plant Establishment Period, Work in accordance with 801-6, "MAINTENANCE AND PLANT ESTABLISHMENT" shall be completed prior to requesting Substantial Completion, unless approved otherwise by the Owner.
 - m) Notify the Engineer to arrange a final inspection of any permanent BMPs installed.

3-13.1.2 Walk-through and Punchlist Procedure. To the “WHITEBOOK”, DELETE in its entirety and SUBSTITUTE with the following:

1. You shall notify the Engineer 15 Working Days in advance of date of anticipated Substantial Completion to allow time for Engineer to schedule a Walk-through. After you complete the requirements in 3-13.1.1, “Requirements Before Requesting Substantial Completion” and when you consider that the Work is Substantially Complete, you will notify the Engineer in writing that the Project is Substantially Complete. The Engineer will review your request and determine if the Project is ready for a Walk-through, by verifying whether you have completed all items as required by 3-13.1.1, “Requirements Before Requesting Substantial Completion”. Within 7 Working Days, the City will either reject your request of a Walk-through in writing or schedule a Walk-through inspection. The Engineer shall facilitate the Walk-through.
2. The following documents shall be provided at the time of your Walk-through request: As-Built markup, Plans, specifications, technical data such as submittals and equipment manuals, draft final payment, warranties, material certifications, bonds, guarantees, maintenance service agreements, and maintenance and operating manuals.
3. Written warranties, except manufacturer's standard printed warranties, shall be on a letterhead addressed to you. Warranties shall be submitted in the format described in this section, modified as approved by the City, to suit the conditions pertaining to the warranty. Lack of submitting these items will delay start of Walk-through.
4. The Engineer will provide you with the Punchlist within 15 Working Days after the date of the Walk-through. The City shall not provide a preliminary Punchlist.
5. If the Engineer finds that the Project is not Substantially Complete as defined herein, the Engineer will terminate the Walk-through and notify you in writing.
6. If, at any time during the Engineer’s evaluation of the corrective Work required by the Punchlist, the Engineer discovers that additional corrective Work is required, the Engineer may include that corrective Work in the Punchlist.
7. You shall remain solely responsible for the Project Site until the Project is completely operational, all Punchlist items have been corrected, and all operation and maintenance manuals have been accepted by the City.
8. The Engineer shall meet with you within 5 Working Days of notification that all Punchlist items are corrected. You shall complete the Punchlist within 30 Working Days, and Working Days will continue to be counted until Acceptance of the Project.

3-13.2 Acceptance. To the “WHITEBOOK”, DELETE in its entirety and SUBSTITUTE with the following:

1. You shall provide the completed, signed, and stamped DS-563 to the Engineer prior to Acceptance.
2. You shall deliver the final As-builts and final billing prior to Acceptance.

3. You shall assemble and deliver to the Engineer a Final Summary Report and Affidavit of Disposal prior to Acceptance.
4. Acceptance shall occur after all of the requirements contained in the Contract Documents have been fulfilled. If, in the Engineer's judgment, you have fully performed the Contract, the Engineer will recommend to the City Engineer that your performance of the Contract be accepted. You shall receive notification of Acceptance in writing from the Owner and counting of working days shall cease and Warranty begins.
5. Retention can be released 35 Calendar Days after NOC. Submit your request for retention to the Resident Engineer and they will mail to you a "Release of Claims" form which shall be completed and returned before the retention will be released.

3-13.3

Warranty. To the "WHITEBOOK", DELETE in its entirety and SUBSTITUTE with the following:

1. You shall warranty and repair all defective materials and workmanship for a period of 1 year. This call back warranty period shall start on the date the Work was accepted by the City unless the City has Beneficial Use or takes Occupancy of the project earlier (excluding water, sewer, and storm drain projects).
2. You shall warranty the Work free from all latent defects for 10 years and patent defects for a period of 4 years.
3. The warranty period for specific items covered under manufacturers' or suppliers' warranties shall commence on the date they are placed into service at the direction of the Engineer in writing.
4. All express warranties from Subcontractors, manufacturers', or Suppliers', of any tier, for the materials furnished and Work performed shall be assigned, in writing, to the City, and shall be delivered to the Engineer prior to the Acceptance of your performance of the Contract.
5. Replace or repair defective materials and workmanship in a manner satisfactory to the Engineer after notice to do so from the Engineer and within the time specified in the notice. If you fail to make such replacements or repairs within the time specified in the notice, the City may perform the replacement or repairs at your expense. If you fail to reimburse the City for the actual costs, your Surety shall be liable for the cost
6. Items that shall be warrantied free from defective workmanship and materials for a period longer than 1 year are as follows:

Specified Item	Minimum Warranty Period
Detectable Warning Tile Construction	3 Years of Manufacturer's Warranty
All Work Under SECTION 500 - PIPELINE REHABILITATION	3 Years
Fiber Optic Interconnect Cables	2 Years
Luminaires*	10 Years of Manufacturer's Warranty

Specified Item	Minimum Warranty Period
LED Signal Modules	3 Years of Manufacturer's Warranty
Field Devices Associated with 700-6.3, "Adaptive Control Note"	See 700-6.3.9, "Warranty"

* Provide documentation verifying that the induction luminaire models being offered for the Project are covered by the 10-year warranty.

7. If installed, you shall provide the City and property owner a copy of the manufacturer's warranty for private sewer pumps, including the alarm panel and all other accessories.
 - a) You shall involve the manufacturer in the installation and startup as needed to secure any extended warranty required.
 - b) Nothing in here is intended to limit any manufacturer's warranty which provides the City with greater warranty rights than set forth in this section or the Contract Documents.
 - c) The warranty shall include all components. The form of the warranty shall be approved by the Engineer in accordance with 3-13.3.2, "Warranty Format Requirements".
8. If, during the warranty period, any item of the Work is found to be Defective Work, you shall correct it promptly after receipt of written notice from the City to do so. The warranty period shall be extended with respect to portions of the Work corrected as part of the warranty requirements.

3-15.3 Coordination. To the "WHITEBOOK", ADD the following:

2. Other adjacent City projects are scheduled for construction for the same time period in the vicinity of Tierrasanta Bl & Alley W/O Esplendente Bl. See **Appendix F - Adjacent Projects Map** for the approximate location. Coordinate the Work with the adjacent projects as listed below:
 - a) AC Water & Sewer Group 1051; Sewer Rehab 1051A (B-18091, B-18098, B-19145)

Alley W/O Esplendente Bl & Tierrasanta Bl

PM: Jonard Talamayan (619) 533-4116

SECTION 4 - CONTROL OF MATERIALS

4-3.6 Preapproved Materials. To the "WHITEBOOK", ADD the following:

3. You shall submit in writing a list of all products to be incorporated in the Work that are on the AML.

4-6 TRADE NAMES. To the “WHITEBOOK”, ADD the following:

11. You shall submit your list of proposed substitutions for an “equal” item **no later than 5 Working Days after the determination of the Apparent Low Bidder** and on the City’s Product Submittal Form available at:

<https://www.sandiego.gov/ecp/edocref/>

SECTION 5 – LEGAL RELATIONS AND RESPONSIBILITIES

5-4 INSURANCE. To the “GREENBOOK”, DELETE in its entirety and SUBSTITUTE with the following:

5-4 INSURANCE.

1. The insurance provisions herein shall not be construed to limit your indemnity obligations contained in the Contract.

5-4.1 Policies and Procedures.

1. You shall procure the insurance described below, at its sole cost and expense, to provide coverage against claims for loss including injuries to persons or damage to property, which may arise out of or in connection with the performance of the Work by you, your agents, representatives, officers, employees or Subcontractors.
2. Insurance coverage for property damage resulting from your operations is on a replacement cost valuation. The market value will not be accepted.
3. You shall maintain this insurance for the duration of this Contract and at all times thereafter when you are correcting, removing, or replacing Work in accordance with this Contract. Your liabilities under the Contract, e.g., your indemnity obligations, is not deemed limited to the insurance coverage required by this Contract.
4. The payment for insurance shall be included in the Contract Price as bid by you. Except as specifically agreed to by the City in writing, you are not entitled to any additional payment. Do not begin any Work under this Contract until you have provided and the City has approved all required insurance.
5. Policies of insurance shall provide that the City is entitled to 30 Days (10 Days for cancellation due to non-payment of premium) prior written notice of cancellation or non-renewal of the policy. Maintenance of specified insurance coverage is a material element of the Contract. Your failure to maintain or renew coverage or to provide evidence of renewal during the term of the Contract may be treated by the City as a material breach of the Contract.

5-4.2 Types of Insurance.

5-4.2.1 Commercial General Liability Insurance.

1. Commercial General Liability Insurance shall be written on the current version of the ISO Occurrence form CG 00 01 07 98 or an equivalent form providing coverage at least as broad.

2. The policy shall cover liability arising from premises and operations, XCU (explosions, underground, and collapse), independent contractors, products/completed operations, personal injury and advertising injury, bodily injury, property damage, and liability assumed under an insured's contract (including the tort liability of another assumed in a business contract).
3. There shall be no endorsement or modification limiting the scope of coverage for either "insured vs. insured" claims or contractual liability. You shall maintain the same or equivalent insurance for at least 10 years following completion of the Work.
4. All costs of defense shall be outside the policy limits. Policy coverage shall be in liability limits of not less than the following:

<u>General Annual Aggregate Limit</u>	<u>Limits of Liability</u>
Other than Products/Completed Operations	\$2,000,000
Products/Completed Operations Aggregate Limit	\$2,000,000
Personal Injury Limit	\$1,000,000
Each Occurrence	\$1,000,000

5-4.2.2 Commercial Automobile Liability Insurance.

1. You shall provide a policy or policies of Commercial Automobile Liability Insurance written on the current version of the ISO form CA 00 01 12 90 or later version or equivalent form providing coverage at least as broad in the amount of \$1,000,000 combined single limit per accident, covering bodily injury and property damage for owned, non-owned, and hired automobiles ("Any Auto").
2. All costs of defense shall be outside the limits of the policy.

5-4.2.3 Contractors Pollution Liability Insurance.

1. You shall procure and maintain at your expense or require your Subcontractor, as described below, to procure and maintain the Contractors Pollution Liability Insurance including contractual liability coverage to cover liability arising out of cleanup, removal, storage, or handling of hazardous or toxic chemicals, materials, substances, or any other pollutants by you or any Subcontractor in an amount not less than \$2,000,000 limit for bodily injury and property damage.
2. All costs of defense shall be outside the limits of the policy. Any such insurance provided by your Subcontractor instead of you shall be approved separately in writing by the City.
3. For approval of a substitution of your Subcontractor's insurance, you shall certify that all activities for which the Contractors Pollution Liability Insurance will provide coverage will be performed exclusively by the Subcontractor providing the insurance. The deductible shall not exceed \$25,000 per claim.

4. Contractual liability shall include coverage of tort liability of another party to pay for bodily injury or property damage to a third person or organization. There shall be no endorsement or modification of the coverage limiting the scope of coverage for either “insured vs. insured” claims or contractual liability.
5. Occurrence based policies shall be procured before the Work commences and shall be maintained for the Contract Time. Claims Made policies shall be procured before the Work commences, shall be maintained for the Contract Time, and shall include a 12 month extended Claims Discovery Period applicable to this contract or the existing policy or policies that shall continue to be maintained for 12 months after the completion of the Work without advancing the retroactive date.
6. Except as provided for under California law, the policy or policies shall provide that the City is entitled to 30 Days prior written notice (10 Days for cancellation due to non-payment of premium) of cancellation or non-renewal of the policy or policies.

5-4.2.4 Contractors Hazardous Transporters Pollution Liability Insurance.

1. You shall provide at your expense or require your Subcontractor to provide, as described below, Contractors Hazardous Transporters Pollution Liability Insurance including contractual liability coverage to cover liability arising out of transportation of hazardous or toxic, materials, substances, or any other pollutants by you or any Subcontractor in an amount not less than \$2,000,000 limit per occurrence/aggregate for bodily injury and property damage.
2. All costs of defense shall be outside the limits of the policy. The deductible shall not exceed \$25,000 per claim. Any such insurance provided by a subcontractor instead of you shall be approved separately in writing by the City.
3. For approval of the substitution of Subcontractor’s insurance the Contractor shall certify that all activities for which Contractors Hazardous Transporters Pollution Liability Insurance will provide coverage will be performed exclusively by the Subcontractor providing the insurance.
4. Contractual liability shall include coverage of tort liability of another party to pay for bodily injury or property damage to a third person or organization. There shall be no endorsement or modification of the coverage limiting the scope of coverage for either “insured vs. insured” claims or contractual liability. Occurrence based policies shall be procured before the Work commences and shall be maintained for the duration of this Contract. Claims Made policies shall be procured before the Work commences, shall be maintained for the duration of this contract, and shall include a 12 month extended Claims Discovery Period applicable to this contract or the existing policy or policies that shall continue to be maintained for 12 months after the completion of the Work under this Contract without advancing the retroactive date.
5. Except as provided for under California law, the policy or policies shall provide that the City is entitled to 30 Days prior written notice (10 Days for cancellation

due to non-payment of premium) of cancellation or non-renewal of the policy or policies.

5-4.3 Rating Requirements. Except for the State Compensation Insurance Fund, all insurance required by this Contract as described herein shall be carried only by responsible insurance companies with a rating of, or equivalent to, at least "A-, VI" by A.M. Best Company, that are authorized by the California Insurance Commissioner to do business in the State, and that have been approved by the City.

5-4.3.1 Non-Admitted Carriers. The City will accept insurance provided by non-admitted, "surplus lines" carriers only if the carrier is authorized to do business in the State and is included on the List of Approved Surplus Lines Insurers (LASLI list).

All policies of insurance carried by non-admitted carriers shall be subject to all of the requirements for policies of insurance provided by admitted carriers described herein.

5-4.4 Evidence of Insurance. Furnish to the City documents e.g., certificates of insurance and endorsements evidencing the insurance required herein, and furnish renewal documentation prior to expiration of this insurance. Each required document shall be signed by the insurer or a person authorized by the insurer to bind coverage on its behalf. We reserve the right to require complete, certified copies of all insurance policies required herein.

5-4.5 Policy Endorsements.

5-4.5.1 Commercial General Liability Insurance.

5-4.5.1.1 Additional Insured.

1. You shall provide at your expense policy endorsement written on the current version of the ISO Occurrence form CG 20 10 11 85 or an equivalent form providing coverage at least as broad.
2. To the fullest extent allowed by law e.g., California Insurance Code §11580.04, the policy shall be endorsed to include the City and its respective elected officials, officers, employees, agents, and representatives as additional insured.
3. The additional insured coverage for projects for which the Engineer's Estimate is \$1,000,000 or more shall include liability arising out of:
 - a) Ongoing operations performed by you or on your behalf,
 - b) your products,
 - c) your Work, e.g., your completed operations performed by you or on your behalf, or
 - d) premises owned, leased, controlled, or used by you.
4. The additional insured coverage for projects for which the Engineer's Estimate is less than \$1,000,000 shall include liability arising out of:
 - a) Ongoing operations performed by you or on your behalf,

- b) your products, or
- c) premises owned, leased, controlled, or used by you.

5-4.5.1.2 Primary and Non-Contributory Coverage. The policy shall be endorsed to provide that the coverage with respect to operations, including the completed operations, if appropriate, of the Named Insured is primary to any insurance or self-insurance of the City and its elected officials, officers, employees, agents and representatives. Further, it shall provide that any insurance maintained by the City and its elected officials, officers, employees, agents and representatives shall be in excess of your insurance and shall not contribute to it.

5-4.5.1.3 Project General Aggregate Limit. The policy or policies shall be endorsed to provide a Designated Construction Project General Aggregate Limit that will apply only to the Work. Only claims payments which arise from the Work shall reduce the Designated Construction Project General Aggregate Limit. The Designated Construction Project General Aggregate Limit shall be in addition to the aggregate limit provided for the products-completed operations hazard.

5-4.5.2 Commercial Automobile Liability Insurance.

5-4.5.2.1 Additional Insured. Unless the policy or policies of Commercial Auto Liability Insurance are written on an ISO form CA 00 01 12 90 or a later version of this form or equivalent form providing coverage at least as broad, the policy shall be endorsed to include the City and its respective elected officials, officers, employees, agents, and representatives as additional insured, with respect to liability arising out of automobiles owned, leased, hired or borrowed by you or on your behalf. This endorsement is limited to the obligations permitted by California Insurance Code §11580.04.

5-4.5.3 Contractors Pollution Liability Insurance Endorsements.

5-4.5.3.1 Additional Insured.

1. The policy or policies shall be endorsed to include as an Insured the City and its respective elected officials, officers, employees, agents, and representatives, with respect to liability arising out of:
 - a) Ongoing operations performed by you or on your behalf,
 - b) your products,
 - c) your work, e.g., your completed operations performed by you or on your behalf, or
 - d) premises owned, leased, controlled, or used by you.

Except that in connection with, collateral to, or affecting any construction contract to which the provisions of subdivision (b) of § 2782 of the California Civil Code apply, this endorsement shall not provide any duty of indemnity coverage for the active negligence of the City and its respective elected officials, officers, employees, agents, and representatives in any case where an

agreement to indemnify the City and its respective elected officials, officers, employees, agents, and representatives would be invalid under subdivision (b) of §2782 of the California Civil Code.

2. In any case where a claim or loss encompasses the negligence of the Insured and the active negligence of the City and its respective elected officials, officers, employees, agents, and representatives that are not covered because of California Insurance Code §11580.04, the insurer's obligation to the City and its respective elected officials, officers, employees, agents, and representatives shall be limited to obligations permitted by California Insurance Code §11580.04.

5-4.5.3.2 Primary and Non-Contributory Coverage. The policy or policies shall be endorsed to provide that the insurance afforded by the Contractors Pollution Liability Insurance policy or policies is primary to any insurance or self-insurance of the City and its elected officials, officers, employees, agents and representatives with respect to operations including the completed operations of the Named Insured. Any insurance maintained by the City and its elected officials, officers, employees, agents and representatives shall be in excess of your insurance and shall not contribute to it.

5-4.5.3.3 Severability of Interest. For Contractors Pollution Liability Insurance, the policy or policies shall provide that your insurance shall apply separately to each insured against whom claim is made or suit is brought, except with respect to the limits of the insurer's liability and shall provide cross-liability coverage.

5-4.5.4 Contractors Hazardous Transporters Pollution Liability Insurance Endorsements.

5-4.5.4.1 Additional Insured.

1. The policy or policies shall be endorsed to include as an Insured the City and its respective elected officials, officers, employees, agents, and representatives, with respect to liability arising out of:
 - a) Ongoing operations performed by you or on your behalf,
 - b) your products,
 - c) your work, e.g., your completed operations performed by you or on your behalf, or
 - d) premises owned, leased, controlled, or used by you.

Except that in connection with, collateral to, or affecting any construction contract to which the provisions of subdivision (b) of §2782 of the California Civil Code apply, this endorsement shall not provide any duty of indemnity coverage for the active negligence of the City and its respective elected officials, officers, employees, agents, and representatives in any case where an agreement to indemnify the City and its respective elected officials, officers, employees, agents, and representatives would be invalid under subdivision (b) of §2782 of the California Civil Code.

2. In any case where a claim or loss encompasses the negligence of the Insured and the active negligence of the City and its respective elected officials, officers, employees, agents, and representatives that are not covered because of California Insurance Code §11580.04, the insurer's obligation to the City and its respective elected officials, officers, employees, agents, and representatives shall be limited to obligations permitted by California Insurance Code §11580.04.

5-4.5.4.2 Primary and Non-Contributory Coverage. The policy or policies shall be endorsed to provide that the insurance afforded by the Contractors Pollution Liability Insurance policy or policies is primary to any insurance or self-insurance of the City and its elected officials, officers, employees, agents and representatives with respect to operations including the completed operations of the Named Insured. Any insurance maintained by the City and its elected officials, officers, employees, agents and representatives shall be in excess of your insurance and shall not contribute to it.

5-4.5.4.3 Severability of Interest. For Contractors Hazardous Transporters Pollution Liability Insurance, the policy or policies shall provide that your insurance shall apply separately to each insured against whom claim is made or suit is brought, except with respect to the limits of the insurer's liability and shall provide cross-liability coverage.

5-4.6 Deductibles and Self-Insured Retentions. You shall pay for all deductibles and self-insured retentions. You shall disclose deductibles and self-insured retentions to the City at the time the evidence of insurance is provided.

5-4.7 Reservation of Rights. The City reserves the right, from time to time, to review your insurance coverage, limits, deductibles and self-insured retentions to determine if they are acceptable to the City. The City will reimburse you, without overhead, profit, or any other markup, for the cost of additional premium for any coverage requested by the Engineer but not required by this Contract.

5-4.8 Notice of Changes to Insurance. You shall notify the City 30 Days prior to any material change to the policies of insurance provided under this Contract.

5-4.9 Excess Insurance. Policies providing excess coverage shall follow the form of the primary policy or policies e.g., all endorsements.

5-4.10 Architects and Engineers Professional Insurance (Errors and Omissions Insurance).

1. For Contracts with required engineering services (e.g., Design-Build, preparation of engineered Traffic Control Plans (TCP), and etc) by you, you shall keep or require all of your employees or Subcontractors, who provide professional engineering services under this contract, Professional Liability coverage with a limit of **\$1,000,000** per claim and **\$2,000,000** annual aggregate in full force and effect.
2. You shall ensure the following:
 - a) The policy retroactive date is on or before the date of commencement of the Project.

- b) The policy will be maintained in force for a period of 3 years after completion of the Project or termination of this Contract, whichever occurs last. You agree that for the time period specified above, there will be no changes or endorsements to the policy that affect the specified coverage.
- 3. If professional engineering services are to be provided solely by the Subcontractor, you shall:
 - a) Certify this to the City in writing and
 - b) Agree in writing to require the Subcontractor to procure Professional Liability coverage in accordance with the requirements set forth above.

5-4.11 Workers' Compensation Insurance and Employers Liability Insurance.

- 1. In accordance with the provisions of §3700 of the California Labor Code, you shall provide at your expense Workers' Compensation Insurance and Employers Liability Insurance to protect you against all claims under applicable state workers compensation laws. The City, its elected officials, and employees will not be responsible for any claims in law or equity occasioned by your failure to comply with the requirements of this section.
- 2. Limits for this insurance shall be not less than the following:

<u>Workers' Compensation</u>	<u>Statutory Employers Liability</u>
Bodily Injury by Accident	\$1,000,000 each accident
Bodily Injury by Disease	\$1,000,000 each employee
Bodily Injury by Disease	\$1,000,000 policy limit
- 3. By signing and returning the Contract you certify that you are aware of the provisions of §3700 of the Labor Code which requires every employer to be insured against liability for worker's compensation or to undertake self-insurance in accordance with the provisions of that code and you shall comply with such provisions before commencing the Work as required by §1861 of the California Labor Code.

5-4.11.1 Waiver of Subrogation. The policy or policies shall be endorsed to provide that the insurer will waive all rights of subrogation against the City and its respective elected officials, officers, employees, agents, and representatives for losses paid under the terms of the policy or policies and which arise from Work performed by the Named Insured for the City.

ADD:

5-10.1.3 Weekly Updates Recipients.

- 1. Submit a weekly correspondence with updates, traffic control issues and locations, lane closures, and any other pertinent information (with additional contact names given during award process) to the following recipients:
 Sheila Bose, Senior Engineer, SBose@sandiego.gov
 Daniel Yelsits, Project Engineer, DYelsits@sandiego.gov
 Resident Engineer, TBA

5-10.2.1 Public Notice by Contractor. To the "WHITEBOOK", items 2 and 3, DELETE in their entirety and SUBSTITUTE with the following:

2. No less than 5 Working Days in advance of Project construction activities and utility service interruptions, you shall notify all critical facilities, businesses, institutions, property owners, residents, or any other impacted stakeholders within a minimum 300-foot (90 m) radius of the Project. Verbal and written notifications shall be sent to critical facilities (including but not limited to police stations, fire stations, hospitals, and schools). A copy of written notifications sent to any critical facility shall also be sent to the Resident Engineer. You shall keep records of the people contacted, along with the dates of notification, and shall provide the record to the Engineer upon request. You shall identify all other critical facilities that need to be notified.
3. Furnish and distribute public notices in the form of door hangers using the City's format to all occupants and/or property owners along streets:
 - a) Where Work is to be performed at least Working 5 Working Days before starting construction or survey activities or impacting the community as approved by the Resident Engineer.
 - b) Within 5 Working Days of the completion of your construction activities where Work was performed, you shall distribute public notices in the form of door hangers, which outlines the anticipated dates of Asphalt Resurfacing or Slurry Seal.
 - c) 72 hours in advance of the scheduled resurfacing.

5-10.3 Exclusive Community Liaison Services. To the "WHITEBOOK", ADD the following:

2. You shall retain an Exclusive Community Liaison for the Project that shall implement Work in accordance with the specifications described in 5-10.2 "Community Outreach Services" and 5-10.3 "Exclusive Community Liaison Services".

5-13 ELECTRONIC COMMUNICATION. To the "WHITEBOOK", DELETE in its entirety and SUBSTITUTE with the following:

1. Virtual Project Manager shall be used on this Contract.
2. You shall post all communications addressed to the Engineer concerning construction including RFIs, submittals, daily logs including the Weekly Statement of Working Days (WSWD), Storm Water, and transmittals to the Virtual Project Manager (VPM) website established for the Projects. This shall not supersede any Federal requirements.
3. Maintain a list of scheduled activities including planned and actual execution dates for all major construction activities and milestones defined in the approved Schedule.
4. Review and act on all communications addressed to you in the VPM project website.

5. A user's guide to the VPM system is available on the City's website and shall be provided to you at the Pre-construction Meeting. Refer to the VPM training videos and forms at the location below:

<https://www.sandiego.gov/ecp/edocref/>

6. Submit the Sensitive Information Authorization Acknowledgement Form and VPM User Agreement located in the VPM user's guide at the Pre-construction Meeting.

5-15.1 General. To the "WHITEBOOK", item 10, DELETE in its entirety and SUBSTITUTE with the following:

10. If your construction activities have encountered flammable liquids or other hazardous substances, you shall ensure that construction staff have the required Hazardous Waste Operations and Emergency Response (HAZWOPER) certification. Construction staff shall include: City Engineers, City Laboratory Technicians, and City staff that perform onsite inspections.
 - a) If your Work encounters flammable liquids or other hazardous substances, you shall be responsible for scheduling training for all construction staff to attend and for submitting verification to the Engineer that construction staff have the required HAZWOPER certification prior to continuing that Work in that area. You shall maintain the HAZWOPER certifications annually until the construction activities triggering the requirement is complete, as approved by the Resident Engineer.
 - b) You shall be responsible for implementing, training, and submitting verification to the Engineer that construction staff have the required HAZWOPER certification before the Notice to Proceed (NTP) has been issued.

5-15.17 Payment. To the "WHITEBOOK", ADD the following:

5. The payment for Hazardous Waste Operations and Emergency Response (HAZWOPER) certification and training for construction staff shall be included in the allowance Bid item for "Hazardous Waste Operations and Emergency Response (HAZWOPER) Certification".

SECTION 6 – PROSECUTION AND PROGRESS OF THE WORK

6-1.1 Construction Schedule. To the "WHITEBOOK", item 1, subsection "e" and "s", DELETE in their entirety and SUBSTITUTE with the following:

- e) Monthly progress payments are contingent upon the submittal of an updated Schedule to the Engineer. The Engineer may refuse to process the whole or part of any monthly payment if you refuse or fail to provide an acceptable schedule.
- s) Submit an updated cash flow forecast with every pay request (for each Project ID or WBS number provided in the Contract) showing periodic and cumulative

construction billing amounts for the duration of the Contract Time. If there has been any Extra Work since the last update, include only the approved amounts.

- i. Refer to the Sample City Invoice materials in **Appendix D – Sample City Invoice with Cash Flow Forecast** and use the format shown.
- ii. See also the “Cash Flow Forecast Example” at the location below:
<https://www.sandiego.gov/ecp/edocref/>

To the “WHITEBOOK”, ADD the following:

3. The **120 Calendar Day** Plant Establishment Period is included in the stipulated Contract Time and shall begin with the acceptance of installation of the vegetation plan in accordance with Section 801-6, “MAINTENANCE AND PLANT ESTABLISHMENT”.

6-1.5.2 Excusable Non-Compensable Delays. To the “WHITEBOOK”, DELETE in its entirety and SUBSTITUTE with the following:

6-1.5.2 Excusable Non-Compensable and Concurrent Delays.

1. The City shall only issue an extension of time for Excusable Delays that meet the requirements of 6-4.2, “Extensions of Time” for the following circumstances:
 - a) Delays resulting from Force Majeure.
 - b) Delays caused by weather.
 - c) Delays caused by changes to County, State, or Federal law.
2. When a non-excusable delay is concurrent with an Excusable Delay, you shall not be entitled to an extension of Contract Time for the period the non-excusable delay is concurrent with the Excusable Delay.
3. When an Excusable Non-Compensable Delay is concurrent with an Excusable Compensable Delay, you shall be entitled to an extension of Contract Time, but shall not be entitled to compensation for the period the Excusable Non-Compensable Delay is concurrent with the Excusable Compensable Delay.

6-3 TIME OF COMPLETION. To the “WHITEBOOK”, ADD the following:

1. You shall complete the liner installation of all segments of sewer mains and the lateral reinstatements as verified by the Engineer within **120 Working Days** from the date of NTP. Complete the remaining Work as part of this project, including lateral lining and post-lining CCTV video, within the remaining number of Working Days.

6-4.2 Extensions of Time. To the “WHITEBOOK”, DELETE in its entirety and SUBSTITUTE with the following:

1. The Contract Time shall not be modified except by Change Order.
2. You shall notify the City in writing within **1 Working Day** after the occurrence and discovery of an event that impacts the Project Schedule.

- a) If you believe this event requires a Change Order, you shall submit a **written Change Order request with a report to** the City that explains the request for Change Order within **5 Working Days**. The Change Order request must include supporting data, a general description of the discovery, the basis for extension, and the estimated length of extension. The City may grant an extension of time, in writing, for the Change Order request if you require more time to gather and analyze data.
- 3. The Engineer shall not grant an extension of Contract Time in accordance with 6-1.5, "Excusable Delays" unless you demonstrate, through an analysis of the critical path, the following:
 - a) The event causing the delay impacted the activities along the Project's critical path.
 - b) The increases in the time to perform all or part of the Project beyond the Contract Time arose from unforeseeable causes beyond your control and without your fault or negligence and that all project float has been used.
- 4. Any modifications to the Contract Time will be incorporated into the weekly document that the Engineer issues that stipulates the Contract Time. If you do not agree with this document, submit to the Engineer for review a written protest supporting your objections to the document within **30 Calendar Days** after receipt of the statement. Your failure to file a timely protest shall constitute your acceptance of the Engineer's weekly document.
 - a) Your protest will be considered a claim for time extension and shall be subject to 2-10.1, "Claims".

6-4.4 Written Notice and Report. To the "WHITEBOOK", DELETE in its entirety and SUBSTITUTE with the following:

- 1. Your failure to notify the Resident Engineer within **1 Working Day** OR provide a Change Order request within **5 Working Days** after the event, in accordance with 6-4.2, "Extensions of Time", will be considered grounds for refusal by the City to consider such request if your failure to notify prejudices the City in responding to the event.

ADD:

6-6.1.1 Environmental Document.

- 1. The City of San Diego has prepared an **Addendum to Mitigated Negative Declaration** for **AC Water and Sewer Group 1056**, Project No. **661067**, as referenced in the Contract Appendix. You shall comply with all requirements of the **Addendum to Mitigated Negative Declaration** as set forth in **Appendix A**.
- 2. Compliance with the City's environmental document shall be included in the Contract Price, unless separate bid items have been provided.

6-6.2.1 Archaeological and Native American Monitoring Program. To the "WHITEBOOK", ADD the following:

- 4. You shall retain a qualified archaeologist and Native American Monitor for this Contract. You shall coordinate your activities and Schedule with the activities

and schedules of the archaeologist and Native American monitor. Notify the Engineer before noon of the Working Day before monitoring is required. See 3-5, "INSPECTION" for details.

SECTION 7 – MEASUREMENT AND PAYMENT

7-3.1 General. To the "GREENBOOK" and "WHITEBOOK", paragraph (8), DELETE in its entirety and SUBSTITUTE with the following:

If, within the time fixed by law, a properly executed notice to stop payment is filed with the City, due to your failure to pay for labor or materials used in the Work, all money due for such labor or materials will be withheld from payment in accordance with applicable laws.

To the "WHITEBOOK", ADD the following:

1. Unless specified otherwise, the Contract Price includes use, consumer, and other taxes mandated by applicable legal requirements.
2. As provided in §7105 of the California Public Contract Code, if the Contract is not financed by revenue bonds, you are not responsible for the cost of repairing or restoring damage to the Project when damage was proximately caused by an act of God, in excess of 5% of the Contract Price, if the following occur:
 - a) The Project damaged was built in accordance with the Contract requirements.
 - b) There are no insurance requirements in the Contract for the damages.
3. The Lump Sum Bid item for "Removal of Rueda Drive Pressure Reducing Station" shall include, and not be limited to, full compensation for all demolition and removal work within the Project Site and preservation of property as specified in the Plans and Contract Documents.
4. The Lump Sum Bid item for "Removal of Tambor Road Pressure Reducing Station" shall include, and not be limited to, full compensation for all demolition and removal work within the Project Site and preservation of property as specified in the Plans and Contract Documents.
5. The Lump Sum Bid item for "Removal of Pavo Real Drive Pressure Reducing Station" shall include, and not be limited to, full compensation for all demolition and removal work within the Project Site and preservation of property as specified in the Plans and Contract Documents.
6. The Lump Sum Bid item for "Installation of Rueda Drive Pressure Reducing Station" shall include, and not be limited to, full compensation for all materials and labor needed to complete installation work (including excavation, shoring, dewatering, bedding, backfill, concrete vault fabrication and concrete vault, vault hatches, pipe penetrations and seals, vault sump, pipe supports, ladders, locking mechanisms, survey as-needed for vault top fabrication to match existing curb grades, vault shop drawings, installation,

concrete, irrigation removal and reconnection, landscape restoration to match existing, piping, valves, fittings, testing and commissioning), as specified in the Plans, Contract Documents, and Technicals Section 13111.

7. The Lump Sum Bid item for "Installation of Tambor Road Pressure Reducing Station" shall include, and not be limited to, full compensation for all materials and labor needed to complete installation work (including excavation, shoring, dewatering, bedding, backfill, concrete vault fabrication and concrete vault, vault hatches, pipe penetrations and seals, vault sump, pipe supports, ladders, locking mechanisms, survey as-needed for vault top fabrication to match existing curb grades, vault shop drawings, installation, concrete, irrigation removal and reconnection, landscape restoration to match existing, piping, valves, fittings, testing and commissioning), as specified in the Plans, Contract Documents, and Technicals Section 13111.
8. The Lump Sum Bid item for "Installation of Pavo Real Drive Pressure Reducing Station" shall include, and not limited to, full compensation for all materials and labor needed to complete installation work (including excavation, shoring, dewatering, bedding, backfill, concrete vault fabrication and concrete vault, vault hatches, pipe penetrations and seals, vault sump, pipe supports, ladders, locking mechanisms, survey as-needed for vault top fabrication to match existing curb grades, vault shop drawings, installation, concrete, irrigation removal and reconnection, landscape restoration to match existing, piping, valves, fittings, testing and commissioning), as specified in the Plans, Contract Documents, and Technicals Section 13111.
9. The Lump Sum Bid item for "Instrumentation and Controls for Tambor Rd Pressure Reducing Station", shall include, and not limited to, full compensation for all material, equipment and labor needed to complete the installation. The lump sum price shall also include the testing of Instrumentation and Controls and coordination with City Personnel for the operational check, as specified in the Plans, Contract Documents, and Technicals Section 13300, 13370, 13374, 13390, 13414, 13427, 13430, 16010, 16110, 16120, 16190, 16195, 16421, 16450, and 16950.
10. The Lump Sum Bid item for "Tierrasanta Blvd Striping Improvement Sheets 42147-2-D through 42147-14-D", (Additive Alternate B), shall include, and not limited to, full compensation for all material, equipment, labor, mobilization and demobilization needed to complete the work, as specified in the Plans and Contract Documents.
11. The Lump Sum Bid item for "Colina Dorada Dr Striping Improvement Sheets 42147-15-D through 42147-26-D", (Additive Alternate C), shall include, and not limited to, full compensation for all material, equipment, labor, mobilization and demobilization needed to complete the work, as specified in the Plans and Contract Documents.
12. The Lump Sum Bid item for "Tierrasanta Blvd (Alternate) Striping Improvement Sheets 42147-27-D through 42147-39-D", (Additive Alternate D), shall include, and not limited to, full compensation for all material,

equipment, labor, mobilization and demobilization needed to complete the work, as specified in the Plans and Contract Documents.

13. The Bid item for "Pedestrian Push Button" shall include, and not limited to, full compensation for all work, material, equipment, and labor associated with installation, replacement, and relocation of Pedestrian Push Button Assemblies, Posts and Foundations, and Pull Boxes.

7-3.2

Partial and Final Payment. To the "WHITEBOOK", item 1, DELETE in its entirety and SUBSTITUTE with the following:

1. The Final Payment, which is the release of Retention, shall be paid to you after you have successfully submitted the following required documents:
 - a) An affidavit that payrolls and bills for materials, equipment, and other indebtedness connected with the Work for which the City or the City's property might be responsible for or encumbered by.
 - b) A certificate evidencing that insurances required by the Contract Documents shall remain in force after Final Payment is currently in effect and shall not be canceled or allowed to expire until at least a 30 Calendar Days prior written notice has been given to the Engineer.
 - c) Consent of Surety to Final Payment.
 - d) If required by the Engineer, other data establishing payment or satisfaction of obligations such as receipts, releases and waivers of liens, claims, and security interests or encumbrances arising out of the Contract Documents. If a Subcontractor refuses to furnish a release or waiver required by the City, you may furnish a bond satisfactory to the Engineer to indemnify the City against such lien.
 - e) If required in the Contract Documents, the successful completion and submittal of the required reports such as construction demolition, waste recycling, and hydrostatic discharge reports.
 - f) Required EOCP Final Summary Report in accordance with Section 0-12, "Contract Records and Reports", record drawings, operations manuals, test reports, warranty documentation, and UL labels shall be submitted before requesting the release of retention.
 - g) Acceptance of the completed Project by the asset owning Department.

To the "WHITEBOOK", ADD the following:

2. Submit an invoice for payment after you successfully complete the required documents and the City will pay the invoice within 30 Calendar Days. The City will pay 6% annually for late retention payments.

7-3.2.1

Application for Progress Payment. To the "WHITEBOOK", item 3, DELETE in its entirety and SUBSTITUTE with the following:

3. The City shall not pay progress or partial payments until you submit to the Engineer an acceptable updated Schedule. It is solely your responsibility to prepare and submit the Schedule updates.

7-3.2.2 Amount of Progress Payments. To the "WHITEBOOK", DELETE in its entirety and SUBSTITUTE with the following:

1. The City will pay 6% annually for late progress payments.
2. Progress payments will be considered "late" if the following occur:
 - a) The City does not pay the contractor within 30 Calendar Days from receipt of an undisputed and properly submitted invoice. A properly submitted payment invoice means that the City has approved for payment the entire invoice amount or if the Resident Engineer has not disputed any portion of the application within 7 Calendar Days of the date of submission.
 - b) The application for payment does not require signing of a Contract Change Order.
3. The Engineer may withhold payment for any of the following reasons:
 - a) Defective or incomplete Work.
 - b) Not providing an updated and accurate Cost Loaded Construction Schedule in accordance with 6-1.1, "Construction Schedule".
 - c) Stop notices, wage orders, or other withholdings required by Applicable Law. Your failure to comply with 5-3.3, "Payroll Records" and the Contractor Registration and Electronic Reporting System requirements of the Contract Documents.
4. The Engineer may back charge the contract for any of the following reasons:
 - a) Defective or incorrect Work not remedied.
 - b) Damage to City property or a third party's property that was caused by you.
 - c) Liquidated Damages.

7-3.2.3 Waiver of Claims at Final Payment. To the "WHITEBOOK", DELETE in its entirety and SUBSTITUTE with the following:

1. Your acceptance of Final Payment constitutes a waiver of affirmative Claims by you, except those previously made in writing and identified as unsettled at the time of Final Payment.

7-3.2.4 Withholding of Payment and Back Charge. To the "WHITEBOOK", DELETE in its entirety.

7-3.4.1 Payment. To the "WHITEBOOK", ADD the following:

4. The cost for mobilization excludes the costs for all mobilization and demobilization Work associated with each paving phase. The costs for all mobilization and demobilization Work associated with each paving phase shall be paid in accordance with 306-1.2.1, "Payment".

7-3.5.1 General. To the "WHITEBOOK", DELETE in its entirety and SUBSTITUTE with the following:

1. Unit Bid prices shall not be subject to adjustment regardless of quantity used, or if none is used, for the following Bid items:
 - a) imported backfill

- b) shoring
 - c) water services
 - d) house connection sewers
 - e) water pollution control items
2. Unit Bid prices for "Potholing Existing Utilities Not Shown on Plans (Depth up to 7 feet)" shall not be subject to adjustment regardless of quantity used or if none is used.
 3. Upon discovery and prior to the Work, you shall notify the Resident Engineer if there is a change in Bid item quantity that increases the total Contract Price by 5% or \$100,000 or more, whichever is less.

7-3.9

Field Orders. To the "WHITEBOOK", DELETE in its entirety and SUBSTITUTE with the following:

1. If the cumulative total of Field Order items of Work does not exceed the "Field Orders" Bid Item, the City shall pay those Field Orders as shown below:

TABLE 7-3.9

FIELD ORDER LIMITS

Contract Price	Maximum Field Order Work Amount
Less than \$100,001	\$2,500
\$100,001 to \$1,000,000	\$5,000
\$1,000,001 to \$5,000,000	\$10,000
\$5,000,001 to \$15,000,000	\$20,000
\$15,000,001 to \$30,000,000	\$40,000
Greater than \$30,000,000	\$50,000

2. Field Order items of Work for contracts greater than \$15,000,000 will require additional approvals from the City prior to its approval by the Resident Engineer.
3. The City will issue a Field Order only after the City's acceptance of the cost of the field order amount.
4. Field Orders shall not be used to add scope or to include extensions of time related to changes in work.
5. If in the event there is a change related to the critical path on the project which necessitates an extension of time and the change amount is within the Field Order limits shown on Table 7-3.9, then a Field Order can be issued to compensate you for the approved costs. Any extensions of time associated with the change shall be included in a subsequent Change Order and no additional compensation shall be granted as part of the change order for the extension of time.

6. The unused portions of Field Orders Bid item shall revert to the City upon Acceptance.

7-3.11 Compensation Adjustments for Price Index Fluctuations. To the "WHITEBOOK", ADD the following:

5. This Contract is not subject to the provisions of The "WHITEBOOK" for Compensation Adjustments for Price Index Fluctuations for paving asphalt.

7-4.3 Markup. To the "WHITEBOOK", item 4, DELETE in its entirety and SUBSTITUTE with the following:

4. When a Subcontractor is performing Extra Work, the allowance for overhead and profit shall be applied to the labor, materials, and equipment costs of the Subcontractor as follows:
 - a) Regardless of the number of a Subcontractor's tasks for Extra Work, you may only apply 10% for the first \$50,000 of the Subcontractor's portion of accumulated total cost then 5% for any remaining costs. You shall not apply 10% to any costs after the first \$50,000 of accumulated total costs from performing Extra Work.
 - b) If the accumulated costs of single or subsequent tasks exceed the \$50,000 threshold, you shall instead only apply 5% to any amounts in excess of the \$50,000.

SECTION 203 – BITUMINOUS MATERIALS

203-6.3.1 General. To the "WHITEBOOK", ADD the following:

3. Asphalt concrete for Job Mix Formula (JMF) and Mix Designs shall be Type III and shall not exceed 15% RAP.

SECTION 209 – PRESSURE PIPE

209-1.1.1 General. To the "WHITEBOOK", ADD the following:

2. PVC products, specifically type C900 and C905, as manufactured or distributed by J-M Manufacturing Company or JM Eagle shall not be used on the Contract for pressurized pipe.
3. Refer to AWWA C900-16 for all references to AWWA C905.

SECTION 300 – EARTHWORK

300-1.1 General. To the "GREENBOOK", ADD the following:

300-1.1.1 Removal of Pressure Reducing Stations. Prior to submittal of a Bid for this Work, the Contractor shall inspect the project site to verify the magnitude and cost of all Clearing and Grubbing required to accomplish the Work. Removal of the Pressure Reducing Stations shall also include saw cutting, demolition, removal and disposal of all existing improvements called out on the Plans to be removed and/or disposed of, including, but not limited to, pressure regulating stations and appurtenances, vaults, excess soil, pavement, concrete pads, sidewalk to nearest joint, curb and gutter, pedestrian curb ramps, signs and sign posts, monument signs, electrical conduit & equipment, telephone conduit, trees and roots, waterlines, irrigation lines, vegetation

and all other existing improvements that are shown on the plans for removal or are in conflict with the installation of work shown on the plans, directed by the Resident Engineer to be removed, or otherwise required to perform the work which are not designated as separate bid items or which are not included in other bid items.

SECTION 301 – SUBGRADE PREPARATION, TREATED MATERIALS, AND PLACEMENT OF BASE MATERIALS

301-1.6 Preparatory Repair Work. To the “WHITEBOOK”, item 1, DELETE in its entirety and SUBSTITUTE with the following:

1. Prior to the placement of any asphalt concrete or application of slurry, you shall complete all necessary preparation and repair Work and shall obtain approval by the Resident Engineer.

ADD the following:

13. Asphalt concrete shall be Type III and shall not exceed 15% RAP in accordance with 203-6.3.1, “General”.

SECTION 302 – ROADWAY SURFACING

302-4.5 Scheduling, Public Convenience and Traffic Control. To the “GREENBOOK”, paragraphs (1) and (2), DELETE in their entirety and SUBSTITUTE with the following:

1. In addition to the requirements of Part 6, you shall comply with the following:
 - a) At least 5 Working Days prior to commencing the Work, you shall submit your proposed Schedule to the Engineer for approval.
 - b) Based upon the approved schedule, you shall notify residents and businesses of the Work and post temporary “No Parking” signs 72 hours in advance.
 - c) Requests for changes in the approved Schedule shall be submitted to the Engineer for approval at least 3 Working Days before the street is scheduled to be sealed.

302-4.12.2 Application. To the “WHITEBOOK”, item 1, ADD the following:

- c) RPMS shall only be placed when ambient temperature is 50° F or higher.

SECTION 303 – CONCRETE AND MASONRY CONSTRUCTION

303-5.1.1 General. To the “WHITEBOOK”, ADD the following:

7. For the purposes of this section, the terms “walk” and “access ramp” shall be synonymous with “sidewalk” and “curb ramp and pedestrian ramp”, respectively.

303-5.10.2 Payment. To the “WHITEBOOK”, ADD the following:

4. The payment for completely removing and replacing the existing concrete spandrel of a cross gutter associated with curb ramp installations, in

accordance with SDG-131 - General Curb Ramp Notes, and as identified on the Plans, shall be included in the payment for the curb ramp. No additional costs shall be incurred when separate Bid items for cross gutters has been provided.

5. The payment for completely removing and replacing the existing concrete alley apron associated with curb ramp installations, in accordance with SDG-131 - General Curb Ramp Notes, and as identified on the Plans, shall be included in the payment for the Curb Ramp installation. No additional costs shall be incurred when separate Bid items for alley aprons has been provided.

SECTION 306 – OPEN TRENCH CONDUIT CONSTRUCTION

ADD:

306-1.1

High-line Phasing.

1. Build the Project in accordance with the water high-lining phasing shown on the Plans and in phases as follows:
 - a) Phase I: Colina Dorada Dr from Tierrasanta Bl to E/O Pendiente Ct
 - b) Phase II: Colina Dorada Dr from E/O Pendiente Ct to Pavo Real Dr
 - c) Phase III: Colina Dorada Dr from Pavo Real Dr to Joyas Ct
 - d) Phase IV: Colina Dorada Dr from Joyas Ct to Papagallos Ct
 - e) Phase V: Colina Dorada Dr from Papagallos Ct to Calle De Vida
 - f) Phase VI: Calle De Vida from Colina Dorada Dr to Rueda Dr
2. When installing pipelines within the City's streets, for the following streets, the total time allowed for the completion of Work shall not exceed **10 Working Days** per 500 feet of pipeline installation:
 - a) Tierrasanta Bl from beginning to Colina Dorada Dr
 - b) Colina Dorada Dr from Tierrasanta Bl to Calle De Vida
 - c) Calle De Vida from Colina Dorada Dr to Rueda Dr

ADD:

306-1.2

Phased Paving.

1. You shall implement phased paving, when directed and approved by the Engineer.
2. The Engineer will notify you when you can proceed with phased paving Work. Each phase shall be completed within **90 Calendar Days** after the Engineer's notification. Plan and schedule your Work accordingly to ensure each phase is complete.
3. When Phased Paving is initiated, the following Work shall be completed within the determined areas:
 - a) Installation of mains and appurtenances.
 - b) Operational checks and testing.
 - c) Mains are in service.

- d) Trench restoration.
 - e) Road surface preparatory Work.
 - f) Installation of concrete sidewalks and curb ramps.
 - g) Adjustments of gate valves and manholes, survey monuments and utility boxes.
4. You may propose to change the limits of the determined phasing, in writing, for the Engineer's review and approval. If approved, there shall be no additional costs to the City. No additional Working Days will be granted for delays due to the City's review and approval of your proposed change and due to the implementation of that proposed change.
 5. You may use multiple crews to complete each phase of paving.

ADD:

306-1.2.1 Payment.

1. The payment for all Work associated with Phased Paving shall be included in the Bid item for each "Phased Paving" area. This payment shall include the costs for all mobilization and demobilization for resurfacing and striping associated with each paving phase regardless of the paving operation. No additional payment shall be made regardless of the number of mobilizations and demobilizations required to complete that phase.

306-7.8.2.1 General. To the "WHITEBOOK", item 2, DELETE in its entirety and SUBSTITUTE with the following:

2. Pressure testing of pipe and fittings at the lowest elevation shall be performed at 150% of the specified test pressure and no less than 100% of the specified test pressure at the highest elevation.
 - a) Specified test pressure for Class 235 pipe shall be 150 psi and is tested at 225 psi.
 - b) Specified test pressure for Class 305 pipe shall be 200 psi and is tested at 300 psi.

ADD:

306-8.5.4 High Deflection Coupling.

1. High deflection couplings shall be constructed in accordance with the Plans and Reference Specifications. Working Drawings prepared by a Civil or Structural Engineer registered in the State of California shall be submitted in accordance with 3-8.2, "Working Drawings" for any proposed additional high deflection couplings not indicated on the Plans and Reference Specifications.

306-8.8.3 Thrust Blocks and Anchor Blocks. To the "WHITEBOOK", item 1, DELETE in its entirety and SUBSTITUTE with the following:

1. Thrust blocks shall be installed at all bends, tees, dead-ends and reducers. The use of restrained joints requires approval from the Engineer. The thrust blocks shall be constructed as follows:
 - a) Thrust blocks shall be constructed of concrete conforming to 201-1, "PORTLAND CEMENT CONCRETE".

- b) Unless otherwise shown on the Plans, concrete thrust blocks shall be constructed in accordance with SECTION 303 - CONCRETE AND MASONRY CONSTRUCTION and the Standard Drawings.
- c) Concrete blocks shall be constructed between undisturbed ground and fittings to be anchored.
- d) Unless otherwise shown on the Plans, the quantity of concrete and the bearing area of the pipe against undisturbed soil shall be as shown on the Standard Drawings.
- e) Unless otherwise shown on the Plans, concrete shall be placed so pipe joints and fittings remain accessible to repairs.

306-8.9.2.3 Allowable Leakage. To the "GREENBOOK", DELETE in its entirety and SUBSTITUTE with the following:

- 1. For prefabricated pressure pipe testing requirements, refer to prefabricated gravity pipe pressure testing requirements in 306-7.8.2, "Pressure Testing and Leakage Inspection".

306-8.9.4.5 Dechlorination and Flushing. To the "GREENBOOK", ADD the following:

- 1. When you are required to flush water mains using a 4-inch or larger meter, you shall provide a submittal to the Engineer for review of the proposed connection point of the meter and a plan demonstrating how flushed water will be captured or delivered down the storm drain or sewer system.
- 2. Once the submittal has been approved, you shall be responsible for coordinating the payment for this meter at Development Services Department by filling out the DSD form for the need for a construction meter for flushing purposes. Once paid by you, call Public Utilities Department Coordination Number at 619-527-7424 to coordinate the delivery and use of the meter in accordance to the approved submittal.
- 3. You shall return the meter to the City at the completion of work.
- 4. The payment for the meter cost shall be reimbursed under the allowance Bid item for "**4-Inch or Larger Meter for Construction Flushing**". All other costs associated with the purchase of the meter shall be included in the contract price. Costs associated with flushing operations shall be included under the costs for the pipeline installation.

306-15.6 Hydrants. To the "WHITEBOOK", DELETE in its entirety and SUBSTITUTE with the following:

- 1. The payment for fire hydrant assembly and marker, fire service connection, assembly and backflow preventer, and fire service connection and assembly, shall be included in the Bid items for the following:
 - a) Fire Hydrant Assembly and Marker
 - b) Fire Service Connection, Assembly, and Backflow Preventer for City Property
 - c) Fire Service Connection and Assembly

2. Removal of existing fire hydrants within the trench limits and all appurtenant Work shall be included in the Bid item for "Fire Hydrant Assembly and Marker".
3. Removal of existing fire hydrants outside of the trench limits and all appurtenant Work shall be included in the Bid item for "Removal or Abandonment of Existing Water Facilities" in accordance with 306-3.3.4, "Payment".
4. Payment for fire hydrant discs shall be included in the Bid item for "Fire Hydrant Assembly and Marker"

306-15.8 Pipeline Appurtenances. To the "WHITEBOOK", item 3, DELETE in its entirety and SUBSTITUTE with the following:

3. Payment for water meter boxes and meter box lids shall be included in the Bid item for "Water Services" unless a Bid item for each "Meter Box" has been provided. Payment shall include any additional adjustment to place the box around the meter to ensure the valve is accessible and operating properly (including adjusting the water service pipe beyond the meter box).

306-18.5 Video Inspection Submittals. To the "WHITEBOOK", item 1, subsection "h", DELETE in its entirety and SUBSTITUTE with the following:

- h) **Post-rehabilitation Videos** - Post-rehabilitation videos shall be submitted within 30 Calendar Days of the completion of the Work in phases not to exceed 2 mile increments. The final video recording shall clearly show the condition of the liner with ends sealed at the manholes, service laterals, and connection seals. The submittal of this final video recording shall also include MS Access database and marked up Field Book pages or Plans as attachments.

306-18.7 Payment. To the "WHITEBOOK", ADD following:

5. The payment for post-rehabilitation videos shall be included in the associated Bid items provided, regardless of the number of phased videos required at 2 mile increments.

ADD:

306-19 Pressure Reducing Station (PRS).

Pressure Reducing Stations shall be installed at the following locations:

- A. Rueda Drive
- B. Tambor Road
- C. Pavo Real Drive

Pressure reducing stations shall include pre-cast concrete vault (sizes as shown on the plans), vault hatch, pressure reducing valves, piping and appurtenances as shown in Plans numbered 41288-56-D through 41288-72-D of the Construction plans for the Pressure Reducing Stations.

Precast vault shall be designed to accepted engineering standards with a 28-day concrete compressive strength of not less than 4,000 psi and shall have a traffic load rating of H-20. Top of vaults located within sidewalk areas shall be pre-casted to the elevations surveyed by the contractor and provided to the pre-caster to match the existing top of curb elevations and profile. The top of the back of vaults shall be sloped

towards the street at 1.5% and shall match adjacent sidewalk grades as surveyed by the contractor and provided to the pre-caster.

Precast vaults shall be as shown on the Plans, and shall include, but are not limited to, the following:

- A. Pipe penetration seals
- B. Pipe supports inside and outside of vaults
- C. Exterior coating of concrete vault with concrete curing compound
- D. Waterproof mastic joint seal
- E. Aluminum checkered plate, full opening, spring-assisted, hinged cover single- or double-leaf hatch (as shown on the Plans) with locking mechanisms
- F. H-20 Traffic Load rating
- G. Ladder rungs
- H. Integral, monolithic sump, 18" x 18"
- I. Pressure gauge and sensing line
- J. Fasteners, anchors, and supports not otherwise identified above

ADD:

306-19.1 Pressure Reducing Valves. The CONTRACTOR shall provide pressure regulating valves indicated, complete and operable, with all accessories.

The CONTRACTOR shall furnish submittals in accordance with 2-5.3. Pressure regulating valves shall be installed in accordance with the manufacturer's written instructions.

The initial settings for the pressure reducing valves are shown below. The Contractor shall coordinate the final settings with the City Water Operations staff.

<u>Station</u>	<u>Upstream HGL</u>	<u>Downstream HGL</u>
Rueda Drive	600	450
Tambor Road	600	450
Pavo Real Drive	752	600

- 1. Water Pressure Reducing Valves (Larger than 1-1/2 inches)
 - a) General: Large water pressure regulating valves shall be of the piston-type or diaphragm- actuated globe type, with cast iron body stainless steel trim. Unless otherwise indicated, the valves shall have a pressure rating of not less than 250 psi, shall have 250-lb flanges, and shall have an adjustable downstream pressure range with downstream setting as required.
 - b) Pressure reducing valves shall be provided with the following additional equipment by manufacturer:

- a. Valve position indicator kit
- b. Pressure differential transmitter flow monitoring kit.
- c) Manufacturers or Approved Equal:
 - a. CLA-VAL Company
 - b. Golden-Anderson Valve Division (GA Industries, Inc.)
 - c. Watts Regulator Company

ADD:

306-20

INSTRUMENTATION AND CONTROLS (I&C) - TAMBOR ROAD PRS. The I&C portion of the PRS shall include, but not limited to, installation of pressure transmitters and appurtenances, remote control panel and pressure transmitter panels, electrical service from existing pole to panels, limit proximity switch on pre-cast vault hatch, control wiring between the field instrument described and location of the control panels. In addition, the pressure reducing valve is to be provided with optional electronic position indication and flow monitoring kits that will be installed to be integrated with the subject remote-control panel. The I&C will require specialty services that include the complete installation and start-up of the subject equipment in accordance with the Specifications, Standard Drawings and Construction Plans. See "TECHNICALS", Section 133000 – See Technicals TOC, Instrumentation and Controls for technical specifications of SCADA system for the Tambor Road Pressure Reducing Station (PRS).

SECTION 402 – UTILITIES

402-2

PROTECTION. To the "WHITEBOOK", item 2, ADD the following:

- g) Refer to **Appendix O - Advanced Metering Infrastructure (AMI) Device Protection** for more information on the protection of AMI devices.

402-6

COOPERATION. To the "GREENBOOK", ADD the following:

- 1. Notify SDG&E at least 10 Working Days prior to excavating within 10 feet of SDG&E Underground High Voltage Transmission Power Lines (69 KV and higher).

402-7.2

Pipe Separations. To the "WHITEBOOK", item 1, subsection "a", DELETE in its entirety and SUBSTITUTE with the following:

- a) You shall notify the Engineer immediately if:
 - i. 1 foot (0.3 m) vertical separation as measured from the outside of pipe wall to the outside of pipe wall between sewer and water mains cannot be maintained.
 - ii. 10 feet (3.0 m) horizontal separation as measured from the outside of pipe wall to the outside of pipe wall between sewer and water mains cannot be maintained.
 - iii. 6 inches (152.4 mm) vertical separation as measured from the outside of pipe wall to the outside of pipe wall between utilities other than sewer and water mains cannot be maintained.
 - iv. 3 feet (0.9 m) or more of cover over the top of the water main cannot be maintained.

- v. 5 feet (1.5 m) or more of cover over the top of the recycled water main cannot be maintained.

402-8 PAYMENT. To the "WHITEBOOK", item 3, DELETE in its entirety and SUBSTITUTE with the following:

- 3. With the Resident Engineer's approval, compensation for each existing utility pothole that is not shown on the Plans but marked out by USA shall be included in the Bid item for "Potholing Existing Utilities Not Shown on Plans (Depth up to 7 feet)". Potholing for existing utilities that have been shown on the Plans shall be included in the Contract Price.

SECTION 500 – PIPELINE REHABILITATION

500-1 GENERAL. To the "WHITEBOOK", ADD the following:

- 4. Any Cured-in-Place Pipe (CIPP) lining Work within a 1000-foot radius from school areas shall first be coordinated with the school and shall be performed outside of school hours at no expense to the City.

500-2.1 Initial Submittals. To the "WHITEBOOK", DELETE in its entirety and SUBSTITUTE with the following:

- 1. You shall submit the following required information **at the time of Bid Opening**:
 - a) Contractor's Experience and Past Project Documentation.
 - i. You shall submit documentation that you have performed similar main rehabilitation projects (of scope and size) successfully within the last 10 years in the United States. The scope shall include the same product, installation, and curing. The proposed product shall have at least 5 years or more of documented performance records.
 - ii. Your superintendent shall be assigned full time to this project and shall be present at the Site while Work is being performed. If CIPP is used, the superintendent shall have documentation conveying experience with the proposed resin and felt combination used and the installation of the proposed lateral sealing system with the pipe lining system.
 - b) Authorized Installer.
 - i. The installation of the lining system shall be performed by a contractor authorized, certified, or both by the manufacturer or owner of the process.
 - ii. You shall submit a copy of the authorizations, certifications, or both from all manufacturers listed on the City's Approved Material List (AML) that will be used for the Work that includes the name, address, point of contact, and telephone number of the manufacturer.

**SECTION 601 - TEMPORARY TRAFFIC CONTROL FOR CONSTRUCTION
AND MAINTENANCE WORK ZONES**

601-2.1.4 **Traffic Control for Resurfacing and Slurry Sealing.** To the "WHITEBOOK", item 3, subsection "d", DELETE in its entirety and SUBSTITUTE with the following:

- d) Place "NO PARKING - TOW-AWAY ZONE" signs 72 hours in advance of the scheduled slurry sealing. Reschedule street block segments which are not completed by the last posted Working Day. If a Work delay of 48 hours or more occurs from the originally scheduled Work date, remove the "NO PARKING - TOW-AWAY ZONE" signs for a minimum of 24 hours, then reset and re-post for the appropriate Work date.

601-3.5.1 **General.** To the "WHITEBOOK", item 3, DELETE in its entirety and SUBSTITUTE with the following:

3. Temporary "No Parking" and "No Stopping" signs shall be installed 72 hours before enforcement. Temporary "No Parking" and "No Stopping" signs shall be installed and removed as specified in the Special Provisions. Signs shall indicate specific days, dates, and times of restrictions. If violations occur, call Police Dispatch 619-531-2000 to enforce the Tow-Away notice.

601-3.6 **Channelizing Devices.** To the "WHITEBOOK", item 4, Barricades, ADD the following:

- h) You shall place "OPEN TRENCH" signs (C27(CA)) on Type 3 Barricade within the construction Work zone, ahead of any Work areas with open trenches that are greater than 3 inches in depth, in accordance with California MUTCD SECTION 6F.103 (CA). The barricades shall be placed in a continuous manner and shall prevent pedestrian, vehicular, and biker access to the open trench area.

SECTION 700 – MATERIALS

700-5.1 **Vehicle Detectors.** To the "WHITEBOOK", item 1, DELETE in its entirety and SUBSTITUTE with the following:

1. Loop wire shall be Type 2. Loop detector lead-in cable shall be Type "B". Slots shall be filled with elastomeric sealant, epoxy sealant, or hot-melt rubberized asphalt sealant, except asphaltic emulsion loop sealant and cold tar loop sealant are acceptable if the pavement surface will receive an asphaltic concrete overlay.

SECTION 800 – MATERIALS

800-1.1.2 **Class "A" Topsoil.** To the "WHITEBOOK", item 4, subsection "e", DELETE in its entirety and SUBSTITUTE with the following:

- e) The test results shall provide the following information:
 - i. Date of Testing
 - ii. Project Name
 - iii. The Contractor's Name
 - iv. Source of Material and Supplier's Name
 - v. Estimate of Quantity Needed in Cubic Yards
 - vi. Soil Gradation

- vii. Fertility
- viii. Heavy Metals
- ix. Soil Permeability in Inches per Hour
- x. Toxic Elements
- xi. Chloride Content
- xii. pH
- xiii. EcE (electrical conductivity)
- xiv. SAR (Sodium Absorption Ratio)
- xv. Organic Content by Dry Weight
- xvi. Carbon : Nitrogen Ratio
- xvii. Water-soluble Nutrient Levels
- xviii. Recommendations for adding amendments, chemical corrections, or both.

To the "WHITEBOOK", item 5, DELETE in its entirety and SUBSTITUTE with the following:

5. The topsoil shall conform to the following agricultural suitability requirements:

pH	6.0 – 7.5
ECe (electrical conductivity)	0.0 – 3.0
SAR (Sodium Absorption Ratio)	0.0 – 5.0
Chloride Content	Less than 150 ppm
Boron Content	Less than 1 ppm
Organic Content	3% to 6% by dry weight
Carbon : Nitrogen Ratio	20:1 maximum
Sandy Loam Gradation Limit*	Gravel over 2mm: Less than 10% by weight Sand: 75% to 85% Sand finer than 100 mesh (0.15 mm): Less than 15% Sand finer than 60 mesh (0.25 mm): Less than 40% Sand larger than 32 mesh (0.5 mm): Minimum 15% Silt: 20% maximum Clay: 15% maximum

Permeability Rate**	2 inches to 5 inches per hour at 80% compaction
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* Per USDA Classification Scheme.

** Tested in accordance with USDA Handbook Number 60, method 34b or other approved method.

800-1.2.5 Mulch. To the “WHITEBOOK”, item 3, subsection “i”, ADD the following:
Type 9 Mulch shall be 2 inches maximum in size.

SECTION 802 – NATIVE HABITAT PROTECTION, INSTALLATION, MAINTENANCE, AND MONITORING

802-2.1 Project Biologist. To the “WHITEBOOK”, ADD the following:

5. The City will retain a qualified Project Biologist to perform biological monitoring Work for this Contract. You shall coordinate your activities and Schedule with the activities and schedules of the Project Biologist.

SECTION 900 – MATERIALS

900-2.3 Payment. To the “WHITEBOOK”, item 3, DELETE in its entirety and SUBSTITUTE with the following:

3. The payment for furnishing materials for your connection, cut and plug, and cut-in Work shall cover all necessary materials (fittings and hardware, excluding valves and pipes), delivery, and unloading. The payment shall be included within the Bid item of the Work involved and no separate payment for furnishing those materials shall be made. The payment for furnishing valve and pipe materials for your connection, cut and plug, and cut-in Work shall be included in the separate Bid items for each valve and pipe.

SECTION 901 – INSTALLATION AND CONNECTION

901-1.1 General. To the “WHITEBOOK”, item 2, DELETE in its entirety and SUBSTITUTE with the following:

2. The Engineer will coordinate all interactions between you and the City Water Operations Division, the City Water Quality Laboratory, and other City organizations. Upon your request, the Engineer shall notify the City's Public Utilities Department's staff as noted below which shall be required at least 20 Working Days prior to the beginning of Work that involves shutting down pipelines, high-lining, cutting and plugging of, or making connection to the existing water mains.
 - a) Transmission Mains (16 inches and larger) – Jesus Ramos (619-527-7438)
 - b) Distribution Mains (less than 16 inches) – Tisa Aguero (619-527-3143) Water Facilities – Tatyana Fikhman (619-527-7465)

901-1.1.2.2 Start-up Procedures. To the “WHITEBOOK”, item 2, subsection “j”, DELETE in its entirety and SUBSTITUTE with the following:

- j) In the event that the high-line piping system fails to pass the required bacteriological testing, you will be expected to help investigate and perform

corrective actions if warranted by the findings and you shall re-flush and re-disinfect the lines for re-testing at no additional cost to the City. Disposal of chlorinated water for retesting shall be in accordance with the City standards and regulations. Indiscriminate disposal of chlorinated water shall not be permitted.

901-2.2.1 General. To the “WHITEBOOK”, item 5, DELETE in its entirety and SUBSTITUTE with the following:

5. The Engineer will coordinate all interactions between you and the City Water Operations Division, the City Water Quality Laboratory, and other City organizations. Upon your request, the Engineer shall notify the City's Public Utilities Department as noted below which shall be required at least 20 Working Days prior to the beginning of Work that involves shutting down pipelines, high-lining, cutting and plugging of, or making connection to the existing water mains.
 - a) Transmission Mains (16 inches and larger) – Jesus Ramos (619-527-7438)
 - b) Distribution Mains (less than 16 inches) – Tisa Aguero (619-527-3143)
 - c) Water Facilities – Tatyana Fikhman (619-527-7465) and Jesus Ramos (619-527-7438)

901-2.2.4 Preparation for Connection. To the “WHITEBOOK”, item 7 and 8, DELETE in their entirety and SUBSTITUTE with the following:

7. Upon receiving notification of a shutdown date by City Water Operations Division for your planned connection, you shall trench and steel plate the pit(s) necessary to make the connection(s) prior to the start of the scheduled shutdown to facilitate an expedient connection to the existing main. Shutdown of the water main and connection shall be completed within the timeline agreed upon and as specified by City Water Operations staff so that water is restored in accordance with the shutdown notification and as needed for operation of the water system.
8. If you anticipate connection operations exceed the time as identified in the notification, causes health and safety risks, or disrupts water services to the consumers, you shall notify the Engineer and the City's Station 38 at (619) 527-7500 as soon as possible for assistance to provide potable water and temporary high-lines to restore water to the affected consumers.

To the “WHITEBOOK”, ADD the following:

12. After the connection operation (for mains or services), you shall request the Engineer notify City Water Laboratory take water samples for bacteriological tests in accordance with Section 7 of the AWWA C651. If the test does not pass, you will be expected to help investigate and perform corrective actions if warranted by the findings.
13. Bacteriological Testing (Bac-T) sample results are valid only for 14 Calendar Days from the date the results are first made available. If any system is not placed into service within the 14 Calendar Days, then bacteriological testing shall be reinitiated.

901-2.3.4.1 Quality Control. To the "WHITEBOOK", item 3, DELETE in its entirety and SUBSTITUTE with the following:

3. After the cut and plug operation, the water main and its appurtenances shall be disinfected and field tested by you in accordance with the latest edition of AWWA C651. You shall also request the Engineer to notify the City Water Laboratory to take water samples for bacteriological tests in accordance with Section 7 of the AWWA C651. If the test does not pass, you will be expected to help investigate and perform corrective actions if warranted by the findings.

901-2.5 Payment. To the "WHITEBOOK", DELETE in its entirety and SUBSTITUTE with the following:

1. Your Work for connecting to the existing system (cut-in or tie-in Work), excluding new main interconnections between various phases, shall be paid under the Bid items for the connection (cut-in or tie-in Work) and shall include the following:
 - a) Trenching, furnishing, and installing all materials and labor to complete the Work, including up to 10 feet of new water pipe
 - b) Potholing
 - c) Protecting the water main while performing the Work
 - d) Coordinating your Work with the City Forces
 - e) Coordinating with the community (community outreach)
 - f) Traffic control and construction BMPs
 - g) Pavement Restoration
2. Cut and plug Work of the existing system by you shall be paid under the Bid item for "Cut and Plug by the Contractor" and shall include coordination of Work with City Forces, any scheduling impact costs, community outreach, furnishing and installing of materials, and traffic control. Potholing and protecting the water main while performing the Work shall be included in this payment.
3. Traffic control, saw cutting the trench area, trench caps, and other spot repairs in the vicinity of the disturbed area at each restored connection shall be included in the square foot Bid item for "Pavement Restoration for Final Connection". Asphalt overlay and slurry seal Work shall be paid for under separate Bid items.
4. Interconnections between various phases of newly installed watermains shall be included in the associated pipeline bid items.

SECTION 1001 - CONSTRUCTION BEST MANAGEMENT PRACTICES (BMPs)

1001-1 GENERAL. To the "WHITEBOOK", ADD the following:

7. Based on a preliminary assessment by the City, this Contract is subject to **WPCP**.

TECHNICALS

Group Job 1056 PRS Replacement

Technical Specifications

Special Provisions Prepared by:

Kimley-Horn and Associates, Inc.
401 B Street, Suite 600
San Diego, CA 92101



Samuel Lake McWhorter

3/3/2021

Samuel Lake McWhorter, P.E.

TECHNICAL SPECIFICATIONS

Group Job 1056 Pressure Reducing Station Replacement

SECTION	TITLE
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CSI FORMAT TECHNICAL SPECIFICATIONS

13111	CATHODIC PROTECTION
13300	INSTRUMENTATION AND CONTROL
13370	CONTROL PANELS
13374	CONTROL PANEL INSTRUMENTATION
13390	COMMUNICATIONS
13414	FLOW COMPUTER KIT- METERING VALVE
13427	LIQUID LEVEL SWITCH - FLOAT (TILT)
13430	PRESSURE TRANSMITTER
16010	BASIC ELECTRICAL REQUIREMENTS
16110	RACEWAYS
16120	WIRES AND CABLES
16190	SUPPORTING DEVICES
16195	ELECTRICAL IDENTIFICATION
16421	UTILITY SERVICE ENTRANCE
16450	GROUNDING
16950	ELECTRICAL TESTS

SECTION 13111

CATHODIC PROTECTION

PART 1 – GENERAL

1.1 WORK OF THIS SECTION

- A. The Contractor shall provide all labor, materials, tools, and incidentals to install a cathodic protection system for the new PRS piping (as shown on the plans) including all electrical connections, anodes, test stations, insulators, enclosures, and all accessories required for a complete and operable system.
- B. The Contractor shall retain a qualified Corrosion Engineer to direct the construction of facilities specified herein. The Corrosion Engineer shall test and certify that the corrosion control facilities for this project are constructed properly and as specified and are fully functional.

1.2 DEFINITIONS

- A. Contractor: The licensed prime installer selected by the Owner to install the pipeline.
- B. Owner: The City of San Diego.
- C. Corrosion Engineer: A qualified Corrosion Engineer retained by the Contractor who is either a Registered Professional Corrosion Engineer or NACE-International Certified Cathodic Protection Specialist or Corrosion Specialist.
- D. Engineer: The City of San Diego's Resident Engineer or designated representative.
- E. City's Corrosion Engineer: The Engineer's appointed representative from the City's Corrosion Section.

1.3 CONTRACTOR QUALIFICATIONS

- A. All work must be conducted by qualified, experienced personnel working under continuous, competent supervision. Qualified Contractors must have experience in cathodic protection installations. The drilling subcontractor and

well drilling foreman must have experience in the installation of deep well anodes. Cathodic protection installation and testing shall be done under the direct supervision of a Corrosion Engineer. The Contractor doing the electrical installations and well drilling work shall have proper valid State of California licenses.

1.4 REFERENCE SPECIFICATIONS, CODES AND STANDARDS

A. Commercial Standards:

1. A497 – Steel Welded Wire Reinforcement
2. ASTM A615 - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement
3. AWWA C217 - Wax Coating Systems for Underground Piping Systems
4. Bulletin 74 - California Well Standards
5. Green Book - Standard Specifications for Public Works Construction, 2018 edition
6. Mil-C-18480-B - Coating Compound, Bituminous, Solvent, Coal Tar Base
7. NACE SP0169 - Standard Practice, Control of External Corrosion on Underground or Submerged Metallic Piping Systems
8. NACE SP0572 - Design, Installation, Operation, and Maintenance, of Impressed Current Deep Groundbeds
9. NACE SP0286 - Electrical Isolation of Cathodically Protected Pipelines
10. NEC 70 – National Electrical Code
11. NEMA LE - Cotton Phenolic Resin – Electrical Grade
12. NEMA CE - Canvas Phenolic Resin - General Purpose Grade
13. NEMA 3R - Enclosures for Outdoor Applications
14. NEMA MR-20 – Semiconductor Rectifiers Cathodic Protection Units
15. NEMA WC 70 – Power Cables Rated 2,000 Volts or Less
16. NEMA G10 – Glass Reinforced Epoxy
17. NFPA 70 - National Electrical Code (NEC)
19. UL 514 - Metallic Outlet Boxes
20. Standard Specifications of Public Works Construction City Supplement (White Book) latest edition
21. Standard Drawings for Public Works Construction latest edition.

1.5 CONTRACTOR SUBMITTALS

- ##### **A. The Contractor shall furnish the following documents (Submittals) AS ONE SUBMITTAL PACKAGE:**
1. Catalog cuts and other information for products to be used including:

- a. Mixed Metal Oxide Anodes
 - b. Anode Centering Devices
 - c. Calcined Coke
 - d. Deep Anode Construction Materials
 - e. Anode Wellhead Vault
 - e. Ornamental Enclosure
 - f. AC Meter Pedestal
 - g. AC Disconnect Switch
 - h. Anode Shunt Panel
 - i. Conduit and Fittings
 - j. Wire, Leads, and Cable
 - k. Anode Shunts
 - l. Ready Mix Concrete
 - m. Plastic Warning Tape
 - n. Exothermic Weld Kits
 - o. Elastomeric Weld Caps
 - p. Exothermic Weld Coating
 - q. MicroMax GPS Interrupter, Relay and Heat sink
 - r. At-Grade Concrete Test Box
 - s. Micarta Test Board
 - t. Flange Isolation Kits
 - u. Wax Tape Coating System
 - v. Standard Potential Galvanic Anode
2. As-Built Drawings: The Contractor shall maintain as-built drawings showing the exact locations of the deep well anode bed, rectifier, test stations, insulators, and wire trenching runs. Location changes shall be clearly indicated in red on a blue-line copy of the design drawings. These drawings shall be submitted to the Engineer before the work is considered complete. Provide sub-foot GPS coordinates for all test stations and impressed current equipment.
- B. Certifications: The Contractor shall submit a notarized affidavit of compliance that all Work, materials and equipment required according to this Section were properly constructed and manufactured in full conformance with these Contract Documents. The Contractor shall submit the manufacturers' Certificates of Compliance.
- C. Operations and Maintenance Information: The Contractor shall submit operation and maintenance related information, rectifier field test reports, parts list with part replacement numbers, and troubleshooting procedures.

- D. Test and Inspection Reports: The Contractor shall submit field test and inspection reports, along with wiring diagrams of the installed system. Testing reports shall include at a minimum: native or baseline pipe-to-soil potentials; electrical isolation from casings and insulating flange kits; electrical continuity for all metallic pipe sections containing non-welded joints or inline specials not intentionally electrically isolated; cathodic protection system activation; any deficiencies; and conclusions and recommendations. The final testing report issued for this project shall include all previous testing results, approved material submittals, and as-built drawings. The reports shall be submitted in an electronic PDF format. In addition, all tabulated calculated data shall be submitted as a Microsoft Excel file format.
- E. Qualifications: The Contractor shall submit documentation of the qualifications of the Corrosion Engineer.
- F. Permits: The Contractor shall submit copies of all permits including state and local well drilling permits and traffic control permits for deep well anode sites.
- G. Drilling Log: Drilling records shall be submitted to the Engineer within ten days of the completion of the anode well. Records shall include:
 - 1. Drillers Log.
 - 2. Identification of water-bearing strata.
 - 3. Resistance-to-well of all anodes before and after calcined coke is added to the well.
 - 4. Anode Well Drilling Permit and Final Well Completion Permit.

1.6 PACKAGING AND SHIPPING

- A. The Contractor shall coil wires, secure and package anodes as required to prevent damage during shipment.

1.7 NOTIFICATION FOR TESTING AND INSPECTION

- A. The Contractor shall notify the Engineer at least seven days in advance of the deep well drilling and the installation of wiring, and test stations. Well loading and completion shall be done in the presence of the Engineer. The Engineer or the Owner's Representative shall witness all corrosion control installations at their discretion.

1.8 CORROSION ENGINEER QUALIFICATIONS SUBMITTAL

- A. Contractor shall retain the services of a Corrosion Engineer to inspect, activate, adjust, and evaluate the effectiveness of the cathodic protection system. The Corrosion Engineer is herein defined as a registered Professional Engineer with certification or licensing that includes education and experience in cathodic protection of buried or submerged metal structures, or a person accredited or certified by NACE International at the level of Corrosion Specialist or Cathodic Protection Specialist (i.e. NACE International CP Level 4). Such a person shall have experience inspecting pipeline cathodic protection systems. The Corrosion Engineer shall directly oversee the Cathodic Protection Technician, review all specification section 13111 related inspections and field measurements, and certify the accuracy and completeness of all cathodic protection submittals and reports.

- B. Services of Cathodic Protection Technician: Obtain the services of a Cathodic Protection Technician to inspect, activate, adjust, and evaluate the effectiveness of the cathodic protection system. The Cathodic Protection Technician is herein defined as a person accredited or certified by NACE International as a Cathodic Protection Level 2 Technician. .

PART 2 – PRODUCTS

2.1 CONDUIT, FITTINGS, AND ACCESSORIES

- A. All below-grade wire shall be run in schedule 40 PVC conduit. All above-grade conduit shall be rigid galvanized steel.

- B. Fittings: Fittings for use with rigid steel conduit shall be galvanized cast ferrous metal, with gasket covers. Rigid metallic conduit fittings shall be galvanized conforming to UL 514. Fittings for use with either rigid nonmetallic conduit shall be PVC and shall have solvent weld-type conduit connections.

- C. Elbows: All buried conduit elbows shall be long radius ell type.

2.2 WIRES

- A. General: Conform to applicable requirements of NEMA WC 70. All wires shall be single conductor, unless otherwise specified. All wires shall be single

conductor, stranded copper wire with 600-volt HMWPE insulation, unless otherwise specified.

- B. Joint Bond: Two No. 2 AWG HMWPE.
- C. Cathode (Pipe) Lead: Two No. 2 AWG HMWPE.
- D. Positive Jumper Wire: No. 6 AWG THWN with red insulation.
- E. Negative Jumper Wire: No. 6 THWN with blue insulation.
- F. Test Station Pipeline Leads: No. 8 AWG HMWPE.
- G. Galvanic Anode Leads: No. 12 AWG THWN (WHITE).
- H. Casing Test Leads: No. 10 AWG HMWPE.
- I. R Drop Test Leads: No. 8 AWG HMWPE

2.3 CONCRETE

- A. Reinforcing steel: ASTM A615, Grade 60 deformed bars and welded wire fabric.
- B. Welded Wire Fabric: ASTM A497.
- C. Formwork: Plywood, earth cuts may be used.
- D. Concrete with minimum 3,000 psi compressive strength at 28 days.

2.4 ANCILLARY MATERIALS

- A. Electrical Tape: Linerless rubber high-voltage splicing tape and vinyl electrical tape suitable for moist and wet environments. Use Scotch 130C and Scotch 88 as manufactured by 3M Products or approved equal.
- B. Wire Connectors: One-piece, tin-plated crimp-on lug connector as manufactured by Burndy Co., Thomas and Betts.
- C. Insulating Resin: At Contractor's option, bitumastic coating (Koppers 50 or equal) may be used if allowed to dry completely before covering.

2.5 MARKING TAPE

- A. Inert polyethylene, impervious to known alkalis, acids, chemical reagents, and solvents likely to be encountered in soil. B. Thickness: Minimum 4-mils.
- C. Width: 6-inches.
- D. Identifying Lettering: Minimum 1-inch high, permanent black lettering imprinted continuously over entire length.
- E. Color: Red with black lettering as follows: "CAUTION CATHODIC PROTECTION CABLES BURIED BELOW."

2.6 EXOTHERMIC WELDS

- A. General: Wire sleeves, welders, and weld cartridges according to the weld manufacturer's recommendations for each wire size and pipe or fitting size and material. Welding materials and equipment shall be the product of a single manufacturer. Interchanging materials of different manufacturers will not be accepted.
- B. Weld Caps: Exothermic welds shall be sealed with a pre-fabricated plastic cap filled with formable mastic compound on a base of elastomeric tape. Use Royston Handy Cap or approved equivalent. Primer for weld caps shall be Royston Roybond Primer 747 or approved equivalent.
- C. Weld Coating: All bare metal shall be coated. Exothermic welds and weld caps shall be coated with a cold-applied, fast-drying mastic consisting of bituminous resin and solvents per MIL-C-18480B. Use Royston R28, Royston R28 Zero VOC, Royston A51 Plus, Royston A51 Low VOC, Tapecoat TC Mastic or approved equal.

2.7 AT-GRADE TEST STATIONS

- A. At-Grade (Flush) Mounted:
- B. Test Box: Concrete box of dimensions as shown on the Drawings. Use precast concrete San Diego Pre-cast Model 1BSD\K with cast iron lid. The cast iron lid shall be 9-1/2-inch diameter with the letters "City of San Diego Corrosion Test Station".

- C. Each CP Test Box shall include a 5 inch x 5 inch cross-laminated phenolic terminal board with a minimum thickness of 1/4-inch. The phenolic material shall be NEMA type CE or LE. The terminal board shall contain individual electrical lugs for each wire entering the test station or junction box.

2.8 PIPE FLANGE ISOLATION KIT

- A. For purposes of this specification, the terms "Pipe Flange Isolation Kit", "Insulating Flange", "Insulating Joint", and "Dielectric Flange" are used synonymously.
- B. The Contractor shall over drill flange holes where insulating kits are to be used per AWWA C207 to accommodate insulating sleeves.
- C. The Pipe flange isolation kit materials shall be designated by the manufacturer as suitable for service at the operating temperatures and pressures specified on the Plans.
- D. Flange isolation kits shall consist of a one piece, full-face, insulating gasket, an insulating sleeve for each bolt, insulating washers, and steel washers. For nominal pipe diameters up to and including 36-inches, provide one insulating washer and one steel washer on each side of the flange for each flange bolt. For nominal pipe diameters greater than 36-inches, the insulating washers shall be installed sandwiched between a pair of matching steel washers on each side of the flange for each flange bolt.
- E. Insulating Gasket: Insulating gasket retainers shall be full face, Type E, NEMA G-10 glass reinforced epoxy retainers with an Ethylene Propylene Diene Monomer (EPDM) rubber rectangular cross section O-ring seal. Minimum total gasket thickness shall not be less than 1/8-inch. The gasket shall have the same outside diameter as the pipe flange. For steel pipe the gasket's inside diameter shall be equal to the inside diameter of the pipe's steel cylinder. At valve to pipe connections where the inside diameters are not equal, the gasket's inside diameter shall be equal to the smaller of the two inside diameters. Dielectric strength shall be not less than 550-volts per mil, and compressive strength shall be not less than 50,000-psi. The manufacturer's name and date of manufacture shall be marked on both sides of the gasket with minimum two-inch tall block letters using a durable marking ink or paint. The gasket shall be installed within 12 months of its date of manufacture. Do not store insulated flange gaskets at

jobsites under direct sunlight or at temperatures exceeding 110 degrees Fahrenheit. Use PSI Linebacker insulating gasket or approved equal.

- F. Insulating Sleeves: Provide full length, one piece, NEMA G-10 glass reinforced epoxy insulating flange bolt sleeves. Dielectric strength shall be not less than 400-volts per mil. The length of the insulating sleeves shall provide an air gap between the end of the insulating sleeve and inside surface of the stud bolt nut with a tolerance of 1/32inch minimum and 1/8-inch maximum. Insulating sleeve length must be adjusted for the actual thickness of the washers and insulating washer thickness.
- G. Insulating Washers: Insulating washers shall be NEMA G-10 glass reinforced epoxy with a minimum thickness of 1/8-inch. Dielectric strength shall not be less than 550-volts per mil, and compressive strength shall not be less than 50,000-psi. The insulating washer's inside diameter shall be sized to fit over the insulating sleeve's outside diameter.
- H. Steel Washers: Provide hardened steel washers that conform to ASTM F436 for insulated flanges greater than 36 inches in nominal diameter. Double steel washers (4 steel washers per flange bolt) are required for insulated flanges greater than 36 inches in nominal diameter. The inside and outside diameter of the steel washers shall match those of the insulating washers. The steel washers must be able to freely rotate around the insulating sleeve. Attention must be paid to the fit between the steel washers and the insulating sleeve in order to avoid the washers twisting and cracking the sleeves when the flange bolts are torqued.
- I. Provide four extra insulating sleeves and eight extra insulating washers for each insulating flange upon successful inspection of the insulating flange by the Engineer.

2.9 WAX TAPE COATING FOR BURIED SURFACES AND BURIED ISOLATION FLANGES

- A. All buried pipe sections of pipe, specials, and fitting surfaces that are not tape wrapped or epoxy coated shall be wrapped with a petrolatum wax tape coating per AWWA C217 with plastic outer wrap. No bare metallic surfaces shall be buried, backfilled, or in contact with the soil.
- B. Apply a wax tape coating system which conforms to AWWA C217 and consists of three parts: surface primer, wax-tape, and outer covering.

- C. The primer shall be a blend of petrolatum, plasticizer, and corrosion inhibitors having a paste like consistency. It shall have a pour point of 100-degrees F to 110-degrees F and a flash point of 350-degrees. Use Trenton Wax-Tape Primer or approved equal.
- D. The wax-tape shall consist of a synthetic-fiber felt, saturated with a blend of high melt microcrystalline wax, solvents, and corrosion inhibitors, forming a tape coating that is easily formable over irregular surfaces and which firms up after application. The tape shall have a saturant pour point between 125-degrees F and 130-degrees F and a dielectric strength equal to a minimum of 100-volts per mil. Tape thickness shall be 70-mils to 90-mils in 6-inch wide rolls. Use Trenton No. 1 wax-tape, or equal.
- E. The outer covering shall consist of two layers of a plastic wrapper. The plastic wrapper material shall consist of three 10-mil thick clear polyvinylidene chloride, high cling membranes wound together as a single sheet. Use Trenton Poly-Ply, or equal.

2.10 STANDARD POTENTIAL MAGNESIUM ANODES

- A. CAPACITY. Standard potential magnesium anodes shall have a theoretical energy content of 1000 ampere-hours per pound and have a minimum useful output of 500 ampere-hours per pound.

- B. CHEMICAL COMPOSITION (STANDARD POTENTIAL MAGNESIUM) ASTM B843

aluminum	5.30	to	6.70
	percent		
manganese	0.15	to	0.70
	percent		
zinc	2.50	to	3.50
	percent		
copper	0.02 percent max		
nickel	0.002 percent max		
iron	0.003 percent max		
silicon	0.10 percent max		
others, total	0.30 percent max		
magnesium	remainder		

- C. OPEN CIRCUIT POTENTIAL. The open circuit potential of all anodes, buried in the soil, shall be between 1.45- and 1.55-volts dc versus a copper-copper sulfate reference electrode.
- D. INGOT SIZE AND WEIGHT. Anodes shall be 17-pound pre-packaged, standard potential ingots with a trapezoidal cross section. Ingot length shall be 25.25 inches long. The total packaged weight shall be 45 lbs.
- E. ANODE CONSTRUCTION. Anodes shall be cast magnesium with a galvanized steel core rod recessed on one end to provide access to the rod for connection of the lead wire. Silver braze the lead wire to the rod and make the connection mechanically secure. Insulate the connection to a 600-volt rating by filling the recess with epoxy and covering any exposed bare steel core or wire with heat shrinkable tubing. The insulating tubing shall extend over the lead wire insulation by not less than 1/2 inch. The anode lead wire shall be stranded copper and shall be connected directly to the anode steel core as described above. There shall be NO wire splices between the anode steel core and the tag end at the test station.
- F. ANODE PRE-PACKAGED BACKFILL MATERIAL. The anodes shall be completely encased and centered within a permeable cloth bag in a special low resistivity backfill mix with the following composition:

Gypsum	75%
Powdered bentonite	20%
Anhydrous sodium sulfate	5%

- G. Backfill grains shall be such that 100 percent is capable of passing through a screen of 100 mesh. Backfill shall be firmly packed around the anode such that the ingot is approximately in the center of the backfill. The resistivity of the backfill shall be no greater than 50 ohm-cm when tested wet in a soil box. Total prepackaged weight shall be approximately 45 pounds.

PART 3 – EXECUTION

3.1 GENERAL

- A. Work not specifically described herein shall conform to NACE SP0169, NACE SP0572, NACE SP0286, the Standard Specifications for Public Works

Construction 2018 (Greenbook) and City Supplement White Book and Standard Drawings.

3.2 WIRE CABLES AND CONDUCTORS

- A. Rectifier to Pipeline: Wire shall be single-conductor; No. 2 AWG stranded copper with 600-V High Molecular Weight Polyethylene (HMWPE) insulation 7/64-inch thick.
- B. Installation: Arrange conductors neatly in rectifier and ornamental enclosure. Cut to proper length, remove surplus wire, and attach terminal or connect to appropriate junction box or rectifier terminal.
- C. Below ground Seals: Seal below ground conduit to prevent intrusion of foreign material after wire is in place.
- D. Buried Wires, Cables and Leads: Buried rectifier, pipeline, test station, or anode leads, and conduits shall be at a 36-inch deep, minimum, below finished grade. Wires shall be free of splices. The Contractor shall compact wire trenches and re-pave in accordance with the Greenbook/Whitebook Standards.
- E. AC Wiring Backfill: AC wire shall be installed and backfilled per SDG&E Service Guide (latest edition).
- F. Warning Tape: Bury warning tape in the trench 12-inches below grade and above underground conductors and conduits. Align parallel to and within 2-inches of the centerline of the conduit run.

3.3 CONDUITS

- A. Securing Conduits: Secure conduits entering test station boxes or ornamental enclosures with double locknuts, one on the outside and one on the inside.
- B. Insulation Fittings: Install insulated bushings and insulated throat connectors on the ends of rigid metallic conduit.
- C. Watertight Fittings: Use watertight couplings and connections. Install and equip boxes and fittings to prevent water from entering the conduit or box. Seal unused openings.

3.4 WIRE-TO-PIPE CONNECTIONS

- A. Exothermic Weld:
 - 1. Use exothermic weld method for electrical connection of copper wire to steel surfaces. Observe proper safety precautions, welding procedures, weld charge selection, and surface preparation recommended by the welder manufacturer. Assure that the pipe or fitting wall thickness is of sufficient thickness that the exothermic weld process will not damage the integrity of the pipe or fitting wall or protective lining. One exothermic weld shall be used for one wire only.
 - 2. Preparation of Metal: Remove all coating, dirt, grime, and grease from the metal surface by wire brushing and/or use of suitable safe solvents. Clean the surface to a bright, shiny surface free of all pits and flaws. The surface must be completely dry.
 - 3. Testing: After the weld connection has cooled, remove slag, visually inspect, and physically test wire connection by striking the weld with a 2-lb hammer while pulling firmly on the wire. All unsound welds shall be completely removed, the surface prepared again, and re-welded. All weld slag shall be removed from the weld before applying coating and weld cap.

- B. Protective Coating: The Contractor shall furnish all materials, clean surfaces and repair any damage to protective coatings and linings damaged as a result of the welding. A coating shall be applied to all exothermic weld locations. The coating for dielectrically coated steel shall be as described in Section 2.14 above. All surfaces must be clean and dry and free of oil, dirt, loose particles and all other foreign materials before application of the coating. The coating must cure per the manufacturer's recommendations prior to backfill. The mortar rockshield shall be repaired per the manufacturer's recommendations.

3.5 MAGNESIUM ANODES

- A. INSPECTION. All lead wires shall be inspected to ensure that the lead wire is securely connected to the anode core and that no damage has occurred to the lead wire. Lead wire failures shall require replacement of the complete anode and lead wire.

- B. PRE-PACKAGED ANODE INSPECTION. Each anode shall be inspected to ensure that the backfill material completely surrounds the anode and that the cloth bag containing the anode and backfill material is intact. If the prepackaged anodes are supplied in a waterproof container or covering, that container or covering

shall be removed before installation. The CONTRACTOR shall notify the ENGINEER at least seven (7) days in advance of installing the anodes.

- C. LOCATION. Anodes are to be installed in augured holes as shown in the drawings. Anode positions can be adjusted slightly to avoid interference with existing structures. Alternate anode positions must be approved by the ENGINEER.
- D. HANDLING. Care shall be taken to ensure that the anode is never lifted, supported, transported, or handled by the lead wire. All anodes shall be lowered into the hole using a sling or a rope.
- E. ANODE HOLE SIZE AND DEPTH. Anodes shall be placed vertically at the bottom of a 12 feet deep augured hole, 12 inches in diameter (minimum).
- F. SOAKING REQUIREMENTS, PRE-PACKAGED ANODES. Once the prepackaged anodes are in the hole, water shall be poured into the hole so that the anodes are completely covered with water. Allow the anodes to soak for a minimum of 30 minutes before any soil backfill is added.
- G. SOIL BACKFILL. After the pre-packaged anodes are soaked, the hole is backfilled with stone-free, native soil. No voids shall exist around the anode bags and the anode lead wire shall not be damaged. The backfill shall be tamped and compacted in 18-inch lifts above the anode taking care not to damage the anode lead wire.

3.6 AT-GRADE TEST STATIONS

- A. LOCATION. At-grade corrosion monitoring test boxes shall be located behind the curb or sidewalk and NOT in traffic lanes or gutters. All test box locations shall be approved by the ENGINEER.
- B. TEST BOX BOTTOM. Test boxes shall be set in native soil.
- C. TEST LEAD ATTACHMENT. Test leads shall be attached to the pipe using the exothermic weld process. An 18-inch length of slack wire shall be coiled at each weld and inside each test box.

- D. CONCRETE PAD. A 24-inch square by 4-inch thick reinforced concrete pad is required around each at-grade test station. Test boxes and concrete pad shall be flush with the top of the median curb.

3.7 EXTERNAL COATING

- A. All insulating couplings shall be covered with a 3-layer wax tape coating system per AWWA C217 with plastic outer wrap. Additionally, all in-line valves, flanges couplings, and adapters that are not coated with a bonded dielectric coating shall be wax tape coated per AWWA C217 with plastic outer wrap.
- B. Primer: Surfaces must be cleaned of all dirt, grime, and dust by using a wire brush and clean cloth. The surface shall be dry. Apply the primer by hand or brush. A thin coating of primer shall be applied to all surfaces and worked into all crevices. The primer shall be applied generously around bolts, nuts, and threads, and shall fully cover all exposed areas. The primer should overlap the pipe coating by a minimum of 3-inches.
- C. Petrolatum Saturated Tape: The wax tape can be applied immediately after the primer. Short lengths of tape shall be cut and carefully molded around each individual bolt, nut, and stud end. For long bolts (such as in couplings), short lengths of tape shall be cut and circumferentially wrapped around each individual bolt. After the bolts are covered, the tape shall be circumferentially wrapped around the flange with sufficient tension to provide continuous adhesion without stretching the tape. The tape shall be formed, by hand, into all voids and spaces. There shall be no voids or gaps under the tape. The tape shall be applied with a 1-inch minimum overlap. Minimum thickness of 70 mils over flat surfaces. Minimum thickness of 140 mils over edges.
- D. Outer Covering: A plastic outer cover shall be applied over the petrolatum-saturated tape. The plastic shall be a minimum of 50-guage (10-mils) and shall have two layers applied.

3.8 REBAR GROUND CABLE AT CONCRETE STRUCTURES

- A. Minimum size #2 AWG, bare copper stranded grounding cable. The quantity of cable required should be sufficient to run two ground cables from a flush-to-grade concrete ground box down to two separate exothermic connections made to rebar inside each concrete encasement or major reinforced concrete structure. Locate the rebar ground test boxes adjacent to cathodic protection test boxes.

3.9 INSTALLATION OF FLANGE ISOLATION MATERIALS

- A. Provide a minimum of five days advance notice to the Engineer before assembling insulated pipe flanges to allow for coordination and observance of its installation. The Engineer shall inspect the condition of the gasket's O-ring immediately before the gasket is installed to ensure it is free of cracks, dry rot, cuts, or other defects.

- B. Install pipe flange insulating materials at the locations shown on the Plans. Install pipe flange insulating materials in accordance with the manufacturer's recommendations and NACE recommended practice SP0286, "Electrical Isolation of Cathodically Protected Pipelines." Particular attention shall be paid to properly aligning the flanges prior to inserting the insulating sleeves around flange bolts.

- C. Prevent moisture, soil, or other foreign matter from contacting any portion of the insulated flange prior to or during installation. If moisture, soil, or other foreign matter contacts any portion of the insulated flange, disassemble it, clean with a suitable solvent and dry prior to reassembling. Follow the manufacturer's recommendations regarding the torque pattern of the bolts and the amount of torque to be used when installing the flange insulating kit. Do not use conductive grease on the flange bolts or any other flange components. Note: the following products have been tested for electrical conductivity and approved for use: Huskey 2000 Lubricating Paste & AntiSeize compound, Triflow aerosol lubricant with Teflon additive, or approved equal.

- D. All insulating flange kits that will be buried must be tested and approved by the City's Corrosion Engineer before burial. Failure to have written approval by the City before burial may require the contractor to re-excavate the insulating flange assembly for proper testing at the contractor's expense.

PART 4 – TESTING AND INSPECTION

4.1 General

- A. The CP system shall be activated and adjusted by the Contractor's Corrosion Engineer.

The Contractor is required to contact the City's Corrosion Section (phone number 619-

527-5439) at least 5 days in advance of all corrosion control/cathodic protection facility installations. The Engineer, City's Corrosion Engineer, or the Owner's Representative shall witness all testing and installations at their discretion. All test data shall be submitted to the City's Corrosion Engineer within seven (7) days of the completion of the testing. All testing shall be conducted under the supervision of a qualified Corrosion Engineer who is retained by the Contractor. All deficiencies found to be due to faulty materials or workmanship shall be repaired or replaced by the Contractor and at his/her expense.

4.2 TEST LEADS AND BOND WIRES

- A. Responsibility: The Contractor shall be responsible for testing and inspecting all test leads, bond wires, and exothermic welds.
- B. Test Method: All completed wire connections shall be tested by striking the weld with a 2-lb. Hammer while pulling firmly on the wire. Failed welds shall be completely removed, the surface re-prepared, and re-welded. Welds shall be spot tested by the Engineer. After backfilling, all test leads shall be tested using a standard ohmmeter.
- C. Acceptance: The resistance between each pair of test leads shall not exceed 120% of the total wire resistance as determined from published wire data.

4.3 ANODE LEAD WIRE INSPECTION

- A. Responsibility: The City's Corrosion Engineer will inspect each anode lead wire at the anode site. The Contractor shall assist the City's Corrosion Engineer and is responsible for inspecting/testing the anode lead wire insulation prior to storing and shipping.
- B. Test Method: Inspection shall be visual and by feel, or by using a Holiday Tester. The Engineer shall inspect and run his or her hand along the full length of each anode lead wire cable just prior to installation in the well.
- C. Acceptance: All anode lead wires shall be free of cuts, nicks, and abrasions. Cables with damage shall be rejected.

4.4 TEST LEAD TRENCHING AND BACKFILL

- A. Responsibility: The Engineer, at his or her discretion, shall inspect wire trenches and backfill material and methods.
- B. Test Method: The depth, trench bottom padding, and backfill material shall be visually inspected before backfilling.
- C. Acceptance: Conformance with specifications.

4.5 FLANGE ISOLATION KIT TESTING

- A. Each buried insulating flange shall be tested for its electrical isolation effectiveness by and acceptable to the City's Corrosion Engineer prior to burial. The insulating flange shall be tested for electrical isolation before the wax tape coating is applied. Testing shall be performed and deemed as acceptable as described in the above grade testing procedure.
- B. Each above grade or insulating flange within a vault shall be tested for its electrical isolation effectiveness. This testing shall be performed by the Contractor's Cathodic Protection Technician and witnessed by the City's Corrosion Engineer. The Contractor shall provide written notice of this testing to the Engineer a minimum of two days in advance. If the insulated pipe flange will be buried, At the Engineer's option, the City of San Diego may repeat this testing during or immediately after the installation of the insulating flange. Replace or repair any insulated pipe flange that is determined to not meet the minimum electrical isolation requirements in this specification. The effectiveness of insulating flanges shall be determined using the following test techniques in the order shown until one of the criteria is achieved or as otherwise directed by the Engineer.
- C. Electrical Potential Difference Test: Electrically bond the pipe on the vault or unburied side of the insulating flange to an electrical ground with a maximum resistance to remote soil of 5-Ohms. If the pipe on both sides of the insulating flange is mechanically connected to a minimum 50-feet of buried pipe, then the pipe does not need to be bonded to an electrical ground for this test. Measure the CP Potential of the pipe on both sides of the insulating flange using a copper/copper sulfate reference electrode. If the difference in CP Potentials is greater than or equal to 500-millivolts, the insulating flange is providing adequate electrical isolation. This test must be performed with all cathodic protection systems and anodes disconnected from the pipeline. If this criterion is not met, perform the Nilsson 400 Meter Direct Resistance Test to verify the effectiveness of the insulating flange.

- D. Direct Resistance Test: Measure the electrical resistance across the insulated flange using a 97-Hertz square wave null balancing ohmmeter such as the Model 400 Nilsson Soil Resistance Meter and the four-wire resistance technique. A standard handheld digital multi-test meter's ohmmeter circuit (e.g. Fluke 97 or Beckman HD110) is not suitable for properly making these resistance measurements. Perform this test by connecting the meter's P1 and C1 terminals to one side of the insulating flange, using two wires, and then connecting the meter's P2 and C2 terminals to the other side of the insulating flange, using two additional wires. Use vise grips or temporary exothermic welds to make the wire connections to the flange or pipe. The criterion for a pipe filled with water is a minimum measurement of 5-Ohms. The criterion for a dry or a partially filled pipe is a minimum measurement of 100-Ohms. If none of the applicable criteria are met, perform the Inductive Ammeter Direct Resistance Test to verify the effectiveness of the insulating flange.
- E. Inductive Ammeter Direct Resistance Test: Connect two separate wires via two separate connections to the pipe on both sides of the insulating flange. Use vise grips or temporary exothermic welds to make the wire connections. Use two pairs of test wires, one for current flow, one for voltage measurement. Using the first set of test wires, apply a minimum 12-volt DC electrical current across the insulating flange. Using the second set of test wires, measure the voltage across the insulating flange developed by the DC current flow. Use an inductive ammeter hoop (e.g. Swain hoop) clamped around the pipe immediately adjacent to the insulating flange to measure the change in DC current flow in the pipe, through the insulated flange. Calculate the electrical resistance across the insulating flange in Ohms by dividing the change in DC Volts by the change in DC Amps (i.e. Ohm's Law). The criterion for a pipe filled with water is a minimum measurement of 5-Ohms. The criterion for a dry pipe is a minimum measurement of 100-Ohms. If either of the applicable criteria is not met, perform the NACE Insulating Flange Leakage Test, per NACE SP0286, to verify the effectiveness of the insulating flange.
- F. NACE Insulating Flange Leakage Test: This test procedure shall conform to the "Leakage Test" described in the NACE Standard SP0286, Section 8, "Field Testing and Maintenance", Figure 12. The test current used shall be between 3 and 5 DC Amps. The criterion for a pipe filled with water is a maximum "electrical leakage value" of 10percent of the test current. The criterion for a dry pipe is a maximum "electrical leakage value" of 5-percent of the test current.
- G. Individual Flange Bolt Testing: For all insulated flanges to be buried and for all other insulating flanges that do not meet any of the other criteria, measure the

electrical resistance of each flange bolt to both sides of the insulated flange using a Nilsson Model 400 Soil Resistance Meter and four-wire resistance technique. The measured resistance value for each flange through-bolt shall be a minimum of 1,000-Ohms, as measured from each bolt to both flanges. This criterion applies to the flange through bolts and does not apply to valve cap bolts which are threaded on one side. Remove, inspect, and replace all dielectric flange bolt sleeves and washers that do not meet the minimum resistance criterion.

- H. If an insulated flange with threaded cap bolts passes the resistance tests for all the “through-bolts” yet fails the other previous tests, remove all the threaded cap bolts, inspect and replace all imperfect dielectric flange bolt sleeve and washer materials and retest.
- I. In order to make an accurate resistance measurement that passes any of these criteria it may be necessary to disable the pipe inside a vault, flow control facility, or pump station on one side of the insulated flange (or temporarily remove any electrically grounded appurtenances) so that the pipe is not grounded on one side of the insulated flange. This temporary change may eliminate an electrical path which interferes with making an accurate resistance measurement.

4.6 ELECTRICAL CONTINUITY TESTING OF PIPE WITH BONDED JOINTS

- A. Conduct electrical continuity testing to demonstrate that all buried pipe joints (except insulated flanges) are either welded joints or have been electrically bonded across with bond cables. This testing shall be performed by the Contractor’s Cathodic Protection Technician and witnessed by the Engineer. The Contractor shall demonstrate to the Engineer’s satisfaction that full electrical continuity has been achieved and shall make all required bond cable connections in the event that electrical continuity of the pipeline is not achieved.
- B. Perform electrical continuity tests between test stations. Circulate a 12-volt electrical direct current (DC) through the pipeline. Use two pairs of test wires, one for current flow, one for voltage measurement. Measure the voltage difference developed by the DC current flow. Calculate the electrical resistance of the pipeline section in Ohms using Ohm's Law.
- C. The resistance acceptance criterion for each pipeline section tested is less than 120 percent of the calculated resistance value. The resistance value shall be calculated using the steel cross section area of the pipe, its length, and consideration for the joint bond cables at each bonded joint.

- D. If other electrical continuity test methods are proposed, the Contractor shall prepare a written test procedure specifying the alternate method and equipment that will be used. A standard handheld digital multi-test meter's ohmmeter circuit (e.g. Fluke 87) is not suitable for properly making these electrical resistance measurements. Submit in writing the alternate proposed test method to the City's Corrosion Engineer for approval a minimum of 30 days before the pipe laying begins.

4.7 CP TEST STATION WIRE INTEGRITY TESTING

- A. Testing of Completed Welds: Exothermically welded wire-to-pipeline connections shall be inspected by the Engineer prior to backfilling the pipeline. At the Engineer's direction, tests to verify the soundness of the welds shall be conducted by the Contractor. Tests for this purpose shall consist of striking the weld nugget with a 2pound hammer while steadily pulling on the wire. Note that the wire near the weld shall not be unnecessarily cold worked during installation or testing. Remove and reweld any welds that break loose or show signs of separating, as determined by the Engineer.
- B. Wire Identification: The Engineer shall be given two day's advance notice to verify that buried pipe lead wires and anode lead wires are properly identified prior to backfilling the wires.
- C. CP Test Wire Resistance Tests: After the pipeline is backfilled and the CP test wires are trenched to the CP Test Box or CP Monitoring Station, each pair of CP test wires shall be tested for integrity. The CP Technician shall measure the electrical resistance of one CP test wire to the pipeline and back on the second CP test wire. If more than twice the theoretical resistance of the total wire length installed is measured, the Contractor shall re-excavate the pipeline and replace or re-weld the CP test wires to the pipeline. Use the following copper wire unit resistance values to calculate the theoretical resistance of each pair of CP test wires.
1. No. 2 AWG wire 0.162 Ohms / 1000 feet
 2. No. 4 AWG wire 0.258 Ohms / 1000 feet
 3. No. 6 AWG wire 0.411 Ohms / 1000 feet

4. No. 8 AWG wire 0.653 Ohms / 1000 feet
5. No. 10 AWG wire 1.038 Ohms / 1000 feet
6. No. 12 AWG wire 1.650 Ohms / 1000 feet
7. No. 14 AWG wire 2.624 Ohms / 1000 feet

4.8 ELECTRICAL ISOLATION TESTING BETWEEN PIPE AND STEEL REINFORCEMENT

- A. Prior to placing concrete, all pipe/wall/slab penetrations must be inspected by the City's Corrosion Engineer. Testing shall be performed and deemed acceptable as described herein. A seven-day notice is required before placing concrete.

- B. Conduct visual and electrical testing at all steel pipe penetrations through reinforced concrete structures before and after the concrete is placed. This testing is required to demonstrate that all buried steel pipe is not in contact with any metallic objects embedded in the concrete wall or concrete slab including all of the following:
 - Rebar
 - tie wire
 - snaps
 - bolts
 - tie rods
 - taper ties
 - dowels

- C. Perform this testing no more than 1 day before each concrete placement and no more than 1 day after each concrete placement. Correct all direct contacts detected between sections of pipe to be buried and concrete reinforcing components by trimming or repositioning the reinforcement components. If pipe to reinforcement contacts are detected after concrete is in place, use chipping hammers and other concrete demolition tools to remove as much concrete as is necessary to eliminate all metallic points of contact with the steel pipe. A representative from the City of San Diego, Water System Operations, Corrosion Section shall be notified a minimum of 7 days before the first pipe-vault penetration concrete is placed in order to witness and ensure proper electrical isolation. The failure for a new buried steel pipeline to pass this electrical isolation test may require concrete and reinforcing steel to be incrementally demolished by the contractor at no cost to the City of San Diego until the new pipeline passes the electrical isolation test.

- D. Perform all electrical resistance measurements for this test using a 97-Hertz square wave null balancing ohmmeter such as the Nilsson Model 400 Soil Resistance Meter or the MC Miller Model 400A and the four-wire resistance technique to compensate for the test wire and connection resistances. A standard handheld digital multi-test meter's ohmmeter circuit (e.g. Fluke 87) is not suitable for properly making these resistance measurements. Perform this test by connecting the meter's P1 and C1 terminals to the pipe, using two different wires and two different connections, and then connecting the meter's P2 and C2 terminals to the rebar, using two additional wires and connections. Use vise grips or temporary exothermic welds to make the wire connections to the pipe and rebar.
- E. Rebar Ground Cable Connections at Pipe Encasements and Vault Penetrations: Select two exposed pieces of rebar separated by at least 2 feet that are wire tied to a minimum of 6 other perpendicular pieces of rebar for use as electrical ground reference test points. Using temporary connections such as vice grips or other compression clamps measure the electrical resistance between the two different pieces of rebar to ensure that the rebar test points are electrically continuous with the bulk of the rebar in the concrete structure. If either piece of rebar is not securely wire tied to all the other rebar in the encasement or vault, then the electrical resistance measurement will yield erroneous or misleading data. A maximum resistance of 0.10 Ohm between the two rebar test points is required before continuing with the electrical isolation test. Connect two un-spliced lengths of minimum size #6 AWG bare copper stranded grounding cable to two different pieces of rebar. Each ground cable connection to the rebar shall be made with a separate exothermic weld or a separate mechanical compression ground clamp.
- F. Direct Resistance Isolation Test: Testing shall first be performed using the Direct Resistance Test. Attach one pair of the resistance test leads to the pipe and one pair of resistance test leads to the rebar then measure the pipe to rebar resistance. If the resistance is 10 Ohms or more, the pipe is sufficiently electrically isolated from the rebar. If the test reading is less than 10 Ohms, proceed with the Steel Polarization Isolation Test described below.
- G. Steel Polarization Isolation Test:
- Step 1: Measure the baseline CP potentials of the buried pipeline and of the rebar using a stationary location for a copper sulfate reference electrode. Place the reference electrode in soil at an offset distance from the pipeline equal to

approximately the length or width (whichever is greater) of the concrete structure under construction. If the difference between the readings of the pipe and rebar is 500 millivolts DC or more, that indicates sufficient electrical isolation. This test must be done with all nearby sources of cathodic protection electrical current turned off or disconnected, and with all welding equipment turned off. If the difference is less than 500 millivolts DC, record the baseline CP Potentials and proceed to the next step.

Step 2: Set up a temporary DC power source such as a truck battery, a minimum 300 Watt, 2 to 4 Ohm, power rheostat, a calibrated electrical shunt, and two minimum #6 AWG test cables. Set up the DC power source with the positive cable connected to the rebar and the negative cable connected to the pipe. Initially adjust the rheostat for the largest resistance/smallest current and measure the current flow. Adjust the electrical power to a minimum current of 1 DC Amp, maximum of 10 DC Amps. Allow the DC current to flow for a minimum of 5 minutes then shut off the test current.

Step 3: Re-measure CP Potentials of the pipe and rebar using the same reference electrode in the same location with the test current off. These are called polarized CP potentials.

Step 4: Compare the polarized CP Potentials with the previously measured baseline CP Potentials. If the pipe is electrically isolated from the rebar, the test current will polarize the buried pipeline's steel cathodically (i.e. a more negative CP Potential) and shift the rebar anodically (i.e. a more positive CP Potential). If the difference between the polarized potentials of the pipeline and rebar is less than 300 millivolts DC, there are one or more metallic contacts between the buried pipeline and the rebar. If the difference is 300 millivolts DC or greater the steel pipeline is sufficiently electrically isolated from the rebar.

- H. In no case shall an electrical resistance measurement made with a hand-held volt-ohm multimeter be accepted as an accurate isolation test procedure. In the event of a question regarding the electrical isolation of the pipeline, the Engineer shall make the final determination.
- I. Electrical isolation tests shall be conducted for each pipeline encasement, each pipe to vault penetration, and any other reinforced concrete structure that a pipeline passes through. The electrical isolation tests must be performed by the City's Corrosion Engineer one day before concrete is placed, and the day after concrete is placed. The Engineer will witness the electrical isolation test conducted before the concrete is placed.

- J. After the pipeline passes the rebar isolation test, direct bury the two bare copper ground cables connected to the rebar to a flush-to-grade concrete ground box near the pipe-vault penetration. Provide a cover for the test box marked "GROUND". Provide a minimum of two (2) feet of extra ground cable inside the rebar ground test box. If there is a nearby cathodic protection test box, the rebar ground wires can be run into that box. If the rebar test wires are not long enough to reach the permanent test box, splice additional wire to them using two brass split bolts for each splice. No coating is required for the connections.

4.9 PIPELINE CONTINUITY THROUGH IN-LINE APPURTENANCES AND PIPE JOINTS

- A. The CONTRACTOR'S CORROSION ENGINEER shall measure the linear resistance of sections of pipe in which in-line valves, non-welded pipe joints, or other flanged mechanical joints have been installed. All testing shall be done by the CORROSION ENGINEER in the presence of the ENGINEER.
- B. TEST METHOD. Resistance shall be measured by the linear resistance method. A direct current shall be impressed from one end of the test section to the other (test station to test station). A voltage drop is measured for a given current level. The measured resistance (R) is calculated using the equation $R=dV/I$, where dV is the voltage drop between the test span and I is the corresponding current. The resistance shall be measured at least three (3) times for accuracy.
- C. ALTERNATIVE METHODS. If other electrical continuity test methods are proposed, the CONTRACTOR shall prepare a written test procedure specifying the alternate method and equipment that will be used. A standard handheld digital multi-test meter's ohmmeter circuit (e.g. Fluke 87) is not suitable for properly making these electrical resistance measurements. Submit in writing the alternate proposed test method to the ENGINEER for approval a minimum of 30 days before the pipe laying begins. The alternative method must be acceptable to the City's Corrosion Engineer with written approval before being conducted by the Contractor.
- D. ACCEPTANCE. Acceptance is a comparison between the measured resistance (from the field test data) and the theoretical resistance. The theoretical resistance must consider the pipe (length and wall thickness) and the resistance of the bond wires. The measured resistance shall not exceed the theoretical resistance by more than 120% to determine electrical continuity. The CONTRACTOR'S CORROSION ENGINEER shall submit, within seven (7) days of the completion of the testing, and in a report format, to the ENGINEER, all

calculations of the theoretical resistance and measured pipe resistance for each section tested.

4.10 CATHODIC PROTECTION PERFORMANCE

- A. Responsibility: The cathodic protection system shall be activated and tested by the Corrosion Engineer in the presence of the City's Corrosion Engineer. Upon completion of the performance testing, the Contractor shall adjust the level of protection in accordance with NACE SP0169 to a structure-to-electrolyte potential of -850 mV or more negative as measured with respect to a saturated copper/copper sulfate (CSE) reference electrode. This potential may be either a direct measurement of the polarized potential or a current-applied potential. Interpretation of a current-applied measurement requires consideration of the significance of voltage drops in the earth and metallic paths.
- B. Test Method: Achievement of cathodic protection shall be accomplished by a pipe to soil potential survey at each test station of the pipeline. In the event that the full length of the pipeline has not been installed, then the extent of the survey shall be determined by the Engineer. Potential survey data shall include native pipe-to-soil potentials and instant-off pipe-to-soil potentials.
- C. Acceptance Criterion for Steel Pipe with Dielectric Coating: The operation of the cathodic protection system for steel pipelines with a dielectric coating shall be tested to ensure that all portions of the buried pipeline are provided a full level of corrosion protection. The standard used to evaluate the CP potential measurements shall be as follows: 0.85-VOLT CP Instant Off POTENTIAL - A negative voltage of at least 0.85-volt as measured between the buried pipeline and a copper sulfate reference electrode contacting the soil immediately over or adjacent to the pipeline in accordance with NACE SP0169. Determination of this voltage is to be made with the cathodic protection current momentarily interrupted. Voltage drops must be considered for valid interpretation of this voltage measurement.

4.11 COMPLIANCE WITH SPECIFICATIONS

- A. Deficiencies: Any deficiencies or omission in materials or workmanship shall be rectified by the Contractor and at his expense. Deficiencies shall include, but not limited to: anode failures, rectifier malfunctions, electrical discontinuities, lack of electrical isolation, broken or missing test leads or test boxes, improper

or unclean trench backfill, and other deficiencies associated with the workmanship, installation, and non-functioning equipment.

END OF SECTION

SECTION 13300

INSTRUMENTATION AND CONTROL

PART 1 -- GENERAL

1.1 WORK OF THIS SECTION

- A. The CONTRACTOR shall provide all Instrumentation and Control systems (I&C) complete and operable, in accordance with the Contract Documents. The requirements of this Section apply to all components of the I&C unless indicated otherwise.
- B. The Contractor shall provide PLC Programming for the project. Programming of the Central HMI system will be done by the City under a separate contract.
- C. Responsibilities
 - 1. The CONTRACTOR, through the use of a qualified Instrumentation Subcontractor or vendor and qualified electrical and mechanical installers, shall be responsible to the OWNER for the implementation of the I&C and the integration of the I&C with other required instrumentation and control devices.
 - 2. Due to the complexities associated with the interfacing of numerous control system devices, the Instrumentation Subcontractor or vendor shall be responsible to the CONTRACTOR for the integration of the I&C with existing devices and devices provided under other Sections and provide a completely- integrated control system free of signal incompatibilities.
 - 3. As a minimum, the Instrumentation Subcontractor or vendor shall perform the following work:
 - a. Coordinate and cooperate with City's representative in incorporation of this site into the City's SCADA system, including wireless communications and memory map format/database integration efforts. (SCADA HMI integration by the City.)
 - b. Implementation of the I&C:

- (1) Prepare complete and accurate shop drawings
- (2) Design, develop, and electronically verify complete and accurate control panel design and functionality according to specifications.
- (3) Conduct operations and maintenance training for owners' personnel on maintenance calibration and repair of all instrumentation provided under this contract.
- (4) Procure hardware and provide a complete and accurate bill of materials.
- (5) Fabricate panels
- (6) Perform factory tests on panels
- (7) Perform bench calibration and verify calibration after installation
- (8) Oversee and guarantee installation for accuracy and totality to design and functionality.
- (9) Oversee, complete set of documents. Label all wires, verify and guarantee complete loop testing results.
- (10) Oversee, document, and certify system commissioning
- (11) Perform comprehensive testing that guarantee accurate and complete system functionality, as well as testing component level accuracy to within manufactures specifications.
- (12) Provide complete and accurate operations and maintenance manuals to include drawings, BOM, specifications, procedures, calibrations, certificates.
- (13) Conduct operations and maintenance training for owners' personnel on maintenance calibration and repair of all instrumentation provided under this contract.

- (14) Provide drawings that are complete, correct and of sufficient quantity to have copies located at every maintenance location.
 - (15) Prepare calibration sheets
 - (16) Certify the installation of the I&C
 - (17) Perform complete loop check test on all analog/digital signals. Tests continuity and label all wires on panel.
- c. Integration of the I&C with instrumentation and control devices being provided under other Sections:
- (1) Develop all requisite loop drawings and record loop drawings associated with equipment provided under other Divisions and OWNER-furnished and existing equipment.
 - (2) Resolve signal, power, ground and/or functional incompatibilities between I&C and all interfacing devices. Document and guarantee results.
4. Instrumentation Subcontractor or vendor responsibilities in addition to the items identified above shall be at the discretion of the CONTRACTOR. Additional requirements in this Section and Division 13 that are stated to be the CONTRACTOR's responsibility may be performed by the Instrumentation Subcontractor or vendor.

D. Certification of Intent:

- 1. Fifteen days after Notice of Award, the CONTRACTOR shall submit a certification from the selected Instrumentation Subcontractor or vendor. The certification shall be typed on letterhead paper of the Instrumentation Subcontractor or vendor firm. The certification shall be signed by an authorized representative of the Instrumentation Subcontractor or vendor. The certification shall include the following statements:
 - a. (Company name) "hereby certifies intent to assume and execute full responsibility to the CONTRACTOR to perform all tasks defined

under Subsection 13300-1.1C.3 in full compliance with the requirements of the Contract Documents."

- b. "It is certified that the quotation to the CONTRACTOR includes full and complete compliance with the requirements of the Contract Documents without exception."

E. Documentation of Instrumentation Subcontractor Qualifications:

1. List of at least two instrumentation and control system projects successfully completed, of size and scope similar to that described herein, in which the applicant performed system engineering, system fabrication and installation, documentation (including schematic, wiring and panel assembly drawings), field testing, calibration and start-up, operator instruction and maintenance training. Each of the references cited must be accompanied by a written confirmation of the accuracy of the data by a managerial member of the control system operational staff.
2. In addition, list the following information for each project above:
 - a. Name of plant, OWNER, contact name, and telephone number. All phone numbers and contacts shall be verified by the applicant before submission.
 - b. Name of manufacturer(s) for the majority of instrumentation provided.
 - c. Type of equipment furnished (i.e., transmitters, recorders, indicators, etc.)
 - d. Manufacturer and model number of DCS, SCADA, or PLC to which the analog system interfaced.
 - e. Date of completion or acceptance.

3. Furnish the name of the individual person who will be responsible for office engineering and management of this project, and the individual who will be responsible for field testing, calibration, start-up, and operator training for this project. Include references of recent projects of these individual persons.
4. Submit specific documentation which verifies that Instrumentation Subcontractor employs the minimum of individuals who have been formally trained in the application of the:
 - a. Indicated operating systems.
 - b. Indicated software packages.
 - c. Indicated graphical user interface software packages.
5. Document that the applicant's company has been actively involved in the instrumentation systems business (under the same corporate name).

1.2 RELATED SECTIONS

- A. The Work of the following Sections applies to the Work of this Section. Other Sections, referenced below, shall also apply to the extent required for proper performance of this Work.
 1. 13374 CONTROL PANEL INSTRUMENTATION
 2. 13390 COMMUNICATIONS

1.3 REFERENCE SPECIFICATIONS, CODES AND STANDARDS

- B. The Work of this Section shall comply with the current editions of the following codes as adopted by the City of San Diego Municipal code:
 1. National Electrical Code (NEC)
 2. Uniform Building Code (UBC)
- C. Except as otherwise indicated, the current editions of the following apply to the Work of this Section:

1. ANSI/SA S 5.1 Instrumentation Symbols and Identification
2. ISA-S20 Specification Forms for Process Measurement and Control Instruments

1.4 CONTRACTOR SUBMITTALS

- A. General: Submittals shall be furnished in accordance with the following:
 1. Coordinate the instrumentation Work so that the complete instrumentation and control system will be provided and will be supported by accurate shop drawings and record drawings.
 2. Symbology and Nomenclature: In these Contract Documents, all systems, all meters, all instruments, and all other elements are represented schematically, and are designated by symbology as derived from Instrument Society of America Standard ANSI/ISA S5.1 - Instrumentation Symbols and Identification. The nomenclature and numbers designated herein, and on the Drawings shall be employed exclusively throughout shop drawings, and similar materials. No other symbols, designations, or nomenclature unique to the manufacturer's standard methods shall replace those prescribed above, used herein, or on the Drawings.
- B. Instrument Submittal:
 1. Provide a complete index that lists each device by tag number, type and manufacturer. Provide a data sheet for each different type of instrument with the list of tag names. Provide a technical brochure for each data sheet.
- C. Shop Drawings:
 1. General:
 - a. Shop drawings shall include the letter head or title block of the Instrumentation Subcontractor. The title block shall include, as a minimum, the Instrumentation Subcontractor's registered business name and address, project name, drawing name,

revision level, and personnel responsible for the content of the drawing.

- b. Organization of the shop drawing submittals shall be compatible with eventual submittals for later inclusion in the operations and maintenance information. Submittals that are improperly organized or incomplete for a given loop will be rejected.
 - c. Shop drawing information shall be bound in standard size, 3 ring, loose leaf, vinyl plastic, hard cover binders suitable for bookshelf storage. Binder ring size shall not exceed 3 inches.
 - d. Interfaces between instruments, motor starters, control valves, variable speed drives, flow meters, chemical feeders and other equipment related to the I&C shall be included in the shop drawing submittal.
2. Project-Wide Loop Drawing Submittal: Furnish a Project-wide Loop Drawing Submittal (PLDS) that completely defines and documents the contents of each monitoring, alarming, interlock, and control loop associated with equipment provided under the instrumentation sections, equipment provided under sections in other Divisions, existing, and OWNER-furnished equipment that is to be incorporated into the I&C. The PLDS shall be a singular complete bound package electronically drafted in INTERGRAPH MICROSTATION format, submitted within 120 days after contract award, and shall include the following:
- a. A complete index in the front of each bound volume. The loop drawings shall be indexed by systems or process areas. All loops shall be tagged in a manner consistent with the Contract Documents. Loop drawings shall be submitted for every analog and discrete monitoring and control loop.
 - b. Drawings showing definitive diagrams for every instrumentation loop system. These diagrams shall show and identify each component of each loop or system using legend and symbols from ANSI/ISA S5.4 - Instrument Loop Drawings, and as defined by the most recent revision in ISA. Each system or loop diagram shall be drawn on a separate drawing sheet. Loop drawings shall

be developed for loops in equipment vendor supplied packages, equipment provided under the instrumentation sections, and OWNER furnished equipment. The loop drawings shall also show all software modules and linkages. In addition to the expanded ISA S5.4 requirements the loop diagrams shall also show the following details:

- (1) Functional name of each loop.
 - (2) Reference name, drawing, and loop diagram numbers for any signal continuing off the loop diagram sheet.
 - (3) MCC panel, circuit, and breaker numbers for all power feeds to the loops and instrumentation.
 - (4) Designation, and if appropriate, terminal assignments associated with every manhole, pullbox, junction box, conduit, and panel through which the loop circuits pass.
 - (5) Vendor panel, instrument panel, conduit, junction boxes, equipment and PLC I/O terminations, termination identification wire numbers and colors, power circuits, and ground identifications.
- c. Itemized instrument summary. The instrument summary shall list all of the key attributes of each instrument provided under this Contract. As a minimum, attributes shall include:
- (1) Tag number
 - (2) Manufacturer
 - (3) Model number
 - (4) Service
 - (5) Area location
 - (6) Calibrated range
 - (7) Loop drawing number

(8) Associated LCP, PLC, PCM, or RCP

3. Test Procedure Submittals:
 - a. Submit the proposed procedures to be followed during tests of the I&C and its components.
 - b. Preliminary Submittal: Outlines of the specific proposed tests and examples of proposed forms and checklists.
 - c. Detailed Submittal: After approval of the Preliminary Submittal, the CONTRACTOR shall submit the proposed detailed test procedures, forms, and checklists. This submittal shall include a statement of test objectives with the test procedures.
 - d. Certify in writing that for each loop or system checked out, and all discrepancies have been corrected.

4. Calibration Sheets: Each instrument calibration sheet shall provide the following information and a space for sign-off on individual items and on the completed unit:
 - a. Project name
 - b. Loop number
 - c. Tag number
 - d. Manufacturer
 - e. Model number
 - f. Serial number
 - g. Calibration range
 - h. Calibration data: Input, output, and error at 10, 50 and 90% of span

- i. Switch setting, contact action, and deadband for discrete elements Space for comments
 - j. Space for sign-off by Instrumentation Supplier and date
 - k. Test equipment used and associated serial numbers
5. Training Submittals: The CONTRACTOR shall submit a training plan that includes:
- a. Schedule of training courses including dates, durations, and locations of each class.
 - b. Resumes of the instructors who will actually implement the plan.

D. Operations and Maintenance Information:

- 1. General: Operations and maintenance information shall be based upon the approved shop drawing submittals as modified for conditions encountered in the field during the Work.
- 2. Operations and maintenance information submitted shall be organized as follows for each process:
 - a. Section A - Loop Drawings
 - b. Section B - Instrument Summary
 - c. Section C - Instrument Data Sheets
 - d. Section D - Sizing Calculations
 - e. Section E - Instrument Installation Details
 - f. Section F - Test Results
- 3. CONTRACTOR-certified results from Calibration Loop Testing, Pre-commissioning, and Performance Testing shall be included in Section H of the operations and maintenance information.

E. Record Drawings:

1. Keep current a set of complete loop and schematic diagrams which shall include all field and panel wiring, piping and tubing runs, routing, mounting details, point-to-point diagrams with cable, wire, tube and termination numbers. These drawings shall include all instruments and instrument elements and shall comply with Section 3-7.6.1 of the White Book for CADD submittals. All such drawings shall be submitted for review before acceptance of the completed Work.

1.5 FACTORY TESTING

- A. Arrange for the Manufacturers of the equipment and fabricators of panels and cabinets supplied under this Section to allow the ENGINEER to inspect and witness the testing of the equipment at the site of fabrication. Equipment shall include the cabinets, special control systems, flow measuring devices, and other pertinent systems and devices. A minimum of 10 working days notification shall be provided to the ENGINEER before testing. No shipments shall be made without the ENGINEER's approval.

1.6 PERIOD FOR CORRECTION OF DEFECTS

- A. Correct all defects in the I&C upon notification from the OWNER within one year from the date of Substantial Completion. Corrections shall be completed within 5 days after notification.

1.7 SYSTEM DESCRIPTION

- A. All instruments shall return automatically and immediately to accurate measurement upon restoration of power after a power failure, except where specifically noted.
- B. Provide and install two-wire transmitters in local panels or enclosures with receiver/indicator/retransmitter as required.
- C. Provide instrument transmitters which produce isolated 4-20 mAdc analog signals. Follow ISA-S50.1.

- D. For instruments which produce a pulse signal, use dc pulse frequency signals whose repetition rate is directly proportional to the process variable over a 10:1 range. Use 24 Vdc power source.
- E. Provide instruments with conformably coated printed circuit boards to prevent damage by dust, moisture, fungus, and airborne contaminants.
- F. Provide instruments complete with mounting hardware, floor stands, wall brackets, or instrument racks.
- G. Use linear, direct reading indicators unless otherwise specified.

1.8 QUALITY ASSURANCE

- A. Provide instrumentation of rugged construction designed for the site conditions. Provide only new, standard, first-grade materials.
- B. Provide material and equipment in accordance with applicable codes and standards, except as modified by the specifications.
- C. Use single source manufacturer for each instrument type. Use the same manufacturer for different instrument types whenever possible.
- D. Coordinate instrumentation to assure proper interface and system integration. Provide signal processing equipment, to include, but not be limited to, process sensing and measurement, transducers, signal converters, conditioners, transmitters, receivers, and power supplies. Coordinate the various subcontractors, equipment suppliers, and manufacturers.

1.9 WARRANTY

- A. Warranty the instrumentation, materials, workmanship, and installation to be free from defects for a period of one year from the date of final acceptance of the equipment.
- B. Furnish and install replacement parts during the warranty period for any defective component at no additional cost. Replace spare parts consumed during the warranty period with new equipment at no additional cost, immediately after use, to restore the spare parts inventory.

PART 2 - PRODUCTS

2.1 GENERAL

- A. Code and Regulatory Compliance: All I&C Work shall conform to or exceed the applicable requirements of the National Electrical Code. Conflicts between the requirements of the Contract Documents and any codes or referenced standards or specifications shall be resolved with the more stringent requirement having precedence.
- B. Current Technology: All meters, instruments, and other components shall be the most recent field-proven models marketed by their manufacturers at the time of submittal of the shop drawings unless otherwise required to match existing equipment.
- C. Hardware Commonality: All instruments that use a common measurement principle (for example, d/p cells, pressure transmitters, level transmitters that monitor hydrostatic head) shall be furnished by a single Manufacturer. All panel mounted instruments shall have matching style and general appearance. Instruments performing similar functions shall be of the same type, model, or class, and shall be from a single Manufacturer.
- D. Loop Accuracy: The accuracy of each instrumentation system or loop shall be determined as a probable maximum error; this shall be the square-root of the sum of the squares of certified "accuracies" of the designated components in each system, expressed as a percentage of the actual span or value of the measured variable. Each individual instrument shall have a minimum accuracy of $\pm 0.5\%$ of full scale and a minimum repeatability of $\pm 0.25\%$ of full scale unless otherwise indicated. Instruments that do not conform to or improve upon these criteria are not acceptable.
- E. Instrument and Loop Power: Power requirements and input/output connections for all components shall be verified. Power for transmitted signals shall, in general, originate in and be supplied by the control panel devices. The use of "2-wire" transmitters is preferred and use of "4-wire" transmitters shall be minimized. Individual loop or redundant power supplies shall be provided as required by the Manufacturer's instrument load characteristics to ensure sufficient power to each loop component. All power supplies shall be mounted within control panels or in the field at the point of application.

- F. Loop Isolators and Convertors: Signal isolators shall be provided as required to ensure adjacent component impedance match where feedback paths may be generated, or to maintain loop integrity during the removal of a loop component. Dropping precision wire-wound resistors shall be installed at all field side terminations in the control panels to ensure loop integrity. Signal conditioners and converters shall be provided where required to resolve any signal level incompatibilities or provide required functions.
- G. Environmental Suitability: All indoor and outdoor control panels and instrument enclosures shall be suitable for operation in the ambient conditions associated with the locations designated in the Contract Documents. Heating, cooling, and dehumidifying devices shall be provided in order to maintain all instrumentation devices 20% within the minimums and maximums of their rated environmental operating ranges. Provide all power wiring for these devices. Enclosures suitable for the environment shall be furnished. All instrumentation in hazardous areas shall be suitable for use in the particular hazardous or classified location in which it is to be installed.
- H. Signal Levels: Analog measurements and control signals shall be as indicated herein, and unless otherwise indicated, shall vary in direct linear proportion to the measured variable. Electrical signals outside control panels shall be 4 to 20 mA DC except as indicated. Signals within enclosures may be 1 to 5 VDC. All electric signals shall be electrically or optically isolated from other signals. All pneumatic signals shall be 3 to 15 psig with 3 psig equal to 0% and 15 psig equal to 100%.
- I. Control Panel Power Supplies: All power supplies shall have an excess rated capacity of 40%. The failure of a power supply shall be repeated to the SCADA System.

2.2 OPERATING CONDITIONS

- A. The I&C shall be designed and constructed for satisfactory operation and long, low maintenance service under the following conditions:
 - 1. Environment - Coastal
 - 2. Temperature Range - 32 through 104 degrees F
 - 3. Thermal Shock - 1-degree F per minute, maximum

- 4. Relative Humidity - 20 through 90%, non-condensing

2.3 SPARE PARTS AND SPECIAL TOOLS

- A. Spare Parts: Furnish the spare parts selected by the ENGINEER from the priced list of spare parts in the Instrument Submittal and Control Panel Engineering Submittal in conformance with Section 13370 - Control Panels.
- B. Special Tools: Furnish a priced list of all special tools required to calibrate and maintain all of the instrumentation provided under the Contract Documents. After approval, furnish all listed tools.
- C. Timing of Submittals: All special tools and spare parts shall be submitted before startup starts and shall be suitably wrapped and identified.

2.4 LIMIT SWITCH

- A. Each intrusion alarm limit switch shall transmit a signal when the monitored door or hatch is not in the closed position.
- B. Each limit switch shall be SPDT, rated for 5 amps. Conduit entrance and terminals shall be epoxy sealed. Limit switch mounting and actuator shall be determined by the Contractor to provide a reliable, positive, and accurate indication of entrance. The switch shall be normally open (actuated closed when the door or hatch is closed). Switch shall be mounted for minimum obstruction of access. Limit switches shall be Type "C" by Square D Class 9007, Allen Bradley 802T, or equal.

Tag No.	Service	Trip Set Point	NEMA Rating
ZS-A	PRS Vault	N/A	4
ZS-B	PRS Vault	N/A	4
ZS-C	RCP Panel	N/A	4

2.5 COPPER TUBING AND CONNECTORS

- A. Copper tubing shall be ASTM B88 or 75, type K or L, Annealed temper (soft copper).

- B. Connectors shall be compression fitted and made of cast copper alloy, brass, or stainless steel. Cast copper alloy fittings shall comply with ASME/ANSI B16.26 specifications.
- C. Thread compounds and lubricants shall be used according to the manufacturer's recommendations. Teflon tape shall not be used.
- D. Copper tubing and connectors shall be Swagelock, Hoke or approved equal.
- E. Copper tubing supports shall be two-hole mounted, made of 304 stainless steel, and have SBR rubber inserts. Use Mc Master-Carr catalog number 8981T25 or approved equal. Single hole rubber cushioned loop straps are not acceptable.

PART 3 – EXECUTION

3.1 PRODUCT HANDLING

- A. Shipping Precautions: After completion of shop assembly, factory test, and approval, all equipment, cabinets, panels, and consoles shall be packed in protective crates and enclosed in heavy duty polyethylene envelopes or secured sheeting to provide complete protection from damage, dust, and moisture. Dehumidifiers shall be placed inside the polyethylene coverings. The equipment shall then be skid-mounted for final transport. Lifting rings shall be provided for moving without removing protective covering. Boxed weight shall be shown on shipping tags together with instructions for unloading, transporting, storing, and handling at the job site.
- B. Special Instructions: Special instructions for proper field handling, storage, and installation required by the Manufacturer shall be securely attached to each piece of equipment before packaging and shipment.
- C. Tagging: Each component shall be tagged to identify its location, instrument tag number, and function in the system. A permanent stainless steel or other non-corrosive material tag firmly attached and permanently and indelibly marked with the instrument tag number, as given in the tabulation, shall be provided on each piece of equipment in the I&C. Identification shall be prominently displayed on the outside of the package.
- D. Storage: Equipment shall not be stored outdoors. Equipment shall be stored in dry permanent shelters, including in-line equipment, and shall be adequately protected against mechanical injury. If any apparatus has been damaged, such damage shall be repaired by the CONTRACTOR at no additional cost to the OWNER. If any apparatus has been subject to possible injury by water, it shall be thoroughly dried out and put through tests as directed by the ENGINEER. Such tests shall be at no additional cost to the OWNER, and if the equipment fails the tests, it shall be replaced at no additional cost to the OWNER.

3.2 MANUFACTURER'S SERVICES

- A. Manufacturer's services shall be furnished for the following equipment:
 - 1. All flow meters in new or potable water streams that relate to process control, mass balance calculations, and billing of customers.

2. All process analyzers
 3. All hazardous gas detection equipment
 4. Instruments that require specialized knowledge, such as vibration detectors.
- B. Furnish the following Manufacturer's services for the instrumentation listed above:
1. Perform bench calibration
 2. Oversee installation
 3. Verify installation of installed instrument
 4. Certify installation and reconfirm Manufacturer's accuracy statement
 5. Oversee loop testing, prepare loop validation sheets, and certify loop testing
 6. Oversee pre-commissioning, prepare pre-commissioning validation sheets, and certify pre-commissioning
 7. Train the OWNER's personnel

3.3 INSTALLATION

- A. General:
1. All instrumentation, including instrumentation furnished under other Divisions, shall be installed under Division 13 and the manufacturers' instructions.
 2. Equipment Locations: The monitoring and control system configurations indicated are diagrammatic. The locations of equipment are approximate. The exact locations and routing of wiring and cables shall be governed by structural conditions and physical interferences

and by the location of electrical terminations on equipment. All equipment shall be located and installed so that it will be readily accessible for operation and maintenance. Where job conditions require reasonable changes in approximated locations and arrangements, or when the OWNER exercises the right to require changes in location of equipment that do not impact material quantities or cause material rework, make such changes without additional cost to the OWNER.

B. Conduit, Cables, and Field Wiring

1. All conduit shall be provided under Division 16.
2. All 4-20 mA signal circuits, process equipment control wiring, signal wiring to field instruments, SCADA and PLC input and output wiring and other field wiring and cables shall be provided under Division 16.
3. All SCADA and PLC equipment cables, data highway communication networks shall be provided under Division 13.
4. All terminations and wire identification at I&C equipment furnished under this or any other Division shall be provided under Division 13.

C. Instrumentation Tie-Downs: All instruments, control panels, and equipment shall be anchored by methods that comply with seismic requirements that apply to the site.

D. Ancillary Devices: The Contract Documents show all necessary conduit and instruments required to make a complete instrumentation system. The CONTRACTOR shall be responsible for providing any additional or different type connections as required by the instruments and specific installation requirements at no additional cost to the OWNER. All such additions and all such changes, including the proposed method of installation, shall be submitted to the ENGINEER for approval before commencing the Work. Such changes shall not be a basis of claims for extra work or delay.

E. Installation Criteria and Validation: All field-mounted components and assemblies shall be installed and connected according to the requirements below:

1. Installation personnel have been instructed on installation requirements of the Contract Documents.
2. Technical assistance is available to installation personnel at least by telephone.
3. Installation personnel have at least one copy of the approved shop drawings and data.
4. All power and signal wires shall be terminated with crimped type lugs.
5. All connectors shall be, as a minimum, water-tight.
6. All wires shall be mounted clearly with an identification tag that is of a permanent and reusable nature.
7. All wire and cable shall be arranged in a neat manner and securely supported in cable groups and connected from terminal to terminal without splices unless specifically approved by the ENGINEER. All wiring shall be protected from sharp edges and corners.
8. All mounting stands and bracket materials and workmanship shall comply with requirements of the Contract Documents.
9. Verify the correctness of each installation, including polarity of electric power and signal connections, and making sure all process connections are free of leaks. Certify in writing that for each loop or system checked out, all discrepancies have been corrected.
10. The OWNER will not be responsible for any additional cost of rework attributable to actions of the CONTRACTOR or the Instrumentation Subcontractor.

3.4 LOOP TESTING

- A. General: Individual instrument loop diagrams per ISA Standard S5.4 - Instrument Loop Diagrams, expanded format, shall be submitted to the ENGINEER for review before the loop tests. The CONTRACTOR shall notify the ENGINEER of scheduled tests a minimum of 30 days before the estimated completion date of installation and wiring of the I&C. After the ENGINEER's

review of the submitted loop diagrams for correctness and compliance with the specifications, loop testing shall proceed. The loop check shall be witnessed by the ENGINEER.

- B. Instrument and Instrument Component Validation: Each instrument shall be field tested, inspected, and adjusted to its indicated performance requirement in accordance its Manufacturer's specifications and instructions. Any instrument that fails to meet any Contract requirement, or, in the absence of a Contract requirement, any published manufacturer performance specification for functional and operational parameters, shall be repaired or replaced, at the discretion of the ENGINEER at no additional cost to the OWNER.
- C. Loop Validation: Controllers and electronic function modules shall be field tested and exercised to demonstrate correct operation. All control loops shall be checked under simulated operating conditions by impressing input signals at the primary control elements and observing appropriate responses of the respective control and monitoring elements, final control elements, and the graphic displays associated with the SCADA and PLC. Actual signals shall be used wherever available. Following any necessary corrections, the loops shall be retested. Specified accuracy tolerances for each analog network are defined as the root-mean-square-summation of individual component accuracy requirements. Individual component accuracy requirements shall be as indicated by Contract requirements or by published manufacturer accuracy specifications, whenever Contract accuracy requirements are not indicated. Each analog network shall be tested by applying simulated analog or discrete inputs to the first element of an analog network. For networks that incorporate analog elements, simulated sensor inputs corresponding to 20, 40, 60, 80 and 100% of span shall be applied, and the resulting element outputs monitored to verify compliance to calculated root-mean-square-summation accuracy tolerance requirements. Continuously variable analog inputs shall be applied to verify the proper operation and setting of discrete devices. Provisional settings shall be made on controllers and alarms during analog loop tests. All analog loop test data shall be recorded on tests that include calculated root-mean-square-summation system accuracy tolerance requirements for each output.
- D. Loop Validation Sheets: Prepare loop confirmation sheets for each loop covering each active instrumentation and control device except simple hand switches and lights. Loop confirmation sheets shall form the basis for operational tests and documentation. Each loop confirmation sheet shall cite

the following information and shall provide spaces for sign-off on individual items and on the complete loop by the Instrumentation Supplier:

1. Project name
 2. Loop number
 3. Tag number, description, manufacturer and model number for each element
 4. Installation bulletin number
 5. Specification sheet number
 6. Loop description number
 7. Adjustment check
 8. Space for comments
 9. Space for loop sign-off by Instrumentation Supplier and date
 10. Space for ENGINEER witness signature and date
- E. Loop Certifications: When installation tests have been successfully completed for all individual instruments and all separate analog control networks, a certified copy of all test forms signed by the ENGINEER or the ENGINEER representative as a witness, with test data entered, shall be submitted to the ENGINEER together with a clear and unequivocal statement that all instrumentation has been successfully calibrated, inspected, and tested.

3.5 PRECOMMISSIONING

- A. General: Pre-commissioning shall start after acceptance of all wire test, calibration tests and loop tests, and all inspections have demonstrated that the instrumentation and control system complies with all Contract requirements. Pre-commissioning shall demonstrate proper operation of all systems with process equipment operating over full operating ranges under conditions as closely resembling actual operating conditions as possible.

- B. Pre-commissioning Procedures and Documentation: All pre-commissioning and test activities shall follow detailed test procedures and check lists accepted by the Resident Engineer. All test data shall be acquired using equipment as required and shall be recorded on test forms accepted by the ENGINEER, that include calculated tolerance limits for each step. Completion of all system pre-commissioning and test activities shall be documented by a certified report, including all test forms with test data entered, delivered to the ENGINEER with a clear and unequivocal statement that all system pre commissioning and test requirements have been satisfied.

- C. Operational Validation: Where feasible, system pre commissioning activities shall include the use of water to establish service conditions that simulate, to the greatest extent possible, normal final control element operating conditions in terms of applied process loads, operating ranges, and environmental conditions. Final control elements, control panels, and ancillary equipment shall be tested under start-up and steady-state operating conditions to verify that proper and stable control is achieved using local field mounted control circuits. All hardwired and software control circuit interlocks and alarms shall be operational. The control of final control elements and ancillary equipment shall be tested using both manual and automatic (where provided) control circuits. The stable steady-state operation of final control elements running under the control of field mounted automatic analog controllers or software-based controllers shall be assured by adjusting the controllers as required to eliminate oscillatory final control element operation. The transient stability of final control elements operating under the control of field mounted, and software based automatic analog controllers shall be verified by applying control signal disturbances, monitoring the amplitude and decay rate of control parameter oscillations (if any) and making necessary controller adjustments as required to eliminate excessive oscillatory amplitudes and decay rates.

- D. Loop Tuning: All electronic control stations incorporating proportional, integral or differential control circuits shall be optimally tuned, experimentally, by applying control signal disturbances and adjusting the gain, reset, or rate settings as required to achieve a proper response. Measured final control element variable position/speed set point settings shall be compared to measured final control element position/speed values at 20, 40, 60, 80 and 100% of span and the results checked against indicated accuracy tolerances.

- E. Pre-commissioning Validation Sheets: Pre-commissioning shall be documented on one of two types of test forms as follows:

1. For functions that can be demonstrated on a loop-by-loop basis, the form shall include:
 - a. Project name
 - b. Loop number
 - c. Loop description
 - d. Tag number, description, manufacturer and data sheet number for each component.
 - e. Space for sign-off and date by both the Instrumentation Subcontractor and ENGINEER.
 2. For functions that cannot be demonstrated on a loop-by-loop basis, the test form shall be a listing of the specific tests to be conducted. With each test description the following information shall be included:
 - a. Specification page and paragraph of function demonstrated
 - b. Description of function
 - c. Space for sign-off and date by both the Instrumentation Subcontractor and ENGINEER.
- F. Pre-commissioning Certification: Submit an instrumentation and control system pre-commissioning completion report that shall state that all Contract requirements have been met and shall include a listing of all instrumentation and control system maintenance and repair activities conducted during the pre-commissioning testing. Acceptance of the instrumentation and control system pre-commissioning testing must be provided in writing by the ENGINEER before the performance testing may begin. Final acceptance of the control system shall be based upon plant completion as stated in the General Conditions.

3.6 ONSITE SUPERVISION

- A. Furnish the services of an on-site service engineer to supervise and coordinate installation, adjustment, testing, and start-up of the I&C. The ENGINEER will be present during the total period required to affect a complete operating system. A qualified team of the Instrumentation Subcontractor personnel shall be on site for 8 hours to check all equipment, perform the tests indicated in this Section, and furnish startup services.

3.7 PERFORMANCE TEST

- A. The entire I&C shall operate for 7 days without failure.
- B. Furnish all necessary support staff as required to operate the system and to satisfy the repair or replacement requirements.
- C. If any component fails during the performance test, it shall be repaired or replaced, and the I&C shall be restarted on another 7-day period.

3.8 TRAINING

- A. General: Train the OWNER's personnel on the maintenance, calibration and repair of all instruments provided under this Contract.
- B. Instructions: The training shall be performed by qualified representatives of the equipment manufacturers and shall be specific to each piece of equipment.
- C. Duration: Each training class shall be a minimum of 8 hours in duration and shall cover, as a minimum, operational theory, maintenance, troubleshooting/repair, and calibration of instruments.
- D. Schedule: Training shall be performed during the pre-commissioning phase of the project. The training sessions shall be scheduled a minimum of 3 weeks in advance of when the courses are to be initiated. The ENGINEER will review the course outline for suitability and provide comments that shall be incorporated.
- E. Agenda: The training shall include operation and maintenance procedures, troubleshooting with necessary test equipment, and changing set points, and calibration for that specific piece of equipment.

- F. Documentation: Within 10 days after the completion of each session the CONTRACTOR shall submit the following:
1. List of all OWNER personnel who attended the session.
 2. Evaluation of OWNER personnel via written testing or equivalent evaluation.
 3. Copy of the training materials used including all notes, diagrams, and comments.

3.9 ACCEPTANCE

- A. For the purpose of this Section, the following conditions shall be fulfilled before the Work is considered substantially complete:
1. All submittals have been completed and approved.
 2. The I&C has been calibrated, loop tested and pre-commissioned.
 3. The OWNER training has been performed.
 4. All required spare parts and expendable supplies and test equipment have been delivered to the ENGINEER.
 5. The performance test has been successfully completed.
 6. All punch-list items have been corrected.
 7. All record drawings in both hard copy and electronic format have been submitted.
 8. Revisions to the operations and maintenance manuals information that may have resulted from the field tests have been made and reviewed.
 9. All debris associated with installation of instrumentation has been removed.
 10. All probes, elements, sample lines, transmitters, tubing, and enclosures have been cleaned and are in like-new condition.

END OF SECTION

- 4. SSPC-SP6B Specification for the Society for Protective Commercial Blast Coating
- B. Underwriters Laboratories (UL) Publication:
 - 1. 508 Industrial Control Equipment

1.4 CONTRACTOR SUBMITTALS

- A. Shop drawings shall be submitted in accordance with Section 13300 - Instrumentation and Control.
- B. Control Panel Engineering Submittal: The CONTRACTOR shall submit a control panel engineering submittal (CPES) for each control panel and enclosure provided under Division 13. The CPES shall completely define and document the construction, finish, layout, power circuits, signal and safety grounding circuits, fuses, circuit breakers, signal circuits, internally mounted instrumentation and SCADA system components, face plate mounted instrumentation components, internal panel arrangements, and external panel arrangements. All panel drawings shall be "B" size, and all data sheets and manufacturer specification sheets shall be "A" size. The submittal shall be in conformance with NEMA Standard ICS-1-1.01, shall be submitted as a singular complete bound volume or multi-volume package within 120 calendar days after Notice to Proceed and shall have the following content:
 - 1. A complete index shall appear in the front of each bound volume. Panels shall be indexed by system or process area, and drawings and data associated with a panel shall be grouped together. All panel tagging and nameplate nomenclature shall be consistent with the requirements of the Contract Documents.
 - 2. Scale construction drawings which define and quantify the type and gauge of steel to be used for panel fabrication, the ASTM A36 grade proposed for structural shapes and straps, panel door locks and hinge mechanisms, type of bolts and bolt locations for section joining and anchoring, details and proposed locations on the use of "Unistrut" members, stiffener materials and locations, electrical terminal box and outlet locations, electrical access locations, print pocket locations, writing board locations and lifting lug material and locations.

3. Scale physical arrangement drawings which define and quantify the physical groupings comprising control panel sections, auxiliary panels, subpanels, and racks. Cutout locations with nameplate identifications shall be indicated.
4. Front of panel layouts for all control panels.
5. Schematic/elementary diagrams depicting all control devices and circuits and their functions.
6. Wiring/connection diagrams locating and identifying electrical devices, terminals and interconnecting wiring. These diagrams shall show interconnecting wiring by lines, designate terminal assignments, and show the physical location of all electrical and control devices.
7. Interconnection diagrams locating and identifying all external connections between the control panel/control panel devices and associated equipment. These diagrams shall show interconnecting wiring by lines, designate terminal assignments, and show the physical location of all panel ingress and egress points.
8. Completed ISA-S20 data sheets for all instrumentation devices associated with each control panel, supplemented with manufacturer specification sheets which verify conformance to the requirements of the Contract Documents.
9. A bill of material which enumerates all devices associated with the control panel.
10. A priced listing of analog spare parts in conformance with Section 13300 - Instrumentation and Control.

1.5 SPARE PARTS AND SPECIAL TOOLS

- A. Control panel spare parts selected by the ENGINEER and special tools shall be provided in accordance with Section 13300 - Instrumentation and Control.
- B. All spare parts and special tools shall be submitted before startup commences, suitably wrapped and identified.

1.6 CERTIFICATION

- A. Each control panel shall bear the UL label. The UL label shall apply to the specific equipment supplied with the enclosure, and the installation and wiring of the equipment within and on the enclosure. If required for UL labeling, provide ground fault interrupters, isolation transformers, fuses, and any other necessary equipment, even though such equipment is not indicated on the Drawings. The fabricator shall be an approved UL listed manufacturer.
- B. The shop that builds the controller must be a UL 508A listed panel shop/fabricator/builder (certified & authorized by UL). This shop will then install a UL sticker of approval on the assembled controller. Otherwise UL or a UL listed third party is needed to inspect, evaluate the work, issue an evaluation report and install the UL approval sticker.

PART 2 -- PRODUCTS

2.1 GENERAL

- A. Environmental Suitability: All outdoor control panels and instrument enclosures shall be suitable for operation in the ambient conditions associated with the locations designated in the Contract Documents. Heating, cooling, and dehumidifying devices shall be provided in order to maintain all instrumentation devices no less than 20% below the maximum rated environmental operating level, and at least 20% above the minimum rated environmental operating level. The CONTRACTOR shall provide all power wiring for these devices. Enclosures suitable for the environment shall be furnished.
- B. The control panel controls shall be as shown on the drawings. Control conductors shall be provided in accordance with the indicated requirements.
- C. Each source of foreign voltage shall be isolated by providing disconnecting or pull apart terminal blocks or a disconnect operable from the control panel front. Each control panel shall be provided with identified terminal strips for the connection of all external conductors. Provide sufficient terminal blocks to connect 25% additional conductors for future use. Discrete outputs from the control panel shall be provided by electrically isolated contacts rated for 5 A at 120 VAC. Analog inputs and outputs shall be an isolated 4-20 mA, 2-wire signals with power supply.

- D. Programmable Logic Controllers (PLCs) may be provided in lieu of relays if the programmable logic controllers match the PLCs provided under Section 13374 - Control Panel Instrumentation.
- E. Painting: The interior of the control panel, back-panel, and side-panel(s) shall have a white finish coat.

2.2 CONTROL PANELS

- A. Remote Control Panel RCP:
 - 1. Fabricate panels, install instruments, plumb and wire in the factory.
 - 2. Furnish termination panels, if required. Include terminal blocks; interface hardware, wiring, and cabling necessary for a complete system.
 - 3. Use panel fabrication techniques that allow for removal and maintenance of all equipment after installation.
 - 4. Provide equipment-mounting racks of standard construction and dimensions. Provide front access doors only unless specified otherwise. Provide space for internal wiring and for the connection of external wiring.
 - 5. Do not locate any equipment within bottom two inches of panel.
 - 6. All equipment located within the panel shall be rigidly secured.
 - 7. All outdoor panels shall be provided with breather/drain plugs.
 - 8. Provide a hasp on all enclosure covers (doors) for Owner furnished locks. The Owner will supply padlocks.
 - 9. Enclosures shall be 12-gauge galvanized steel. Provide single door NEMA type 3R with back panels.
 - 10. Provide structural reinforcements within enclosures to ensure a plane surface, to limit vibration and to provide rigidity during shipment, installation and operation without distortion or damage to the panel or to any instrument.

11. Grind and sand exterior welds to a smooth finish free of burrs. Make surfaces free of ridges, nuts, bolt heads and similar protrusions.
12. Internally, supply the enclosures with a structural steel framework or bracing for equipment support and enclosure bracing. Where two or more enclosures are shown mounted immediately adjacent to one another, bolt them securely together with their front faces parallel.
13. Provide each enclosure with full gaskets on covers.

B. Electrical Requirements:

1. Conduit, wireways, switches, wire, and electrical fittings shall be provided for all 115-V circuits to instruments and other electrical devices as required for a complete and operable installation.
2. Conduit, wireways, junction boxes, and fittings shall be provided for all signal wire, thermocouple, or resistance thermometer lead wire. Conduit or wireway runs shall include those required between temperature sensors and temperature transmitters and between the thermocouple wireway or junction box to instruments.
3. Each terminal connection shall have a plastic plate with a terminal and instrument tag number. All wiring shall be identified with stamped tubular wire and markers.
4. Panels shall be provided with two switched 500 lumen LED panel lights. Two lights shall be provided for every 4 feet of panel width and shall be mounted inside and in the top of the back-of-panel area.
5. The RCP shall be provided with a 15-A, 120-V, service outlet circuit within the back-of-panel area. The circuit shall be provided with 3-wire, 120-V, 15-A, duplex receptacles one for every 4 feet of panel width (one minimum per panel), spaced evenly along the back-of-panel area.
6. Wall mounted or pedestal mounted panels shall be so sized as to adequately dissipate heat generated by equipment mounted in or on the panel.

7. The RCP shall be provided with thermostatically controlled heaters that maintain inside temperature above 40 degrees F.
8. A door switch shall control two LED panel lights within the RCP.
9. Wiring methods and materials for all panels shall be in accordance with the NEC requirements for General Purpose (no open wiring) unless otherwise indicated.
10. Signal and Control Circuit Wiring:
 - a. Wire type and sizes: Conductor shall be flexible stranded copper machine tool wire UL listed Type MTW and shall be rated 600 V. Wires for instrument signal circuits and alarm input circuits shall be No. 14 AWG. All other wires, including shielded cables, shall be No. 16 AWG, minimum.
 - b. Wire Marking: Each signal, control, alarm, and indicating circuit conductor connected to a given electrical point shall be designated by a single unique number which shall be shown on all shop drawings. These numbers shall be marked on all conductors at every terminal using white numbered wire markers which shall be plastic-coated cloth, Brady Type B500 or equal or shall be permanently marked by heat-shrink plastic.
 - c. Flexible conduit is not acceptable except when specifically approved by the ENGINEER in writing.
 - d. Conduit fittings shall be Crouse-Hinds cast fittings or equal.
 - e. Splicing of wires in conduits is discouraged. If permitted, splicing shall be approved by the ENGINEER and splices shall be soldered or pressure type crimped.
 - f. For case grounding, panels shall be provided with a 1/4-inch by 1-inch copper ground bus complete with solderless connector for one No. 4 AWG bare stranded copper cable. The copper cable shall be connected to a system ground loop.
11. DIN Rail Mounted Terminal Blocks:

- a. Provide factory assembled terminal blocks on a mounting channel and bolt the channel to the inside of the panel. Space terminal block strips no closer than 6 inches center to center.
- b. Provide screw type 600 V terminals with pressure plate to accept wire size #12 AWG and smaller. Do not use miniature terminal blocks.
- c. Provide a continuous marking strip with the terminals. Provide a separate terminal for terminating each shield wire.
- d. Reserve one side of each terminal strip for field incoming conductors. Do not make common connections and jumpers required for internal wiring on the field side of the terminal. Terminate no more than two wires at any one terminal.
- e. Provide a minimum of 25 percent spare terminals.
- f. The terminal block shall terminate wires without additional preparation such as tinning of wire ends, special connectors, etc.
- g. The insulation shall have wire entry funnels to facilitate insertion of wires.
- h. The insulating housing shall prevent stray strands from shorting out adjacent terminal blocks.
- i. The terminations shall be gastight to prevent corrosion due to corrosive atmosphere.
- j. Terminal screws shall be captive in the metal body or via the insulation housing.
- k. Once tightened terminal screws shall be useable with accessories such as center or insertion bridges; test sockets; separating plates, end covers, etc.
- l. Provide fusible terminal blocks with fuses and blown fuse indicators for each signal loop.

- m. Manufacturer: Phoenix Contact or equal.
12. DIN Rail Mounted Circuit Breakers:
- a. Circuit breakers shall be 115 VAC, single pole as manufactured by Allen Bradley Series 1492-GH; or approved equal.
13. Relay Sockets:
- a. Sockets for control relays shall be rated 5 amperes. Terminal screws shall be on the "Pressure Screw" type. Sockets shall be mounted via DIN rail and related hardware. Sockets shall be as manufactured by Allen Bradley Series 700-HN101; or approved equal.
14. Control Relay:
- a. Magnetically held relays shall have one spare contact. Control relays shall have contacts rated for 10-ampere inductive load, 125 volts, with coil voltage, number of poles, and pole arrangement as indicated on the plans. Relays shall be of the indicating type. Provide Allen Bradley Series 700-HA; or approved equal.
15. Selector Switches and Indicating Lights:
- a. Selector switches and indicating lights shall be supplied by one manufacturer and be of the same series or model type.
 - b. Type: Heavy duty, oil tight.
 - c. Selector switch contacts shall be rated for AC or DC current with devices simultaneously operated by the switch contacts but not less than 10 Amps resistive at 120 VAC/VDC continuous.
 - d. Indicating lights shall be rated for 120 VAC. Lamps shall be high visibility LED type, long life (20,000 hours minimum). Indicating lights shall be push- to-test.
16. Electrical Locations:

- a. Terminal boxes for incoming and outgoing signal leads shall be located at the top or bottom of the panel as indicated or as otherwise required.

17. Power Supply Wiring:

- a. Unless otherwise indicated, all instruments, alarm systems, and motor controls shall operate on 24 VDC.
- b. At a location near the top of the panel (or bottom), the panel fabricator shall provide terminal box connections for the main power supply entry.
- c. Instruments located on the same panel section and serving the same process unit may be connected to a common branch circuit from the power supply. The number of circuits depends on the circuit load as indicated. Different panel sections or different process units shall not use common branch circuits. When instruments are not equipped with integral fuses, fuses shall be provided as required for the protection of individual instruments against fault currents. Fuses shall be mounted on the back of the panel in a fuse holder, and each fuse shall be identified by a service name tag.
- d. Each potentiometer type instrument, electronic transducer, controller, or analyzer shall have an individual disconnect switch. Disconnect switches shall have metal or plastic tags indicating instrument tag numbers. Individual plug and cord set power supply connections may be used without switches when indicated.

18. Alarm Wiring: The panel vendor shall provide all alarms including light cabinets, audible signal units, test and acknowledge switches, and remote logic units as indicated. Interconnecting wiring to panel mounted initiating devices shall also be wired by the panel vendor. The wiring from external initiating devices shall be provided by the installation contractor. Where plug and cord sets are provided for component interconnection, the panel vendor shall harness and support the cables in neat and orderly fashion. Where separate wire is required, panel vendor shall install No. 16 AWG with THWN or THHN insulation between all components.

19. Signal Wiring:

a. Signal Wire - Non-Computer Use:

(1) Signal wire shall be twisted pair or triads in conduit or troughs. Cable shall be constructed of No. 16 AWG copper signal wires with THWN or THHN insulation.

(2) Color code for instrument signal wiring shall be as

follows:

Positive (+): Black Negative (-):

White

(3) Multiconductor cables where indicated shall consist of No. 16 AWG copper signal wires twisted in pairs, with 90-C, 600-V fault insulation. A copper drain wire shall be provided for the bundle with a wrap of aluminum polyester shield. The overall bundle jacket shall be PVC.

b. Multi-conductor cables, wireways and conduit shall be sized to allow for 10% spare signal wire.

20. 24 VDC Power Supply:

a. Panels shall be equipped with a linear 24-volt D.C. power supply for driving current loops and other D.C. powered equipment. It shall be solidly mounted, labeled and located in plain view oriented for ease of maintenance. Unit shall be sized based on 200% of load requirements of equipment actually furnished. 24 VDC power supply shall be SITOP order No. 6EP3334-8SB00- 0AY0, 120/230 Vac input, 24 Vdc output, 10A (12A up to +45°C), with 3% +/- voltage regulation from no-load to full-load.

21. UPS System:

a. The UPS system shall be Siemens DC UPS module SITOP UPS500S – 24V / 15A, RFI specification – class B, and Degree of protection – IP20. Output current rated value shall be 15A and charge current approximately 1A.

(3) Basic Unit Order No. 6EP1 933-2EC51; Qty. 1.

(4) Expansion Module Order No. 6EP1 935-5PG01; Qty. 5.

- C. Labor and Workmanship: All panels shall be fabricated, piped and wired by fully qualified workmen who are properly trained, experienced, and supervised.

PART 3 -- EXECUTION

3.1 INSTALLATION

- A. Preparation and Shipping:

1. Crate panels for shipment using a heavy framework and skids. The panel sections shall be cushioned to protect the finish of the instruments and panel during shipment. All instruments which are shipped with the panel shall further have suitable shipping stops and cushioning material installed to protect parts which could be damaged due to mechanical shock. Each separate panel unit shall be provided with removable lifting lugs to facilitate handling.
2. All shipments shall be by air ride van, unless otherwise indicated.
3. All control panel testing and inspection shall be performed before shipping.

- B. Control panels shall be installed in accordance with Section 13300 - Instrumentation and Control.

3.2 CONTROL PANEL SIGNAL AND CONTROL CIRCUIT WIRING

- A. Wiring Installation: All wires shall run in plastic wireways except for the following:
 1. Field wiring.
 2. Wiring between mating blocks in adjacent sections.
 3. Wiring to panel-mounted components.

- B. Wiring to Rear Terminals: Wiring to rear terminals on panel-mount instruments shall be in plastic wireways secured to horizontal brackets above or below the instruments in about the same plane as the rear of the instruments.
- C. Shop drawings shall show conformance to the above wiring installation requirements.
- D. Wire Marking: Each signal, control, alarm, and indicating circuit conductor connected to a given electrical point shall be designated by a single unique number which shall be shown on all shop drawings. These numbers shall be marked on all conductors at every terminal using white numbered wire markers which shall be plastic-coated cloth, or permanently marked heat-shrink plastic.
- E. Wires shall be fitted with a crimp type spade lug of the proper size at screw terminals except in the cases of termination fittings designed for compression or solder type termination. There shall be at least 2" of unencumbered wire extending from any point of attachment within the panel. Wire numbers shall be located within 1" of the point of attachment and shall be applied such that the number can be read from the front of the panel without rotating the wire. No more than two wires shall be located at any point of termination, including terminal blocks (terminal blocks specified are designed to accept two points of termination at each side).
- F. Wires shall be routed through Panduit brand wireway of the size shown on the drawings. Routing shall separate 24 Vdc paths from 120 Vac paths as far as possible. Wireway shall be secured to the removable back panel by multiple pan head screws of the proper size at intervals of one at every other mounting hole station provided by Panduit. The mounting hole station shall be completely utilized at the extreme ends of each wireway segment. Within wireway, wire bundles shall be loosely bound with individual plastic tie wraps at intervals of approximately two feet.
- G. External to wireway, wire shall be bundled neatly and secured with plastic tie wraps at intervals of approximately 8". Wire splicing within the Instrument Panel is not acceptable.
 - 1. Wiring color code shall be as shown in this subsection
 - a. Blue: 24vdc +

- b. Brown: 24vdc B
 - c. White: 120vac common
 - d. Black: 120vac power
 - e. Red: 120vac control power
 - f. Green: ground
 - g. Violet: 12vdc +
 - h. Yellow: 12vdc B
 - i. Belden black (+)
 - j. Belden clear (-)
- H. Panels shall be fitted with a duplex electrical outlet as shown on the drawings. Illumination at the panel interior shall be by LED panel lights operated by a door switch.
- Provide a door switch wired to the terminal blocks, as shown on the drawings, to indicate when the RCP door is open.
- I. Legend plates shall be laminated plastic or phenolic, black over white engraved by removing black material to reveal white letters. Lettering shall be sharp and clear, 3/16" nominal height. Engraving which is not uniform either letter to letter or within each character will not be accepted. Tags identifying interior components shall be affixed to the cabinet back panel.
- 1. The following interior components shall be labeled with phenolic tags:
 - a. Low voltage relay
 - b. Control relays
 - c. Modicon PLC
 - d. AC line surge arrestor

- e. DC UPS
- f. DC power supply
- g. Each terminal strip

3.3 CALIBRATION, TESTING, AND INSTRUCTION

- A. General: Calibration, testing, and instruction shall be performed in accordance with Section 13300 - Instrumentation and Control.
- B. Inspection and Approval:
 - 1. The panel fabricator shall conduct the following tests before shipment:
 - a. All alarm circuits rung out to determine their operability.
 - b. All electrical circuits checked for continuity and where applicable, operability.
 - c. All nameplates checked for correct spelling and size of letters.
 - d.
 - e. Any other test required to place the panel in an operating condition.
 - 2. The CONTRACTOR shall furnish all necessary testing devices and sufficient manpower to perform the tests required by the ENGINEER.
 - 3. If the above tests have not been performed before shipment, the CONTRACTOR shall be liable for back charges by the ENGINEER for the extra time required for inspections.
Each control panel shall be tested in the field for functional operation after the connection of external conductors, and before equipment startup.

END OF SECTION

SECTION 13374

CONTROL PANEL INSTRUMENTATION

PART 1 - GENERAL

1.1 WORK OF THIS SECTION

- A. The CONTRACTOR shall provide all control panel instrumentation, complete and operable, in accordance with the Contract Documents.
- B. The Contractor shall provide PLC Programming for the project. Programming of the Central HMI system will be done by the City under a separate contract.

1.2 RELATED SECTIONS

- A. The Work of the following Sections applies to the Work of this Section. Other Sections, not referenced below, also apply to the extent required for proper performance of this Work:

- 1. Section 13300 Instrumentation and Control
- 2. Section 13370 Control Panels

1.3 CONTRACTOR SUBMITTALS

- A. Shop drawings, information, and data sheets shall be submitted in conformance with the requirements of Section 13300 - Instrumentation and Control and Section 13370 - Control Panels.
- B. Submit a preliminary copy of all documentation with the Factory Test procedure submittal. Submit both hard and electronic "as built" documentation with the final O&M manual submittal.

1.4 GENERAL REQUIREMENTS

- A. Provide a PLC system as shown on the drawings and detailed in these specifications. Provide all I/O (analog and discrete), interface modules, and other cabling and hardware as needed to provide a fully functioning system meeting these specifications.

Facility I/O Schedule

Item	Description	Location	I/O Type	Sensor Type
1	AC Power Fail or Source Power Fail	RCP	DI	Aux Contact
2	DC Power Fail	RCP	DI	Aux Contact
3	Intrusion Detection	RCP	DI	Motion Switch
4	Exterior Ambient Temp	RCP	AI	4-20mA Sensor
5	Humidity	RCP	AI	4-20mA Sensor
6	Flow Meter	Valve 1	AI	Insertion
7	Valve Position	Valve 1	AI	POT. Mech Linked
8	Valve Vibration	Valve 1	AI	4-20mA Sensor
9	Flow Meter	Valve 2	AI	Insertion
10	Valve Position	Valve 2	AI	POT. Mech Linked
11	Valve Vibration	Valve 2	AI	4-20mA Sensor
12	Downstream Pressure Transmitter	Pipe Header	AI	Watertight Sensor
13	Upstream Pressure Transmitter	Pipe Header	AI	Watertight Sensor
14	Downstream Temp	Pipe Header	AI	Watertight Sensor
15	Upstream Temp	Pipe Header	AI	Watertight Sensor
16	Vault Submerged	Vault	DI	Float Switch
17	Vault Flood	Vault	DI	Float Switch
18	Vault Sump Flood	Vault	DI	Float Switch
19	Vault Intrusion Detection	Vault	DI	Motion Switch

- B. All software integration and configuration work on the project is to be completed by the approved Instrumentation Subcontractor, unless otherwise noted. Minimum Instrumentation Subcontractor qualifications are detailed in Section 13300.

- C. Provide comprehensive documentation of the program logic, as required in Section 3.

1.5 SOFTWARE LICENSES

A. General

1. Provide the City a non-exclusive, fully paid, perpetual license to use all the software supplied as part of this contract.
2. Provide unlimited license for all Application Software developed or configured by the Instrumentation Subcontractor for this project. Unlimited to mean the City has the right to:
 - a. Use, duplicate and modify the software in any manner, in whole or in part.
 - b. Use the software in any quantity, with any type of equipment, and for any purpose.
 - c. To make back-up copies of all software.

B. Software updates

1. Provide the City with 12 months free software updates and technical support for all manufacturer's software supplied as part of this project.
2. Upgrades and patches shall be installed by the Instrumentation Subcontractor. Schedule upgrades with the Owner.
3. The Instrumentation Subcontractor to test system after upgrade.

1.6 PLC LOGIC AND DOCUMENTATION

A. Logic Configuration shall be:

1. Logically set out in a modular format to follow the process flow.

2. Have all analogs scaled to Owner units (e.g. gpm, psi etc.) and annotate with the units wherever it is used in the program.
- B. Logic Documentation:
1. Contractor is responsible for PLC & device programming. Make maximum use of the documentation facilities which come as part of the Unity Pro programming environment.
 2. Use mnemonic signal and variable names that reflect the signal/variable function.
 3. To provide good readability, make full use of the allowable number of characters in a signal or variable name. Excessively contracted naming that detracts from readability will not be accepted.
 4. Provide a title and short English description at the start of each new strategy that explains the purpose of the logic that follows, and how it functions.
 5. For each sub-section of logic within a strategy, provide a comment which explains to another programmer, the functionality of the logic. The purpose is to assist the reader with understanding the intent of the logic.
 6. Provide a title, revision number, date, and page number on every page of logic.
- C. Original Disks and Software Backups: Provide the Owner with:
1. Original disks for all standard Manufacturer's software supplied.
 2. An electronic back-up copy of all "as built" software configured by the Instrumentation Subcontractor.
 3. A record of all device hardware/ software configuration settings including IP addresses used.

4. A copy of all software licenses with the City named as the software owner.
5. Provide owner with an unrestricted and current software disk of Unity Pro by Schneider Electric to match existing.

PART 2 - PRODUCTS

2.1 GENERAL

- A. The PLC system shall operate in ambient conditions of 32 to 140°F temperature and 5 to 95 percent relative humidity without the need for purging or air conditioning
- B. PLC system shall be designed with high noise immunity to prevent occurrence of false logic signals resulting from switching transients, relay, and circuit breaker noise or conducted and radiated wireless and radio frequency interference.
- C. The controller shall be grounded to the panel ground bus with a separate ground conductor sized per the manufacturers grounding requirements.
- D. Programming software: PLC Program should be written in current version of Unity Pro by Schneider Electric; to match existing.

2.2 PROGRAMMABLE LOGIC CONTROLLERS

- A. The microcontroller system and subsystem components shall be Modicon Momentum Unity M1 Series or approved equal.
- B. Construction: The microcontroller shall be of solid-state design. All CPU operating logic shall be contained within an integral control chassis. Microcontroller terminal base units shall allow for the easy removal and replacement of the controller. The controller shall be capable of operating in a hostile industrial environment without fans, air conditioning, or electrical filtering (up to 60 degrees C and 95 percent humidity).

- C. The PLC shall be a Modicon Momentum Unity M1 processor of the latest design with conformal coating, consisting of the following individual components:
1. Modicon Momentum, M1 Processor Adaptor; Part No. 171CBU98091.
 2. Modicon Momentum, Interbus Communications Adapter; Part No. 170INT11000C.
 3. Modicon Momentum, 8 Channel 4-20mA Differential Analog Input I/O Base; Part #170AAI03000C.
 4. Modicon Momentum, 24 VDC 16-point Discrete Input and 24 VDC 16-point Discrete Output I/O Base; Part #170ADM35010C.
 5. Modicon Momentum, Interbus Cable; Part #170MCI00700.
 6. Modicon Momentum, Terminal Block; Part #170XTS00100.

PART 3-- EXECUTION

3.1 GENERAL

- A. Seven Day Acceptance Test: After start-up has been completed, the System shall undergo a 7-day acceptance test. The System shall run continuously for 7 consecutive days. During this period, all System functions shall be exercised. Any System interruption and accompanying component, subsystem, or program failure shall be logged for the cause, time of occurrence and duration of each failure. A failure shall cause termination of the 7-day acceptance test. When the cause of a failure has been corrected, a new 7-day acceptance test shall be started.
- B. Each time the CONTRACTOR's technician is required to respond to a System malfunction, a report shall be prepared which includes details on the nature of the complaint or malfunction and the resulting repair action required and taken.

3.2 PLC PROGRAMMING REQUIREMENTS

- A. The Instrumentation Subcontractor shall program the PLC such that it will communicate as specified with both the Central HMI.

3.3 CONTROLLER TUNING

- A. Tuning of closed loop controllers
 - 1. Tune PID controllers by adjusting the proportional and integral gain parameters to provide a first over-shoot of approximately 10 to 15%, and to provide a short settling time.
 - 2. Where cascade loops are used, tune the innermost loop first, and then the loop outside it. To provide stability ensure that the closed loop response of an outer loop is 5 to 8 times slower than the inner loop.
- B. Document closed loop response
 - 1. After final tuning of each loop provide trend graphs showing loop response to a 5% change in setpoint, and a 5% upset in controlled variable.
 - 2. Submit annotated loop response graphics with the Operations manual. Provide a title for each graphic and note tuning parameters used on each sheet.

END OF SECTION

SECTION 13390

COMMUNICATIONS

PART 1 - GENERAL

1.1 WORK OF THIS SECTION

- A. The Work of this Section includes providing a complete and operational communication system between the remote project facilities and the existing Water Operations Control Systems Center. The system shall include interface hardware, modules, wireless transceivers, communication bridges, and application software necessary for a communication network.
- B. The Work, equipment, and services required by this Section shall be provided and furnished by the Communication System Contractor.

1.2 RELATED SECTIONS

- A. The Work of the following Sections applies to the Work of this Section. Other Sections, not referenced below, shall also apply to the extent required for proper performance of this Work.
 - 1. Section 13300 Instrumentation and Control
 - 2. Section 13370 Control Panels
 - 3. Section 13374 Control Panel Instrumentation
 - 4. Section 16010 Basic Electrical Requirements

1.3 REFERENCE SPECIFICATIONS, CODES AND STANDARDS

- A. The Work of this Section shall comply with the current editions of the following codes as adopted by the City of San Diego:
 - 1. Uniform Fire Code

2. National Electrical Code
 3. National Electrical Safety Code (NESC)
- B. Except as otherwise indicated, the current editions of the following standards apply to the Work of this Section:
1. ISA RP 55.1 Hardware Testing of Digital Process Computers
 2. NEMA ICS-6 Enclosures for Industrial Controls and Systems
 3. MIL Q STD 9858A Quality Program Requirements
 4. MIL STD 2170 Reliability Prediction of Electronic Equipment
 5. IEEE 802.2 Reliability Prediction of Electronic Equipment
 6. SAMA PMC-32 Logical Link Control
 7. SAMA PMX-32.1 Process Instrumentation Reliability Terminology

1.4 CONTRACTOR SUBMITTALS

- A. Shop drawings of all products listed in Part 2 shall be submitted.

1.5 ENVIRONMENTAL CONDITIONS

- A. The communication systems shall be designed and constructed for operation under the following environmental conditions:
1. Equipment outdoors, coastal environment:
 - a. Temperature range: 32 through 104 degrees F
 - b. Thermal shock: two-degree F per minute maximum
 - c. Relative humidity: 20 through 90%

1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Delivery of Materials: Products shall be delivered in original, unbroken packages, containers, or bundles bearing the name of the manufacturer.
- B. Storage: Products shall be carefully stored in a manner recommended by the manufacturer in an area that is protected from the elements.

PART 2 - PRODUCTS

2.1 GENERAL

- A. Where there is more than one item of similar equipment being furnished under this Section, all equipment of the same type shall be the product of a single manufacturer.
- B. All components shall be the most recent field proven models marketed by their manufacturers at the time of submittal of the shop drawings unless otherwise indicated.
- C. All instrumentation shall be suitable for operation in the ambient conditions at the equipment installation locations. Heating, cooling, and dehumidifying devices shall be incorporated with the outdoor instrumentation in order to maintain it within its rated environmental operating ranges. The Communication System Contractor shall provide all power wiring for these devices.
- D. The Communication System Contractor shall coordinate the installation of the communication system with all applicable utility companies and regulatory agencies having jurisdiction to secure approvals and permits which are required.

2.2 WIRELESS/CELLULAR MODEM

- A. The wireless/cellular modem (herein wireless modem) shall be Restriction of Hazardous Substance directive (ROHS) compliant and FCC approved. The wireless modem shall support at a minimum the following host interfaces: one Ethernet 10/100 Mbps RJ-45, one USB 2.0 (Mini-B5), and one I/O port. The wireless modem shall also support the following

antenna connections: Primary 50 Ohm SMA, and Rx Diversity: 50 Ohm SMA. The wireless modem shall be Class I, Div 2 Certified. The wireless modem shall provide IPsecVPN features. All equipment supplied shall be identical, from same manufacturer and shall be completely interchangeable. The wireless modem shall be manufactured by 4RF, model Aprisa LTE and antenna shall be manufactured by PCTEL, model BMLPVMB/LTE to match existing.

1. Electrical Specifications
 - a. The wireless modem shall support a DC power source. A manufacturer recommended AC power adapter shall be furnished where AC power sources are used at locations shown in the Plans. A fuse (1-2 Amp) shall be furnished and installed on the line closest to a DC power source to protect power source from possible surges due to shorts or other line issues.
2. Environmental Specifications
 - a. Wireless modem equipment shall be hardened for field cabinet conditions. Wireless modem shall have a minimum operating temperature range -22 degrees° to 158° Fahrenheit (F) with a maximum 95% non-condensing relative humidity. The unit shall have thermoelectric cooling (i.e. no fans or moving parts).
3. Physical Specifications
 - a. The unit shall be DIN-rail or shelf mountable. A ruggedized antenna compatible with the wireless modem shall be provided for external mounting to the associated cabinet.
4. Network Specifications
 - a. The wireless modem shall support the following network management interfaces: HTTP, SNMPv2, and SNMPv3.
5. The modem shall support the following network technologies:
 - a. ROW LTE band
 - b. USA LTE band

6. Management Capability:
 - a. The wireless modem shall feature remote management and configuration.
7. Leased Wireless Services:
 - a. The Contractor shall include one (1) year of wireless service with each wireless modem from an Owner-contract approved wireless provider. The Contractor will be provided a list by the Engineer. The Contractor shall submit a copy of the wireless service contract to the Owner for approval prior to purchase.

2.3 NAMEPLATES, TOOLS AND SPARE PARTS

- A. Tools: The Work includes all tools required to repair, calibrate, program, and maintain the equipment.
- B. Test Equipment: It is intended that the diagnostic software furnished with the system shall be able to troubleshoot communications to the circuit board level and that local repairs will be limited to board replacement. Any special diagnostic tester required to perform troubleshooting to this level shall be furnished. A portable calibrator for the wireless system shall be furnished.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. General: The Communication System Contractor shall employ installers who are skilled and experienced in the installation and connection of all the elements, accessories and assemblies of communication systems. The Contractor shall install all equipment according to the latest version of the manufacturer's installation procedures and industry accepted installation standards, codes, and practices, or as directed by the Engineer. All materials and installation practices shall be in accordance with the applicable OSHA requirements as found in 29 Code of Federal Regulations (CFR) Part 1926, Safety and Health Standards for Construction.

- B. Access: All equipment shall be provided as indicated, or, if not indicated, so that it will be readily accessible for operation and maintenance. The ENGINEER reserves the right to require minor changes in equipment location before roughing in without any additional cost to the OWNER.
- C. Review: The Communication System Contractor shall review the existing site conditions and examine all shop drawings for equipment in order to determine exact routing and final terminations for all wiring and cables. Exact routing shall be shown on the Record Drawings.
- D. Installation and Connection: The Communication System Contractor shall install and connect all field-mounted components and assemblies and as recommended by the manufacturer and as indicated.
- E. Conduits: In building interior locations, conduits shall be surface mounted on walls or ceilings wherever possible and parallel to building lines. Conduit shall not be routed on floors unless indicated otherwise. In exterior locations, conduit shall be routed below grade. Existing concrete or asphalt slabs shall be sawcut, conduit installed, and the cut repaired to original condition. Exposed conduit and raceway shall be installed perpendicular or parallel to building lines.
- F. The wireless cellular modem shall be installed in a cabinet and located for easy accessibility for maintenance purposes. If the antenna is to be mounted to the exterior surface of a cabinet, the Contractor shall use manufacturer-approved grommets and sealants that are listed and rated for the type of installation. The Contractor shall submit the method of attachment to the Engineer for approval prior to installation. A copy of all manufacturer equipment specifications and instruction and maintenance manuals shall be placed in the equipment cabinet.
- G. Final Checks: Final check of the communication systems shall be performed as an integral part of the system specified in Section 13300 - Instrumentation and Control.
- H. Furnishing and installation of the communications equipment, including antenna and respective appurtenances, as well as startup and demonstration of proper functionality of the communications system at the PRS facility is the Contractor's responsibility. The City will procure the required cellular service before the site startup.
- I. The site will be connected to Chollas Yard and integrated into the SCADA system by the City. The Contractor shall be required to provide coordination and assistance, including facilitation of contact and collaboration between the Contractor's PLC programmer and the City's

HMI programmer for data structures, format and buffer content, as well as ensuring reliable two-way communications, as a part of their scope.”

3.2 FIELD TESTING

- A. Testing: All systems furnished under this Contract shall be exercised through operational tests in the presence of the ENGINEER in order to demonstrate compliance with requirements. The testing of the communication system shall be performed in accordance with and as an integral part of the testing of the instrumentation and control specified in Section 13300 - Instrumentation and Control.

END OF SECTION

SECTION 13414

FLOW COMPUTER KIT- METERING VALVE

PART 1 -- GENERAL

1.1 SUMMARY

- A. This section describes the requirements for flow monitoring on pressure reducing valves. Provide enclosure as indicated in the drawings.
- B. The regulating valves include instrumentation and flow computer equipment to provide accurate flow measurement. An output signal of 4-20 milli-Amps shall be provided for the appropriate range of flow.
- C. Related sections include:
 - 1. Section 13300 – Instrumentation and Control
 - 2. Section 13430 – Pressure Transmitters
 - 3. Section Field Mounted Instrumentation

1.2 SUBMITTALS

- A. Provide catalog data for all products listed in Part 2.

1.3 PERFORMANCE REQUIREMENTS

- A. Provide instruments which are capable of meeting the following performance requirements when installed in accordance with the manufacturer's recommendations:

Accuracy: +/-1.0 percent

Repeatability: +/-0.5 percent

Linearity: +/-0.5 percent

Measurement Range: 1 to 20 FPS minimum, maximum pressure differential of 100 psi.

1.4 EXISTING CONDITIONS

- A. All pressure regulating valves with flow metering kit under these contract documents are 16" CLA-VAL Pressure Reducing Valves.
- B. MAINTENANCE
 - 1. Include the following spare parts:
 - a. One set of manufacturers recommended spare parts.

PART 2 -- PRODUCTS

2.1 FLOW COMPUTER KIT

- A. The flow computer kit shall contain the following components:
 - 1. NEMA 4 Differential pressure transmitters shall be provided by CLA-VAL and selected for the differential pressure range of each metering valve. Refer to Section 13430.
 - 2. A NEMA 4 metering valve position transmitter, CLA-VAL Model No. X117C, and valve stem adapter.
 - 3. Microprocessor (flow computer) with proprietary algorithm program to compute the flowrate and to display and provide an output flow signal.
- B. The NEMA 4 flow computer kit shall be CLA-VAL Model No. 131 VF flow module. The flow modules shall have DIN mounting and loose shipped for remote mounting.

Tag No.	Service	Range	Drawing
FIT-100	16 Inch valve	TBD	E-11
FIT-200	16 Inch valve	TBD	E-11

PART 3 -- EXECUTION

3.1 INSTALLATION

- A. Verify valve model number, size, pressure class, and other information required by the manufacturer for programming and other requirements. The Contractor is responsible for field verifying all required information.

- B. Modify existing valves as recommended by the manufacturer. Locate components as indicated on the plans. Provide all adapters as required.

END OF SECTION

SECTION 13427

LIQUID LEVEL SWITCH - FLOAT (TILT)

PART 1 -- GENERAL

1.1 SUMMARY

- A. This section describes the requirements for float level switches used vault flood detection.
- B. Related sections include:
 - 1. Section 13300 – Instrumentation and Controls

1.2 SUBMITTALS

- A. Provide catalog data for all products listed in Part 2.

1.3 PERFORMANCE REQUIREMENTS

- A. Provide level float switches capable of meeting the following performance requirements when installed in accordance with the manufacturer's recommendations.
 - 1. Repeatability: +/- 1.0 inch of float setting.
 - 2. Temperature: 32 to 130 degrees F.
 - 3. Electrical: SPDT Normally Closed Mercury Switch, rated for 2 amps at 120 Vac.

1.4 MAINTENANCE

- A. Include the following spare parts:
 - 1. One float with integral sealed watertight switch assembly.

PART 2 -- PRODUCTS

2.1 FLOAT SWITCH

A. Provide switch assemblies as follows:

- 1. Switch Float: Constructed of molded polyethylene or approved equal.
- 2. Switch Configuration: Float shall be equipped with two switches. One switch shall be closed and the other open below the float’s setpoint. Above the setpoint, the switch positions shall reverse. Setpoint differential shall be 1-inch
- 3. Cable: Cable insulation suitable for continuous submergence in water. Conductors shall be minimum 14 AWG stranded copper. Cable length to suit the installation.
- 4. Termination Cabinet: Terminate float switch cables in the flow transmitter enclosures indicated.

B. Provide Flygt ENM-10 or equal by Consolidated Electric, Anchor Scientific, or approved equal. Include mounting hardware.

Tag No.	Size	Trip Set Point	NEMA Rating
LSH	N/A	N/A	4
LSL	N/A	N/A	4

2.2 FLOOD SWITCH

A. Switch shall be a stem mounted float device with 304 stainless steel stem, Buna N Float Material, Lucite Slosh Shield, IMO/GEMS Model LS-270 or approved equal.

Tag No.	Size	Trip Set Point	NEMA Rating
LSHH	N/A	N/A	4

PART 3 -- EXECUTION

3.1 INSTALLATION

- A. Provide junction box in the vault with a non-metallic cord grip connector for support of suspended float switch. Wire the float switch using the manufacturer's recommended flexible cable to the remotely located flow transmitter enclosure indicated.
- B. Provide easily removable switch for maintenance or cleaning, without emptying the vault where mounted.
- C. The vault flood switch shall be approximately 2 to 4 inches in diameter. Vault flood switches shall detect a flood condition 3 inches from the floor.

END OF SECTION

SECTION 13430

PRESSURE TRANSMITTER

PART 1 -- GENERAL

1.1 SUMMARY

- A. This section describes the requirements of two-wire type pressure transmitters.
- B. Related sections include:
 - 1. Section 13300 –Instrumentation and Controls.

1.2 SUBMITTALS

- A. Provide catalog data for all products listed in Part 2.

1.3 PERFORMANCE REQUIREMENTS

- A. Provide instruments that are capable of meeting the following performance requirements when installed in accordance with the manufacturer's recommendations:
 - 1. Accuracy: ± 0.10 percent of calibrated range.
 - 2. Repeatability: ± 0.05 percent of calibrated range.
 - 3. Drift: Less than ± 0.5 percent of span for a six month period.
 - 4. Temperature Effect: Less than ± 0.05 percent per one-degree F. of span from -30 to 150 degrees F.
 - 5. Rangeability: 40 to 1
 - 6. Configurations: Gage Pressure

PART 2 -- PRODUCTS

2.1 PRESSURE TRANSMITTER

A. Meet the following unless otherwise noted on the instrument schedule:

1. Mounting: Provide stainless steel wall mounting hardware.
2. Power Supply: 12-45 Vdc.
3. Output: 4-20 mAdc into 1500 ohms load. Linear output for gage pressure and square root output function for differential pressure.
4. Zero Suppression or Range 150 percent of calibrated span.
5. Range: 9 – 360 psi
6. Maximum Static Pressure: 2,300 psig.
7. Humidity: 10 to 100 percent Relative Humidity.
8. Sensing Element: Diaphragm type.
9. Vent/Drain position: Upper, one for each sensing cavity.
10. Material: Sensing element components to be 316 stainless steel. NEMA 4X electronic enclosure
11. Process Connection: 0.5 inch 14 NPT
12. Electrical Connector: 0.5 inch 14 NPT.
13. Identification plate: 316 SST plate with site mnemonic, tag and loop numbers. Use SST wire to fasten plate to instrument for easy viewing.
14. Design: Provide microprocessor-based electronic design with HART protocol digital communication.
15. Manufacturer: SMAR model LD301 or approved equal.

B. Provide gage pressure transmitters for pipeline. Provide differential pressure transmitters for flow measurement.

Tag No.	Service	Range	Drawing
DPT-100	16" Valve	TBD	E-3
PIT-390	Zone 390 Pressure	TBD	E-3
DPT-200	16" Valve	TBD	E-3
PIT-536	Zone 536 Pressure	TBD	E-3

2.2 ACCESSORIES

- A. Provide 2-valve manifold and pipe mount bracket for each transmitter.

PART 3 -- EXECUTION

3.1 INSTALLATION

- A. Install the transmitter in an orientation where the sensing diaphragms are in a vertical plane.
- B. Allow sufficient clearance overhead for cover removal and around the transmitter to provide an access for necessary adjustments.
- C. Where transmitters are located below the pressure tap slope horizontal lines (tubing) a minimum of one inch per foot downward from the pressure taps.
- D. Where transmitters are located above the pressure tap slope horizontal lines a minimum of one inch per foot upward from the pressure tap.
- E. Pressure lines from the tap location to the transmitter shall not have changes in elevation that trap air in the line.
- F. Assemble screwed fittings with Teflon paste or compatible metallic paste on the external threads. Teflon tape shall not be used.
- G. Local output indicators to be easily accessed for viewing and service by operations personnel.

END OF SECTION

SECTION 16010

BASIC ELECTRICAL REQUIREMENTS

PART 1 -- GENERAL

1.1 SUMMARY

A. This section summarizes general requirements of electrical work specified in Division 16.

1.	16120	WIRES AND CABLES
2.	16190	SUPPORTING DEVICES
3.	16195	ELECTRICAL IDENTIFICATION
4.	16421	UTILITY SERVICE ENTRANCE
5.	16450	GROUNDING
6.	16950	ELECTRICAL TESTS

1.2 DESCRIPTION OF WORK

- C. The Contractor shall furnish labor, materials, equipment and services to store, transport, install, calibrate, and make operational electrical systems and equipment supplied under this contract. Include wiring, conduits, fittings, physical support systems, incidentals, and connections to link the individual components into an integrated system. Typical materials that may be incidentals are terminal lugs not furnished with vendor-supplied equipment, compression connectors for cables, splices, junction and terminal boxes.
- D. The Contractor shall install, wire, and connect all equipment and items furnished by owner and under other divisions that require electrical connections unless otherwise indicated or specified. Include all field connections and terminations to all panels, control equipment and devices, instruments, and to all vendor-furnished packaged equipment.
- E. The Contractor shall include all concrete work required for encasement, installation, or construction of the Work specified in Division 16. Furnish 3000-psi concrete; the following shall apply:

1. Consolidation of encasement concrete around duct banks shall be by hand puddling, and no mechanical vibration shall be permitted.
 2. A workability admixture shall be used in encasement concrete, which shall be a hydroxylated carboxylic acid type in liquid form. Admixtures containing calcium chloride shall not be used.
 3. Concrete for encasement of conduit or duct banks shall contain an integral red- oxide coloring pigment in the proportion of 8 pounds per cubic yard of concrete.
- F. The Contractor shall test all electrical connections and circuits for proper installation and operation.

1.3 PERMITS

- A. The Contractor shall procure and pay for permits and certificates required by local and state ordinances and fire underwriter's certificate of inspection.

1.4 SUBMITTALS

- A. The contractor shall furnish within 30 days, a complete list of all materials, equipment, apparatus, and fixtures proposed for use. The list shall include type, sizes, names of manufactures, catalog numbers, and such other information required to identify the items.
- B. The Contractor shall include the following information in the submittals for this division:
1. Manufacturer, detailed items description, drawings, catalog literature and data edited to indicate specific items, such as conduit, fittings, supports, wire, cable, junction boxes, and pull boxes being provided.
 2. All equipment shall be submitted in a common submittal. All installation details shall be submitted in a common submittal.
 3. Installation detail drawings. Include typical details for raceway hangers and supports.

4. Complete material lists for the Work of this division. Such lists shall state the manufacturer and brand name of each item or class of material. Include shop drawings for all grounding work not specifically indicated.
 5. Shop drawings are required for materials and equipment listed in other sections. Shop drawings shall provide sufficient information to evaluate the suitability of the proposed material or equipment for the intended use, and for compliance with these Specifications. The following shall be included:
 - a. Front, side, rear elevations and top views with dimensional data.
 - b. Location of conduit entrances and access plates.
 - c. Component data.
 - d. Connection diagrams, terminal numbers, wire numbers, internal wiring diagrams, conductor size, and cable numbers.
 - e. Method of anchoring, seismic requirement; weight.
 - f. Types of materials and finish.
 - g. Nameplates.
 - h. Temperature limitations, as applicable.
 - i. Voltage requirement, as applicable.
 - j. Front and rear access requirements.
 6. Nameplate schedules.
- C. Maintenance manuals of sufficient detail to enable a qualified technician to perform maintenance and repair.
 - D. Record Drawings: In addition to the record drawings as part of the record drawings requirements, the Contractor shall show depths and routing of all underground duct banks.

1.5 QUALITY ASSURANCE

- A. The drawings diagrammatically indicate the desired location and arrangement of outlets, conduit runs, equipment, and other items. The Contractor shall determine the exact locations in the field based on the physical size and arrangement of equipment, finished elevations, and other obstructions. Locations shown on the drawings, however, shall be adhered to as closely as possible.
- B. All conduit and equipment shall be installed in a manner to avoid all obstructions and to preserve headroom and keep openings and passageways clear. Where the drawings do not indicate exact locations, such locations shall be obtained from the Resident Engineer. Where equipment is installed without instruction and must be moved, it shall be moved without additional cost to the City.
- C. All materials and equipment shall be installed in accordance with printed recommendations of the manufacturer, which have been reviewed by the Resident Engineer. Workmen skilled in this type of work shall accomplish the installation and installation shall be coordinated in the field with other trades so that interferences are avoided.
- D. All Work, including installation, connection, calibration, testing, adjustment, and paint touchup, shall be accomplished by qualified, experienced personnel working under continuous, competent supervision. The completed installation shall display competent work, reflecting adherence to prevailing industrial standards and methods.
- E. The Contractor shall furnish adequate means for and shall fully protect all finished parts of the materials and equipment against damage from any cause during the progress of the Work and until acceptable by the Resident Engineer.
- F. All materials and equipment, both in storage and during construction, shall be covered in such a manner that no finished surfaces will be damaged, marred, or splattered with water, foam, plaster, or paint. All moving parts shall be kept clean and dry.
- G. The Contractor shall replace or have refinished by the manufacturer, all damaged materials or equipment, including faceplates of panels and switchboard sections, at no cost to the City.

- H. The Contractor shall perform all tests required by the Resident Engineer or other authorities having jurisdictions. All such tests shall be performed in the presence of the Resident Engineer. The Contractor shall furnish all necessary testing equipment and pay all costs of tests, including all replacement parts and labor necessary due to damage resulting from damaged equipment or from test and correction of faulty installation. The following testing shall be accomplished:
1. Testing for the ground resistance value specified in Section 16450 – GROUNDING.
 2. Insulation resistance tests specified in Section 16120 – WIRES AND CABLES.
 3. Operational testing of all equipment furnished and/or connected in other sections of Division 16, including furnishing of support labor for testing.
- I. Any test failure shall be corrected in accordance with the industry practices and in a manner satisfactory to the Resident Engineer.
- J. The Contractor shall perform all work in accordance with all applicable provisions of the following:
1. All applicable requirements of the rules and regulations of the local bodies having jurisdiction. In addition, the Work of this division shall comply with the requirements of the current edition of the City of San Diego Supplement Amendments.
 2. NFPA-70 “The National Electrical Code”, latest edition.
 3. ANSI C-2 “The National Electrical Safety Code”, latest edition.
 4. NECA “National Electrical Contractors Association” guidelines.
 5. All applicable requirements of the Federal Communication Commission and the Federal Aviation Authority.
 6. Government Standards:

FS W-C-596E/GEN(1)	Connector, Plug, Receptacle and Cable Outlet, Electrical Power
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FS W-S-896E/GEN(1)	Switches, Toggle (Toggle and Lode), Flush Mounted (ac)
FS WW-C-581D, E	Conduit, Metal, Rigid, And Intermediate; and Coupling, Elbow, and Nipple, Electrical Conduit: Steel, Zinc Coated
Commercial Standards:	
ANSI C80.1	Zinc Coated, Rigid Steel Conduit, Specification for
ANSI C80.4	Fittings for Rigid Metal Conduit and Electrical Metallic Tubing, Specifications for
ANSI/UL 467	Grounding and Bonding Equipment, Safety Standard for
ASTM B3	Soft or Annealed Copper Wire
ASTM B8	Specification for Concentric- LayStranded Copper Conductors, Hard, Medium-Hard, and Soft
ASTM B33	Specification for Tinned Soft or Annealed Cooper Wire for Electrical Purposes
ASTM D1784	Cell classification PVC 1223-A, B, or C
ICEA S-61-402	Thermoplastic - Insulated Wire and cable
ICEA S-66-524, NEMA WC7 Polyethylene	Cross-Linked, Thermosetting, Wire and Cable

ICEA S-68-516, NEMA WC8 Wire	Ethylene Propylene Rubber Insulated and Cable
NEMA 250	Enclosures for Electrical Equipment (1,000 volts maximum
UL 6	Rigid Metal Electrical Conduit
UL 44	Rubber - Insulated Wire and Cable
UL 514	Electrical Outlet Boxes and Fittings

- K. Construction and installation of all electrical equipment and materials shall comply with all applicable provisions of the OSHA Safety and Health Standards (29CFR1910 and 29CFR 1926, as applicable), State Building Standards, and applicable local codes and regulations.
- L. Unless otherwise specified, the Contractor shall use new materials of current production which conform to standards established by Underwriter's Laboratories, Inc., and are so marked or labeled, together with manufacturer's brand or trademark. Equipment and material which are not covered by UL standards will be accepted provided such material is listed, labeled, certified, or otherwise determine to meet safety requirements of an independent nationally recognized testing laboratory acceptable to the local code- enforcement agency having jurisdiction. Equipment of a class which no independent nationally recognized testing laboratory accepts, certifies, lists, labels, or determines to be safe, will be considered if inspected or tested in accordance with national industrial standards such as NEMA or ANSI. Submit certified test reports and shop drawings as evidence of compliance.
- M. The Contractor shall use one manufacturer for like items and associated equipment. Components of an assembled unit need not be products of the same manufacturer.
- N. The Contractor shall not interfere with continuous operation of the Owner's equipment, unless otherwise approved by the Owner or Engineer.
- O. The Contractor shall inspect the intended storage space at the site. Provide conditioning as required to protect the equipment. Provide a written report on the adequacy of storage.

- P. The Contractor shall protect all stored and installed materials and equipment from physical damage, adverse weather conditions, moisture, and corrosion until final acceptance. Replace or repair any damaged equipment to the satisfaction of the Engineer.

1.6 CLEANUP

- A. **Cleaning of Materials and Equipment:** All parts of the materials and equipment shall be thoroughly cleaned. Exposed parts shall be thoroughly clean of cement, plaster, and other materials. All oil and grease spots shall be removed with a nonflammable cleaning solvent. Such surfaces shall be carefully wiped, and all cracks and corners scraped out. Paint touchup shall be applied to all scratches on panels and cabinets. Electrical cabinets or enclosures shall be vacuum cleaned before final acceptance.
- B. **Cleaning of the Site:** During the progress of the Work, the Contractor shall clean the premises and leave the premises and all portions of the site free of debris.

1.7 DEMOLITION AND RELATED SITES WORK

- A. **Installation of New Equipment in Existing Structures:**
 - 1. Installation of certain new equipment and devices is required in existing structures. For this phase of the Work, the Contractor shall remove existing equipment or devices, install new equipment as indicated, remove existing conductors from existing raceways, and pull new conductors in existing raceways, reconnect existing conductors or furnish and install new conduit and wires.
 - 2. The Contractor shall visit the sites before bidding and carefully examine existing installations so that its proposal will reflect all the Work necessary to provide a complete installation so that the resulting installation will function as required. Include in the bid price all costs of labor and materials necessary to complete installations.
- B. **Installation of Temporary Equipment:**
 - 1. To facilitate continuous operation of existing equipment, temporary equipment shall be provided where indicated. The Contractor shall submit

installation and connection details for review and acceptance. Temporary installations shall be provided at no additional cost to the City.

2. All cables, conduits, and fittings used in temporary connections shall not be reused to install permanent connections. Salvaged items shall be returned to the City.

C. Plant Monitoring Power and Control Shutdowns:

1. Existing operations shall be continued during this demolition process. The Contractor shall carefully examine all Work to be done in, on, or adjacent to existing equipment. Work shall be scheduled, subject to the City's approval, to minimize required shutdown time of sites. The Contractor shall submit a written request, including sequence and duration of activities to be performed during shutdown.
2. The Contractor shall perform all switching and safety tagging required for shutdowns or to isolate existing equipment. In no case shall the Contractor begin any Work in, on, or adjacent to existing equipment without written authorization of the Resident Engineer.

D. Modifications to Existing Electrical Facilities:

1. The Contractor shall provide all modifications or alterations to existing electrical facilities required to successfully install and integrate the new electrical equipment. All modifications to existing equipment, panels, or cabinets shall be made in a professional manner with all coatings repaired to match existing. Modifications to existing electrical facilities required for a complete and operating system shall be made at no additional cost to the City. Extreme caution shall be exercised in digging trenches in order not to damage existing underground utilities. Cost of repairs of damages caused during construction shall be the Contractor's responsibility.
2. The Contractor shall verify all available existing circuit breakers in lighting panels for their intended use as required by the drawings. At no additional cost to the City, the Contractor shall verify the available space in substation switchboards to integrate new power circuit breakers.

PART 2 – PRODUCTS (Not Used)

PART 3 -- EXECUTION

3.1 EXAMINATION

- A. The Contractor shall verify equipment locations and delivery routes prior to installation to ensure the equipment will fit in the available space. The drawings do not indicate exact scale or dimension.
- B. Existing raceways that contain space to run wiring may be used where indicated on the drawings. Do not damage existing equipment or wiring. Do not interrupt control or monitoring signals or power. The Contractor shall obtain prior approval from the Engineer or Resident Engineer before pulling wires.

3.2 INSTALLATION

- A. The Contractor shall provide temporary installations adjacent to existing equipment where noted.
- B. After modifying existing equipment, the Contractor shall dismantle temporary installations and restore to original condition.
- C. Perform work neatly. The Contractor shall keep sites clean of accumulation of cartons, trash and debris. Remove trash and debris daily. Vacuum clean cabinets, panels and enclosures installed or modified.
- D. The Contractor shall route and locate equipment items so as not to obstruct access to equipment, personnel walkways, or expose it to potential mechanical damage.
- E. Install items straight and plumb. The Contractor shall exercise care so that like items are mounted the same position, heights and general location. Securely anchor and fasten items.
- F. The Contractor shall locate and install electrical devices to afford maximum safety to personnel making adjustments, manual operations, or replacement of these devices. Locate items to permit them being reached without the use of ladders or without climbing or crawling over or under obstacles such as motors, pumps, piping, and ductwork.
- G. The Contractor shall use bushings for entrances to existing panels, cabinets, or enclosures through drilling and knock-outs.

- H. The Contractor shall tag wires with foreign voltages to indicate source of power.

3.3 GENERAL

- A. The Contractor shall install electrical equipment and material of the size, type, and general routing as shown on the drawings.
- B. The Contractor shall install metallic raceway, fittings, boxes, and cabinets free from direct contact with reinforcing steel.
- C. The Contractor shall provide fasteners, anchor bolts, anchorage items and supports as required for rigid alignment and sized according to size and weight of equipment and thickness of supporting surfaces.
- D. Where aluminum is placed in contact with dissimilar metal or concrete, the Contractor shall separate contact surfaces with gasket, non-absorptive tape, or coating to prevent corrosion.
- E. The Contractor shall make metallic conduit, raceways, and cable trays electrically and mechanically continuous and ground as required. Conduits shall be continuous between outlets, boxes, cabinets, and panels, and shall enter and be secured to each box.
- F. A ground conductor shall be provided in each raceway run.
- G. Not more than one 3-phase circuit or feeder shall be installed in a conduit run.

3.4 TESTING

- A. The Contractor shall perform field-testing to demonstrate correct installation and operation of equipment.
- B. Upon completion of work, the Contractor shall test the electrical system for shorts and grounds and proper phasing. The Engineer will observe the testing.

3.5 CLEANING

- A. Touch up paint surfaces marred during installation. The Contractor shall submit color samples prior to painting. Remove foreign paint from exterior and touch up scratches with same paint as original. Sand, prime, and repaint rusted areas.
- B. Clean and lubricate relay contacts, pushbutton and other control devices installed or modified. Lubricate with CRC 2-26 or other lubricant or cleaning agent specifically designed for this purpose.
- C. At completion of work in any area, the Contractor shall remove all debris and unused materials and equipment and leave all areas broom clean. Where work in carpeted areas results in visible soiling of carpets, clean the affected carpets and restore them to the original condition.

3.6 PROTECTION

- A. The Contractor shall maintain site security.
 - 1. Verify that all cabinets, doors, and gates that were opened during the day are locked when leaving.
 - 2. Do not leave unlocked cabinets unattended.

END OF SECTION

SECTION 16110

RACEWAYS

PART 1 -- GENERAL

1.1 SUMMARY

A. The section describes the requirements for raceways including the following:

1. Conduit
2. Fittings
3. Miscellaneous Specialty Fittings
4. Raceway Supports
5. Underground Ducts and Manholes
6. Outlet, Junction, and Pull Boxes
7. Wiring Devices
8. Terminal Cabinets
9. Sealants

B. Reference is made to the following related sections:

1. Conduit identification per Section 16195 - Electrical Identification.
2. Conduit support per Section 16190-Supporting Devices

1.2 SUBMITTALS

A. See Section 16010 for general submittal requirements for Division 16.

1.3 SYSTEM DESCRIPTION

- A. Size conduit in accordance with the National Electrical Code, but galvanized rigid steel (GRS) conduit shall be no smaller than 3/4 inch and schedule 40 PVC conduit shall be no smaller than 1 inch. Use larger sizes if shown.
- B. Use fittings of the same material and match the raceway.
- C. PVC coated galvanized rigid steel conduit (GRS) shall be used in all exposed and/or above grade locations and within underground vault structures and for all signal wiring. Schedule 40 PVC shall be used for direct buried or concrete encased underground locations for power and control wiring, concrete encased.

24 Vdc discrete and analog signals may occupy the same conduit.

PART 2 -- PRODUCTS

2.1 CONDUIT

- A. General: Raceway shall be manufactured in accordance with UL and ANSI standards and shall bear UL label as applicable.
- B. Galvanized Rigid Steel (GRS) Conduit:
 - 1. Rigid steel conduits and fittings shall be full weight, mild steel, hot-dip galvanized and zinc bichromate coated inside and outside after galvanizing.
 - 2. Each piece of conduit shall be straight, free from blisters and other defects, cut square and taper reamed. Furnish in 10-foot lengths minimum, threaded at each end. Provide couplings at one end and a protective sleeve for the other end.
 - 3. Rigid steel conduit shall be manufactured in accordance with UL Standard No. 6 and ANSI C80.1.
 - 4. Rigid steel conduit shall be manufactured by Triangle PWC, Republic Steel, or equal.

- C. Rigid Nonmetallic Conduit: Rigid nonmetallic conduit shall be Schedule 40 PVC.
 - 1. Nonmetallic conduits and fittings shall be UL listed, sunlight-resistant, and rated for use with 90 degrees C conductors.
 - 2. Use expansion joints as recommended by the manufacturer.
 - 3. Nonmetallic conduits and fittings shall be manufactured by Carlon, Condux, or equal.
- D. Flexible Metallic Conduit: Liquid-tight flexible metallic conduit shall have an extruded PVC covering over the flexible steel conduit. Conduit shall be approved for grounding. For conduit sizes 3/4 inch through 1-1/4 inches, flexible conduits shall have continuous built-in copper ground conductor. Flexible conduit shall be American Brass, Anaconda, Electroflex, or equal. Explosion-proof flexible conduits shall be used for Class I, Div. 1, Group C&D areas.
- E. PVC coated GRS shall be 40 mil coating. Robroy, OCAL, or approved equal.

2.2 FITTINGS

- A. General: Fittings shall comply with the same requirements as the conduit with which they will be used. Fittings having a volume less than 100 cubic inches for use with rigid steel conduit, shall be cast or malleable nonferrous metal. Such fittings larger than one inch shall be "mogul size." Fittings shall be of the gland ring compression type. Use threaded connectors for all rigid metal conduits. Covers of fittings, unless in "dry" locations, shall be closed with gaskets. Surface-mounted cast fittings, housing wiring devices in outdoor and damp locations, shall have mounting lugs.
- B. Insulated Bushings: Insulated bushings shall be molded plastic or malleable iron with insulating ring, similar to O-Z Type A and B, equivalent types by Thomas & Betts, Steel City, Appleton, O-Z/Gedney, or equal.
- C. Insulated Grounding Bushings: Insulated grounding bushings shall be malleable iron with insulating ring and with ground

- D. Erickson Couplings: Erickson couplings shall be used at all points of union between ends of rigid steel conduits which cannot be coupled. Running threads and threadless couplings shall not be used. Couplings shall be 3-piece type such as Appleton Type EC, equivalent types such as manufactured by T & B, Steel City, O-Z/Gedney, or equal.
- E. Liquid-Tight Fittings: Liquid-tight fittings shall be similar to Appleton Type ST, equivalent types such as manufactured by Crouse-Hinds, T & B, O-Z/Gedney, or equal.
- F. Hubs: Hubs for threaded attachment of steel conduit to sheet metal enclosures, where required, shall be similar to Appleton Type HUB, equivalent types such as manufactured by T & B, Myers Scrutite, or equal.
- G. Transition Fittings: Transition fittings to mate steel to PVC conduit, and PVC access fitting, shall be as furnished or recommended by the manufacturer of the PVC conduit.
- H. Sealed Fittings: Sealing fittings are required in conduit runs entering corrosive areas and elsewhere as shown. Sealing fittings shall be Appleton Type EYS, O-Z Type FSK, or equal. Sealing compound shall not be poured in place until electrical installation has been otherwise accepted.
- I. Expansion Fittings: Expansion fittings shall be installed wherever a raceway crosses a structural expansion joint. Such fittings shall be expansion and deflection type and shall accommodate lateral and transverse movement. Fittings shall be O-Z/Gedney Type "DX," Crouse Hinds "XD," or equal. These fittings are required in metallic and nonmetallic raceway installations. When the installation is in a nonmetallic run, a 3foot length of rigid conduit shall be used to connect the nonmetallic conduit to the fitting.

2.3 MISCELLANEOUS SPECIALITY FITTINGS

- A. Provide conduit thru-wall seals where conduits pass through exterior concrete or masonry walls below grade. The seals shall consist of a hot dip galvanized steel sealing gland assembly capable of providing a seal around the conduit to withstand 50 feet of water head without leakage. The shell of the seal shall have at least two cast collars at a right angle to the sleeve that is embedded in the

concrete. For new structures, provide O-Z/Gedney type WSK, or equal. For cored hole applications in existing structures, provide O-Z/Gedney type CSM, or equal.

2.4 RACEWAY SUPPORTS

See section 16190 for raceway support.

2.5 UNDERGROUND DUCTS AND MANHOLES

A. General: Where an underground distribution system is required, it shall be comprised of multiple runs of single bore nonmetallic ducts, concrete encased, with steel reinforcing bars, with underground manholes and pullboxes. They shall be rigid Schedule 40 PVC for concrete encasement.

1. Manholes and pullboxes shall be of precast concrete. Concrete construction shall be designed for traffic loading.

Covers shall be traffic type, except as shown otherwise. Manholes and pullbox covers designated as "HV" covers shall be identified as "High Voltage Electric," "P" shall be identified as "Secondary Electric," "C" as "Control" and "S" as "Signal." All covers shall be watertight after installation.

Manholes and pullboxes shall be equipped with pulling-in irons opposite and below each ductway entrance.

Manholes shall have concrete covers with 30-inch diameters lids. All covers and lids shall be bolted to cast-in-place frames with corrosion resistant hardware. Frames shall be factory-primed; covers shall be cast-iron and shall have pick holes.

2. Manholes and pullboxes shall have cable supports so that each cable is supported at 3-foot intervals within the manhole or pullbox. Cable supports and racks shall be fastened with galvanized bolts and shall be fabricated of fiberglass or galvanized steel. Porcelain insulators for cable racks shall be provided.
3. Manholes and pullboxes shall be Brooks, Quikset, U.S. Precast, or equal. Cast- iron covers shall be by U.S. Foundry, or equal.

2.6 OUTLET, JUNCTION, AND PULL BOXES

- A. General: Outlet, switch, pull and junction boxes for flush-mounting in general purpose locations shall be one-piece, galvanized, pressed steel. Ceiling boxes for flush-mounting in concrete shall be galvanized, pressed steel.
- B. Corrosive Locations: The entire project site shall be considered a corrosive location. Control station, pull and junction boxes, including covers, for installation in corrosive locations shall meet the NEMA 4X requirements and shall be stainless steel and shall be furnished with mounting lugs.

2.7 TERMINAL CABINETS

- A. Provide terminal cabinets as suitable for flush or surface mounting, dry or wet locations, as indicated on the Drawings. Cabinets shall meet the following additional requirements:

1. Continuous piano hinged door(s) and back panel to mount terminal blocks.

Cabinet boxes shall be constructed of 316 Stainless Steel.

3. Cabinet trims constructed of sheet steel in accordance with UL standards. Trims for surface mounted panels shall be provided with factory applied prime and finish coats of paint. Trims for flush mounted cabinets shall be provided with factory applied prime coat of paint suitable for field application of finish paint, except as otherwise noted.
4. Non-metallic or aluminum backboards.
5. 18 inches in width, 24 inches in height, and 4 inches in depth unless shown otherwise on the Drawings.
6. Provide a minimum of 12 terminals in each cabinet. Provide 25% spare terminals. Terminals shall be Marathon No. 1600, Buchanan No. 218, or equal.

2.8 SEALANTS

- A. Provide non-hardening, UL approved type for wall penetrations and underground ductbank seals.
- B. Provide hard setting, UL approved type for hazardous location seal fittings.

PART 3 – EXECUTION

3.1 GENERAL

- A. Raceways shall be installed as indicated, however, conduit routings shown are diagrammatic. The Contractor shall check location of equipment connections before installing raceways and locate and arrange raceways accordingly. Raceway systems shall be electrically and mechanically complete before conductors are installed. Bends and offsets shall be smooth and symmetrical and shall be accomplished with tools designed for the purpose intended. Factory elbows shall be used for all 3/4-inch conduit. Bends in larger sizes of metallic conduit shall be accomplished by field bending or by the use of factory elbows. All installations shall be in accordance with the latest edition of the NEC.
- B. Raceways shall be installed in accordance with the following schedule:
 - 1. Low Voltage Raceway (control, power, data and communications):
 - a. Rigid Schedule 40 PVC shall be used for concrete encased duct in earth.
 - b. PVC coated GRS conduit and fittings shall be used in vaults and all exposed, above ground locations.
 - 2. Analog Signal Raceways:
 - a. Galvanized rigid steel conduits shall be used for concrete encased duct on earth.
 - b. PVC coated galvanized rigid steel conduits shall be used on exposed installations in general purpose areas.
 - c. PVC coated galvanized rigid steel shall be used on exposed installations in outdoor areas.

- C. Exposed Raceways:
 - 1. Conduits shall be rigidly supported with clamps, hangers, and Unistrut channels.
 - 2. Intervals between supports shall be in accordance with the National Electric Code.
- D. Conduit Terminations: Empty conduit terminations not in manholes or pullboxes shall be plugged. Exposed raceway shall be installed perpendicular or parallel to buildings except where otherwise indicated. Conduit shall be terminated with flush couplings at exposed concrete surfaces. Conduit stubbed up for floor-standing equipment shall be placed in accordance with approved shop drawings. Metallic raceways installed below-grade or in outdoor locations and in concrete shall be made up with a conductive waterproof compound applied to threaded joints. Compound shall be Zinc Clads Primer Coatings No. B69A45, HTL-4 by CrouseHinds, Kopr Shield by Thomas & Betts, or equal.
- E. Install metallic raceway, fittings, boxes, and cabinets free from direct contact with reinforcing steel.
- F. Provide fasteners, anchor bolts, anchorage items and supports as required for rigid alignment and sized according to size and weight of equipment and thickness of supporting surfaces.
- G. Make metallic conduit, raceways, and cable trays electrically and mechanically continuous and ground as required. Conduits shall be continuous between outlets, boxes, cabinets, and panels, and shall enter and be secured to each box.
- H. Provide ground conductor in each raceway run.

3.2 CONDUIT INSTALLATION

- A. Conduit may be cast integral with horizontal and vertical concrete slabs, providing one- inch clearance is maintained between conduit surface and concrete surface. If said clearance cannot be maintained, the conduit shall be installed exposed below elevated slabs; provided, that in the case of slabs on

grade, conduit shall be installed below the slab. Maximum size of conduit that can be cast in slab shall be 1-1/2 inches.

- B. Nonmetallic conduit may be cast integral with horizontal slabs with placement criteria stated above. Non-metallic conduit may be run beneath structures or slabs on grade, without concrete encasement. In these instances, conduit shall be placed at least 12 inches below the bottom of the structure or slab. Nonmetallic conduit may be buried 24 inches minimum below grade, with a 3-inch concrete cover, in open areas or where otherwise not protected by concrete slab or structures. Top of concrete cover shall be colored red. Nonmetallic conduit shall be permitted only as required by the Specifications and in concealed locations as described above.
- C. Where a run of concealed PVC conduit becomes exposed, a transition to rigid steel conduit is required. Such transition shall be accomplished by means of a factory elbow or a minimum 3-foot length of PVC coated rigid steel conduit, either terminating at the exposed concrete surface with a flush coupling. Piercing of concrete walls by nonmetallic runs shall be accomplished by means of a short steel nipple terminating with flush couplings.
- D. Flexible conduit shall be used at dry locations for the connection of equipment such as motors, transformers, instruments, valves, or pressure switches subject to vibration or movement during normal operation or servicing. Flexible conduit may be used in lengths required for the connection of recessed lighting fixtures; otherwise the maximum length of flexible conduit shall be 18 inches.
- E. In other than dry locations, connections shall be made using flexible liquid-tight conduit. Equipment subject to vibration or movement which is normally provided with wiring leads, such as solenoid valves, shall be installed with a cast junction box for the make- up of connections. Flexible conduits shall be as manufactured by American Brass, Cablec, Electroflex, or equal.
- F. Galvanized Rigid Steel Conduit (GRS): Treat field cut threads with a liquid galvanized solution or a conductive rust inhibitor that will maintain ground continuity before installing locknuts, bushings, or other fittings. Where required use UL approve conduit unions. Do not use split couplings or running threads in lieu of unions.
- G. Flexible Metalllic Conduit (liquid tight): Use only for terminations to vibrating or moving equipment such as motors or transformers. Connectors shall be liquid tight, stainless steel, or bronze with insulated throats.

H. Rigid nonmetallic conduit: All exposed bends shall use rigid steel conduit. All risers shall use rigid steel conduit. Do not use PVC conduit for routing of analog or communication signal circuits.

I. Earth Buried Conduits

1. For conduits buried in earth provide minimum 30 inches of cover and minimum of one-foot clearance between other utility crossings and parallel runs. Maintain a grade of at least four inches per 100 feet either from one manhole or pull box to the next or from a high point between them. Drain conduits away from building, if not possible provide watertight seal at building.
2. Provide detectable warning tape approximately 18 inches above and directly over centerline of buried conduit.

J. Conduit Damage Correction

Repair cuts, nicks, and abrasions or replace damaged conduit as directed.

K. Conduit Penetrations

1. Seal all raceways entering structures at the first box or outlet with oakum or suitable plastic expandable compound to prevent the entrance into the structure of gases, liquids, or rodents.
2. Dry pack with non-shrink grout around raceways that penetrate concrete walls, floors, or ceilings aboveground, or use one of the methods indicated for underground penetrations.
3. Where an underground conduit enters a structure through a concrete roof or a membrane waterproofed wall or floor, provide an acceptable, malleable iron, watertight, entrance sealing device. When there is no raceway concrete encasement, provide such device having a gland type sealing assembly at each end with pressure bushings that may be tightened at any time. When there is raceway concrete encasement indicated, provide such a device with a gland type sealing assembly on the accessible side. Securely anchor all such devices into the masonry

construction with one or more integral flanges. Secure membrane waterproofing to such devices in a permanently watertight manner.

4. Where an underground raceway without concrete encasement enters a structure through a nonwaterproofed wall or floor, install a sleeve made of Schedule 40 galvanized pipe. Fill the space between the conduit and sleeve with a suitable plastic expandable compound, or an oakum and lead joint, on each side of the wall or floor in such a manner as to prevent entrance of moisture. A watertight entrance sealing device may be used in lieu of the sleeve.
5. Make concealed penetrations for conduits not more than 1/4 inch larger than the diameter of the conduit. Make penetrations through walls, ceiling, and floors other than concrete for exposed conduits not more than 1/4 inch larger than the diameter of the conduit. Fill void around conduit with caulking compound and finish surface same as wall, ceiling, or floor.
6. Where a conduit enters through a concrete non-waterproofed wall, floor, or ceiling, provide a galvanized steel sleeve, Schedule 80, and fill the space between the conduit and sleeve with plastic expandable compound or an oakum and lead joint. If the sleeve is not placed with the concrete, drill hole not less than 1/2-inch or more than one inch larger than sleeve, center sleeve, and grout sleeve total depth of penetrated concrete with non-shrink grout, polyurethane, or silicone sealant.
7. Where conduits penetrate walls, install junction box on other side of penetration. Separate 120 Vac boxes from low, dc voltage circuits.

3.3 UNDERGROUND DUCTS AND MANHOLES INSTALLATION

- A. Duct Bank Installation: The underground concrete encased duct bank shall be installed in accordance with the criteria below:
 1. Duct shall be assembled using high impact nonmetallic spacers and saddles to provide conduits with vertical and horizontal separation. Plastic spacers shall be set every 5 feet.
 2. The duct shall be laid on a grade line of at least 4 inches per 100 feet, sloping towards pullboxes or manholes. Duct shall be installed and

pullbox and manhole depths adjusted so that the top of the concrete envelope is a minimum of 24 inches below grade.

3. Changes in direction of the duct envelope by more than 10 degrees horizontally or vertically shall be accomplished using bends with a minimum radius 24 times the duct diameter.
 4. Couplings shall be staggered at least 6 inches vertically. Bottom of trench shall be of select backfill or sand. The duct array shall be anchored every 4 feet to prevent movement during placement of the concrete envelope.
 5. Each bore of the completed duct bank shall be cleaned by drawing through it a standard flexible mandrel one foot long and 1/4-inch smaller than the nominal size of the duct through which the mandrel will be drawn. After passing of the mandrel, draw a wire brush and swab through.
 6. A raceway, in the duct envelope, which does not require conductors, shall have a 1/8-inch polypropylene pull cord installed throughout the entire length of the raceway.
- B. Duct Entrances: Duct entrances shall be grouted smooth; duct for primary and secondary cables shall be terminated with flush end bells. Sections of pre-fabricated manholes and pullboxes shall be assembled with waterproof mastic and shall be set on a bed of gravel as recommended by the manufacturer or as required by field conditions.
- C. Duct Bank Markers: Duct bank markers shall be installed every 200 feet along run of duct bank, at changes in horizontal direction of duct bank, and at ends of duct bank. Concrete markers, 6 by 6 inches square and one foot long, shall be set 2 inches above finish grade. The letter "D" and arrow set in the concrete shall be facing in the direction of the duct alignment.
- D. Watertight Penetrations: Duct bank penetration through walls of manholes or pullboxes, and on building walls below grade shall be watertight.
- E. Trench Backfill: Trenches containing duct banks shall be filled with select backfill with no large rocks which could damage the duct.

- F. Concrete Encased Duct Banks: Concrete encased duct bank shall terminate at building foundations. When duct enters the building on a concrete slab on grade, duct shall not be encased, but shall transition to rigid steel PVC-coated conduits on all stub-ups.

3.4 TERMINAL CABINETS INSTALLATION

- A. Provide terminal cabinets where shown on the Drawings and in accessible locations with working space in front of and around the installation.
- B. Cabinets shall be set plumb at an elevation that will cause the maximum circuit breaker height to be less than 66 inches above grade. Top edge of trim of adjacent panels shall be at the same height. Panels which are indicated as flush mounted shall be set so cabinet is flushed and serves as a "ground" for plaster application.
- C. All factory wire connections shall be made at shipping splits, and all field wiring and grounding connections shall be made after the assemblies are anchored.
- D. Identify each circuit and conductor.
- E. Provide terminals and connectors to match the cable being terminated.

3.5 OUTLET, JUNCTION, AND PULL BOXES INSTALLATION

- A. For boxes mounted on steel, concrete, and masonry surfaces provide minimum ¼- inch spacer to hold box away from surface.
- B. Sizing: Pull and junction boxes shall be sized in accordance with the requirements of the NEC.
- C. Outlet Boxes: Outlet boxes shall be used as junction boxes wherever possible. Where separate pullboxes are required, they shall have screw covers.
- D. Requirements: Pullboxes shall be installed when conduit run contains more than three 90-degree bends and runs exceed 200 feet.
- E. Opening in terminal panels, outlet and junction boxes shall be by means of welded bosses, standard knockouts, or shall be sawed, drilled, or punched

with tools specially made for the purpose. The use of a cutting torch is prohibited. Unused openings shall be plugged per the NEC.

- F. Remove debris including dust, dirt, wire clippings and insulation from interior of boxes. Replace damaged boxes or boxes with open circuit holes.
- G. Where boxes are shown on each side of a common wall do not mount back-to-back but offset horizontally minimum of six inches.
- H. For wet or damp indoor or outdoor locations use boxes of rust and corrosion resistant NEMA 4X, with at least 5 1/2 full threads for each (bossed) conduit opening. Boxes to be suitable for flush or surface mounting as required with drilled external, cast mounting extensions (bossed to provide at least 1/8" between back of box and mounting surface for drainage). Box covers shall be hinged, or cap screw retained as required, of the same material as the box and provided with stainless steel (rust proof) hardware. Indoor location may use boxes constructed of stainless steel or non-metallic. Outdoor boxes shall be stainless steel.
- I. For underground locations use boxes constructed of reinforced concrete cast-in-place or pre-fabricated as shown on the Drawings.

END OF SECTION

SECTION 16120

WIRES AND CABLES

PART 1 -- GENERAL

1.1 SUMMARY

- A. This section describes requirements for power, control, and instrumentation wiring including the following:
 - 1. 600 volt and below power cable.
 - 2. 600 volt and below control cable.
 - 3. Shielded signal instrument cable.
 - 4. Wire terminations, splices, and Connectors.
- B. Reference is made to the following related sections:
 - 1. Conductor identification per Section 16195 - Electrical Identification.
 - 2. Installation in raceways per Section 16110 - Raceways.

1.2 SUBMITTAL

- A. In addition to the general submittal requirement in section 16010, include the following in the submittal for this section:
 - 1. Twelve-inch length of wire and cable with tag from coils or reel from which samples are taken. The sample shall show manufacturer, coil or reel number from which sample was taken, insulation type and ratings, conductor AWG, and voltage class of cable.
 - 2. Cable test procedures and methods.
 - 3. Cable test results and certification.

1.3 DELIVERY, STORAGE, AND HANDLING

- A. Deliver wire and cable in unbroken package or reels that bear the manufacturer name, the dates of manufacture, wire size, and wire type.

PART 2 -- PRODUCTS

2.1 GENERAL

- A. Provide lightning and transient surge protection on each end of the cable.

2.2 MATERIALS

- A. **Single Conductor Power Cable.** Single conductor power cable shall be 12 AWG minimum. Conductors shall be copper, stranded, 600-volt, THHN/THWN insulation, and shall be UL listed.
- B. **Single conductor Control Cable.** Single conductor control cable shall be 14 AWG minimum. Conductors shall be copper, stranded, with 600-volt, THHN/THWN insulation, and shall be UL listed.
- C. **Multiconductor Control Cable.** Multiconductor control cable shall be 14 AWG with copper conductors 600 volt, THHN/THWN insulation, and overall PVC jacket applied over tape wrapped cable core. Cable shall be rated type TC and shall be UL listed.
Cable shall be rated 90 C dry, 75 C wet. Conductors shall be identified per ICEA S-61- 402 Appendix K, Method 1 or Method 3. White or green conductors shall not be provided.
- D. **Single Shielded Pair or Triad.** Conductors shall be 16 AWG minimum. Cable shall have 300-volt insulation. Wires shall have uniform twists with a minimum of 6 twists per foot. Each pair or triad shall be provided with a continuous foil or metalized plastic shield providing 100 percent coverage. Each pair or triad shall contain a tinned copper drain wire in continuous contact with the shield. Each pair shall have a black and white wire, each triad shall have a black, white, and red wire. Insulated conductors shall meet the requirements of UL 62 for type TFN. Assembly jacket shall meet the requirements of UL 1277. Cable shall meet the vertical flame test requirements of UL 1277 and shall be rated type TC and shall be UL listed.

- E. **Multiconductor shielded pair or triad.** Conductors shall be 18 AWG minimum. Wires shall have uniform twists with a minimum of 6 twists per foot. Each pair or triad and cable assembly shall be provided with a continuous foil or metalized plastic shield providing 100 percent coverage and total shield isolation from all other pair or triad shields. Each pair shall have a black and white wire, each triad shall have a black, white, and red wire. Each pair or triad shall contain a tinned copper drain wire in continuous contact with the shield. Insulated conductors shall meet the requirements of UL 62 for type TFN. Assembly jacket shall meet the requirements of UL 1277. Cable shall meet the vertical flame test requirements of UL 1277 and shall be rated type TC and shall be UL listed.

- F. **Ground Cable.** All ground cable shall be in conformance with specification section 16450-Grounding. Ground cables shall be bare or green insulated, copper, 12 AWG minimum. Insulated cable shall meet the requirements for Single Conductor Power Cable above.

- G. The same manufacturer shall manufacture each type of cable listed above, multiple manufacturers for the same type of cable shall not be allowed.

2.3 COLOR CODING

- A. Provide color coding throughout the entire network for service, feeder, branch, control, and low energy signal circuit conductors. Color coding of conductors 10 AWG and smaller shall have factory impregnated color throughout its entire length. Conductors No. 8 AWG and larger gauge may be marked with color coding tape a minimum of 0.004 inch in thickness. Color shall be green for grounding conductors, and white or gray for neutrals. The color of conductors for different voltage systems shall be as follows:

SYSTEM	PHASE A	PHASE B	PHASE C	NEUTRAL	GROUND
120/240 one phase	black	red	---	white	green
208/120 three phase	black	red	blue	white	green
480/277 three phase	brown	orange	yellow	gray	green

Control and low energy red --- --- white green

2.4 WIRE CONNECTIONS AND CONNECTING DEVICES

A. Electrical Terminal and Splice Connectors

1. The splicing of conductors is not permitted. Provide continuous conductor runs.
2. For terminating conductors from #22 through #10 AWG use compression type connectors with barrels and locking spade type terminals. Conductor entry and crimp area shall be insulated with PVC insulation. Performance, construction, and materials shall be in conformance with UL standards for wire connectors and rated for 600 volts and 105 degrees Celsius. Connectors shall be manufactured from high conductivity copper and entirely tin-plated. Terminal barrels shall be brazed seam or seamless construction serrated on the inside surface and have a chamfered funnel entry to prevent strand fold-back.
3. For terminating conductors #8 AWG and larger use high pressure compression type or set screw type lugs. Lugs shall be manufactured from high conductivity copper and entirely tin plated with a current carrying capacity equal to the conductors for which they are rated and must also meet UL requirements. All lugs above 4/0 AWG shall be 2-hole lugs with NEMA spacing, rated for operation through 35 kV, and be of closed end construction to exclude moisture migration into the cable conductor.
4. Use solderless/re-usable lugs only when furnished with equipment such as control panels, furnished by others, where specification of compression type lugs is beyond the Contractor's control. Lugs must be manufactured to NEMA standards, with standard number and spacing of holes and set screws. Coated wires with electrical joint compound, T & B Kopr-Shield, Penn-Union Coal-Aid, or equal before being bolted into the connector.

PART 3 -- EXECUTION

3.1 GENERAL

- A. Run all wires and cables in raceways unless otherwise noted.
- B. Conductors shall not be pulled into raceway until:
 - 1. Raceway system is complete and has been inspected and accepted by the Engineer.
 - 2. Plastering and concrete have been completed in affected areas.
 - 3. Raceway system has been freed of moisture and debris.
- C. Wire in panels, cabinets, and gutters shall be neatly grouped using nylon tie straps and shall be fanned out to terminate.
- D. For multiconductor or manufactures supplied cable not installed in raceways, terminate cable sheaths in watertight connectors designed for the specific cable and application.
- E. Conductors of No. 1 size and smaller shall be hand pulled. Pull conductors without exceeding manufacturer's recommendation for maximum pulling tension. Protect conductor insulation jacket at all times from kinks, scrapes, punctures, and other damage. Replace damaged conductors. Use lubricating compound to reduce pulling force. Use lubricating compound that is UL listed and compatible with the conductor- insulated jacket and with the raceway. The use of petroleum or grease-based lubricants is prohibited.
- F. Support conductors in vertical risers with woven grips to prevent loading on conductor connectors.
- G. In conduits entering buildings or from areas where temperature change may cause condensation or moisture, seal between conductors and conduit after conductors are in place.

- H. When using color-coding tape apply with overlapping turns for a minimum length of two inches starting two inches back from the termination point.
- I. Provide full-length ground conductor in all conduits.
- J. Leave a minimum of six inches of free conductor at each connected outlet and a minimum of nine inches at unconnected outlets.

3.2 APPLICATION AND USE OF DIFFERENT CABLE TYPES

- A. **Single Conductor Power Cable.** Single conductor power cable shall be used for all ac power feeders and branch circuits.
- B. **Single Conductor Control Cable.** Single conductor or multiconductor control cable can be used interchangeably for all discrete control signals.
- C. **Multiconductor Control Cable.** Single conductor or multiconductor control cable can be used interchangeably for all discrete control signals.
- D. **Single Shielded Pair or Triad.** Single shielded pair or triad conductors or multiconductor shielded cables can be used interchangeably on analog signal lines of less than 24 volts.
- E. **Multiconductor shielded pair or triad.** Single shielded pair or triad conductors or multiconductor shielded cables can be used interchangeably on analog signal lines of less than 24 volts.
- F. **Ground Cable.** Use ground cable for all equipment ground and earth ground connections.

3.3 SPLICING AND TERMINATION

- A. Make all splices in pull or junction boxes or other approved enclosure. Do not pull splices into conduit. Keep splices to a minimum and in no case more frequent than 300 feet. Insulate all splices to protect conductors from entry of

moisture and or contaminants and to provide insulation levels equal to the conductor insulation.

- B. Make all wire and cable terminations in UL approved lugs for the application.
- C. Connect circuit conductors of the same color to the same phase throughout the installation.
- D. Insulate connections/splices with a smooth even contour with a conformable 7 mil thick vinyl plastic insulating tape which can be applied under all weather conditions and is designed to perform in a continuous temperate environment up to 105 degrees Celsius. Use tape with resistance to abrasion, moisture, alkali's, acids, corrosion, and varying weather conditions (including sunlight) equal to Scotch 33+. Apply tape in conformance with manufacturer's recommendations and in addition, in successive half-lapped layers with sufficient tension to reduce its width to 5/8 of its original width. Do not stretch the last inch of wrap.
- E. First wrap connections or splices with irregular shapes or sharp edges protruding with 30 mil rubber tape to smooth the contour of the joint before being insulated with 33+ insulating tape specified in the previous paragraph.
 - 1. Apply the rubber tape in successive, half-lapped wound layers, highly elongated to eliminate voids, and in accordance with other manufacturer's recommendations on installation.
 - 2. Use rubber tape which is high voltage (69 kV) corona-resistant based on self fusing ethylene propylene rubber and capable of operation at 130 degrees Celsius under emergency conditions. The tape must be capable of being applied in either the stretched or unstretched condition without any loss in either physical or electrical properties. The tape must not split, crack, slip, or flag when exposed to various environments. The tape must be compatible with all synthetic cable insulation. The tape must have a dissipation factor of less than 5 percent at 130 degrees Celsius, be non-vulcanizing, and have a shelf life of at least 5 years. The rubber tape shall be equal to Scotch 23 or 130C electrical splicing tape.

- F. Make splices made in wet or damp locations or below grade watertight with special kits made for the application and compatible with types of cables employed.
- G. Make connections to lugs and bus bars, with corrosion resistant stainless-steel bolts having non-magnetic properties with matching nuts, and a Belleville spring washer (stainless steel) to maintain connection integrity. Torque connections to the specified limits. Prior to bolting up the connection, brush electrical joint compound on the contact faces of the electrical joint.

3.4 SEPARATION OF CONDUCTORS

- A. Ensure that analog signals in one cable or conduit are of the same magnitude. The following are the different signal magnitudes:
 - 1. 0 to 100 mV
 - 2. 101 mV to 5 V
 - 3. 6 V to 75 V
- B. Run 24 Vdc discrete and analog signals in separate conduits from 115 Vac discrete signals and wiring.
- C. Neatly arrange wiring with terminations located directly opposite terminals. Leave wire loops not less than 6 inches long in each outlet box. Tape frayed terminals and exposed wires.

3.5 SPARE WIRES

- A. Notify the Engineer of any instance in which the spare conductor quantity cannot be installed. Tape off all spare conductors in the originating field junction boxes. Terminate and label in terminal boxes. Include all spare wires in conduit and wire schedules.

3.6 TESTING

- A. Cable assembly and testing shall comply with applicable requirement ICEA Publication No. S-68-516 and other relevant ICEA publications. Field tests shall be performed by a certified test organization acceptable to the cable manufacturer.
- B. All wiring shall be tested for continuity, polarity, undesirable ground, and origination. Test wiring for continuity using an ohmmeter. Replace any conductor or cable where the measured resistance exceeds the calculated resistance based on conductor size and length by more than 5 % unless otherwise directed by the engineer.
- C. Before terminating conductors test all conductors between phases and phase to ground for grounds and leakage between individual conductors using a megger capable of producing voltages of at least 500 volts for 300-volt insulation levels and 1000 volts for 600-volt insulation levels. If any conductor tested indicates resistance between conductors or between the conductor and ground of less than 10 megohms, replace the failed wire or cable unless otherwise directed by the engineer.
- D. Cables failing in the test will be replaced with new cable or repaired. Such kind of repair methods shall be as recommended by the cable manufacturer and shall be performed by persons qualified by the industry.
- E. Submit test results to the Engineer and certify all conductors have passed the required tests. Correct problems noted during these tests.

END OF SECTION

SECTION 16190

SUPPORTING DEVICES

PART 1 -- GENERAL

1.1 SUMMARY

- A. This section describes the requirements of supporting devices for equipment,, conduit, and cables.
- B. The Contractor shall retain the services of a registered Civil Engineer in the State of California is required to prepare calculation that show equipment anchorage and support structure requirements will comply with the UBC (latest edition), City Seismic requirements.

1.2 SUBMITTALS

A. Include the following information for each site in the submittal for this section:

- 1. Detail drawings of parts and assembly.
- 2. Descriptive data sheets, literature, bulletins, and related data annotated as necessary to describe the related equipment to be furnished.

1.3 SITE CONDITIONS

- A. Determine to your own satisfaction the location and nature of all surface and subsurface obstacles and the soils and water conditions which will be encountered during the construction.

PART 2 -- PRODUCTS

2.1 MATERIALS

- A. Do not use expansive screw anchors, shields, or other fastening items containing lead or other material that might loosen or melt under fire conditions. Do not use power- actuated fasteners and devices.

- B. Equipment or enclosure support devices.
 - 1. Mounting brackets and support channels shall be stainless steel, unless otherwise specified on the drawings. Fasteners used to mount equipment outdoors shall be stainless steel and designed for use with the support channels.
 - 2. Provide supporting devices manufactured by Unistrut, Bee-Line, Kindorf, or equal.

- C. Raceway Supports
 - 1. Except as noted herein, supports and hangers shall be stainless steel.
 - 2. Fasteners shall be expansion bolts or inserts for concrete, toggle bolts for hollow masonry or frame construction and preset inserts for pre-stressed concrete.
 - 3. For conduits supported on surface, provide straps with holes for one or two fasteners and shaped to fit conduit size.
 - 4. At structural steel members support raceway with hot dip galvanized beam clamps. Drilling or welding may be used only where indicated on the Drawings.

PART 3 -- EXECUTION

3.1 GENERAL

- A. Install fastenings and supports as required for each type of equipment, cables and conduits, and to manufacturer's installation recommendations.

- B. Provide surface mounted supports for 2 or more conduits on channels at a maximum of 3-foot intervals. Provide metal brackets, frames, hangers, clamps and related types of support structures as required to support conduit and cable runs. Do not use wire lashing or perforated strap to support or secure raceways or cables.

- C. Provide adequate support for raceways, conduit and cables dropped vertically to equipment where there is no wall support.
- D. Do not use supports of equipment installed for other trades for conduit or cable support except with permission of the Resident Engineer.
- E. Install inert spacers for aluminum support brackets or channels directly in contact with concrete to reduce chemical reaction between support and concrete.

3.2 CONTROL PANELS

- A. The Contractor shall be responsible for the following installation work:
 - 1. Mounting of the RCP Panel, PIT Enclosure, and the FIT Enclosure.
- B. Provide concrete foundation as required indicated on drawings and certified by a California registered Professional Engineer.

3.3 RACEWAY SUPPORTS

- A. Support raceway at intervals and at locations as required by the NEC. Do not use perforated straps or plumbers' tape for conduit supports. Independently support raceways from the structure.
- B. Install exposed raceways on walls below grade or in damp, wet, or corrosive locations with standoff brackets providing a minimum of 1/4 inch air space between the raceway and the mounting surface.
- C. Where raceway may be affected by dissimilar movements of the supporting structures or medium, provide flexible or expansion devices.

END OF SECTION

SECTION 16195

ELECTRICAL IDENTIFICATION

PART 1 -- GENERAL

1.1 SUMMARY

- A. This section describes the requirements for equipment identification tags.
- B. Identify and label each raceway, piece of equipment, and conductor.
- C. Develop a schedule for labels showing the legend of each as shown on the Drawings. In the absence of specific data on the Drawings, develop legends from the nature of the service or system. Arrange the schedule to produce a legible comprehensive identification system.

1.2 SUBMITTALS

- A. Submit label schedule.

PART 2 -- PRODUCTS

2.1 EQUIPMENT IDENTIFICATION

- A. Use Micarta black letters on a white background unless otherwise specified for a specific application. Electrical enclosure nameplates shall be a minimum of 1 inch high by 3 inches wide with 0.125-inch letters. Engrave nameplates as shown on the Drawings or as approved on the submittal.
- B. Nameplates shall be fastened securely by fasteners of stainless steel, screwed into inserts or tapped holes as required.
- C. Provide labels manufactured by the Brady Identification Systems Division, Safety Sign Company, Westline Products Company, or equal.

2.2 RACEWAY IDENTIFICATION

- A. Provide labels manufactured by None Such Enterprises, or equal.
- B. Identification tape for protection of buried electrical installation shall be a 6-inch wide red polyethylene tape imprinted "Caution – Electric Utilities Below".

2.3 CONDUCTOR IDENTIFICATION

- A. Provide wire markers that are clip sleeve or sleeve type, made of PVC, nylon, or delrin, white in color, with black letters impressed in the material. On wire too large for the standard sleeve sizes, provide sleeve type markers inserted on a cable tie and the tie then installed around the wire.
- B. Acceptable wire markers are Tyton Corporation Tygrup and Ty-Clip, Brady Clip-Sleeve, Panduit and Omnigrip, or approved equal.

PART 3 -- EXECUTION

3.1 GENERAL

- A. Furnish and install nameplates on all field mounted devices, equipment and instruments supplied whether mounted inside an enclosure or field mounted. Securely fasten nameplates to each device or to a conduit clamp located near the device with 16 gage stainless steel wire or nylon self-locking straps.
- B. Indicate the device's name (i.e., BRM4201PI or ELLC300QA) based on the input/output point listing.

3.2 RACEWAY IDENTIFICATION

- A. Identify exposed raceways and raceways concealed above removable ceilings at each end within 12 inches of point to termination.
- B. Provide factory manufactured identifying labels with colored paper, machine printed with an identifying legend laminated between two sheets of vinylite plastic formed to completely encircle the raceway. Match the sizes of the labels with the raceway on which they are to be applied. Install labels in accordance with manufacturer's instructions.

- C. For legends to be used in the labels, indicate the system voltage and what it serves or type of service. The legend shall appear in a minimum of one-inch high white letters on a black background for raceways 2-1/2 inch and smaller diameter and two-inch-high letters for raceways larger than 2-1/2-inch diameter.
- D. Install identification tape directly above buried raceway; Install tape 8 inches below grade and parallel with raceway to be protected.

3.3 EQUIPMENT IDENTIFICATION

- A. All panels and devices powered from an external source shall be provided with a nameplate which indicates the power source and circuit number for the panel or device.
- B. Label feeder units in panelboards, switchboards, disconnects, and motor control centers to identify the enclosure or piece of equipment and to indicate the motor device, outlet, or circuit controlled or monitored. Attach nameplates to inside surfaces with adhesive and to the outside surface with round head, self-tapping stainless-steel screws. Nameplates shall be two-color laminated plastic not less than 1/16-inch-thick, machine engraved to show white letters not less than 1/4-inch-high on a black background.
- C. Type branch circuits in lighting panelboards on a card suitable for the card frame furnished with the panel. The card shall bear the panel designation listed on the Drawings where this information is given, as well as indicate what each circuit controls.

3.4 CONDUCTOR IDENTIFICATION

- A. Identify power conductors terminating in panelboards, cabinets, motor control centers, and special service outlets at each end and in intervening junction and pull boxes. Where feeder conductors pass through a common box, tag the feeder to indicate the electrical characteristics, circuit number and panelboard designation. Locate labels near the conductor ends for terminals and on exposed portions of conductor within pull and junction boxes.
- B. Identify control wiring and instrument power and signal wiring at each end of each wire by a number conforming with the following:

1. Base wire numbers on the instrument or equipment name shown on the Drawings, the I/O list, or stated in the Specifications. If cables are multi-conductor, number the individual wires. Where it is impractical to maintain the same wire numbers throughout, install a terminal block at the junction of the different numbered wires. On each side of the terminal block identify each associated wire number with a label either typed or written in with permanent ink.
 2. Tag wires at both ends with the same notation.
- C. All conduction identification numbers shall show on shop drawings.

END OF SECTION

SECTION 16421

UTILITY SERVICE ENTRANCE

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Arrangement with Utility Companies for permanent electric service.
- B. Underground service entrance.
- C. Metering equipment.

1.2 RELATED SECTIONS

- A. Section 16110 - Raceways.
- B. Section 16450 - Grounding.

1.3 REFERENCES

- A. ANSI/NFPA 70 - National Electrical Code.

1.4 SYSTEM DESCRIPTION

- A. System Characteristics: 120/240 volts, single phase, three-wire, 60 Hertz.

1.5 SUBMITTALS

- A. Submit under provisions of the General Requirements.

1.6 QUALITY ASSURANCE

- A. Perform Work in accordance with Utility Company written requirements.
- B. Maintain one copy of each document on site.

1.7 REGULATORY REQUIREMENTS

- A. Conform to requirements of ANSI/NFPA 70.
- B. Furnish products listed and classified by Underwriters Laboratories, Inc. as suitable for purpose specified and shown.

1.8 FIELD MEASUREMENTS

- A. Verify that field measurements are as indicated on Utility Company drawings.

PART 2 PRODUCTS

2.1 GENERAL

- A. Locate meter pedestal such that the pull section access meets the requirements of SDG&E.

2.2 MANUFACTURERS

- A. Milbank.
- B. Meyers.
- C. Substitutions: Approved equals.

2.3 METER PEDESTAL

- A. Ratings: NEMA 3R enclosure, 100-amp, 120/240-volt, single phase, three wire, 42, 000-amp AIC. Provide main overcurrent device as indicated.
- B. The meter pedestal shall have a meter socket with test blocks that meet the requirements of the serving utility (San Diego Gas and Electric Company). The service cabinet shall bear a UL 508 industrial control panel label for service entrance equipment.
- C. Cabinet shall be fabricated from 12-gauge hot dipped galvanized steel and shall be all welded construction. All fasteners, hinges, latches and hardware shall be of stainless steel and hinges shall be continuous piano style.

Enclosure shall be vandal-resistant. There shall be no exposed, nuts, bolts, screws, rivets, or other fasteners on the exterior. Cabinet door shall have 2,000lb. Stress rated stainless steel hasp welded to cabinet and door.

- D. All bussing shall be U.L. approved copper THHN cable bussing fully rated 100 amps.
- E. Provide pad mount base for concrete foundation.
- F. Enclosure shall have a powder coat finish in accordance with ASTM B-117. Color shall be manufacturer's standard.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that service equipment is ready to be connected and energized.

3.2 PREPARATION

- A. Make arrangements with Utility Companies to obtain new permanent electric service.
- B. Coordinate location of Utility Companies facilities to ensure proper access is available.

3.3 INSTALLATION

- A. Install service entrance conduits from Utility Companies indicated point of connection to meter pedestal per Utility Companies drawings.

END OF SECTION

SECTION 16450

GROUNDING

PART 1 -- GENERAL

1.1 SUMMARY

- A. This section describes the requirements for grounding.

1.2 SUBMITTALS

- A. Manufacturer's Catalog Information for all products listed in Part 2.
- B. Testing results.

PART 2 -- PRODUCTS

2.1 GROUND CONNECTIONS:

- A. Water system piping clamps: Cast bronze clamps with stainless steel screws.
- B. Cable lugs: Shall be wrought copper with high pressure crimp sleeve for the conductor.
- C. Ground rod connections: Exothermic weld or high-pressure crimp type.
- D. Exothermic welds: UL approved and or listed systems with mold, weld cartridges, and weld powder specifically approved for the particular application.
- E. Terminal lugs for shielded instrument cable: Crimp type sized to meet the specific shield requirements.

PART 3 -- EXECUTION

3.1 GENERAL

- A. Install the grounding electrode system with all required components in accordance with NEC Article 250.
- B. Provide and install at least one ground rod at each instrument or panel rack. The length of rods forming an individual ground array shall be equal in length and shall be of the quantity required to obtain a ground resistance of less than 5 ohms.
- C. Unless otherwise specified, ground all non-current carrying metallic parts of electrical equipment, support structures, raceway systems, and the neutral of all wiring systems in accordance with the NEC and other applicable codes and with the manufacturer's recommendations.
- D. All grounds and ground systems shall be bonded together.
- E. Grounding system may be bonded to buried metal piping not less than 2-inch diameter or provide grounding rod driven a minimum of nine feet in the ground. The ground clamp connection to the metal pipe shall be not more than one foot inside the building. Ground conductor for connection to ground rod shall be stranded copper and connected by the exothermic welding process. Earth buried ground conductors shall not be insulated. File or sand surfaces before connecting ground to ensure good metal to metal contact.
- F. Bond the grounding conductors to metallic enclosures at each end and to all intermediate metallic enclosures. Where equipment contains a ground bus, extend and connect grounding conductors to that bus. Run ground conductors inside conduits enclosing the power conductors.
- G. Make connections of grounding conductors to circuits 20 amps or above by a solderless terminal and a 5/16 minimum bolt tapped to the motor frame or equipment housing. Ground connections to smaller equipment may be made by fastening the terminal to a connection box. Connect junction boxes to the equipment grounding system with grounding clips mounted directly on the box or with 3/8-inch machine screws. Remove all paint, dirt, or other surface coverings at grounding conductor connection points so that good metal to metal contact is made.

3.2 PANEL AND ENCLOSURE GROUNDING

- A. Bond panels and enclosures to building grounds.

- B. Provide new ground rod where ground cable routed with conduit is not bonded to earth ground within 50 feet. Bond equipment-grounding conductors to earth ground through the panel.

3.3 INSTRUMENT SIGNAL SHIELD GROUNDS

- A. Ground instrument signal shields at one location only.
- B. Termination of each shield drain wire shall be on its own terminal screw. All of the terminal screws in one rack or panel shall be jumpered with No. 16 solid tinned bare copper wire; connection to ground shall be accomplished with a No. 12 green insulated conductor to the main ground bus
- C. As a general rule, ground shields at local or area control panels nearest the instrument. If no panel is nearby, ground shields at the instrument power source. If a signal passes through several panels, ground at the panel with the most loops.
- D. At the ungrounded end, trim back and insulate shield.
- E. If a signal passes through a junction box or barrier strip, maintain shield continuity.

3.4 TESTING

- A. All tests shall be performed in the presence of the Resident Engineer.
- B. Perform a thorough visual and mechanical inspection to ensure all items are in place and connected with all termination made in an approved manner.

END OF SECTION

SECTION 16950

ELECTRICAL TESTS

PART 1 -- GENERAL

1.1 WORK OF THIS SECTION

- A. The CONTRACTOR shall test, commission and demonstrate that the electrical work satisfies the criteria of these Specifications and functions as required by the Contract Documents.

1.2 GENERAL

- A. The Work of this Section includes furnishing the labor, equipment and power required to support the testing in other Divisions of these Specifications. This scope may require the CONTRACTOR to activate circuits, shutdown circuits, run equipment, make electrical measurements, replace blown fuses, and install temporary jumpers.

1.3 RELATED SECTIONS

- A. The Work of the following Sections applies to the Work of this Section. Other Sections, not referenced below, shall also apply to the extent required for proper performance of this Work.

- 1. Section 16010 - Basic Electrical Requirements

1.4 CODES

- A. The Work of this Section shall comply with the current editions of the National Electrical Code as adopted by the City of San Diego.

1.5 STANDARDS

- A. Except as otherwise indicated, the current editions of the following apply to the Work of this Section:

- 1. NETA National Electrical Testing Association

2. ICEA Insulated Cable Engineers Association

1.6 TESTING

- A. The following test requirements are intended to supplement test and acceptance criteria that may be stated elsewhere.
 1. Test ground interrupter (GFI) receptacles and circuit breakers for proper operation by methods sanctioned by the receptacle manufacturer.
 2. A functional test and check of all electrical components is required prior to performing subsystem testing and commissioning. Compartments and equipment shall be cleaned as required by other provisions of these Specifications before commencement of functional testing. Functional testing shall comprise:
 - a. Visual and physical check of cables and connections associated with all new and modified equipment.
 3. Complete ground testing of all grounding electrodes prior to operating the equipment. Use a three-point ground test.)
- B. Subsystem testing shall occur after the proper operation of alarm and status contacts has been demonstrated or otherwise accepted by the Resident Engineer and after process control devices have been adjusted as accurately as possible. It is intended that the CONTRACTOR will adjust limit switches and level switches to their operating points prior to testing.
- C. Provide ground resistance tests in the presence of the Resident Engineer and submit results. Use a ground resistance meggar "Earth" tester with a maximum of 0-50 scale. Use the full of potential method or the three-terminal method as described by Biddle or Neta.
- D. General: Carry out tests for individual items of materials and equipment indicated in other Sections.

1.7 COMMISSIONING

- A. Commissioning shall not be attempted until all subsystems have been found to operate satisfactorily; commissioning shall only be attempted as a function of

normal plant operation in which plant process flows and levels are routine, and equipment operates automatically in response to flow and level parameters or computer command, as applicable. Simulation of process parameters will be considered only upon receipt of a written request.

PART 2 -- PRODUCTS (Not Used)

PART 3 -- EXECUTION (Not Used)

END OF SECTION

SUPPLEMENTARY SPECIAL PROVISIONS
APPENDICES

APPENDIX A

ADDENDUM TO MITIGATED NEGATIVE DECLARATION



THE CITY OF SAN DIEGO

ADDENDUM TO MITIGATED NEGATIVE DECLARATION

Project No. 661067
Addendum to MND No. 255100
SCH No. 2011091045

SUBJECT: AC Water & Sewer Group 1056. The AC Water and Sewer Group 1056 project will install and replace approximately 17,023 linear feet (LF) (3.22 miles) of 8-inch and 12-inch diameter polyvinyl chloride (PVC) water mains, replace three (3) Pressure Regulating Stations (PRS) and abandon approximately 9,692 linear feet (1.84 miles) of existing water main. Water main replacement would occur within the same utility alignment at the same or shallower depths of existing water mains. New water main improvements would be installed in new trenches. The project will also rehabilitate approximately 1,031 linear feet (0.20 miles) of existing 8-inch and 12-inch diameter vitrified clay pipe (VC) sewer mains and replace 311 linear feet of 8-inch diameter PVC sewer main. In addition, the project would include all associated water services, fire hydrants, laterals, manholes, curb ramps, traffic control, trench restoration, pavement resurfacing, and appurtenances. The project would also install bicycle facilities within the City's paved right of way including striping, markings, and signage. DoradaNew water main installation is necessary to meet minimum utility separation requirements between underground water and sewer utilities.

I. PROJECT DESCRIPTION

Applicant: City of San Diego Engineering and Capital Projects Department

Project Location: Tierrasanta Boulevard, Colina Dorada Drive, Calle De Vida, Papagallo Court and Buho Court.

Project Description:

DoradaThe AC Water and Sewer Group 1056 project will install and replace approximately 17,023 linear feet (LF) (3.22 miles) of 8-inch and 12-inch diameter polyvinyl chloride (PVC) water mains and replace three (3) Pressure Regulating Stations (PRS). Water main replacement would occur within the same utility alignment at the same or shallower depths of existing water mains. New water main improvements would be installed in new trenches. The project would also abandon approximately 9,692 linear feet (1.84 miles) of existing 16-inch diameter asbestos cement water main. In addition, the project would include all associated water services, fire hydrants, and appurtenances. New water main installation is necessary to meet minimum utility separation requirements between underground water and sewer utilities.

The project will also rehabilitate approximately 1,031 linear feet (0.20 miles) of existing 8-inch and 12-inch diameter vitrified clay pipe (VC) sewer mains and replace 311 linear feet of 8-inch diameter PVC sewer main. Related work will also include point repairs of existing sewer mains and replacement of existing laterals. The project would replace and repair existing manholes. Additional improvements include street surfacing, traffic control, installation of new curb ramps, and ADA curb ramp upgrades.

The project includes bicycle facilities installation within the City's paved right of way on Tierrasanta Boulevard and Colina Dorada Drive. Specifically, the project proposes to install new bikeways (Class II and Class III) on Tierrasanta Boulevard from the Caltrans right-of-way at Interstate 15 to Colina Dorada Drive, and Colina Dorada Drive from Tierrasanta Boulevard to Calle De Vida. Project improvements would also include striping, markings, and bicycle signage.

Construction staging will be determined by the contractor. More specific descriptions of construction methods are as follows:

Open Trenching: The open trench method of construction will be used for complete replacement portions of the Project. Trenches are typically 3-5 feet wide and are dug with excavators and similar large construction equipment. All trenching work would occur within the public right-of-way.

Abandonment: Pipeline abandonment activities will have minimum surface/subsurface disturbance at both ends of the mains. Disturbance would be limited to removal of manholes and exposed pipe sections. All abandonment would occur within the Right-of-Way.

Potholing: Potholing will be used to verify utility crossings. These 'potholes' are made by using vacuum type equipment to open up small holes into the street or pavement.

Rehabilitation: Rehabilitation will be used for the existing sewer mains, lateral pipes, and manholes. This technique would seal out runoff and groundwater seepage into the structurally sound pipe.

The AC Water and Sewer Group 1056 project is part of the City of San Diego's on-going Sewer Main and Water Main Replacement Program. The existing sewer and water mains are old and are nearing the end of their service life. Construction of the project will reduce maintenance requirements, correct hydraulic deficiencies, improve reliability and accessibility, and bring the sewer and water main systems up to current design standards.

The project would comply with the requirements described in the *Standard Specifications for Public Works Construction*, and California Department of Transportation's *Manual of Traffic Controls for Construction and Maintenance Work Zones*. A traffic controls plan would be prepared and implemented in accordance with the *City of San Diego Standard Drawings Manual of Traffic Control for Construction and Maintenance Work Zones*. Best Management Practices will be required and specified within the approved Water Pollution Control Plan for erosion control and storm drain inlet protection.

II. ENVIRONMENTAL SETTING

The AC Water and Sewer Group 1056 project would occur within the developed public right-of-way and public utility easements of previously disturbed private property within the City of San Diego described above under Project Location. Surrounding land uses include existing residential, institutional, industrial and commercial developments. Some portions of the alignment are adjacent to the City's Multi-Habitat Planning Area (MHPA). See attached MND for the environmental setting for the overall Citywide Pipeline Projects.

III. SUMMARY OF ORIGINAL PROJECT

A Citywide Pipelines Projects Mitigated Negative Declaration (MND) No. 255100 was prepared by the City of San Diego's Development Services Department (DSD) and was certified by the City Council on November 30, 2011 (Resolution No. 307122). The Citywide Pipelines Projects MND provides for the inclusion of subsequent pipeline projects that are located within the public right-of-way and would not result in any direct impacts to sensitive biological resources. Pursuant to the City of San Diego's Municipal Code Section 128.0306 and Section 15164(c) of State CEQA Guidelines addenda to environmental documents are not required to be circulated for public review.

IV. ENVIRONMENTAL DETERMINATION

The City previously prepared and adopted the Citywide Pipelines Projects Mitigated Negative Declaration (MND No. 255100/SCH No. 2011091045). Based on all available information in light of the entire record, the analysis in this Addendum, and pursuant to Section 15162 of the State CEQA Guidelines, the City has determined the following:

- There are no substantial changes proposed in the project which will require major revisions of the previous environmental document due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects;
- Substantial changes have not occurred with respect to the circumstances under which the project is undertaken which will require major revisions of the previous environmental document due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects; or
- There is no new information of substantial importance, which was not known and could not have been known with the exercise of reasonable diligence at the time the previous environmental document was certified as complete or was adopted, shows any of the following:
 - a. The project will have one or more significant effects not discussed in the previous environmental document;
 - b. Significant effects previously examined will be substantially more severe than shown in the previous environmental document;

- c. Mitigation measures or alternatives previously found not to be feasible would in fact be feasible, and would substantially reduce one or more significant effects of the project, but the project proponents decline to adopt the mitigation measure or alternative; or
- d. Mitigation measures or alternatives which are considerably different from those analyzed in the previous environmental would substantially reduce one or more significant effects on the environment, but the project proponents decline to adopt the mitigation measure or alternative.

Based upon a review of the current project, none of the situations described in Sections 15162 and 15164 of the State CEQA Guidelines apply. No changes in circumstances have occurred, and no new information of substantial importance has manifested, which would result in new significant or substantially increased adverse impacts as a result of the project. Therefore, this Addendum has been prepared in accordance with Section 15164 of the CEQA State Guidelines. Public review of this Addendum is not required per CEQA.

V. IMPACT ANALYSIS

The subsequent impact analysis is to demonstrate that environmental impacts associated with the project are consistent with the previously certified MND. The following includes the project-specific environmental review pursuant to the CEQA. The analysis in this document evaluates the adequacy of the MND relative to the project.

Archaeological Resources

The Citywide Pipelines Project MND No. 255100 concluded that pipeline projects located within the public right-of-way and city easements could result in significant environmental impacts relating to archaeological resources, which included mitigation to reduce impacts to archaeological resources to below a level of significance. Portions of the project area identified with the AC Water and Sewer Group 1056 project would include excavation of previously undisturbed soil which has the potential to contain sensitive archaeological resources.

To reduce potential archaeological resource impacts to below a level of significance, all excavation within previously undisturbed soil would be monitored by a qualified archaeologist or archaeological monitor and Native American monitor. Any significant archaeological resources encountered would be recovered and curated in accordance with the mitigation monitoring and Reporting Program (MMRP) detailed in Section V.

Biological Resources

The project is located adjacent to the MHPA and Mission Trails Regional Park at Calle de Vida and Colina Dorada Drive. All proposed improvements will occur within the City's public right-of-way and will not encroach into environmentally sensitive lands.

The Citywide Pipelines Project MND No. 255100 concluded that pipeline projects located within the public right-of-way and city easements would not result in significant environmental impacts relating to sensitive biological resources. Projects located adjacent to the MHPA would be required to incorporate MHPA land use adjacency measures to reduce any indirect impacts. As such, indirect impacts would be mitigated to below a level of significance. The Land Use Adjacency Guidelines are included with the Mitigation Monitoring and Reporting Program (MMRP) detailed in Section V.

Based on the foregoing analysis and information, there is no evidence that the project would require a major change to the Mitigated Negative Declaration. The project would not result in any new significant impact, nor would a substantial increase in the severity of impacts from that described in the Mitigated Negative Declaration result.

VI. MITIGATION, MONITORING, AND REPORTING PROGRAM (MMRP) INCORPORATED INTO THE PROJECT

Cultural Resources (Archaeology)

I. Prior to Permit Issuance or Bid Opening/Bid Award

A. Entitlements Plan Check

1. Prior to permit issuance or Bid Opening/Bid Award, whichever is applicable, the Assistant Deputy Director (ADD) Environmental designee shall verify that the requirements for Archaeological Monitoring and Native American monitoring have been noted on the applicable construction documents through the plan check process.

B. Letters of Qualification have been submitted to ADD

1. Prior to Bid Award, the applicant shall submit a letter of verification to Mitigation Monitoring Coordination (MMC) identifying the Principal Investigator (PI) for the project and the names of all persons involved in the archaeological monitoring program, as defined in the City of San Diego Historical Resources Guidelines (HRG). If applicable, individuals involved in the archaeological monitoring program must have completed the 40-hour HAZWOPER training with certification documentation.
2. MMC will provide a letter to the applicant confirming the qualifications of the PI and all persons involved in the archaeological monitoring of the project meet the qualifications established in the HRG.
3. Prior to the start of work, the applicant must obtain written approval from MMC for any personnel changes associated with the monitoring program.

II. Prior to Start of Construction

A. Verification of Records Search

1. The PI shall provide verification to MMC that a site specific records search (1/4 mile radius) has been completed. Verification includes, but is not limited to a copy of a confirmation letter from South Coastal Information Center, or, if the search was in-house, a letter of verification from the PI stating that the search was completed.
2. The letter shall introduce any pertinent information concerning expectations and probabilities of discovery during trenching and/or grading activities.
3. The PI may submit a detailed letter to MMC requesting a reduction to the ¼ mile radius.

B. PI Shall Attend Precon Meetings

1. Prior to beginning any work that requires monitoring; the Applicant shall arrange a Precon Meeting that shall include the PI, Native American consultant/monitor (where Native American resources may be impacted), Construction Manager (CM) and/or Grading Contractor, Resident Engineer (RE), Building Inspector (BI), if appropriate, and MMC. The qualified Archaeologist and Native American Monitor shall attend any grading/excavation related Precon Meetings to make comments and/or suggestions concerning the Archaeological Monitoring program with the Construction Manager and/or Grading Contractor.
 - a. If the PI is unable to attend the Precon Meeting, the Applicant shall schedule a focused Precon Meeting with MMC, the PI, RE, CM or BI, if appropriate, prior to the start of any work that requires monitoring.
2. Acknowledgement of Responsibility for Curation (CIP or Other Public Projects)
The applicant shall submit a letter to MMC acknowledging their responsibility for the cost of curation associated with all phases of the archaeological monitoring program.
3. Identify Areas to be Monitored
 - a. Prior to the start of any work that requires monitoring, the PI shall submit an Archaeological Monitoring Exhibit (AME) (with verification that the AME has been reviewed and approved by the Native American consultant/monitor when Native American resources may be impacted) based on the appropriate construction documents (reduced to 11x17) to MMC identifying the areas to be monitored including the delineation of grading/excavation limits.
 - b. The AME shall be based on the results of a site specific records search as well as information regarding the age of existing pipelines, laterals and associated appurtenances and/or any known soil conditions (native or formation).
 - c. MMC shall notify the PI that the AME has been approved.
4. When Monitoring Will Occur
 - a. Prior to the start of any work, the PI shall also submit a construction schedule to MMC through the RE indicating when and where monitoring will occur.
 - b. The PI may submit a detailed letter to MMC prior to the start of work or during construction requesting a modification to the monitoring program. This request shall be based on relevant information such as review of final construction documents which indicate conditions such as age of existing pipe to be replaced, depth of excavation and/or site graded to bedrock, etc., which may reduce or increase the potential for resources to be present.
5. Approval of AME and Construction Schedule
After approval of the AME by MMC, the PI shall submit to MMC written authorization of the AME and Construction Schedule from the CM.

III. **During Construction**

A. Monitor Shall be Present During Grading/Excavation/Trenching

1. The Archaeological Monitor shall be present full-time during all soil disturbing and grading/excavation/trenching activities which could result in impacts to archaeological resources as identified on the AME. **The Construction Manager is responsible for notifying the RE, PI, and MMC of changes to any construction activities such as in the case of a potential safety concern within the area**

being monitored. In certain circumstances OSHA safety requirements may necessitate modification of the AME.

2. The Native American consultant/monitor shall determine the extent of their presence during soil disturbing and grading/excavation/trenching activities based on the AME and provide that information to the PI and MMC. If prehistoric resources are encountered during the Native American consultant/monitor's absence, work shall stop and the Discovery Notification Process detailed in Section III.B-C and IV.A-D shall commence.
 3. The PI may submit a detailed letter to MMC during construction requesting a modification to the monitoring program when a field condition such as modern disturbance post-dating the previous grading/trenching activities, presence of fossil formations, or when native soils are encountered that may reduce or increase the potential for resources to be present.
 4. The archaeological and Native American consultant/monitor shall document field activity via the Consultant Site Visit Record (CSV). The CSV's shall be faxed by the CM to the RE the first day of monitoring, the last day of monitoring, monthly (**Notification of Monitoring Completion**), and in the case of ANY discoveries. The RE shall forward copies to MMC.
- B. Discovery Notification Process
1. In the event of a discovery, the Archaeological Monitor shall direct the contractor to temporarily divert all soil disturbing activities, including but not limited to digging, trenching, excavating or grading activities in the area of discovery and in the area reasonably suspected to overlay adjacent resources and immediately notify the RE or BI, as appropriate.
 2. The Monitor shall immediately notify the PI (unless Monitor is the PI) of the discovery.
 3. The PI shall immediately notify MMC by phone of the discovery, and shall also submit written documentation to MMC within 24 hours by fax or email with photos of the resource in context, if possible.
 4. No soil shall be exported off-site until a determination can be made regarding the significance of the resource specifically if Native American resources are encountered.
- C. Determination of Significance
1. The PI and Native American consultant/monitor, where Native American resources are discovered shall evaluate the significance of the resource. If Human Remains are involved, follow protocol in Section IV below.
 - a. The PI shall immediately notify MMC by phone to discuss significance determination and shall also submit a letter to MMC indicating whether additional mitigation is required.
 - b. If the resource is significant, the PI shall submit an Archaeological Data Recovery Program (ADRP) and obtain written approval of the program from MMC, CM and RE. ADRP and any mitigation must be approved by MMC, RE and/or CM before ground disturbing activities in the area of discovery will be allowed to resume.

Note: If a unique archaeological site is also an historical resource as defined in CEQA Section 15064.5, then the limits on the amount(s) that a project applicant may be required to pay to cover mitigation costs as indicated in CEQA Section 21083.2 shall not apply.

- (1). Note: For pipeline trenching and other linear projects in the public Right-of-Way, the PI shall implement the Discovery Process for Pipeline Trenching projects identified below under "D."
- c. If the resource is not significant, the PI shall submit a letter to MMC indicating that artifacts will be collected, curated, and documented in the Final Monitoring Report. The letter shall also indicate that that no further work is required.
 - (1). Note: For Pipeline Trenching and other linear projects in the public Right-of-Way, if the deposit is limited in size, both in length and depth; the information value is limited and is not associated with any other resource; and there are no unique features/artifacts associated with the deposit, the discovery should be considered not significant.
 - (2). Note, for Pipeline Trenching and other linear projects in the public Right-of-Way, if significance can not be determined, the Final Monitoring Report and Site Record (DPR Form 523A/B) shall identify the discovery as Potentially Significant.

D. Discovery Process for Significant Resources - Pipeline Trenching and other Linear Projects in the Public Right-of-Way

The following procedure constitutes adequate mitigation of a significant discovery encountered during pipeline trenching activities or for other linear project types within the Public Right-of-Way including but not limited to excavation for jacking pits, receiving pits, laterals, and manholes to reduce impacts to below a level of significance:

- 1. Procedures for documentation, curation and reporting
 - a. One hundred percent of the artifacts within the trench alignment and width shall be documented in-situ, to include photographic records, plan view of the trench and profiles of side walls, recovered, photographed after cleaning and analyzed and curated. The remainder of the deposit within the limits of excavation (trench walls) shall be left intact.
 - b. The PI shall prepare a Draft Monitoring Report and submit to MMC via the RE as indicated in Section VI-A.
 - c. The PI shall be responsible for recording (on the appropriate State of California Department of Park and Recreation forms-DPR 523 A/B) the resource(s) encountered during the Archaeological Monitoring Program in accordance with the City's Historical Resources Guidelines. The DPR forms shall be submitted to the South Coastal Information Center for either a Primary Record or SDI Number and included in the Final Monitoring Report.
 - d. The Final Monitoring Report shall include a recommendation for monitoring of any future work in the vicinity of the resource.

IV. Discovery of Human Remains

If human remains are discovered, work shall halt in that area and no soil shall be exported off-site until a determination can be made regarding the provenance of the human remains; and the following procedures as set forth in CEQA Section 15064.5(e), the California Public Resources Code (Sec. 5097.98) and State Health and Safety Code (Sec. 7050.5) shall be undertaken:

A. Notification

- 1. Archaeological Monitor shall notify the RE or BI as appropriate, MMC, and the PI, if the Monitor is not qualified as a PI. MMC will notify the appropriate Senior Planner

- in the Environmental Analysis Section (EAS) of the Development Services Department to assist with the discovery notification process.
2. The PI shall notify the Medical Examiner after consultation with the RE, either in person or via telephone.
- B. Isolate discovery site
1. Work shall be directed away from the location of the discovery and any nearby area reasonably suspected to overlay adjacent human remains until a determination can be made by the Medical Examiner in consultation with the PI concerning the provenience of the remains.
 2. The Medical Examiner, in consultation with the PI, will determine the need for a field examination to determine the provenience.
 3. If a field examination is not warranted, the Medical Examiner will determine with input from the PI, if the remains are or are most likely to be of Native American origin.
- C. If Human Remains **ARE** determined to be Native American
1. The Medical Examiner will notify the Native American Heritage Commission (NAHC) within 24 hours. By law, **ONLY** the Medical Examiner can make this call.
 2. NAHC will immediately identify the person or persons determined to be the Most Likely Descendent (MLD) and provide contact information.
 3. The MLD will contact the PI within 24 hours or sooner after the Medical Examiner has completed coordination, to begin the consultation process in accordance with CEQA Section 15064.5(e), the California Public Resources and Health & Safety Codes.
 4. The MLD will have 48 hours to make recommendations to the property owner or representative, for the treatment or disposition with proper dignity, of the human remains and associated grave goods.
 5. Disposition of Native American Human Remains will be determined between the MLD and the PI, and, if:
 - a. The NAHC is unable to identify the MLD, OR the MLD failed to make a recommendation within 48 hours after being notified by the Commission, OR;
 - b. The landowner or authorized representative rejects the recommendation of the MLD and mediation in accordance with PRC 5097.94 (k) by the NAHC fails to provide measures acceptable to the landowner, THEN
 - c. To protect these sites, the landowner shall do one or more of the following:
 - (1) Record the site with the NAHC;
 - (2) Record an open space or conservation easement; or
 - (3) Record a document with the County.
 - d. Upon the discovery of multiple Native American human remains during a ground disturbing land development activity, the landowner may agree that additional conferral with descendants is necessary to consider culturally appropriate treatment of multiple Native American human remains. Culturally appropriate treatment of such a discovery may be ascertained from review of the site utilizing cultural and archaeological standards. Where the parties are unable to agree on the appropriate treatment measures the human remains and items associated and buried with Native American human remains shall be reinterred with appropriate dignity, pursuant to Section 5.c., above.
- D. If Human Remains are **NOT** Native American

1. The PI shall contact the Medical Examiner and notify them of the historic era context of the burial.
2. The Medical Examiner will determine the appropriate course of action with the PI and City staff (PRC 5097.98).
3. If the remains are of historic origin, they shall be appropriately removed and conveyed to the San Diego Museum of Man for analysis. The decision for internment of the human remains shall be made in consultation with MMC, EAS, the applicant/landowner, any known descendant group, and the San Diego Museum of Man.

V. Night and/or Weekend Work

- A. If night and/or weekend work is included in the contract
 1. When night and/or weekend work is included in the contract package, the extent and timing shall be presented and discussed at the precon meeting.
 2. The following procedures shall be followed.
 - a. No Discoveries
In the event that no discoveries were encountered during night and/or weekend work, the PI shall record the information on the CSV and submit to MMC via fax by 8AM of the next business day.
 - b. Discoveries
All discoveries shall be processed and documented using the existing procedures detailed in Sections III - During Construction, and IV - Discovery of Human Remains. Discovery of human remains shall always be treated as a significant discovery.
 - c. Potentially Significant Discoveries
If the PI determines that a potentially significant discovery has been made, the procedures detailed under Section III - During Construction and IV-Discovery of Human Remains shall be followed.
 - d. The PI shall immediately contact the RE and MMC, or by 8AM of the next business day to report and discuss the findings as indicated in Section III-B, unless other specific arrangements have been made.
- B. If night and/or weekend work becomes necessary during the course of construction
 1. The Construction Manager shall notify the RE, or BI, as appropriate, a minimum of 24 hours before the work is to begin.
 2. The RE, or BI, as appropriate, shall notify MMC immediately.
- C. All other procedures described above shall apply, as appropriate.

VI. Post Construction

- A. Submittal of Draft Monitoring Report
 1. The PI shall submit two copies of the Draft Monitoring Report (even if negative), prepared in accordance with the Historical Resources Guidelines (Appendix C/D) which describes the results, analysis, and conclusions of all phases of the Archaeological Monitoring Program (with appropriate graphics) to MMC via the RE for review and approval within 90 days following the completion of monitoring. **It should be noted that if the PI is unable to submit the Draft Monitoring Report within the allotted 90-day timeframe as a result of delays with analysis, special study results or other complex issues, a schedule shall be submitted to MMC**

establishing agreed due dates and the provision for submittal of monthly status reports until this measure can be met.

- a. For significant archaeological resources encountered during monitoring, the Archaeological Data Recovery Program or Pipeline Trenching Discovery Process shall be included in the Draft Monitoring Report.
 - b. Recording Sites with State of California Department of Parks and Recreation
The PI shall be responsible for recording (on the appropriate State of California Department of Park and Recreation forms-DPR 523 A/B) any significant or potentially significant resources encountered during the Archaeological Monitoring Program in accordance with the City's Historical Resources Guidelines, and submittal of such forms to the South Coastal Information Center with the Final Monitoring Report.
2. MMC shall return the Draft Monitoring Report to the PI via the RE for revision or, for preparation of the Final Report.
 3. The PI shall submit revised Draft Monitoring Report to MMC via the RE for approval.
 4. MMC shall provide written verification to the PI of the approved report.
 5. MMC shall notify the RE or BI, as appropriate, of receipt of all Draft Monitoring Report submittals and approvals.
- B. Handling of Artifacts
1. The PI shall be responsible for ensuring that all cultural remains collected are cleaned and catalogued
 2. The PI shall be responsible for ensuring that all artifacts are analyzed to identify function and chronology as they relate to the history of the area; that faunal material is identified as to species; and that specialty studies are completed, as appropriate.
- C. Curation of artifacts: Accession Agreement and Acceptance Verification
1. The PI shall be responsible for ensuring that all artifacts associated with the survey, testing and/or data recovery for this project are permanently curated with an appropriate institution. This shall be completed in consultation with MMC and the Native American representative, as applicable.
 2. When applicable to the situation, the PI shall include written verification from the Native American consultant/monitor indicating that Native American resources were treated in accordance with state law and/or applicable agreements. If the resources were reinterred, verification shall be provided to show what protective measures were taken to ensure no further disturbance occurs in accordance with Section IV – Discovery of Human Remains, Subsection C.
 3. The PI shall submit the Accession Agreement and catalogue record(s) to the RE or BI, as appropriate for donor signature with a copy submitted to MMC.
 4. The RE or BI, as appropriate shall obtain signature on the Accession Agreement and shall return to PI with copy submitted to MMC.
 5. The PI shall include the Acceptance Verification from the curation institution in the Final Monitoring Report submitted to the RE or BI and MMC.
- D. Final Monitoring Report(s)
1. The PI shall submit one copy of the approved Final Monitoring Report to the RE or BI as appropriate, and one copy to MMC (even if negative), within 90 days after notification from MMC of the approved report.

2. The RE shall, in no case, issue the Notice of Completion until receiving a copy of the approved Final Monitoring Report from MMC which includes the Acceptance Verification from the curation institution.

Land Use Adjacency

Prior to issuance of any construction permit or notice to proceed, DSD/ LDR, and/or MSCP staff shall verify the Applicant has accurately represented the project's design in or on the Construction Documents (CD's/CD's consist of Construction Plan Sets for Private Projects and Contract Specifications for Public Projects) are in conformance with the associated discretionary permit conditions and Exhibit "A", and also the City's Multi-Species Conservation Program (MSCP) Multi-Habitat Planning Area (MHPA) Land Use Adjacency Guidelines. The applicant shall provide an implementing plan and include references on/in CD's of the following:

A. Grading/Land Development/MHPA Boundaries - MHPA boundaries on-site and adjacent properties shall be delineated on the CDs. DSD Planning and/or MSCP staff shall ensure that all grading is included within the development footprint, specifically manufactured slopes, disturbance, and development within or adjacent to the MHPA. For projects within or adjacent to the MHPA, all manufactured slopes associated with site development shall be included within the development footprint.

B. Toxics/Project Staging Areas/Equipment Storage - Projects that use chemicals or generate by-products such as pesticides, herbicides, and animal waste, and other substances that are potentially toxic or impactive to native habitats/flora/fauna (including water) shall incorporate measures to reduce impacts caused by the application and/or drainage of such materials into the MHPA. No trash, oil, parking, or other construction/development-related material/activities shall be allowed outside any approved construction limits. Where applicable, this requirement shall be incorporated into leases on publicly-owned property when applications for renewal occur. Provide a note in/on the CD's that states: "All construction related activity that may have potential for leakage or intrusion shall be monitored by the Qualified Biologist/Owners Representative or Resident Engineer to ensure there is no impact to the MHPA."

C. Lighting - Lighting within or adjacent to the MHPA shall be directed away/shielded from the MHPA and be subject to City Outdoor Lighting Regulations per LDC Section 142.0740.

D. Barriers - New development within or adjacent to the MHPA shall be required to provide barriers (e.g., non-invasive vegetation; rocks/boulders; 6-foot high, vinyl-coated chain link or equivalent fences/walls; and/or signage) along the MHPA boundaries to direct public access to appropriate locations, reduce domestic animal predation, protect wildlife in the preserve, and provide adequate noise reduction where needed.

E. Noise - Due to the site's location adjacent to or within the MHPA where the Qualified Biologist has identified potential nesting habitat for listed avian species, construction noise that exceeds the maximum levels allowed shall be avoided during the breeding seasons for the following: California Gnatcatcher(3/1-8/15); Least Bell's vireo (3/15-9/15); and Southwestern Willow Flycatcher (5/1-8/30) (select only the species that apply). If construction is proposed during the breeding season for the species, U.S. Fish and Wildlife Service protocol surveys shall be required in

order to determine species presence/absence. If protocol surveys are not conducted in suitable habitat during the breeding season for the aforementioned listed species, presence shall be assumed with implementation of noise attenuation and biological monitoring.

The above Mitigation Monitoring and Reporting Program may require additional fees and/or deposits to be collected prior to the issuance of building permits, certificates or occupancy and/or final maps to ensure the successful completion of the monitoring program.

VII. IMPACT SIGNIFICANCE

The MND identified that all impacts would be mitigated to below a level of significance through mitigation. This Addendum also identifies that all significant project impacts would be mitigated to below a level of significance, consistent with the previously certified MND.

VIII. CERTIFICATION

Copies of the addendum, the adopted MND, the Mitigation Monitoring and Reporting Program, and associated project-specific technical appendices, if any, may be reviewed in the office of the Development Services Department, or purchased for the cost of reproduction.

Courtney Holowach FOR

Jeff Szymanski, Senior Planner
Development Services Department

10/5/2020

Date of Final Report

Analyst: Courtney Holowach

Attachments:

Location Map

Mitigated Negative Declaration No. 255100/SCH No. 2011091045

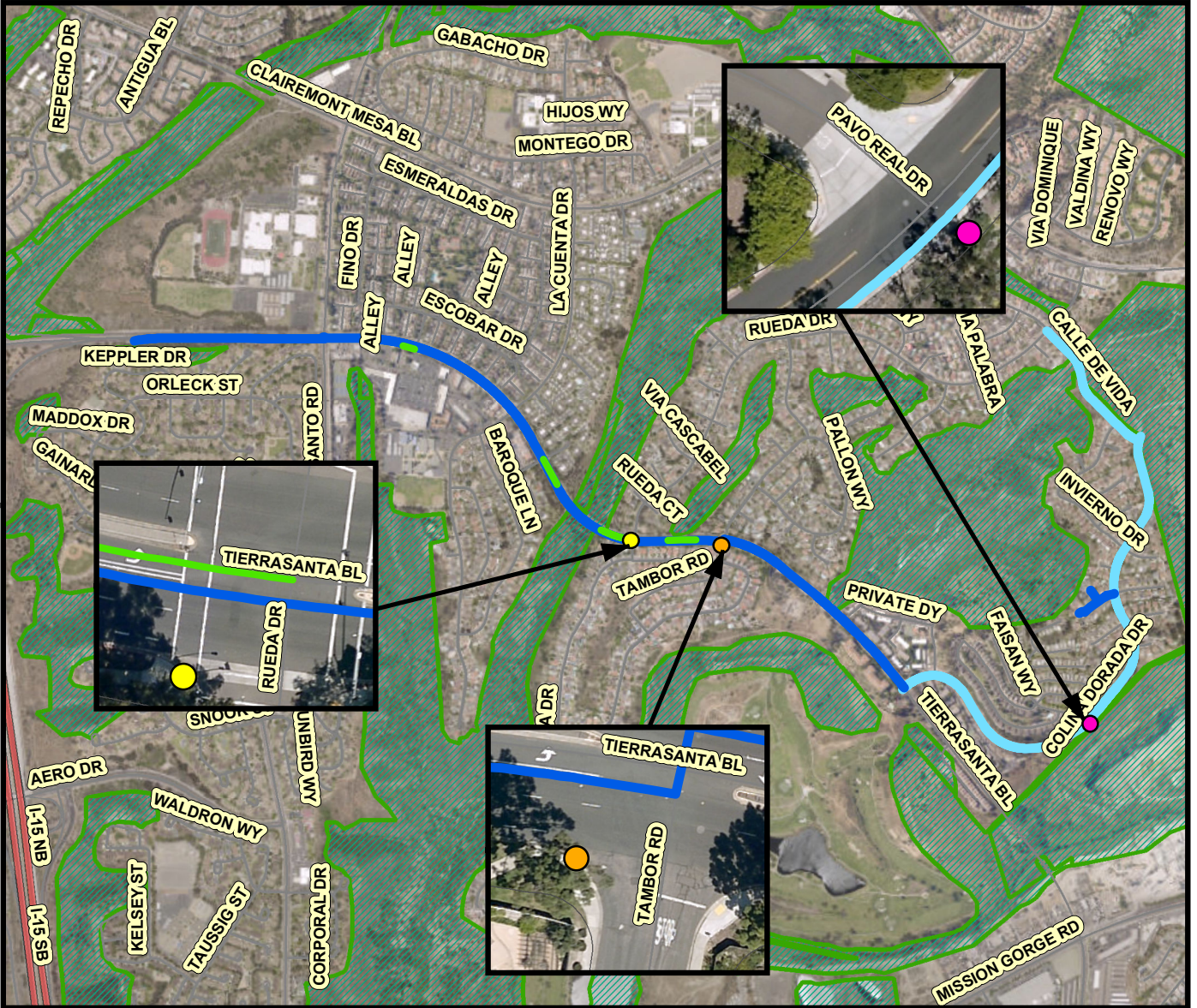
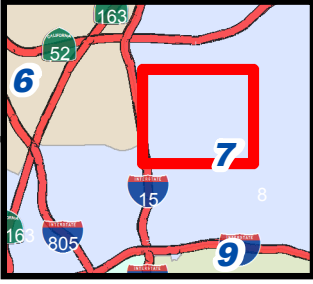
AC WATER AND SEWER GROUP 1056

SENIOR ENGINEER
SHEILA BOSE
619-533-4649

PROJECT MANAGER
ELHAM LOTFI
619-533-5212

PROJECT ENGINEER
DANIEL YELSITS
619-533-5215

FOR QUESTIONS ABOUT THIS PROJECT
Call: 619-533-4207
Email: engineering@sandiego.gov



Legend

- Proposed Water - Realigned
- Proposed Water - Replace in place
- Proposed Sewer Rehab / Point Repair
- Proposed Replacement of Ex PRS @ Tierrasanta Blvd & Rueda Dr
- Proposed Replacement of Ex PRS @ Tierrasanta Blvd & Tambor Rd
- Proposed Replacement of Ex Red GV & Ex 8-inch PRV
- Multi Habitat Planning Areas (MHPA)



No Scale

COMMUNITY NAME: Tierrasanta

COUNCIL DISTRICT: 7

SAP ID: B18181 (W)

Date: 02/03/2020
AC Water and Sewer Group 1056



B18182 (S)

Appendix A - Addendum To Mitigated Negative Declaration

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APPENDIX B
FIRE HYDRANT METER PROGRAM

CITY OF SAN DIEGO CALIFORNIA DEPARTMENT INSTRUCTIONS	NUMBER DI 55.27	DEPARTMENT Water Department
SUBJECT FIRE HYDRANT METER PROGRAM (FORMERLY: CONSTRUCTION METER PROGRAM)	PAGE 1 OF 10	EFFECTIVE DATE October 15, 2002
	SUPERSEDES DI 55.27	DATED April 21, 2000

1. **PURPOSE**

- 1.1 To establish a Departmental policy and procedure for issuance, proper usage and charges for fire hydrant meters.

2. **AUTHORITY**

- 2.1 All authorities and references shall be current versions and revisions.
- 2.2 San Diego Municipal Code (NC) Chapter VI, Article 7, Sections 67.14 and 67.15
- 2.3 Code of Federal Regulations, Safe Drinking Water Act of 1986
- 2.4 California Code of Regulations, Titles 17 and 22
- 2.5 California State Penal Code, Section 498B.0
- 2.6 State of California Water Code, Section 110, 500-6, and 520-23
- 2.7 Water Department Director

Reference

- 2.8 State of California Guidance Manual for Cross Connection Programs
- 2.9 American Water Works Association Manual M-14, Recommended Practice for Backflow Prevention
- 2.10 American Water Works Association Standards for Water Meters
- 2.11 U.S.C. Foundation for Cross Connection Control and Hydraulic Research Manual

3. **DEFINITIONS**

- 3.1 **Fire Hydrant Meter:** A portable water meter which is connected to a fire hydrant for the purpose of temporary use. (These meters are sometimes referred to as Construction Meters.)

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SUBJECT FIRE HYDRANT METER PROGRAM (FORMERLY: CONSTRUCTION METER PROGRAM)	PAGE 2 OF 10	EFFECTIVE DATE October 15, 2002
	SUPERSEDES DI 55.27	DATED April 21, 2000

- 3.2 **Temporary Water Use:** Water provided to the customer for no longer than twelve (12) months.
- 3.3 **Backflow Preventor:** A Reduced Pressure Principal Assembly connected to the outlet side of a Fire Hydrant Meter.

4. **POLICY**

- 4.1 The Water Department shall collect a deposit from every customer requiring a fire hydrant meter and appurtenances prior to providing the meter and appurtenances (see Section 7.1 regarding the Fees and Deposit Schedule). The deposit is refundable upon the termination of use and return of equipment and appurtenances in good working condition.
- 4.2 Fire hydrant meters will have a 2 ½" swivel connection between the meter and fire hydrant. The meter shall not be connected to the 4" port on the hydrant. All Fire Hydrant Meters issued shall have a Reduced Pressure Principle Assembly (RP) as part of the installation. Spanner wrenches are the only tool allowed to turn on water at the fire hydrant.
- 4.3 The use of private hydrant meters on City hydrants is prohibited, with exceptions as noted below. All private fire hydrant meters are to be phased out of the City of San Diego. All customers who wish to continue to use their own fire hydrant meters must adhere to the following conditions:
 - a. Meters shall meet all City specifications and American Water Works Association (AWWA) standards.
 - b. Customers currently using private fire hydrant meters in the City of San Diego water system will be allowed to continue using the meter under the following conditions:
 - 1. The customer must submit a current certificate of accuracy and calibration results for private meters and private backflows annually to the City of San Diego, Water Department, Meter Shop.

CITY OF SAN DIEGO CALIFORNIA DEPARTMENT INSTRUCTIONS	NUMBER DI 55.27	DEPARTMENT Water Department
SUBJECT FIRE HYDRANT METER PROGRAM (FORMERLY: CONSTRUCTION METER PROGRAM)	PAGE 3 OF 10	EFFECTIVE DATE October 15, 2002
	SUPERSEDES DI 55.27	DATED April 21, 2000

2. The meter must be properly identifiable with a clearly labeled serial number on the body of the fire hydrant meter. The serial number shall be plainly stamped on the register lid and the main casing. Serial numbers shall be visible from the top of the meter casing and the numbers shall be stamped on the top of the inlet casing flange.
3. All meters shall be locked to the fire hydrant by the Water Department, Meter Section (see Section 4.7).
4. All meters shall be read by the Water Department, Meter Section (see Section 4.7).
5. All meters shall be relocated by the Water Department, Meter Section (see Section 4.7).
6. These meters shall be tested on the anniversary of the original test date and proof of testing will be submitted to the Water Department, Meter Shop, on a yearly basis. If not tested, the meter will not be allowed for use in the City of San Diego.
7. All private fire hydrant meters shall have backflow devices attached when installed.
8. The customer must maintain and repair their own private meters and private backflows.
9. The customer must provide current test and calibration results to the Water Department, Meter Shop after any repairs.
10. When private meters are damaged beyond repair, these private meters will be replaced by City owned fire hydrant meters.

CITY OF SAN DIEGO CALIFORNIA DEPARTMENT INSTRUCTIONS	NUMBER DI 55.27	DEPARTMENT Water Department
SUBJECT FIRE HYDRANT METER PROGRAM (FORMERLY: CONSTRUCTION METER PROGRAM)	PAGE 4 OF 10	EFFECTIVE DATE October 15, 2002
	SUPERSEDES DI 55.27	DATED April 21, 2000

11. When a private meter malfunctions, the customer will be notified and the meter will be removed by the City and returned to the customer for repairs. Testing and calibration results shall be given to the City prior to any re-installation.
 12. The register shall be hermetically sealed straight reading and shall be readable from the inlet side. Registration shall be in hundred cubic feet.
 13. The outlet shall have a 2 ½ “National Standards Tested (NST) fire hydrant male coupling.
 14. Private fire hydrant meters shall not be transferable from one contracting company to another (i.e. if a company goes out of business or is bought out by another company).
- 4.4 All fire hydrant meters and appurtenances shall be installed, relocated and removed by the City of San Diego, Water Department. All City owned fire hydrant meters and appurtenances shall be maintained by the City of San Diego, Water Department, Meter Services.
- 4.5 If any fire hydrant meter is used in violation of this Department Instruction, the violation will be reported to the Code Compliance Section for investigation and appropriate action. Any customer using a fire hydrant meter in violation of the requirements set forth above is subject to fines or penalties pursuant to the Municipal Code, Section 67.15 and Section 67.37.
- 4.6 Conditions and Processes for Issuance of a Fire Hydrant Meter**
- Process for Issuance
- a. Fire hydrant meters shall only be used for the following purposes:
 1. Temporary irrigation purposes not to exceed one year.

CITY OF SAN DIEGO CALIFORNIA DEPARTMENT INSTRUCTIONS	NUMBER DI 55.27	DEPARTMENT Water Department
SUBJECT FIRE HYDRANT METER PROGRAM (FORMERLY: CONSTRUCTION METER PROGRAM)	PAGE 5 OF 10	EFFECTIVE DATE October 15, 2002
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2. Construction and maintenance related activities (see Tab 2).
 - b. No customer inside or outside the boundaries of the City of San Diego Water Department shall resell any portion of the water delivered through a fire hydrant by the City of San Diego Water Department.
 - c. The City of San Diego allows for the issuance of a temporary fire hydrant meter for a period not to exceed 12 months (365 days). An extension can only be granted in writing from the Water Department Director for up to 90 additional days. A written request for an extension by the consumer must be submitted at least 30 days prior to the 12 month period ending. No extension shall be granted to any customer with a delinquent account with the Water Department. No further extensions shall be granted.
 - d. Any customer requesting the issuance of a fire hydrant meter shall file an application with the Meter Section. The customer must complete a "Fire Hydrant Meter Application" (Tab 1) which includes the name of the company, the party responsible for payment, Social Security number and/or California ID, requested location of the meter (a detailed map signifying an exact location), local contact person, local phone number, a contractor's license (or a business license), description of specific water use, duration of use at the site and full name and address of the person responsible for payment.
 - e. At the time of the application the customer will pay their fees according to the schedule set forth in the Rate Book of Fees and Charges, located in the City Clerk's Office. All fees must be paid by check, money order or cashiers check, made payable to the City Treasurer. Cash will not be accepted.
 - f. No fire hydrant meters shall be furnished or relocated for any customer with a delinquent account with the Water Department.
 - g. After the fees have been paid and an account has been created, the

CITY OF SAN DIEGO CALIFORNIA DEPARTMENT INSTRUCTIONS	NUMBER DI 55.27	DEPARTMENT Water Department
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	SUPERSEDES DI 55.27	DATED April 21, 2000

meter shall be installed within 48 hours (by the second business day). For an additional fee, at overtime rates, meters can be installed within 24 hours (within one business day).

4.7 Relocation of Existing Fire Hydrant Meters

- a. The customer shall call the Fire Hydrant Meter Hotline (herein referred to as “Hotline”), a minimum of 24 hours in advance, to request the relocation of a meter. A fee will be charged to the existing account, which must be current before a work order is generated for the meter’s relocation.
- b. The customer will supply in writing the address where the meter is to be relocated (map page, cross street, etc). The customer must update the original Fire Hydrant Meter Application with any changes as it applies to the new location.
- c. Fire hydrant meters shall be read on a monthly basis. While fire hydrant meters and backflow devices are in service, commodity, base fee and damage charges, if applicable, will be billed to the customer on a monthly basis. If the account becomes delinquent, the meter will be removed.

4.8 Disconnection of Fire Hydrant Meter

- a. After ten (10) months a “Notice of Discontinuation of Service” (Tab 3) will be issued to the site and the address of record to notify the customer of the date of discontinuance of service. An extension can only be granted in writing from the Water Department Director for up to 90 additional days (as stated in Section 4.6C) and a copy of the extension shall be forwarded to the Meter Shop Supervisor. If an extension has not been approved, the meter will be removed after twelve (12) months of use.
- b. Upon completion of the project the customer will notify the Meter Services office via the Hotline to request the removal of the fire hydrant meter and appurtenances. A work order will be generated

CITY OF SAN DIEGO CALIFORNIA DEPARTMENT INSTRUCTIONS	NUMBER DI 55.27	DEPARTMENT Water Department
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for removal of the meter.

- c. Meter Section staff will remove the meter and backflow prevention assembly and return it to the Meter Shop. Once returned to the Meter Shop the meter and backflow will be tested for accuracy and functionality.
- d. Meter Section Staff will contact and notify Customer Services of the final read and any charges resulting from damages to the meter and backflow or its appurtenance. These charges will be added on the customer's final bill and will be sent to the address of record. Any customer who has an outstanding balance will not receive additional meters.
- e. Outstanding balances due may be deducted from deposits and any balances refunded to the customer. Any outstanding balances will be turned over to the City Treasurer for collection. Outstanding balances may also be transferred to any other existing accounts.

5. **EXCEPTIONS**

- 5.1 Any request for exceptions to this policy shall be presented, in writing, to the Customer Support Deputy Director, or his/her designee for consideration.

6. **MOBILE METER**

- 6.1 Mobile meters will be allowed on a case by case basis. All mobile meters will be protected by an approved backflow assembly and the minimum requirement will be a Reduced Pressure Principal Assembly. The two types of Mobile Meters are vehicle mounted and floating meters. Each style of meters has separate guidelines that shall be followed for the customer to retain service and are described below:

- a) **Vehicle Mounted Meters:** Customer applies for and receives a City owned Fire Hydrant Meter from the Meter Shop. The customer mounts the meter on the vehicle and brings it to the Meter Shop for

CITY OF SAN DIEGO CALIFORNIA DEPARTMENT INSTRUCTIONS	NUMBER DI 55.27	DEPARTMENT Water Department
SUBJECT FIRE HYDRANT METER PROGRAM (FORMERLY: CONSTRUCTION METER PROGRAM)	PAGE 8 OF 10	EFFECTIVE DATE October 15, 2002
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inspection. After installation is approved by the Meter Shop the vehicle and meter shall be brought to the Meter Shop on a monthly basis for meter reading and on a quarterly basis for testing of the backflow assembly. Meters mounted at the owner's expense shall have the one year contract expiration waived and shall have meter or backflow changed if either fails.

b) **Floating Meters:** Floating Meters are meters that are not mounted to a vehicle. **(Note: All floating meters shall have an approved backflow assembly attached.)** The customer shall submit an application and a letter explaining the need for a floating meter to the Meter Shop. The Fire Hydrant Meter Administrator, after a thorough review of the needs of the customer, (i.e. number of jobsites per day, City contract work, lack of mounting area on work vehicle, etc.), may issue a floating meter. At the time of issue, it will be necessary for the customer to complete and sign the "Floating Fire Hydrant Meter Agreement" which states the following:

- 1) The meter will be brought to the Meter Shop at 2797 Caminito Chollas, San Diego on the third week of each month for the monthly read by Meter Shop personnel.
- 2) Every other month the meter will be read and the backflow will be tested. This date will be determined by the start date of the agreement.

If any of the conditions stated above are not met the Meter Shop has the right to cancel the contract for floating meter use and close the account associated with the meter. The Meter Shop will also exercise the right to refuse the issuance of another floating meter to the company in question.

Any Fire Hydrant Meter using reclaimed water shall not be allowed use again with any potable water supply. The customer shall incur the cost of replacing the meter and backflow device in this instance.

CITY OF SAN DIEGO CALIFORNIA DEPARTMENT INSTRUCTIONS	NUMBER DI 55.27	DEPARTMENT Water Department
SUBJECT FIRE HYDRANT METER PROGRAM (FORMERLY: CONSTRUCTION METER PROGRAM)	PAGE 9 OF 10	EFFECTIVE DATE October 15, 2002
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7. **FEE AND DEPOSIT SCHEDULES**

7.1 **Fees and Deposit Schedules:** The fees and deposits, as listed in the Rate Book of Fees and Charges, on file with the Office of the City Clerk, are based on actual reimbursement of costs of services performed, equipment and materials. These deposits and fees will be amended, as needed, based on actual costs. Deposits, will be refunded at the end of the use of the fire hydrant meter, upon return of equipment in good working condition and all outstanding balances on account are paid. Deposits can also be used to cover outstanding balances.

All fees for equipment, installation, testing, relocation and other costs related to this program are subject to change without prior notification. The Mayor and Council will be notified of any future changes.

8. **UNAUTHORIZED USE OF WATER FROM A HYDRANT**

8.1 Use of water from any fire hydrant without a properly issued and installed fire hydrant meter is theft of City property. Customers who use water for unauthorized purposes or without a City of San Diego issued meter will be prosecuted.

8.2 If any unauthorized connection, disconnection or relocation of a fire hydrant meter, or other connection device is made by anyone other than authorized Water Department personnel, the person making the connection will be prosecuted for a violation of San Diego Municipal Code, Section 67.15. In the case of a second offense, the customer's fire hydrant meter shall be confiscated and/or the deposit will be forfeited.

8.3 Unauthorized water use shall be billed to the responsible party. Water use charges shall be based on meter readings, or estimates when meter readings are not available.

8.4 In case of unauthorized water use, the customer shall be billed for all applicable charges as if proper authorization for the water use had been obtained, including but not limited to bi-monthly service charges, installation charges and removal charges.

CITY OF SAN DIEGO CALIFORNIA DEPARTMENT INSTRUCTIONS	NUMBER DI 55.27	DEPARTMENT Water Department
SUBJECT FIRE HYDRANT METER PROGRAM (FORMERLY: CONSTRUCTION METER PROGRAM)	PAGE 10 OF 10	EFFECTIVE DATE October 15, 2002
	SUPERSEDES DI 55.27	DATED April 21, 2000

- 8.5 If damage occurs to Water Department property (i.e. fire hydrant meter, backflow, various appurtenances), the cost of repairs or replacements will be charged to the customer of record (applicant).

Water Department Director

- Tabs: 1. Fire Hydrant Meter Application
2. Construction & Maintenance Related Activities With No Return To Sewer
3. Notice of Discontinuation of Service

APPENDIX

Administering Division: Customer Support Division

Subject Index: Construction Meters
Fire Hydrant
Fire Hydrant Meter Program
Meters, Floating or Vehicle Mounted
Mobile Meter
Program, Fire Hydrant Meter

Distribution: DI Manual Holders



Application for Fire Hydrant Meter (EXHIBIT A)

(For Office Use Only)

NS REQ	FAC#
DATE	BY

METER SHOP (619) 527-7449

Meter Information

Application Date	Requested Install Date:
------------------	-------------------------

Fire Hydrant Location: (Attach Detailed Map//Thomas Bros. Map Location or Construction drawing.) Zip:	T.B.	G.B. (CITY USE)
Specific Use of Water:		
Any Return to Sewer or Storm Drain, if so, explain:		
Estimated Duration of Meter Use:		Check Box if Reclaimed Water

Company Information

Company Name:			
Mailing Address:			
City:	State:	Zip:	Phone: ()
*Business license#		*Contractor license#	
A Copy of the Contractor's license OR Business License is required at the time of meter issuance.			
Name and Title of Billing Agent: <small>(PERSON IN ACCOUNTS PAYABLE)</small>			Phone: ()
Site Contact Name and Title:			Phone: ()
Responsible Party Name:			Title:
Cal ID#			Phone: ()
Signature:		Date:	
<small>Guarantees Payment of all Charges Resulting from the use of this Meter. Insures that employees of this Organization understand the proper use of Fire Hydrant Meter</small>			

Fire Hydrant Meter Removal Request	Requested Removal Date:
Provide Current Meter Location if Different from Above:	
Signature:	Title: Date:
Phone: ()	Pager: ()

<input type="checkbox"/> City Meter	<input type="checkbox"/> Private Meter
Contract Acct #:	Deposit Amount: \$ 936.00 Fees Amount: \$ 62.00
Meter Serial #	Meter Size: 05 Meter Make and Style: 6-7
Backflow #	Backflow Size: Backflow Make and Style:
Name:	Signature: Date:

WATER USES WITHOUT ANTICIPATED CHARGES FOR RETURN TO SEWER

Auto Detailing
Backfilling
Combination Cleaners (Vactors)
Compaction
Concrete Cutters
Construction Trailers
Cross Connection Testing
Dust Control
Flushing Water Mains
Hydro Blasting
Hydro Seeing
Irrigation (for establishing irrigation only; not continuing irrigation)
Mixing Concrete
Mobile Car Washing
Special Events
Street Sweeping
Water Tanks
Water Trucks
Window Washing

Note:

1. If there is any return to sewer or storm drain, then sewer and/or storm drain fees will be charges.

Date

Name of Responsible Party
Company Name and Address
Account Number: _____

Subject: Discontinuation of Fire Hydrant Meter Service

Dear Water Department Customer:

The authorization for use of Fire Hydrant Meter # _____, located at *(Meter Location Address)* ends in 60 days and will be removed on or after *(Date Authorization Expires)*. Extension requests for an additional 90 days must be submitted in writing for consideration 30 days prior to the discontinuation date. If you require an extension, please contact the Water Department, or mail your request for an extension to:

City of San Diego
Water Department
Attention: Meter Services
2797 Caminito Chollas
San Diego, CA 92105-5097

Should you have any questions regarding this matter, please call the Fire Hydrant Hotline at (619) _____ - _____.

Sincerely,

Water Department

APPENDIX C

MATERIALS TYPICALLY ACCEPTED BY CERTIFICATE OF COMPLIANCE

MATERIALS TYPICALLY ACCEPTED BY CERTIFICATE OF COMPLIANCE

1. Soil amendment
2. Fiber mulch
3. PVC or PE pipe up to 16 inch diameter
4. Stabilizing emulsion
5. Lime
6. Preformed elastomeric joint seal
7. Plain and fabric reinforced elastomeric bearing pads
8. Steel reinforced elastomeric bearing pads
9. Waterstops (Special Condition)
10. Epoxy coated bar reinforcement
11. Plain and reinforcing steel
12. Structural steel
13. Structural timber and lumber
14. Treated timber and lumber
15. Lumber and timber
16. Aluminum pipe and aluminum pipe arch
17. Corrugated steel pipe and corrugated steel pipe arch
18. Structural metal plate pipe arches and pipe arches
19. Perforated steel pipe
20. Aluminum underdrain pipe
21. Aluminum or steel entrance tapers, pipe downdrains, reducers, coupling bands and slip joints
22. Metal target plates
23. Paint (traffic striping)
24. Conductors
25. Painting of electrical equipment
26. Electrical components
27. Engineering fabric
28. Portland Cement
29. PCC admixtures
30. Minor concrete, asphalt
31. Asphalt (oil)
32. Liquid asphalt emulsion
33. Epoxy

APPENDIX D

SAMPLE CITY INVOICE WITH CASH FLOW FORECAST

WBS #:	B18108
Date Submitted:	10/10/2018
NTP Date:	3/23/2018
Final Statement of WD Date:	5/23/2020
Contract #:	K-XX-XXXX-XXX-X
Contract Amount:	\$5,617,000

Construction Cash Flow Forecast
 "Sewer and Water Group Job 965 (W)"

Year	January	February	March	April	May	June	July	August	September	October	November	December
2018				15,000	25,000	52,000	52,000	100,000	10,000	100,000	100,000	100,000
2019	10,000	10,000	85,000	58,000	100,000	100,000	100,000	100,000	100,000	100,000	1,000,000	1,000,000
2020	100,000	100,000	100,000	1,000,000	1,000,000							
2021												
2022												
2023												
2024												
2025												

SAMPLE REFERENCE

APPENDIX E
LOCATION MAP

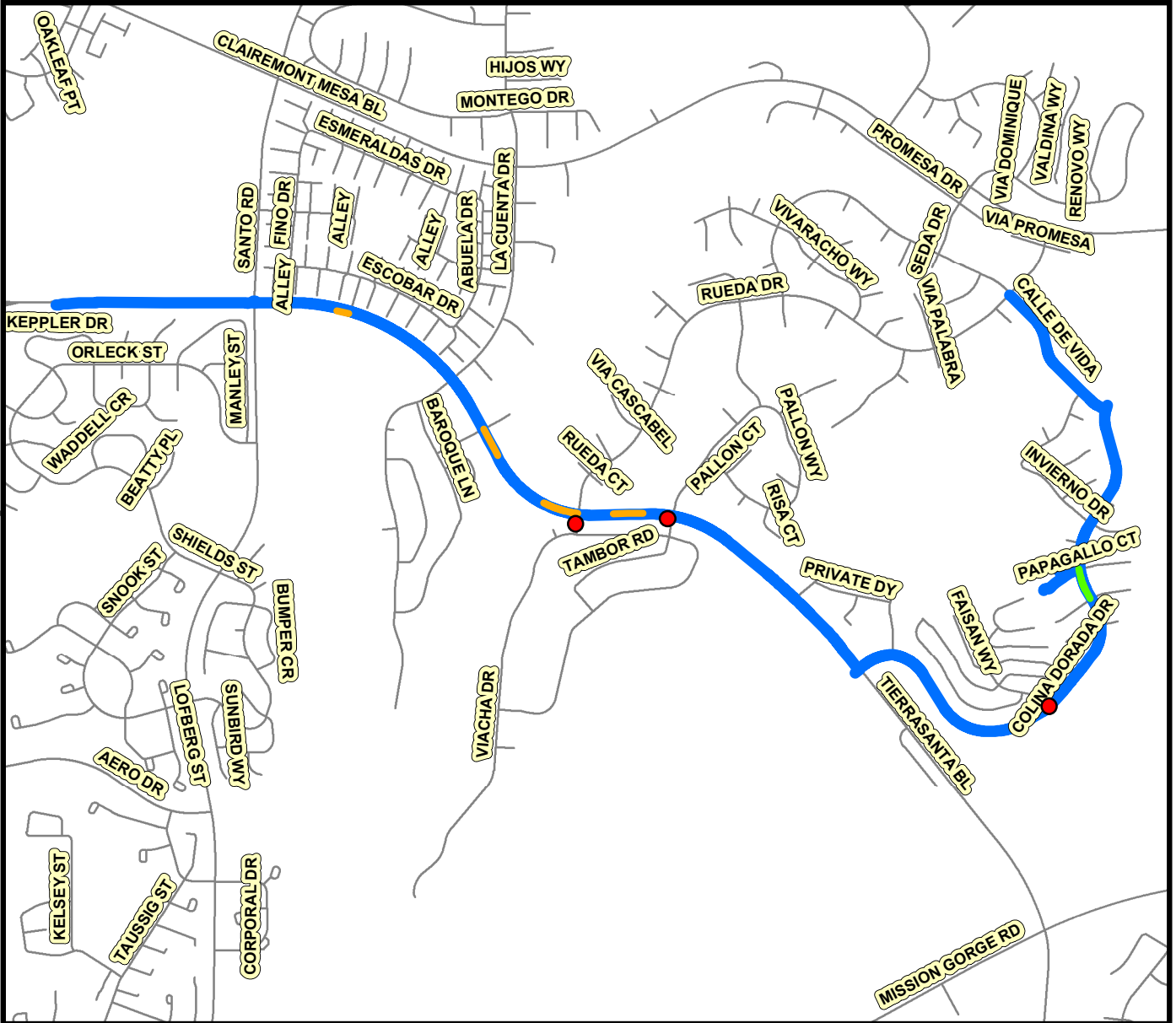
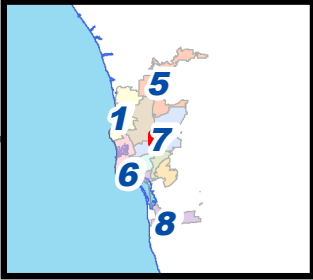
AC WATER & SEWER GROUP 1056

SENIOR ENGINEER
SHEILA BOSE
619-533-4698

PROJECT MANAGER
ELHAM LOTFI
619-533-5212

PROJECT ENGINEER
DANIEL YELSITS
619-533-5215

FOR QUESTIONS ABOUT THIS PROJECT
Call: 619-533-4207
Email: engineering@sandiego.gov



Legend

- Sewer Replacement
- Sewer Rehab
- Water Replacement
- PRS Replacement



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APPENDIX F
ADJACENT PROJECT MAP

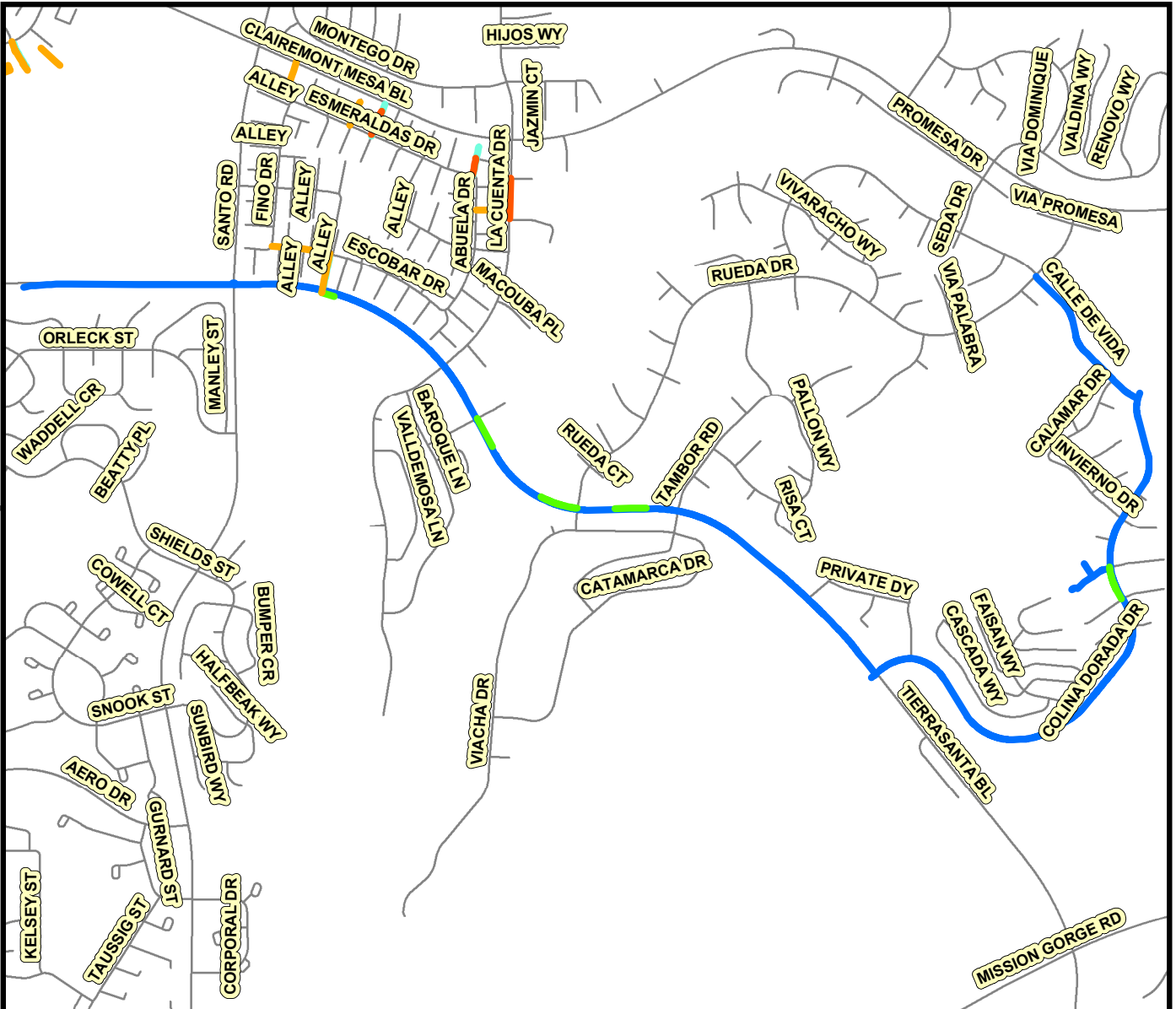
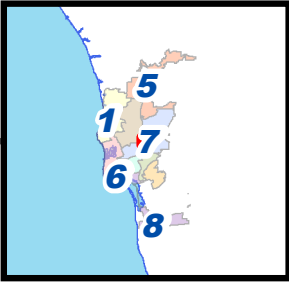
AC WATER & SEWER GROUP 1056
ADJACENT PROJECTS

SENIOR ENGINEER
 SHEILA BOSE
 619-533-4698

PROJECT MANAGER
 ELHAM LOTFI
 619-533-5212

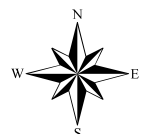
PROJECT ENGINEER
 DANIEL YELSITS
 619-533-5215

FOR QUESTIONS ABOUT THIS PROJECT
 Call: 619-533-4207
 Email: engineering@sandiego.gov



Legend

- B18182 AC Water & Sewer Group 1056 (S)
- B19145 Sewer Rehab 1051A
- B18181 AC Water & Sewer Group 1056 (W)
- B18098 AC Water & Sewer Group 1051 (S)
- B18091 AC Water & Sewer Group 1051 (W)



COMMUNITY NAME: TIERRASANTA

COUNCIL DISTRICT: 7

WBS NO: B18181 (W) \

B18182 (S) \

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APPENDIX G

CONTRACTOR'S DAILY QUALITY CONTROL INSPECTION REPORT

City of San Diego
Rubber Polymer Modified Slurry
Contractor's Daily Quality Control Inspection Report

Project Title: _____ Date: _____

Ambient Temperature (Start of Work): _____ Time: _____

Environmental Considerations: _____

Locations (Address Range/Cross Streets):

1. _____
2. _____
3. _____

Approved Mix Design: _____

Material Suppliers: _____

RPMS Type(s): _____

Slurry Machine #'s: _____

Estimated Cure Time (Break) of Slurry: _____

Pre-Mix (Per 100 Counts)

Gate Setting/Emulsion %: _____

Aggregate Weight: _____

Cement % (by weight of aggregate): _____

Crumb Rubber % (by volume of cement): _____

Machine Inspection

Leaks: _____

Sprayers: _____

Emulsion Filter: _____

Carbon Black: _____

Spreader Box Inspection

Cleanliness: _____

Augers: _____

Rubbers: _____

Fabric: _____

Runners: _____

City of San Diego
Rubber Polymer Modified Slurry
Contractor's Daily Quality Control Inspection Report

Project Conditions

Crack Fill: _____

Asphalt Deficiencies: _____

Cleanliness: _____

Impediments/Other: _____

Communication to Client/ Resident Engineer

Crack Fill: _____

Asphalt Deficiencies: _____

Cleanliness: _____

Impediments/Other: _____

Test Lab

Tech: _____ Time on Site: _____

Notes

QCP Administrator Signature:

Date Signed:

Appendix G

City of San Diego
Asphalt Concrete Overlay
Contractor's Daily Quality Control Inspection Report

Project Title: _____ Date: _____

Locations: 1. _____
2. _____
3. _____

Asphalt Mix Specification: Attached Supplier: _____

Dig out Locations: 1. _____
2. _____
3. _____

Tack Coat Application Rate @ Locations:
1. _____
2. _____
3. _____

Asphalt Temperature at Placement @ Locations:
1. _____
2. _____
3. _____

Asphalt Depth @Locations:
1. _____
2. _____
3. _____

Compaction Test Result @Locations:
1. _____
2. _____
3. _____

Location and nature of defects:

- 1. _____
- 2. _____
- 3. _____

Remedial and Corrective Actions taken or proposed for Engineer's approval:

- 1. _____
- 2. _____
- 3. _____

Date's City Laboratory representative was present:

- 1. _____
- 2. _____
- 3. _____

Verified the following:

- 1. Proper Storage of Materials & Equipment
- 2. Proper Operation of Equipment
- 3. Adherence to Plans and Specs
- 4. Review of QC Tests
- 5. Safety Inspection

Initials:

- _____
- _____
- _____
- _____
- _____

Deviations from QCP _____ (see attached)

Quality Control Plan Administrator's Signature:

Date Signed:

APPENDIX H
MONTHLY DRINKING WATER DISCHARGE MONITORING FORM

DRINKING WATER DISCHARGE MONITORING FORM

(Use for All Discharges to the Storm Drain)

All discharge activities related to this project comply with the State Water Resources Control Board ORDER WQ 2014-0194-DWQ, STATEWIDE GENERAL NPDES PERMIT FOR DRINKING WATER SYSTEMS DISCHARGES as referenced by (http://www.waterboards.ca.gov/water_issues/programs/npdes/docs/drinkingwater/final_statewide_wqo2014_0194_dwq.pdf), and as follows:

Project Name:				WBS No.:			Watershed No.					
Qualified Person Conducting Tests:				signature								
BMPs MUST BE IN PLACE PRIOR TO ANY SCHEDULED DISCHARGE						By signing, I certify that all of the statements and conditions for drinking water discharge events are correct.						
Event #1												
Discharge Location ¹	Category ² (Select one)	Notification ³ (Select all that apply)	BMPs in Place ⁴ (Select all that apply)	Volume ⁵ (gal)	Sampling ⁶ (take samples at 10 mins, 50-60 mins & last 10 mins)				Exceedence ⁷			Notes Report exceedence to RE & complete page 2 of 2
					Measure	Unit	Time	Result	Limit	No	Yes	
Inlet Location	Superchlorinated <small>(Chlorine added for disinfection)</small>	TSW <small>(All Categories)</small>	Sweep flow path <small>(gutter, street, etc.)</small>	Total	Chlorine	mg/L			0.1 mg/L= Exceedence			
	Large Volume <small>(≥ 325,850 gal)</small>	PUD <small>(All Categories)</small>	Dechlorination <small>(diffusers, chemicals, etc.)</small>				Reused <small>(if any)</small>					
	Well Dev/Rehab <small>(Not Typical)</small>	Water Board <small>(Large Volume Only)</small>	Inlet Protection		Turbidity	NTU			20 NTU= Exceedence 225 NTU= Exceedence for Ocean			
	Small Volume/Other <small>(No Sampling Required)</small>	County <small>(≥100,000 gal & within ¼ mile of ocean/bay; or if enters the County's MS4)</small>	Erosion Controls									
			Sediment Controls		pH	Unit			Range 6.5 to 8.5			
Date:	Start											
Time:	End											
Date:												
Time:												
Event #2												
Discharge Location ¹	Category ² (Select one)	Notification ³ (Select all that apply)	BMPs in Place ⁴ (Select all that apply)	Volume ⁵ (gal)	Sampling ⁶ (take samples at 10 mins, 50-60 mins & last 10 mins)				Exceedence ⁷			Notes Report exceedence to RE & complete page 2 of 2
					Measure	Unit	Time	Result	Limit	No	Yes	
Inlet Location	Superchlorinated <small>(Chlorine added for disinfection)</small>	TSW <small>(All Categories)</small>	Sweep flow path <small>(gutter, street, etc.)</small>	Total	Chlorine	mg/L			0.1 mg/L= Exceedence			
	Large Volume <small>(≥ 325,850 gal)</small>	PUD <small>(All Categories)</small>	Dechlorination <small>(diffusers, chemicals, etc.)</small>				Reused <small>(if any)</small>					
	Well Dev/Rehab <small>(Not Typical)</small>	Water Board <small>(Large Volume Only)</small>	Inlet Protection		Turbidity	NTU			20 NTU= Exceedence 225 NTU= Exceedence for Ocean			
	Small Volume/Other <small>(No Sampling Required)</small>	County <small>(≥100,000 gal & within ¼ mile of ocean/bay; or if enters the County's MS4)</small>	Erosion Controls									
			Sediment Controls		pH	Unit			Range 6.5 to 8.5			
Date:	Start											
Time:	End											
Date:												
Time:												

Submit completed Form to RE

Instructional Notes found on the Page 2 of 2

Receiving Water Monitoring

(Complete only if limits exceed on Page 1 of 2)

Event #1	
1) Go to the location where the discharge enters the receiving water.	
<input type="checkbox"/> Accessible <input type="checkbox"/> Unable to Determine <input type="checkbox"/> No Safe Access	
2) If accessible, take photos and complete the visual monitoring below. If unable to determine, stop here. If no safe access, stop here.	
3) Visual Monitoring: Is the discharge into the receiving water...	
...causing erosion	<input type="checkbox"/> Yes <input type="checkbox"/> No
...carrying floating or suspended matter	<input type="checkbox"/> Yes <input type="checkbox"/> No
...causing discoloration	<input type="checkbox"/> Yes <input type="checkbox"/> No
...causing and impact to the aquatic life present	<input type="checkbox"/> Yes <input type="checkbox"/> No
...observed with visible film	<input type="checkbox"/> Yes <input type="checkbox"/> No
...observed with an sheen or coating	<input type="checkbox"/> Yes <input type="checkbox"/> No
...causing potential nuisance conditions	<input type="checkbox"/> Yes <input type="checkbox"/> No
3) If all answers are NO, stop here.	
4) If any answers are YES, Notify the RE immediately for further action	

Event #2	
1) Go to the location where the discharge enters the receiving water.	
<input type="checkbox"/> Accessible <input type="checkbox"/> Unable to Determine <input type="checkbox"/> No Safe Access	
2) If accessible, take photos and complete the visual monitoring below. If unable to determine, stop here. If no safe access, stop here.	
3) Visual Monitoring: Is the discharge into the receiving water...	
...causing erosion	<input type="checkbox"/> Yes <input type="checkbox"/> No
...carrying floating or suspended matter	<input type="checkbox"/> Yes <input type="checkbox"/> No
...causing discoloration	<input type="checkbox"/> Yes <input type="checkbox"/> No
...causing and impact to the aquatic life present	<input type="checkbox"/> Yes <input type="checkbox"/> No
...observed with visible film	<input type="checkbox"/> Yes <input type="checkbox"/> No
...observed with an sheen or coating	<input type="checkbox"/> Yes <input type="checkbox"/> No
...causing potential nuisance conditions	<input type="checkbox"/> Yes <input type="checkbox"/> No
3) If all answers are NO, stop here.	
4) If any answers are YES, Notify the RE immediately for further action	

Instructional Notes

- 1) Log the location of the inlet or discharge point. For example: Albatross St & 5th Av. Log the start date and time and the end date and time of the discharge.
- 2) Log the discharge category. "Superchlorinated" are discharges where additional chlorine is added in order to adequately disinfect and sanitize drinking water system facilities. This does NOT include potable water containing residual chlorine from the water treatment process. "Large Volume" discharges are greater than 325,850 gallons of total volume for one event. "Well Dev/Rehab" are discharges of potable ground water from a well. This is not typical. If none of these categories apply, then select "Small Volume/Other."
- 3) Notifications of the location, date, time, category, and estimated volume of discharge must be made to the contacts and per the requirements below:

Contact	When to Notify	Email
TSW	3 days prior to all discharges	SWPPP@SanDiego.gov
PUD	3 days prior to all discharges	CompReports@SanDiego.gov Rdavenport@SanDiego.gov
San Diego Water Board	3 days prior to Large Volume discharges	SanDiego@WaterBoards.ca.gov Ben.Neill@WaterBoards.ca.gov
County of San Diego	3 days prior if 100,000 gal and within 1/4 mile of ocean/bay	DEH: Joseph.Palmer@SDCounty.ca.gov Dominique.Edwards@SDCounty.ca.gov
	3 days prior if enter county MS4 or unincorporated County	WPP: Nicholas.DeValle@SDCounty.ca.gov LUEG.Watersheds@sdcounty.ca.gov

- 4) At a minimum, sweep gutters prior to starting discharge and use dechlorination BMPs. The contractor and RE must monitor and determine if BMPs need to be removed or modified. For example if inlet protection is causing flooding at a storm drain inlet, contractor may elect to remove BMPs. Document any modification to BMPs in the notes
- 5) Total volume must be logged for all discharges. If discharge water is reused for other purposes such as watering a golf course, log that volume under "Reused"
- 6) Sampling is required for categories per the following table:

Category	Measure	Sample Frequency
Superchlorinated	Chlorine, Turbidity, pH	first 10 min, 50-60 min, last 10 min
Large Volume	Chlorine Turbidity	first 10 min, 50-60 min, last 10 min
Well Dev/Rehab	Chlorine Turbidity	first 10 min, 50-60 min, last 10 min
Small Volume/Other	None required	N/A

- 7) Effluent limitations must be monitored not to exceed per the following table:

Measure	Method	Limit
Chlorine	Field Measure	0.10 mg/L-Cl
Turbidity	Visual Estimate	20 NTU for inland waters
		225 NTU for ocean 100 NTU for wells
pH	Field Measure	6.5 - 8.5

APPENDIX I
HAZARDOUS WASTE LABEL/FORMS

HAZARDOUS WASTE

STATE AND FEDERAL LAW PROHIBITS IMPROPER DISPOSAL
IF FOUND, CONTACT THE NEAREST POLICE, OR PUBLIC SAFETY
AUTHORITY, OR THE U.S. ENVIRONMENTAL PROTECTION AGENCY
OR THE CALIFORNIA DEPARTMENT OF HEALTH SERVICES

GENERATOR NAME _____

ADDRESS _____ 24 HR. PHONE () _____

CITY _____ STATE _____ ZIP _____

EPA ID NO. _____ MANIFEST DOCUMENT NO. _____

EPA WASTE NO. _____ CA WASTE NO. _____ ACCUMULATION START DATE _____ / ____ / ____

CONTENTS, COMPOSITION _____

PROPER DOT SHIPPING NAME _____

TECHNICAL NAME (S) _____

UN/NA NO. WITH PREFIX _____

PHYSICAL STATE | HAZARDOUS PROPERTIES FLAMMABLE TOXIC
 SOLID LIQUID | CORROSIVE REACTIVE OTHER _____

HANDLE WITH CARE!
CONTAINS HAZARDOUS OR TOXIC WASTES

INCIDENT/RELEASE ASSESSMENT FORM ¹

If you have an emergency, Call 911

Handlers of hazardous materials are required to report releases. The following is a tool to be used for assessing if a release is reportable. Additionally, a non-reportable release incident form is provided to document why a release is not reported (see back).

Questions for Incident Assessment:

	YES	NO
1. Was anyone killed or injured, or did they require medical care or admitted to a hospital for observation?	<input type="checkbox"/>	<input type="checkbox"/>
2. Did anyone, other than employees in the immediate area of the release, evacuate?	<input type="checkbox"/>	<input type="checkbox"/>
3. Did the release cause off-site damage to public or private property?	<input type="checkbox"/>	<input type="checkbox"/>
4. Is the release greater than or equal to a reportable quantity (RQ)?	<input type="checkbox"/>	<input type="checkbox"/>
5. Was there an uncontrolled or unpermitted release to the air?	<input type="checkbox"/>	<input type="checkbox"/>
6. Did an uncontrolled or unpermitted release escape secondary containment, or extend into any sewers, storm water conveyance systems, utility vaults and conduits, wetlands, waterways, public roads, or off site?	<input type="checkbox"/>	<input type="checkbox"/>
7. Will control, containment, decontamination, and/or clean up require the assistance of federal, state, county, or municipal response elements?	<input type="checkbox"/>	<input type="checkbox"/>
8. Was the release or threatened release involving an unknown material or contains an unknown hazardous constituent?	<input type="checkbox"/>	<input type="checkbox"/>
9. Is the incident a threatened release (a condition creating a substantial probability of harm that requires immediate action to prevent, reduce, or mitigate damages to persons, property, or the environment)?	<input type="checkbox"/>	<input type="checkbox"/>
10. Is there an increased potential for secondary effects including fire, explosion, line rupture, equipment failure, or other outcomes that may endanger or cause exposure to employees, the general public, or the environment?	<input type="checkbox"/>	<input type="checkbox"/>

If the answer is YES to any of the above questions – report the release to the California Office of Emergency Services at 800-852-7550 and the local CUPA daytime: (619) 338-2284, after hours: (858) 565-5255. Note: other state and federal agencies may require notification depending on the circumstances.

Call 911 in an emergency

If all answers are NO, complete a Non Reportable Release Incident Form (page 2 of 2) and keep readily available. Documenting why a “no” response was made to each question will serve useful in the event questions are asked in the future, and to justify not reporting to an outside regulatory agency.

If in doubt, report the release.

¹ This document is a guide for accessing when hazardous materials release reporting is required by Chapter 6.95 of the California Health and Safety Code. It does not replace good judgment, Chapter 6.95, or other state or federal release reporting requirements.

NON REPORTABLE RELEASE INCIDENT FORM

1. RELEASE AND RESPONSE DESCRIPTION

Incident # _____

Date/Time Discovered	Date/Time Discharge	Discharge Stopped <input type="checkbox"/> Yes <input type="checkbox"/> No
Incident Date / Time:		
Incident Business / Site Name:		
Incident Address:		
Other Locators (Bldg, Room, Oil Field, Lease, Well #, GIS)		
Please describe the incident and indicate specific causes and area affected. Photos Attached?: <input type="checkbox"/> Yes <input type="checkbox"/> No		
Indicate actions to be taken to prevent similar releases from occurring in the future.		

2. ADMINISTRATIVE INFORMATION

Supervisor in charge at time of incident:	Phone:
Contact Person:	Phone:

3. CHEMICAL INFORMATION

Chemical	Quantity <input type="checkbox"/> GAL <input type="checkbox"/> LBS <input type="checkbox"/> FT ³
Chemical	Quantity <input type="checkbox"/> GAL <input type="checkbox"/> LBS <input type="checkbox"/> FT ³
Chemical	Quantity <input type="checkbox"/> GAL <input type="checkbox"/> LBS <input type="checkbox"/> FT ³
Clean-Up Procedures & Timeline:	
Completed By:	Phone:
Print Name:	Title:

EMERGENCY RELEASE FOLLOW - UP NOTICE REPORTING FORM

A	BUSINESS NAME	FACILITY EMERGENCY CONTACT & PHONE NUMBER () -	
B	INCIDENT DATE MO DAY YR	TIME OES NOTIFIED (use 24 hr time)	OES CONTROL NO.
C	INCIDENT ADDRESS LOCATION	CITY / COMMUNITY	COUNTY ZIP
D	CHEMICAL OR TRADE NAME (print or type)		CAS Number
D	CHECK IF CHEMICAL IS LISTED IN 40 CFR 355, APPENDIX A <input type="checkbox"/>	CHECK IF RELEASE REQUIRES NOTIFICATION UNDER 42 U.S.C. Section 9603 (a) <input type="checkbox"/>	
D	PHYSICAL STATE CONTAINED <input type="checkbox"/> SOLID <input type="checkbox"/> LIQUID <input type="checkbox"/> GAS	PHYSICAL STATE RELEASED <input type="checkbox"/> SOLID <input type="checkbox"/> LIQUID <input type="checkbox"/> GAS	QUANTITY RELEASED
D	ENVIRONMENTAL CONTAMINATION <input type="checkbox"/> AIR <input type="checkbox"/> WATER <input type="checkbox"/> GROUND <input type="checkbox"/> OTHER	TIME OF RELEASE	DURATION OF RELEASE — DAYS — HOURS — MINUTES
E	ACTIONS TAKEN		
F	KNOWN OR ANTICIPATED HEALTH EFFECTS (Use the comments section for addition information)		
	<input type="checkbox"/> ACUTE OR IMMEDIATE (explain) _____		
	<input type="checkbox"/> CHRONIC OR DELAYED (explain) _____		
	<input type="checkbox"/> NOTKNOWN (explain) _____		
G	ADVICE REGARDING MEDICAL ATTENTION NECESSARY FOR EXPOSED INDIVIDUALS		
H	COMMENTS (INDICATE SECTION (A - G) AND ITEM WITH COMMENTS OR ADDITIONAL INFORMATION)		
I	CERTIFICATION: I certify under penalty of law that I have personally examined and I am familiar with the information submitted and believe the submitted information is true, accurate, and complete.		
	REPORTING FACILITY REPRESENTATIVE (print or type) _____		
	SIGNATURE OF REPORTING FACILITY REPRESENTATIVE _____ DATE: _____		

EMERGENCY RELEASE FOLLOW-UP NOTICE REPORTING FORM INSTRUCTIONS

GENERAL INFORMATION:

Chapter 6.95 of Division 20 of the California Health and Safety Code requires that written emergency release follow-up notices prepared pursuant to 42 U.S.C. § 11004, be submitted using this reporting form. Non-permitted releases of reportable quantities of Extremely Hazardous Substances (listed in 40 CFR 355, appendix A) or of chemicals that require release reporting under section 103(a) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 [42 U.S.C. § 9603(a)] must be reported on the form, as soon as practicable, but no later than 30 days, following a release. The written follow-up report is required in addition to the verbal notification.

BASIC INSTRUCTIONS:

- The form, when filled out, reports follow-up information required by 42 U.S.C § 11004. Ensure that all information requested by the form is provided as completely as possible.
- If the incident involves reportable releases of more than one chemical, prepare one report form for each chemical released.
- If the incident involves a series of separate releases of chemical(s) at different times, the releases should be reported on separate reporting forms.

SPECIFIC INSTRUCTIONS:

Block A: Enter the name of the business and the name and phone number of a contact person who can provide detailed facility information concerning the release.

Block B: Enter the date of the incident and the time that verbal notification was made to OES. The OES control number is provided to the caller by OES at the time verbal notification is made. Enter this control number in the space provided.

Block C: Provide information pertaining to the location where the release occurred. Include the street address, the city or community, the county and the zip code.

Block D: Provide information concerning the specific chemical that was released. Include the chemical or trade name and the Chemical Abstract Service (CAS) number. Check all categories that apply. Provide best available information on quantity, time and duration of the release.

Block E: Indicate all actions taken to respond to and contain the release as specified in 42 U.S.C. § 11004(c).

Block F: Check the categories that apply to the health effects that occurred or could result from the release. Provide an explanation or description of the effects in the space provided. Use Block H for additional comments/information if necessary to meet requirements specified in 42 U.S.C. § 11004(c).

Block G: Include information on the type of medical attention required for exposure to the chemical released. Indicate when and how this information was made available to individuals exposed and to medical personnel, if appropriate for the incident, as specified in 42 U.S.C. § 11004(c).

Block H: List any additional pertinent information.

Block I: Print or type the name of the facility representative submitting the report. Include the official signature and the date that the form was prepared.

MAIL THE COMPLETED REPORT TO:

**State Emergency Response Commission (SERC)
Attn: Section 304 Reports
Hazardous Materials Unit
3650 Schriever Avenue
Mather, CA 95655**

NOTE: Authority cited: Sections 25503, 25503.1 and 25507.1, Health and Safety Code. Reference: Sections 25503(b)(4), 25503.1, 25507.1, 25518 and 25520, Health and Safety Code.

APPENDIX J

REHAB DATA COLLECTION – SEWER MAINS SAMPLE DATA TEMPLATE

APPENDIX K

REHAB DATA COLLECTION – MANHOLES SAMPLE DATA TEMPLATE

APPENDIX L

REHAB DATA COLLECTION – LATERALS SAMPLE DATA TEMPLATE

APPENDIX M

SAMPLE OF ARCHAEOLOGY INVOICE

(FOR ARCHAEOLOGY ONLY)

Company Name

Address, telephone, fax

Date: Insert Date

To: Name of Resident Engineer
City of San Diego
Construction Management and
Field Services Division
9573 Chesapeake Drive
San Diego, CA 92123-1304

Project Name: Insert Project Name

SAP Number (WBS/IO/CC): Insert SAP Number

Drawing Number: Insert Drawing Number

Invoice period: Insert Date to Insert Date

Work Completed: Bid item Number – Description of Bid Item – Quantity – Unit Price– Amount

Detailed summary of work completed under this bid item: Insert detailed description of Work related to Archaeology Monitoring Bid item. See Note 1 below.

Summary of charges:

Description of Services	Name	Start Date	End Date	Total Hours	Hourly Rate	Amount
Field Archaeologist	Joe Smith	8/29/2011	9/2/2011	40	\$84	\$3,360
Laboratory Assistant	Jane Doe	8/29/2011	9/2/2011	2	\$30	\$60
Subtotal						\$3,420

Work Completed: Bid item Number – Description of Bid Item – Quantity – Unit Price– Amount

Detailed summary of work completed under this bid item: Insert detailed description of Work related to Archaeology Curation/Discovery Bid item. See Note 2 below.

Summary of charges:

Description of Services	Where work occurred (onsite vs offsite/lab)	Name	Start Date	End Date	Total Hours	Hourly Rate	Amount
Field Archaeologist		Joe Smith	8/29/2011	9/2/2011	40	\$84	\$3,360
Laboratory Assistant		Jane Doe	8/29/2011	9/2/2011	2	\$30	\$60
Subtotal							\$3,420

Total this invoice: \$ _____

Total invoiced to date: \$ _____

Note 1:

For monitoring related bid items or work please include summary of construction work that was monitored from Station to Station, Native American monitors present, MMC coordination, status and nature of monitoring and if any discoveries were made.

Note 2:

For curation/discovery related bid items or work completed as part of a discovery and curation process, the PI must provide a response to the following questions along with the invoice:

1. Preliminary results of testing including tentative recommendations regarding eligibility for listing in the California Register of Historical Resources (California Register).
 - a. Please briefly describe your application (consideration) of all four California Register criteria.
 - b. If the resource is eligible under Criterion D, please define the important information that may be present.
 - c. Were specialized studies performed? How many personnel were required? How many Native American monitors were present?
 - d. What is the age of the resource?
 - e. Please define types of artifacts to be collected and curated, including quantity of boxes to be submitted to the San Diego Archaeological Center (SDAC). How many personnel were required? How many Native American monitors were present?
2. Preliminary results of data recovery and a definition of the size of the representative sample.
 - a. Were specialized studies performed? Please define types of artifacts to be collected and curated, including quantity of boxes to be submitted to the SDAC. How many personnel were required? How many Native American monitors were present?
3. What resources were discovered during monitoring?
4. What is the landform context and what is the integrity of the resources?
5. What additional studies are necessary?
6. Based on application of the California Register criteria, what is the significance of the resources?
 - a. If the resource is eligible for the California Register, can the resource be avoided by construction?
 - b. If not, what treatment (mitigation) measures are proposed? Please define data to be recovered (if necessary) and what material will be submitted to the SDAC for curation. Are any specialized studies proposed?

(After the first invoice, not all the above information needs to be re-stated, just revise as applicable).

APPENDIX N
SAMPLE OF PUBLIC NOTICE



CONSTRUCTION NOTICE

PROJECT TITLE

Work on your street will begin within one week to replace the existing water mains servicing your community.

The work will consist of:

- Saw-cutting and trench work on Ingulf Street from Morena Boulevard to Galveston Street to install new water mains, water laterals and fire hydrants.
• Streets where trenching takes place will be resurfaced and curb ramps will be upgraded to facilitate access for persons with disabilities where required.
• This work is anticipated to be complete in your community by December 2016.

How your neighborhood may be impacted:

- Water service to some properties during construction will be provided by a two-inch highline pipe that will run along the curb. To report a highline leak call 619-515-3525.
• Temporary water service disruptions are planned. If planned disruptions impact your property, you will receive advance notice.
• Parking restrictions will exist because of the presence of construction equipment and materials.
• "No Parking" signs will be displayed 72 hours in advance of the work.
• Cars parked in violation of signs will be TOWED.

Hours and Days of Operation:

Monday through Friday X:XX AM to X:XX PM.

City of San Diego Contractor:

Company Name, XXX-XXX-XXXX



CONSTRUCTION NOTICE

PROJECT TITLE

Work on your street will begin within one week to replace the existing water mains servicing your community.

The work will consist of:

- Saw-cutting and trench work on Ingulf Street from Morena Boulevard to Galveston Street to install new water mains, water laterals and fire hydrants.
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How your neighborhood may be impacted:

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• Temporary water service disruptions are planned. If planned disruptions impact your property, you will receive advance notice.
• Parking restrictions will exist because of the presence of construction equipment and materials.
• "No Parking" signs will be displayed 72 hours in advance of the work.
• Cars parked in violation of signs will be TOWED.

Hours and Days of Operation:

Monday through Friday X:XX AM to X:XX PM.

City of San Diego Contractor:

Company Name, XXX-XXX-XXXX

APPENDIX O

ADVANCED METERING INFRASTRUCTURE (AMI) DEVICE PROTECTION

Protecting AMI Devices in Meter Boxes and on Street Lights

The Public Utilities Department (PUD) has begun the installation of the Advanced Metering Infrastructure (AMI) technology as a new tool to enhance water meter reading accuracy and efficiency, customer service and billing, and to be used by individual accounts to better manage the efficient use of water. **All AMI devices shall be protected per Section 402-2, "Protection", of the 2018 Whitebook.**

AMI technology allows water meters to be read electronically rather than through direct visual inspection by PUD field staff. This will assist PUD staff and customers in managing unusual consumption patterns which could indicate leaks or meter tampering on a customer's property.

Three of the main components of an AMI system are the:

- A. Endpoints, see Photo 1:

Photo 1

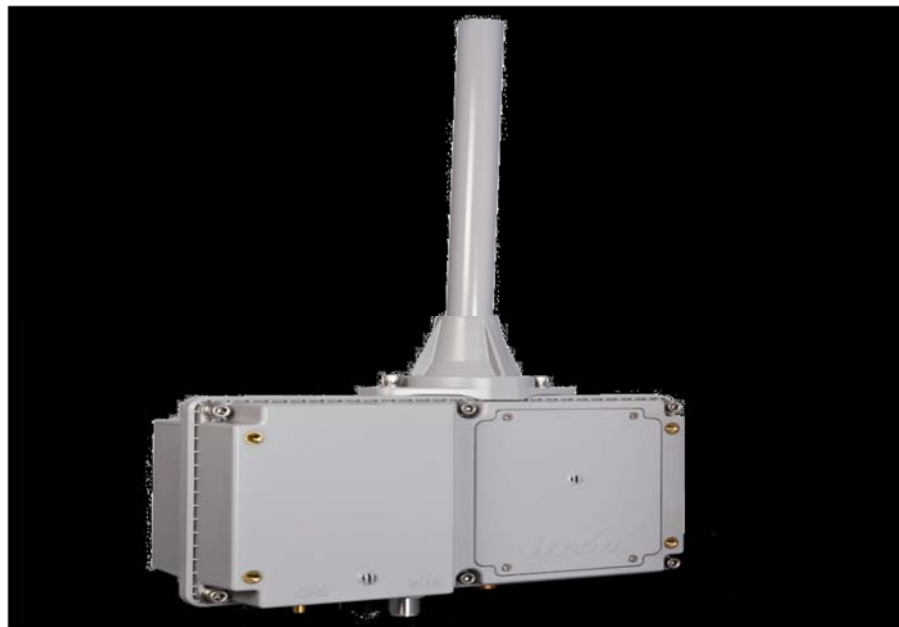


B. AMI Antenna attached to Endpoint (antenna not always required), see Photo 2:



Network Devices, see Photo 3:

Photo 3



AMI endpoints transmit meter information to the AMI system and will soon be on the vast majority of meters in San Diego. These AMI devices provide interval consumption data to the PUD's Customer Support Division. If these devices are damaged or communication is interrupted, this Division will be alerted of the situation. The endpoints are installed in water meter boxes, coffins, and vaults adjacent to the meter. A separate flat round antenna may also be installed through the meter box lid. This antenna is connected to the endpoint via cable. The following proper installation shall be implemented when removing the lid to avoid damaging the antenna, cable, and/or endpoint. Photo 4 below demonstrates a diagram of the connection:

Photo 4



The AMI device ERT/Endpoint/Transmitter shall be positioned and installed as discussed in this Appendix. If the ERT/Endpoint/Transmitter is disturbed, it shall be re-installed and returned to its original installation with the end points pointed upwards as shown below in Photo 5.

The PUD's code compliance staff will issue citations and invoices to you for any damaged AMI devices that are not re-installed as discussed in the Contract Document

Photo 5 below shows a typical installation of an AMI endpoint on a water meter.

Photo 5

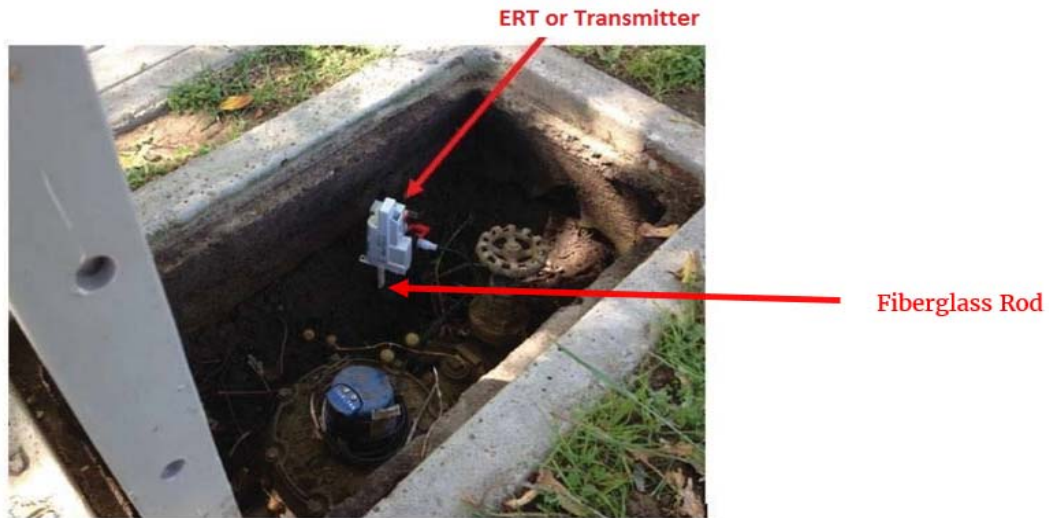


Photo 6 below is an example of disturbance that shall be avoided:

Photo 6



You are responsible when working in and around meter boxes. If you encounter these endpoints, use proper care and do not disconnect them from the registers on top of the water meter. If the lid has an antenna drilled through, do not change or tamper with the lid and inform the Resident Engineer immediately about the location of that lid. Refer to Photo 7 below:

Photo 7



Another component of the AMI system are the Network Devices. The Network Devices are strategically placed units (mainly on street light poles) that collect interval meter reading data from multiple meters for transmission to the Department Control Computer. **If you come across any of these devices on street lights that will be removed or replaced (refer to Photos 8 and 9 below), notify AMI Project Manager Arwa Sayed at (619) 362-0121 immediately.**

Photo 8 shows an installed network device on a street light. On the back of each Network Device is a sticker with contact information. See Photo 9. **Call PUD Water Emergency Repairs at 619-515-3525 if your work will impact these street lights.** These are assets that belong to the City of San Diego and you shall be responsible for any costs of disruption of this network.

Photo 8



Network Device

Photo 9



If you encounter any bad installations, disconnected/broken/buried endpoints, or inadvertently damage any AMI devices or cables, notify the Resident Engineer immediately. The Resident Engineer will then immediately contact the AMI Project Manager, Arwa Sayed, at (619) 362-0121.

ATTACHMENT P
LONG-TERM PLANT ESTABLISHMENT AGREEMENT

LONG-TERM PLANT ESTABLISHMENT AGREEMENT

This 36 month Long-Term Plant Establishment Agreement (LTPEA) is made and entered into by and between the City of San Diego (City), a municipal corporation, and TC Construction Company, Inc. (Contractor), who may be individually or collectively referred to herein as a "Party" or the "Parties."

RECITALS

- A. Concurrent with execution of this LTPEA, the Parties entered into a general contract (Construction Contract) for the construction of **AC Water and Sewer Group 1056 (Project), WBS number B-18181, B-18182, Bid No. K-21-2000-DBB-3.**
- B. In accordance with the Construction Contract, the Contractor shall enter into this agreement with the City for the purpose of implementing and fulfilling long-term maintenance requirements in accordance with the City of San Diego Municipal Code and the Contract Documents for the specified elopement(s) of **AC Water and Sewer Group 1056** (Maintenance Requirements). The performance of the terms of this LTPEA shall commence immediately upon completion of performance of the Construction Contract.
- C. The Contractor is ready and willing to fulfill its maintenance requirements in accordance with the terms of this LTPEA.

NOW, THEREFORE, in consideration of the above recitals and the mutual covenants and conditions set forth herein, and for good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the Parties hereby set forth their mutual covenants and understandings as follows:

INTRODUCTORY PROVISIONS

- A. **Recitals Incorporated.** The above referenced Recitals are true and correct and are incorporated into this LTPEA by this reference.
- B. **Exhibits Incorporated.** All Exhibits and Attachments referenced in this LTPEA are incorporated into this LTPEA by this reference.
- C. **Contract Term.** This LTPEA shall be effective upon completion of the tree installations and it shall be effective until the completion of the Work as described below.
- D. **Terms and Conditions.** This LTPEA is subject to the terms and conditions of the Construction Contract included in The GREENBOOK and The WHITEBOOK i.e., **Part 1, Sections 800, 801, 802** and The WHITEBOOK EOCP Section except as follows.
- E. **Partial Release of Payment Bond and Performance Bond**
 - 1. **Performance of Contract in Two Phases.** There are two separate phases of work to be performed by the Contractor under this Contract. The first phase covers the

work involved in the original agreement as described in this agreement ("Phase 1 Work"). The second phase covers the work involved in the long-term plant establishment of the Canary Island Pine Trees after Phase 1 Work has been completed ("Phase 2 Work").

- 2. Bond Handling for Contract Phases.** The Payment Bond and the Performance Bond covering Phase 1 Work on this Contract shall remain in full force and effort until completion of that phase is certified. The original Payment Bond and the original Performance Bond covering Phase 1 Work on this Contract shall continue in full force and effort for Phase 2 Work, however the value of each bond may be reduced as follows:

 - i. Completion by the Contractor of all Phase 1 Work shall be evidenced solely by the City Engineer affirming in writing that to the best of their knowledge that all Phase 1 Work has been completed by the Contractor in strict conformity with all City-approved plans and revisions, and that the Phase 1 Work completed by the Contractor meets all applicable standards ("Notice of Completion").
 - ii. Upon issuance by the City Engineer of the Notice of Completion for Phase 1 Work, the Payment Bond for this Project, and the Performance Bond for this Project, may be partially released, and thereby reduced for the work performed under Phase 1 cover. The remaining payment and performance bond will cover the full cost of Phase 2 Work on this Project, which will be the amount specified in Section 4.1 of this Agreement.
- 3. No Partial Release Upon Default.** No Partial Performance Bond Release and Reduction shall be given to the Contractor if the Performance Bond and/or this Agreement is in default on Phase 1.

SECTION 1 - MAINTENANCE CONTRACT SUMMARY

- 1.1. General.** The Contractor shall fulfill the Project's Maintenance Requirements (Work) as identified in the scope of work attached as Exhibit A in a manner satisfactory to the City.

The Contractor shall provide all equipment, labor, and materials necessary to perform the **Work** as described in the written in Exhibit A, at the direction of the City.

- 1.2. Work Schedule.** After receiving notification from the City, the Contractor shall create a comprehensive schedule of Work for performance of this LTPEA (Schedule) for the City's approval. The Schedule shall include watering.

The City will approve the Schedule prior to the commencement of the Work. The City may require the Contractor to revise the Schedule. The Contractor shall not revise the Schedule unless the revisions have received the prior written approval of the City.

- 1.3. Commencement of Work & Maintenance Period.** This LTPEA shall commence when the City approves of the Work of the tree installation and sends notice of the approval to the Contractor in accordance with **Exhibit A** of the supplemental agreement and shall continue for **36** months. A copy of the approval form is attached as Exhibit B.

- 1.4. Performance of Work.** The Work shall be performed in accordance with the manufacturer's **recommendations** for each piece of equipment used in performance by the Contractor of this LTPEA.

- 1.5. License.** The Contractor shall hold the following licenses in good standing:

- a) **C-27** State Contractor's License. Alternatively, the Contractor shall retain the services of a Subcontractor with a **C-27** State Contractor's License.
- b) Registration with the County Agriculture Commission.
- c) City of San Diego Business License.

Prior to performing the Work, the Contractor shall complete and submit to the City the License Data Sheet. See Exhibit C.

- 1.6. Hours of Performance.** The Contractor shall perform the Work between the hours of 7:00 a.m. and 3:30 p.m., Monday through Friday (Working Hours). The City may, in its sole discretion, grant permission to Contractor to perform Work during non-Working Hours. Maintenance functions that generate excess noise, e.g., operations of power equipment which would cause annoyance to area residents, shall not begin before 7:00 a.m.

SECTION 2 - ADMINISTRATION

- 2.1. Contract Administrator.** The Engineering & Capital Project Department is the Contract Administrator for the LTPEA. The Contractor shall perform the Work under the direction of a designated representative of the Engineering & Capital Projects Department. The

City will communicate with the Contractor on all matters related to the administration of this LTPEA and the Contractor's performance of the Work rendered hereunder. When this LTPEA refers to communications to or with City, those communications shall be with the City, unless the City or this LTPEA specifies otherwise. Further, when this LTPEA requires an act or approval by City, that act or approval will be performed by the City.

- 2.2. Local Office.** The Contractor shall maintain a local office with a competent company representative who can be reached during Normal Working Hours and who is authorized to discuss matters pertaining to this LTPEA with the City. A local office is one located in San Diego County that can be reached by telephone and facsimile. An answering service in conjunction with a company email address for the designated company representative would fulfill this requirement. A mobile telephone shall not fulfill the requirement for a local office. All calls to the Contractor from the City shall be returned within a 1-hour period.
- 2.3. Emergency Calls.** The Contractor shall have the capability to receive and to respond immediately to calls of an emergency nature. The City shall refer emergency calls to Contractor for immediate disposition. The Contractor shall provide City with a 24 hour emergency telephone number for this purpose.
- 2.4. Staffing.** The Contractor shall furnish sufficient supervisory and working personnel capable of promptly accomplishing on schedule, and to the satisfaction of City, all Work required under this LTPEA.
- 2.5. Contractor Inspections.** The Contractor shall perform inspections of the Work site and prepare and submit to the City a Punchlist and dates of correction. The Punchlist shall include a comprehensive report of Work performed at the Work site to ensure 100% cover.

PART 3: WORK SITE MAINTENANCE

- 3.1. Irrigation Water.** The Contractor shall diligently practice water conservation, including minimizing run-off or other waste. The Contractor shall turn off irrigation systems, if any, during periods of rainfall and at such other times when suspension of irrigation is desirable to conserve water and to remain within the guidelines of good horticultural landscape maintenance practices in accordance with instructions from the Project Biologist. The Contractor's failure to properly manage and conserve water may result in deductions from the monthly payment to be made to the Contractor under this LTPEA, or other penalties.

If Contractor causes excessive use or waste of irrigation water, the estimated cost of that water shall be deducted from the monthly payment. Further, any monetary fines or other damages assessed to City for Contractor's failure to follow water conservation regulations imposed by the City, the Public Utilities Department of the City of San Diego, and where appropriate the State of California, the County Water Authority, or other legal entity shall be solely the responsibility of the Contractor, and may be deducted from the monthly payment to be made to the Contractor under this LTPEA.

- 3.2. **Payment for Water.** The Contractor shall pay for the water used in the maintenance of the Work site and this cost is included in the price of this LTPEA.
- 3.3. **Satisfactory Progression.** If the trees are not progressing towards a growth rate of 18 inches per year, as defined in the Scope of Work, in accordance with the Work Schedule, as determined by City, City may adjust monthly payments to Contractor accordingly.

SECTION 4: COMPENSATION

- 4.1. **Maximum Compensation.** The compensation for this LTPEA shall not exceed **\$29,000. SEE EXHIBIT A.** (Contract Price).

Prevailing Wage Requirements. The Prevailing wages requirements per Attachment D for this LTPEA Construction Contract are hereby incorporated by this reference.

- 4.2. **Method of Payment and Reports.** The payments will be made monthly in direct proportion that each month bears to the total value of the Contract Price. As
- 4.3. conditions precedent to payment, the Contractor shall submit every month a detailed invoice and report of maintenance work performed. The Contractor's failure to submit the required reports or certified payrolls as described in the Construction Contract shall constitute a basis for withholding of payment by the City.

Final Payment. The Contractor shall not receive the final payment until the following conditions have been completed to the City's satisfaction:

- 4.4. The item(s) of the work subject to this long-term plant establishment as specified in **Exhibit A** (Maintenance Items) have been determined to be in compliance with the Construction Contract and this LTPEA.

The Contractor has provided to the City a signed and notarized Affidavit of Disposal, a copy of which is attached to the Construction Contract, stating that all brush, trash, debris, and surplus materials resulting from the Work have been disposed of in a legal manner.

The Contractor has provided to the City a final work summary report.

The Contractor has performed comprehensive and successful testing and checks of the Maintenance Items.

SECTION 5: BONDS AND INSURANCE

- 5.1. **Contract Bonds.** Prior to commencement of the Work, Contractor, at its sole cost and expense, shall provide to City the following bonds issued by a surety authorized to issue bonds in California and otherwise satisfactory to City:

A Payment Bond (Material and Labor Bond) in an amount not less than the Contract Price for this bid item, to satisfy claims of material suppliers and mechanics and laborers employed by it on the Work. The Payment Bond shall be maintained by the Contractor in full force and effect until the Work is accepted by City and until all claims for materials and labor are paid, and shall otherwise comply with the California Civil Code.

A Performance Bond in an amount not less than the Contract Price for this bid item to guarantee faithful performance of all Work, within the time prescribed, in a manner satisfactory to the City, and that all materials and workmanship will be free from original or developed defects. The Performance Bond shall remain in full force and effect until performance of the Work is completed as set forth in this LTPEA.

5.2. Insurance. At all times during the term of this LTPEA, the Contractor shall maintain insurance coverage as specified in the Construction Contract, Section 5-4, "INSURANCE."

The Contractor shall not begin the Work under this LTPEA until it has complied with the following:

- a) Obtain insurance certificates reflecting evidence of insurance as specified in the Construction Contract , Section 5-4, "INSURANCE" for:
 1. Commercial General Liability
 2. Commercial Automobile Liability
 3. Worker's Compensation
- b) Confirm that all policies contain the specific provisions required in Section 5-4, "INSURANCE."

The Contractor shall submit copies of any policy upon request by the City.

The Contractor shall not modify any policy or endorsement thereto which increases the City's exposure to loss for the duration of this LTPEA.

SECTION 6: MISCELLANEOUS

6.1. Illness and Injury Prevention Program. The Contractor shall comply with all the mandates of Senate Bill 198 and specifically shall have a written Injury Prevention Program on file with the City in accordance with all applicable standards, orders, or requirements of California Labor Code, Section 6401.7. This Program shall be on file prior to performance of any Work.

6.2. City Standard Provisions. This LTPEA is subject to the following standard provisions:

1. WHITEBOOK, Section 5-1.2, California Building Code, California Code of Regulations Title 24 and Americans with Disabilities Act.

2. WHITEBOOK, Section 5-1.3, Drug-Free Workplace.
 3. WHITEBOOK, Section 5-1.4, Contractor Standards and Pledge of Compliance.
 4. WHITEBOOK, Section 5-1.5, Equal Benefits.
 5. WHITEBOOK, Section 5-1.6, Notice of Labor Compliance Program Approval.
 6. WHITEBOOK, Section 5-8, Information Security Policy (ISP).
- 6.3. Taxpayer Identification Number.** I.R.S. regulations require the City to have the correct name, address, and Taxpayer Identification Number (TIN) or Social Security Number (SSN) on file for businesses or persons who provide services or products to the City. This information is necessary to complete Form 1099 at the end of each tax year. As such, the Contractor shall provide the City with a Form W-9 upon execution of this LTPEA.
- 6.4. Assignment.** The Contractor shall not assign the obligations under this LTPEA, whether by express assignment or by sale of the company, nor any monies due or to become due, without City's prior written approval. Any assignment in violation of this Section shall constitute a Default and is grounds for immediate termination of this LTPEA, at the sole discretion of City. In no event shall any putative assignment create a contractual relationship between City and any putative assignee.
- 6.5. Independent Contractors.** The Contractor and any Subcontractors employed by Contractor shall be independent contractors and not agents of City. Any provisions of this LTPEA that may appear to give City any right to direct Contractor concerning the details of performing the Work, or to exercise any control over such performance, shall mean only that Contractor shall follow the direction of City concerning the end results of the performance.
- 6.6. Covenants and Conditions.** All provisions of this LTPEA expressed as either covenants or conditions on the part of the City or the Contractor shall be deemed to be both covenants and conditions.
- 6.7. Jurisdiction and Venue,.** The jurisdiction and venue for any suit or proceeding arising out of or concerning this LTPEA, the interpretation or application of any of its terms, or any related disputes shall be the County of San Diego, State of California.
- 6.8. Successors in Interest.** This LTPEA and all rights and obligations created by this LTPEA shall be in force and effect whether or not any Parties to this LTPEA have been succeeded by another entity, and all rights and obligations created by this LTPEA shall be vested and binding on any Party's successor in interest.
- 6.9. Integration.** This LTPEA and the exhibits, attachments, and references incorporated into this LTPEA fully express all understandings of the Parties concerning the matters covered in this LTPEA. No change, alteration, or modification of the terms or conditions of this LTPEA, and no verbal understanding of the Parties, their officers, agents, or employees shall be valid unless made in the form of a written change agreed to in writing by both

Parties or an amendment to this LTPEA agreed to by both Parties. All prior negotiations and agreements are merged into this LTPEA.

- 6.10. Counterparts.** This LTPEA may be executed in counterparts, which when taken together shall constitute a single signed original as though all Parties had executed the same page.
- 6.11. No Waiver.** No failure of either the City or the Contractor to insist upon the strict performance by the other of any covenant, term or condition of this LTPEA, nor any failure to exercise any right or remedy consequent upon a breach of any covenant, term, or condition of this LTPEA, shall constitute a waiver of any such breach or of such covenant, term or condition. No waiver of any breach shall affect or alter this LTPEA, and each and every covenant, condition, and term hereof shall continue in full force and effect to any existing or subsequent breach.
- 6.12. Severability.** The unenforceability, invalidity, or illegality of any provision of this LTPEA shall not render any other provision of this LTPEA unenforceable, invalid, or illegal.

6.13. **Signing Authority.** The representative for each Party signing on behalf of a corporation, partnership, joint venture or governmental entity hereby declares that authority has been obtained to sign on behalf of the corporation, partnership, joint venture, or entity and agrees to hold the other Party or Parties hereto harmless if it is later determined that such authority does not exist.

IN WITNESS WHEREOF, this Contract is executed by the City of San Diego, acting by and through its Engineering & Capital Projects Department Director in accordance with San Diego Municipal Code Section **22.3103**, and by Contractor.

Dated this 13th day of September, 2021.

THE CITY OF SAN DIEGO

By: 

Cindy Crocker
Acting Deputy Director
Purchasing & Contracting Department
Public Works Division

I HEREBY CERTIFY I can legally bind TC Construction Company, Inc. and that I have read this entire contract, this 17th day of June, 2021.

By: 

Printed Name: Austin Cameron

Title: president

I HEREBY APPROVE the form of the foregoing Contract this

14th day September of 2021.

Mara W. Elliott, City Attorney

By: 

Printed Name: Bonny Hsu
Deputy City Attorney

EXHIBIT A

SCOPE OF WORK

- I. **Location of Work.** The location of the Work to be performed is shown in these Specifications and Drawings numbered **41288-1-D** through **41288-72-D** (Specifications), which are incorporated into this contract by this reference as though fully set forth herein.
- II. **Description of Work.** The Contractor shall irrigate and monitor the Canary Island Pine Trees during the 36 Month Long-term Plant Establishment Program in accordance with this contract.
- III. **Method of Performing Work.**
 - A. General. The 36-month Canary Island Pine Tree establishment program shall commence in accordance with the Long Term Plant Establishment Agreement.
 - 1) You shall comply with any and all applicable environmental regulations including but not limited to those in the Contract Documents as well as the latest City Landscape Standards, Biology Guidelines, Sewer Design Guidelines, and Environmentally Sensitive Lands Guidelines and Municipal Code Landscape Sections §142.0401. You are responsible for adhering to local, state, and federal laws including but not limited the Clean Water Act, the Clean Air Act, and the Migratory Bird Treaty Act.
 - B. Irrigation. Irrigation delivery techniques and schedules will vary depending on the availability of a sprinkler irrigation system and weather patterns. Failure of an existing irrigation system to provide full and proper irrigation shall not relieve Contractor of the responsibility to provide adequate irrigation with full and proper coverage of all areas subject to this LTPEA.
 - 1) Contractor shall furnish a temporary water meter to tie into a fire hydrant for the purpose of watering the Canary Island Pine Trees. The contractor shall make whatever adjustments may be necessary to prevent excessive run-off into streets, rights-of-way, or other areas not meant to be irrigated. The cost of wasted water may be charged to Contractor.
 - 2) Irrigation shall be accomplished as follows:
 - a) Canary Island Pine Trees shall be irrigated per the following watering schedule:

FIRST YEAR: Water each tree twice a week with 5 to 10 gallons of water.
SECOND YEAR: Water each tree twice a month with 10 to 15 gallons of water.
THIRD YEAR: Water each tree at least once a month with 10 to 15 gallons of water.

- C. Tree Maintenance. The Contractor shall perform pruning to promote the best growth habits, appearance, and health of all trees and container plants, and to prevent encroachment which is in any manner deemed undesirable by City. The Contractor is responsible for tree pruning that can be accomplished with a 12 foot pole saw by a worker standing on the ground. The Contractor shall not top trees.
- 1) Potential Hazards. The Contractor shall notify City within 24 hours of any tree that shows signs of root heaving or leaning, or is in any manner a potential safety hazard. The Contractor shall immediately reestablish trees and shrubs that are uprooted due to storms, if possible. If trees cannot be reestablished, Contractor shall remove them immediately (including roots) and fill the holes until replacement planting is complete.
 - 2) Replacement. The Contractor shall completely remove and replace trees lost due to Contractor's faulty maintenance or negligence, as determined by City. The Contractor shall replace trees in kind and size as determined by City. If there is a difference in value between the tree lost and the replacement tree, City will deduct the difference from payment to be made under this LTPEA. The City shall determine the value of the tree lost using the latest International Society of Arboriculture (I.S.A.) guidelines for value determination.
 - 3) Staking. The Contractor shall securely stake any newly planted trees and other trees needing support with 2 "lodge pole" type stakes placed on opposite sides of the tree outside the root ball and secured to the tree with at least two flexible rubber tree ties. The Contractor shall regularly inspect tree ties and stakes and reposition them as necessary to ensure against girdling and abrasion.
- D. Plant Replacement. Contractor shall notify City within 4 days of the loss of plant material due to any cause.
- 1) Contractor shall at no cost to City replace any tree, shrub, ground cover, or other plant which is damaged or lost as a result of Contractor's faulty maintenance or negligence. The size and species of replacement plant materials shall be as directed by City.
 - 2) If so directed by City, Contractor shall replace any plant damaged or lost that is not a result of Contractor's faulty maintenance or negligence. The size and species of replacement plant materials shall be as directed by City. The City will pay for materials and labor.
 - 3) City may determine that certain plants should be replaced in order to ensure maximum ecological health and overall aesthetic appearance of planting in the Revegetation Area. When City determines such replacement should occur, Contractor shall replace the plants as directed by City. City will pay for materials and labor.

- E. Damage Reports. The Contractor shall notify City within 24 hours of any damage to the Work Area caused by accident, vandalism or theft.
- F. Litter. The Contractor shall promptly dispose of all trash and debris at an appropriate City disposal site. The Contractor shall pay any and all fees associated with the disposal of debris or trash accumulated under the terms of this LTPEA. The Contractor understands that disposal of refuse at City landfills is subject to a fee and that the Refuse Disposal Division can be contacted at (619) 573-1418 for fee information.
 - 1) Contractor Generated Litter. The Contractor shall promptly remove all debris generated by Contractor's pruning, trimming, weeding, edging and other Work required by this LTPEA. Immediately after working in streets, park walks, gutters, driveways, and paved areas, Contractor shall clean them in accordance with all applicable laws.
 - 2) Third Party Generated Litter. Upon discovery Contractor shall remove all litter, including bottles, glass, cans, paper, cardboard, fecal matter, leaves, branches, metallic items, and other debris, from the Work site.
- G. Payment. The Contract Lump Sum price paid for the "36 Month Long Term Plant Establishment" shall include full compensation for all items of Work and all Work appurtenant thereto as specified in Exhibit A. This includes obtaining a temporary construction meter, temporary irrigation, removal of temporary irrigation after 36 months, and all labor, and water needed to establish, maintain, and monitor the trees.

No additional compensation will be allowed.

EXHIBIT B

INSERT A COPY OF THE ENGINEER'S FIELD NOTIFICATION WHICH ESTABLISHES THE COMMENCEMENT DATE OF THE MONITORING PROGRAM, SEE THE 2018 WHITEBOOK, SECTION 802

EXHIBIT C

LICENSE DATA SHEET

State Contractor License Classification and Number: 662550

Name of License Holder: WESTERN GARDENS LANDSCAPING INC
(QUALIFYING INDIVIDUAL: GREGORY NIKOLIA VASILIEFF)

Expiration Date: 1/31/2023

City of San Diego Business License Number: 1996003162

Expiration Date: 3/31/2022

ATTACHMENT F
RESERVED

ATTACHMENT G
CONTRACT AGREEMENT

**ATTACHMENT G
CONTRACT AGREEMENT**

CONSTRUCTION CONTRACT

This Phase-Funded contract is made and entered into between THE CITY OF SAN DIEGO, a municipal corporation, herein called "City", and TC Construction Company, Inc., herein called "Contractor" for construction of **AC Water and Sewer Group 1056**; Bid No. **K-21-2000-DBB-3**; in the total amount of **EIGHT MILLION EIGHT HUNDRED NINETY NINE THOUSAND ONE HUNDRED SIX DOLLARS AND THIRTY TWO CENTS (\$8,899,106.32)**, which is comprised of the Base Bid plus Additive Alternates B, C, E, and G, consisting of an amount not to exceed **\$7,150,356.19** for Phase I and **\$1,748,750.13** for Phase II.

IN CONSIDERATION of the payments to be made hereunder and the mutual undertakings of the parties hereto, City and Contractor agree as follows:

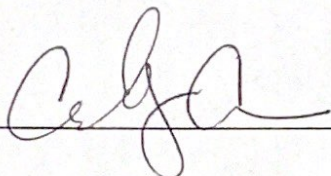
1. The following are incorporated into this contract as though fully set forth herein:
 - (a) The attached Faithful Performance and Payment Bonds.
 - (b) The attached Proposal included in the Bid documents by the Contractor.
 - (c) Reference Standards listed in the Instruction to Bidders and the Supplementary Special Provisions (SSP).
 - (d) Phase Funding Schedule Agreement and Long-Term Revegetation Maintenance Contract.
 - (e) That certain documents entitled **AC Water and Sewer Group 1056**, on file in the office of the City Clerk/Engineering & Capital Projects Department as Document No. **B-18181, B-18182, B-21136**, as well as all matters referenced therein.
2. The City wishes to construct this Project on a Phase- Funded basis. In accordance with Whitebook section 7-3.10, the City is only obligated to pay for Phase I; Contractor cannot begin, nor is the City financially liable for any additional Phases, unless and until Contractor is issued a Notice to Proceed for each additional Phase by the City.
3. The Contractor shall perform and be bound by all the terms and conditions of this contract and in strict conformity therewith shall perform and complete in a good and workmanlike manner **AC Water and Sewer Group 1056**, Bid Number **K-21-2000-DBB-3**, San Diego, California.
4. For such performances, the City shall pay to Contractor the amounts set forth at the times and in the manner and with such additions or deductions as are provided for in this contract, and the Contractor shall accept such payment in full satisfaction of all claims incident to such performances (See WHITEBOOK, Section 7-3.10, Phased Funding Compensation).
5. No claim or suit whatsoever shall be made or brought by Contractor against any officer, agent, or employee of the City for or on account of anything done or omitted to be done in connection with this contract, nor shall any such officer, agent, or employee be liable hereunder.
6. This contract is effective as of the date that the Mayor or designee signs the agreement and is approved by the City Attorney in accordance with San Diego Charter Section 40.

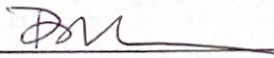
CONTRACT AGREEMENT (continued)

IN WITNESS WHEREOF, this Agreement is signed by the City of San Diego, acting by and through its Mayor or designee, pursuant to Municipal Code §22.3102 authorizing such execution.

THE CITY OF SAN DIEGO

APPROVED AS TO FORM

By 

Mara W. Elliott, City Attorney
By 

Print Name: Cindy Crocker
Acting Deputy Director
Purchasing & Contracting Department
Public Works Division

Print Name: Bonny Hsu
Deputy City Attorney

Date: 9/13/2021

Date: 9/14/21

CONTRACTOR

By 

Print Name: AUSTIN CAMERON

Title: PRESIDENT

Date: 8/25/2021

City of San Diego License No.: B1987004773

State Contractor's License No.: 402459

DEPARTMENT OF INDUSTRIAL RELATIONS (DIR) REGISTRATION NUMBER: 1000003132

CERTIFICATIONS AND FORMS

The Bidder, by submitting its electronic bid, agrees to and certifies under penalty of perjury under the laws of the State of California, that the certifications, forms and affidavits submitted as part of this bid are true and correct.

BIDDER'S GENERAL INFORMATION

To the City of San Diego:

Pursuant to "Notice Inviting Bids", specifications, and requirements on file with the City Clerk, and subject to all provisions of the Charter and Ordinances of the City of San Diego and applicable laws and regulations of the United States and the State of California, the undersigned hereby proposes to furnish to the City of San Diego, complete at the prices stated herein, the items or services hereinafter mentioned. The undersigned further warrants that this bid is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization, or corporation; that the bid is genuine and not collusive or sham; that the bidder has not directly or indirectly induced or solicited any other bidder to put in a false or sham bid, and has not directly or indirectly colluded, conspired, connived, or agreed with any bidder or anyone else to put in a sham bid, or that anyone shall refrain from bidding; that the bidder has not in any manner, directly or indirectly, sought by agreement, communication, or conference with anyone to fix the bid price of the bidder or any other bidder, or to fix any overhead, profit, or cost element of the bid price, or of that of any other bidder, or to secure any advantage against the public body awarding the contract of anyone interested in the proposed contract; that all statements contained in the bid are true; and, further, that the bidder has not, directly or indirectly, submitted his or her bid price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, or paid, and will not pay, any fee to any corporation, partnership, company, association, organization, bid depository, or to any member or agent thereof to effectuate a collusive or sham bid.

The undersigned bidder(s) further warrants that bidder(s) has thoroughly examined and understands the entire Contract Documents (plans and specifications) and the Bidding Documents therefore, and that by submitting said Bidding Documents as its bid proposal, bidder(s) acknowledges and is bound by the entire Contract Documents, including any addenda issued thereto, as such Contract Documents incorporated by reference in the Bidding Documents.

**NON-COLLUSION AFFIDAVIT TO BE EXECUTED BY BIDDER AND SUBMITTED WITH BID UNDER 23
UNITED STATES CODE 112 AND PUBLIC CONTRACT CODE 7106**

State of California

County of San Diego

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

CONTRACTOR CERTIFICATION

DRUG-FREE WORKPLACE

I hereby certify that I am familiar with the requirements of San Diego City Council Policy No. 100-17 regarding Drug-Free Workplace as outlined in the WHITEBOOK, Section 5-1.3, "Drug-Free Workplace", of the project specifications, and that;

This company has in place a drug-free workplace program that complies with said policy. I further certify that each subcontract agreement for this project contains language which indicates the subcontractor's agreement to abide by the provisions of subdivisions a) through c) of the policy as outlined.

CONTRACTOR CERTIFICATION

AMERICANS WITH DISABILITIES ACT (ADA) COMPLIANCE CERTIFICATION

I hereby certify that I am familiar with the requirements of San Diego City Council Policy No. 100-4 regarding the Americans With Disabilities Act (ADA) outlined in the WHITEBOOK, Section 5-1.2, "California Building Code, California Code of Regulations Title 24 and Americans with Disabilities Act", of the project specifications, and that:

This company has in place workplace program that complies with said policy. I further certify that each subcontract agreement for this project contains language which indicates the subcontractor's agreement to abide by the provisions of the policy as outlined.

CONTRACTOR CERTIFICATION

CONTRACTOR STANDARDS – PLEDGE OF COMPLIANCE

I declare under penalty of perjury that I am authorized to make this certification on behalf of the company submitting this bid/proposal, that as Contractor, I am familiar with the requirements of City of San Diego Municipal Code § 22.3004 regarding Contractor Standards as outlined in the WHITEBOOK, Section 5-1.4, ("Contractor Standards and Pledge of Compliance"), of the project specifications, and that Contractor has complied with those requirements.

I further certify that each of the Contractor's subcontractors has completed a Pledge of Compliance attesting under penalty of perjury of having complied with City of San Diego Municipal Code § 22.3004.

CONTRACTOR CERTIFICATION

EQUAL BENEFITS ORDINANCE CERTIFICATION

I declare under penalty of perjury that I am familiar with the requirements of and in compliance with the City of San Diego Municipal Code § 22.4300 regarding Equal Benefits Ordinance.

CONTRACTOR CERTIFICATION

EQUAL PAY ORDINANCE CERTIFICATION

Contractor shall comply with the Equal Pay Ordinance (EPO) codified in the San Diego Municipal Code (SDMC) at section 22.4801 through 22.4809, unless compliance is not required based on an exception listed in SDMC section 22.4804.

Contractor shall require all of its subcontractors to certify compliance with the EPO in their written subcontracts.

Contractor must post a notice informing its employees of their rights under the EPO in the workplace or job site.

By signing this Contract with the City of San Diego, Contractor acknowledges the EPO requirements and pledges ongoing compliance with the requirements of SDMC Division 48, section 22.4801 et seq., throughout the duration of this Contract.

AFFIDAVIT OF DISPOSAL

(To be submitted upon completion of Construction pursuant to the contracts Certificate of Completion)

WHEREAS, on the _____ DAY OF _____, 2____ the undersigned entered into and executed a contract with the City of San Diego, a municipal corporation, for:

AC Water and Sewer Group 1056

(Project Title)

as particularly described in said contract and identified as Bid No. **K-21-2000-DBB-3**; SAP No. (WBS) **B-18181, B-18182**; and **WHEREAS**, the specification of said contract requires the Contractor to affirm that "all brush, trash, debris, and surplus materials resulting from this project have been disposed of in a legal manner"; and **WHEREAS**, said contract has been completed and all surplus materials disposed of:

NOW, THEREFORE, in consideration of the final payment by the City of San Diego to said Contractor under the terms of said contract, the undersigned Contractor, does hereby affirm that all surplus materials as described in said contract have been disposed of at the following location(s)

and that they have been disposed of according to all applicable laws and regulations.

Dated this _____ DAY OF _____, _____.

By: _____
Contractor

ATTEST:

State of _____ County of _____

On this _____ DAY OF _____, 2____, before the undersigned, a Notary Public in and for said County and State, duly commissioned and sworn, personally appeared _____ known to me to be the _____ Contractor named in the foregoing Release, and whose name is subscribed thereto, and acknowledged to me that said Contractor executed the said Release.

Notary Public in and for said County and State

CERTIFICATE OF COMPLIANCE

Materials and Workmanship Compliance

For Contract or Task _____

I certify that the material listed below complies with the materials and workmanship requirements of the Caltrans Contract Plans, Special Provisions, Standard Specifications, and Standard Plans for the contract listed above.

I also certify that I am an official representative for _____, the manufacturer of the material listed above. Furthermore, I certify that where California test methods, physical or chemical test requirements are part of the specifications, that the manufacturer has performed the necessary quality control to substantiate this certification.

Material Description:

Manufacturer: _____
Model: _____
Serial Number (if applicable) _____
Quantity to be supplied: _____
Remarks: _____

Signed by: _____

Printed Name: _____

Title: _____

Company: _____

Date: _____

City of San Diego

Engineering & Capital Projects Department, CMFE Division

NOTICE OF MATERIALS TO BE USED

To: _____
Resident Engineer

Date: _____, 20____

You are hereby notified that the materials required for use under Contract No. _____
for construction of _____

in the City of San Diego, will be obtained from sources herein designated.

CONTRACT ITEM NO. (Bid Item)	KIND OF MATERIAL (Category)	NAME AND ADDRESS WHERE MATERIAL CAN BE INSPECTED (At Source)

It is requested that you arrange for a sampling, testing, and inspection of the materials prior to delivery, in accordance with Section 4 - CONTROL OF MATERIALS of the WHITEBOOK, where it is practicable, and in accordance with your policy. It is understood that source inspection does not relieve the Contractor of full responsibility for incorporating in the work, materials that comply in all respects with the contract plans and specifications, nor does it preclude subsequent rejection of materials found to be undesirable or unsuitable.

Distribution:

Supplier

Signature of Supplier

Address

SUBCONTRACTOR LISTING

(OTHER THAN FIRST TIER)

Pursuant to California Senate Bill 96 and in accordance with the requirements of Labor Code sections 1771.1 and 1725.5, by submitting a bid or proposal to the City, Contractor is certifying that he or she has verified that all subcontractors used on this public work project are registered with the California Department of Industrial Relations (DIR). **The Bidder is to list below the name, address, license number, DIR registration number of any (known tiered subcontractor)** - who will perform work, labor, render services or specially fabricate and install a portion [type] of the work or improvement pursuant to the contract. **If none are known at this time, mark the table below with non-applicable (N/A).**

NAME, ADDRESS AND TELEPHONE NUMBER OF SUBCONTRACTOR	CONSTRUCTOR OR DESIGNER	DIR REGISTRATION NUMBER	SUBCONTRACTOR LICENSE NUMBER	TYPE OF WORK
Name: <u>George T Hall</u> Address: <u>1605 Gene Autry Way</u> City: <u>Anaheim</u> State: <u>CA</u> Zip: <u>92805</u> Phone: <u>714-939-7100</u> Email: <u>jsanders@georgethall.com</u>	Constructor	1000396013	920775	Low Voltage Systems
Name: _____ Address: _____ City: _____ State: _____ Zip: _____ Phone: _____ Email: _____				
Name: _____ Address: _____ City: _____ State: _____ Zip: _____ Phone: _____ Email: _____				
Name: _____ Address: _____ City: _____ State: _____ Zip: _____ Phone: _____ Email: _____				

**** USE ADDITIONAL FORMS AS NECESSARY ****

NAMED EQUIPMENT/MATERIAL SUPPLIER LIST

***** PROVIDED FOR ILLUSTRATIVE PURPOSES ONLY *** TO BE SUBMITTED IN ELECTRONIC FORMAT ONLY *** SEE INSTRUCTIONS TO BIDDERS FOR FURTHER INFORMATION**

NAME, ADDRESS AND TELEPHONE NUMBER OF VENDOR/SUPPLIER	MATERIALS OR SUPPLIES	DOLLAR VALUE OF MATERIAL OR SUPPLIES	SUPPLIER (Yes/No)	MANUFACTURER (Yes/No)	MBE, WBE, DBE, DVBE, OBE, ELBE, SLBE, SDB, WoSB, HUBZone, OR SDVOSB ^①	WHERE CERTIFIED ^②
Name: _____ Address: _____ City: _____ State: _____ Zip: _____ Phone: _____ Email: _____						
Name: _____ Address: _____ City: _____ State: _____ Zip: _____ Phone: _____ Email: _____						

- ① As appropriate, Bidder shall identify Vendor/Supplier as one of the following and shall include a valid proof of certification (except for OBE, SLBE and ELBE):
- | | | | |
|---|--------|--|---------|
| Certified Minority Business Enterprise | MBE | Certified Woman Business Enterprise | WBE |
| Certified Disadvantaged Business Enterprise | DBE | Certified Disabled Veteran Business Enterprise | DVBE |
| Other Business Enterprise | OBE | Certified Emerging Local Business Enterprise | ELBE |
| Certified Small Local Business Enterprise | SLBE | Small Disadvantaged Business | SDB |
| Woman-Owned Small Business | WoSB | HUBZone Business | HUBZone |
| Service-Disabled Veteran Owned Small Business | SDVOSB | | |

- ② As appropriate, Bidder shall indicate if Vendor/Supplier is certified by:
- | | | | |
|--|--------|--|----------|
| City of San Diego | CITY | State of California Department of Transportation | CALTRANS |
| California Public Utilities Commission | CPUC | | |
| State of California's Department of General Services | CADoGS | City of Los Angeles | LA |
| State of California | CA | U.S. Small Business Administration | SBA |

The Bidder will not receive any subcontracting participation percentages if the Bidder fails to submit the required proof of certification.

ELECTRONICALLY SUBMITTED FORMS

FAILURE TO FULLY COMPLETE AND SUBMIT ANY OF THE FOLLOWING FORMS WILL DEEM YOUR BID NON-RESPONSIVE.

PLANETBIDS WILL NOT ALLOW FOR BID SUBMISSIONS WITHOUT THE ATTACHMENT OF THESE FORMS

The following forms are to be completed by the bidder and submitted (uploaded) electronically with the bid in PlanetBids.

- A. BID BOND – See Instructions to Bidders, Bidders Guarantee of Good Faith (Bid Security) for further instructions**
- B. CONTRACTOR’S CERTIFICATION OF PENDING ACTIONS**
- C. SUBCONTRACTOR LISTING FOR ALTERNATE ITEMS**
- D. MANDATORY DISCLOSURE OF BUSINESS INTERESTS FORM**
- E. DEBARMENT AND SUSPENSION CERTIFICATION FOR PRIME CONTRACTOR**
- F. DEBARMENT AND SUSPENSION CERTIFICATION FOR SUBCONTRACTORS, SUPPLIERS AND MANUFACTURERS**
- G. CONTRACTOR’S EXPERIENCE AND PAST PROJECT DOCUMENTATION. SEE SSP AND 2018 WB SECTION 500-2.1, INITIAL SUBMITTALS, ITEM 1, a.**
- H. MANUFACTURER AUTHORIZED INSTALLER CERTIFICATION. SEE SSP AND 2018 WB SECTION 500-2.1, INITIAL SUBMITTALS, ITEM 1, b.**

BID BOND

**See Instructions to Bidders, Bidder Guarantee of Good Faith
(Bid Security)**

KNOW ALL MEN BY THESE PRESENTS,

That TC Construction Company, Inc. as Principal,
and Liberty Mutual Insurance Company as Surety, are held
and firmly bound unto The City of San Diego hereinafter called "OWNER," in the sum
of **10% OF THE TOTAL BID AMOUNT** for the payment of which sum, well and truly to be made, we
bind ourselves, our heirs, executors, administrators, successors, and assigns, jointly and severally,
firmly by these presents.

WHEREAS, said Principal has submitted a Bid to said OWNER to perform the WORK required under
the bidding schedule(s) of the OWNER's Contract Documents entitled

AC Water & Sewer Group 1056

NOW THEREFORE, if said Principal is awarded a contract by said OWNER and, within the time and in
the manner required in the "Notice Inviting Bids" enters into a written Agreement on the form of
agreement bound with said Contract Documents, furnishes the required certificates of insurance, and
furnishes the required Performance Bond and Payment Bond, then this obligation shall be null and
void, otherwise it shall remain in full force and effect. In the event suit is brought upon this bond by
said OWNER and OWNER prevails, said Surety shall pay all costs incurred by said OWNER in such suit,
including a reasonable attorney's fee to be fixed by the court.

SIGNED AND SEALED, this 17th day of March, 2021

TC Construction Company, Inc. (SEAL)

(Principal)

By: 

(Signature)

Austin Cameron, President

(SEAL AND NOTARIAL ACKNOWLEDGEMENT OF SURETY)

Liberty Mutual Insurance Company (SEAL)

(Surety)

By: 

(Signature)

Tara Bacon, Attorney-in-Fact

CALIFORNIA ACKNOWLEDGMENT

CIVIL CODE § 1189

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.

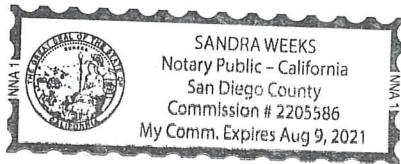
State of California

County of San Diego

On March 18, 2021 before me, Sandra Weeks, Notary Public
Date Here Insert Name and Title of the Officer

personally appeared Austin Cameron
Name(s) of Signer(s)

who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) 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 Sandra Weeks
Signature of Notary Public

Place Notary Seal and/or Stamp Above

OPTIONAL

Completing this information can deter alteration of the document or fraudulent reattachment of this form to an unintended document.

Description of Attached Document

Title or Type of Document: _____

Document Date: _____ Number of Pages: _____

Signer(s) Other Than Named Above: _____

Capacity(ies) Claimed by Signer(s)

Signer's Name: _____

- Corporate Officer – Title(s): _____
- Partner – Limited General
- Individual Attorney in Fact
- Trustee Guardian or Conservator
- Other: _____

Signer is Representing: _____

Signer's Name: _____

- Corporate Officer – Title(s): _____
- Partner – Limited General
- Individual Attorney in Fact
- Trustee Guardian or Conservator
- Other: _____

Signer is Representing: _____

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.

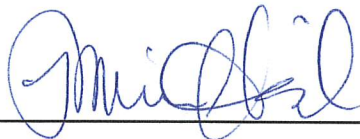
State of California
County of San Diego)

On March 17, 2021 before me, Minna Huovila, Notary Public
(insert name and title of the officer)

personally appeared Tara Bacon
who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) 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 

(Seal)





This Power of Attorney limits the acts of those named herein, and they have no authority to bind the Company except in the manner and to the extent herein stated.

Liberty Mutual Insurance Company
The Ohio Casualty Insurance Company
West American Insurance Company

Certificate No: 8204402-024019

POWER OF ATTORNEY

KNOWN ALL PERSONS BY THESE PRESENTS: That The Ohio Casualty Insurance Company is a corporation duly organized under the laws of the State of New Hampshire, that Liberty Mutual Insurance Company is a corporation duly organized under the laws of the State of Massachusetts, and West American Insurance Company is a corporation duly organized under the laws of the State of Indiana (herein collectively called the "Companies"), pursuant to and by authority herein set forth, does hereby name, constitute and appoint, Dale G. Harshaw; Geoffrey Shelton; Janice Martin; John R. Qualin; Lawrence F. McMahon; Minna Huovila; Sarah Myers; Tara Bacon

all of the city of San Diego state of CA each individually if there be more than one named, its true and lawful attorney-in-fact to make, execute, seal, acknowledge and deliver, for and on its behalf as surety and as its act and deed, any and all undertakings, bonds, recognizances and other surety obligations, in pursuance of these presents and shall be as binding upon the Companies as if they have been duly signed by the president and attested by the secretary of the Companies in their own proper persons.

IN WITNESS WHEREOF, this Power of Attorney has been subscribed by an authorized officer or official of the Companies and the corporate seals of the Companies have been affixed thereto this 22nd day of October, 2020.



Liberty Mutual Insurance Company
The Ohio Casualty Insurance Company
West American Insurance Company
By: David M. Carey, Assistant Secretary

Not valid for mortgage, note, loan, letter of credit, currency rate, interest rate or residual value guarantees.

State of PENNSYLVANIA ss
County of MONTGOMERY

On this 22nd day of October, 2020 before me personally appeared David M. Carey, who acknowledged himself to be the Assistant Secretary of Liberty Mutual Insurance Company, The Ohio Casualty Company, and West American Insurance Company, and that he, as such, being authorized so to do, execute the foregoing instrument for the purposes therein contained by signing on behalf of the corporations by himself as a duly authorized officer.

IN WITNESS WHEREOF, I have hereunto subscribed my name and affixed my notarial seal at King of Prussia, Pennsylvania, on the day and year first above written.



COMMONWEALTH OF PENNSYLVANIA
Notarial Seal
Teresa Pastella, Notary Public
Upper Merion Twp., Montgomery County
My Commission Expires March 28, 2021
Member, Pennsylvania Association of Notaries

By: Teresa Pastella
Teresa Pastella, Notary Public

This Power of Attorney is made and executed pursuant to and by authority of the following By-laws and Authorizations of The Ohio Casualty Insurance Company, Liberty Mutual Insurance Company, and West American Insurance Company which resolutions are now in full force and effect reading as follows:

ARTICLE IV - OFFICERS: Section 12. Power of Attorney.
Any officer or other official of the Corporation authorized for that purpose in writing by the Chairman or the President, and subject to such limitation as the Chairman or the President may prescribe, shall appoint such attorneys-in-fact, as may be necessary to act in behalf of the Corporation to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such attorneys-in-fact, subject to the limitations set forth in their respective powers of attorney, shall have full power to bind the Corporation by their signature and execution of any such instruments and to attach thereto the seal of the Corporation. When so executed, such instruments shall be as binding as if signed by the President and attested to by the Secretary. Any power or authority granted to any representative or attorney-in-fact under the provisions of this article may be revoked at any time by the Board, the Chairman, the President or by the officer or officers granting such power or authority.

ARTICLE XIII - Execution of Contracts: Section 5. Surety Bonds and Undertakings.
Any officer of the Company authorized for that purpose in writing by the chairman or the president, and subject to such limitations as the chairman or the president may prescribe, shall appoint such attorneys-in-fact, as may be necessary to act in behalf of the Company to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such attorneys-in-fact subject to the limitations set forth in their respective powers of attorney, shall have full power to bind the Company by their signature and execution of any such instruments and to attach thereto the seal of the Company. When so executed such instruments shall be as binding as if signed by the president and attested by the secretary.

Certificate of Designation - The President of the Company, acting pursuant to the Bylaws of the Company, authorizes David M. Carey, Assistant Secretary to appoint such attorneys-in-fact as may be necessary to act on behalf of the Company to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations.

Authorization - By unanimous consent of the Company's Board of Directors, the Company consents that facsimile or mechanically reproduced signature of any assistant secretary of the Company, wherever appearing upon a certified copy of any power of attorney issued by the Company in connection with surety bonds, shall be valid and binding upon the Company with the same force and effect as though manually affixed.

I, Renee C. Llewellyn, the undersigned, Assistant Secretary, The Ohio Casualty Insurance Company, Liberty Mutual Insurance Company, and West American Insurance Company do hereby certify that the original power of attorney of which the foregoing is a full, true and correct copy of the Power of Attorney executed by said Companies, is in full force and effect and has not been revoked.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed the seals of said Companies this 17th day of March, 2021.



By: Renee C. Llewellyn
Renee C. Llewellyn, Assistant Secretary

For bond and/or Power of Attorney (POA) verification inquiries, please call 610-832-8240 or email HOSUR@libertymutual.com.

CONTRACTOR'S CERTIFICATION OF PENDING ACTIONS

As part of its bid or proposal (Non-Price Proposal in the case of Design-Build contracts), the Bidder shall provide to the City a list of all instances within the past 10 years where a complaint was filed or pending against the Bidder in a legal or administrative proceeding alleging that Bidder discriminated against its employees, subcontractors, vendors or suppliers, and a description of the status or resolution of that complaint, including any remedial action taken.

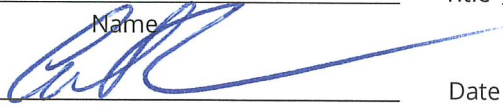
CHECK ONE BOX ONLY.

- The undersigned certifies that within the past 10 years the Bidder has NOT been the subject of a complaint or pending action in a legal administrative proceeding alleging that Bidder discriminated against its employees, subcontractors, vendors or suppliers.

- The undersigned certifies that within the past 10 years the Bidder has been the subject of a complaint or pending action in a legal administrative proceeding alleging that Bidder discriminated against its employees, subcontractors, vendors or suppliers. A description of the status or resolution of that complaint, including any remedial action taken and the applicable dates is as follows:

DATE OF CLAIM	LOCATION	DESCRIPTION OF CLAIM	LITIGATION (Y/N)	STATUS	RESOLUTION/REMEDIAL ACTION TAKEN

Contractor Name: TC Construction Company, Inc.

Certified By Austin Cameron Title President
Name

Signature Date 4-16-21

USE ADDITIONAL FORMS AS NECESSARY

SUBCONTRACTORS ADDITIVE/DEDUCTIVE ALTERNATE

*** FOR USE WHEN LISTING SUBCONTRACTORS ON ALTERNATES ***

(Use Additional Sheets As Needed)

ADDITIVE/DEDUCTIVE ALTERNATE	SUBCONTRACTOR NAME, LOCATION, PHONE & EMAIL	CONSTRUCTOR OR DESIGNER	DIR REGISTRATION NUMBER	SUBCONTRACTOR LICENSE NUMBER	TYPE OF WORK	DOLLAR VALUE OF SUBCONTRACT	MBE, WBE, DBE, DVBE, OBE, ELBE, SLBE, SDB, WOSB, HUBZone, OR SDVOSB	WHERE CERTIFIED	CHECK IF JOINT VENTURE PARTNERSHIP
ALT A	Name: Pavement Recycling Systems Address: 10240 San Serrano Way City: Jurupa Valley State: CA Zip: 91752 Phone: 951-1082-1091 Email: aschot@pavementrecycling.com	100003363	569 352	Cold Mill	\$238,106.25	N/A	N/A	N/A	
ALT A	Name: Southwest Signal Service Address: 9201 Isaac St Ste A City: Santee State: CA Zip: 92071 Phone: 619-442-3543 Email: ahussine@southwestsignal.com	100004145	451115	Traffic Loops	\$9,900.00	SDBE	City of SD	N/A	
ALT F	Name: Ray Allen Shum Seal Address: 11922 Bloomfield Ave City: Santa Fe Springs State: CA Zip: 90670 Phone: 512-804-3362 Email: Lawrence@RASlumy.com	100001156	37298	Shum Seal	\$170,501.00	N/A	N/A	N/A	

As appropriate, Bidder shall identify Subcontractor as one of the following and shall include a valid proof of certification (except for OBE, SLBE and ELBE):

- ① Certified Minority Business Enterprise
- ① Certified Disadvantaged Business Enterprise
- ① Other Business Enterprise
- ① Certified Small Local Business Enterprise
- ① Woman-Owned Small Business
- ① Service-Disabled Veteran Owned Small Business
- ② As appropriate, Bidder shall indicate if Subcontractor is certified by:
 - MBE
 - DBE
 - OBE
 - SLBE
 - WOSB
 - SDVOSB
 - CITY
 - California Public Utilities Commission
 - State of California's Department of General Services
 - State of California
- ② Certified Woman Business Enterprise
- ② Certified Disabled Veteran Business Enterprise
- ② Certified Emerging Local Business Enterprise
- ② Small Disadvantaged Business
- ② HUBZone Business
- ② WBE
- ② DVBE
- ② ELBE
- ② SDB
- ② HUBZone
- ② CALTRANS
- ② LA
- ② SBA

The Bidder will not receive any subcontracting participation percentages if the Bidder fails to submit the required proof of certification.

SUBCONTRACTORS ADDITIVE/DEDUCTIVE ALTERNATE
***** FOR USE WHEN LISTING SUBCONTRACTORS ON ALTERNATES *****
 (Use Additional Sheets As Needed)

ADDITIVE/DEDUCTIVE ALTERNATE	SUBCONTRACTOR NAME, LOCATION, PHONE & EMAIL	CONSTRUCTOR OR DESIGNER	DIR REGISTRATION NUMBER	SUBCONTRACTOR LICENSE NUMBER	TYPE OF WORK	DOLLAR VALUE OF SUBCONTRACT	MBE, WBE, DBE, DVBE, OBE, ELBE, SLBE, SDB, WOSB, HUBZone, OR SDVOSB	WHERE CERTIFIED	CHECK IF JOINT VENTURE PARTNERSHIP
ALT F	Name: MD Rubberized Crackfill Address: 72 Rancho Circle City: Lake Forest State: CA Zip: 92630 Phone: 949-273-6130 Email: md.crackfill@gmail.com	Constructor	100006438	986086	Crack Filling	(9326.72) W/A	W/A	W/A	W/A
ALT Bk/D	Name: Payco Specialties Address: 126 N. Second Ave City: Chula Vista State: CA Zip: 91910 Phone: 619-442-9204 Email: jeremy@payco.biz	Constructor	100003515	298637	Striping	\$194,378.00 SDBE	SDBE	City of San Diego	W/A
	Name: _____ Address: _____ City: _____ State: _____ Zip: _____ Phone: _____ Email: _____								

- ① As appropriate, Bidder shall identify Subcontractor as one of the following and shall include a valid proof of certification (except for OBE, SLBE and ELBE):
- Certified Minority Business Enterprise
 - Certified Disadvantaged Business Enterprise
 - Other Business Enterprise
 - Certified Small Local Business Enterprise
 - Woman-Owned Small Business
 - Service-Disabled Veteran Owned Small Business
- ② As appropriate, Bidder shall indicate if subcontractor is certified by:
- City of San Diego
 - California Public Utilities Commission
 - State of California's Department of General Services
 - State of California
 - MBE
 - DBE
 - OBE
 - SLBE
 - WOSB
 - SDVOSB
 - CITY
 - CPUC
 - CADoGS
 - CA
 - WBE
 - DVBE
 - ELBE
 - SDB
 - HUBZone
 - CALTRANS
 - LA
 - SBA

The Bidder will not receive any subcontracting participation percentages if the Bidder fails to submit the required proof of certification.

Mandatory Disclosure of Business Interests Form

BIDDER/PROPOSER INFORMATION

Legal Name		DBA	
TC Construction Company, Inc.		N/A	
Street Address	City	State	Zip
10540 Prospect Ave	Santee	CA	92071
Contact Person, Title		Phone	Fax
Austin Cameron, President		619-448-4560	619-448-3341

Provide the name, identity, and precise nature of the interest* of all persons who are directly or indirectly involved** in this proposed transaction (SDMC § 21.0103).

* The precise nature of the interest includes:

- the percentage ownership interest in a party to the transaction,
- the percentage ownership interest in any firm, corporation, or partnership that will receive funds from the transaction, the value of any financial interest in the transaction,
- any contingent interest in the transaction and the value of such interest should the contingency be satisfied, and any philanthropic, scientific, artistic, or property interest in the transaction.

** Directly or indirectly involved means pursuing the transaction by:

- communicating or negotiating with City officers or employees,
- submitting or preparing applications, bids, proposals or other documents for purposes of contracting with the City,
- or directing or supervising the actions of persons engaged in the above activity.


Name	Title/Position
Austin Cameron	President
City and State of Residence	Employer (if different than Bidder/Proposer)
El Cajon, CA	N/A
Interest in the transaction	
40% Owner	

Name	Title/Position
Darren Tharp	Vice President
City and State of Residence	Employer (if different than Bidder/Proposer)
Alpine, CA	N/A
Interest in the transaction	
10% Owner	

* Use Additional Pages if Necessary *

Under penalty of perjury under the laws of the State of California, I certify that I am responsible for the completeness and accuracy of the responses contained herein, and that all information provided is true, full and complete to the best of my knowledge and belief. I agree to provide written notice to the Mayor or Designee within five (5) business days if, at any time, I learn that any portion of this Mandatory Disclosure of Business Interests Form requires an updated response. Failure to timely provide the Mayor or Designee with written notice is grounds for Contract termination.

Austin Cameron, President



4-16-21

Print Name, Title

Signature

Date

Failure to sign and submit this form with the bid/proposal shall make the bid/proposal non-responsive. In the case of an informal solicitation, the contract will not be awarded unless a signed and completed Mandatory Disclosure of Business Interests Form is submitted.

Mandatory Disclosure of Business Interests Form

BIDDER/PROPOSER INFORMATION

Legal Name		DBA	
TC Construction Company, Inc.		N/A	
Street Address	City	State	Zip
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Contact Person, Title		Phone	Fax
Austin Cameron, President		619-448-4560	619-448-3341

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- communicating or negotiating with City officers or employees,
 - submitting or preparing applications, bids, proposals or other documents for purposes of contracting with the City,
 - or directing or supervising the actions of persons engaged in the above activity.

Name	Title/Position
Jack Gieffels	Secretary/Treasurer
City and State of Residence	Employer (if different than Bidder/Proposer)
El Cajon, CA	N/A
Interest in the transaction	
10% Owner	

Name	Title/Position
Terry Cameron	CEO
City and State of Residence	Employer (if different than Bidder/Proposer)
El Cajon, CA	N/A
Interest in the transaction	
10% Owner	

*** Use Additional Pages if Necessary ***

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Austin Cameron, President

4-16-21

Print Name, Title
Signature
Date

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Mandatory Disclosure of Business Interests Form

BIDDER/PROPOSER INFORMATION

Legal Name		DBA	
TC Construction Company, Inc.		N/A	
Street Address	City	State	Zip
10540 Prospect Ave	Santee	CA	92071
Contact Person, Title		Phone	Fax
Austin Cameron, President		619-448-4560	619-448-3341

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- submitting or preparing applications, bids, proposals or other documents for purposes of contracting with the City,
- or directing or supervising the actions of persons engaged in the above activity.

Name	Title/Position
Chad Cameron	Estimator
City and State of Residence	Employer (if different than Bidder/Proposer)
El Cajon, CA	N/A
Interest in the transaction	
20% Owner	

Name	Title/Position
Robert Kostyrka	General Superintendant
City and State of Residence	Employer (if different than Bidder/Proposer)
El Cajon, CA	N/A
Interest in the transaction	
10% Owner	

* Use Additional Pages if Necessary *

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Austin Cameron, President

4-16-21

Print Name, Title

Signature

Date

Failure to sign and submit this form with the bid/proposal shall make the bid/proposal non-responsive. In the case of an informal solicitation, the contract will not be awarded unless a signed and completed Mandatory Disclosure of Business Interests Form is submitted.

**DEBARMENT AND SUSPENSION CERTIFICATION
PRIME CONTRACTOR
FAILURE TO COMPLETE AND SUBMIT AT TIME OF BID SHALL RENDER BID NON-RESPONSIVE**

EFFECT OF DEBARMENT OR SUSPENSION
To promote integrity in the City's contracting processes and to protect the public interest, the City shall only enter into contracts with responsible- bidders and contractors. In accordance with San Diego Municipal Code §22.0814 (a); <i>Bidders</i> and <i>contractors</i> who have been <i>debarred</i> or <i>suspended</i> are excluded from submitting bids, submitting responses to requests for proposal or qualifications, receiving <i>contract</i> awards, executing <i>contracts</i> , participating as a <i>subcontractor</i> , employee, agent or representative of another <i>person</i> contracting with the City.

As part of its bid or proposal (Non-Price Proposal in the case of Design-Build contracts), the Bidder shall provide to the City a list of Names of the Principal Individual owner(s).

The names of all persons interested in the foregoing proposal as Principals are as follows:

NAME	TITLE
Austin Cameron	President
Darren Tharp	Vice President
Jack Gieffels	Secretary/Treasurer
Terry Cameron	CEO

IMPORTANT NOTICE: If Bidder or other interested person is a corporation, state secretary, treasurer, and manager thereof; if a co-partnership, state true name of firm, also names of all individual co-partners composing firm; if Bidder or other interested person is an individual, state first and last names in full.

The Bidder, under penalty of perjury, certifies that, except as noted below, he/she or any person associated therewith in the capacity of owner, partner, director, officer, manager:


- Is not currently under suspension, debarment, voluntary exclusion, or determination of ineligibility by any Federal, State or local agency;
- has not been suspended, debarred, voluntarily excluded or determined ineligible by any Federal, State or local agency within the past 3 years;
- does not have a proposed debarment pending; and
- has not been indicted, convicted, or had a civil judgment rendered against it by a court of competent jurisdiction in any matter involving fraud or official misconduct within the past 3 years.

If there are any exceptions to this certification, insert the exceptions in the following space.

Exceptions will be considered in determining bidder responsibility. For any exception noted above, indicate below to whom it applies, initiating agency, and dates of action.

Contractor Name: TC Construction Company, Inc.

Certified By Austin Cameron Title President

Name 

Date 4-16-21

Signature

NOTE: Providing false information may result in criminal prosecution or administrative sanctions.

**DEBARMENT AND SUSPENSION CERTIFICATION
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The names of all persons interested in the foregoing proposal as Principals are as follows:

NAME	TITLE
Chad Cameron	Estimator
Robert Kostyrka	General Superintendant

IMPORTANT NOTICE: If Bidder or other interested person is a corporation, state secretary, treasurer, and manager thereof; if a co-partnership, state true name of firm, also names of all individual co-partners composing firm; if Bidder or other interested person is an individual, state first and last names in full.

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Certified By Austin Cameron Title President

Name 

Date 4-16-21

Signature

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DEBARMENT AND SUSPENSION CERTIFICATION
SUBCONTRACTORS, SUPPLIERS AND MANUFACTURERS
 TO BE COMPLETED BY BIDDER
 FAILURE TO COMPLETE AND SUBMIT AT TIME OF BID SHALL RENDER BID NON-RESPONSIVE

Names of the Principal individual owner(s)

As part of its bid or proposal (Non-Price Proposal in the case of Design-Build contracts), the Bidder shall provide to the City a list of Names of the Principal Individual owner(s) for their subcontractor/supplier/manufacturers.

Please indicate if principal owner is serving in the capacity of **subcontractor**, **supplier**, and/or **manufacturer**:

SUBCONTRACTOR SUPPLIER MANUFACTURER

NAME	TITLE
Muline Technologies	Dominic Burtech - Partner
	Frank Durazo - Partner
	Julie Burtech - Partner
	Salvado Aquino - Partner

SUBCONTRACTOR SUPPLIER MANUFACTURER

NAME	TITLE
Soclaris Contracting	Sonny Rosenthal - President
	Clay Rosenthal - Secretary
	Christine Rheinhardt - Treasurer

SUBCONTRACTOR SUPPLIER MANUFACTURER


NAME	TITLE
Vic Salazar Communications	Vic Salazar - President

SUBCONTRACTOR SUPPLIER MANUFACTURER

NAME	TITLE
MD Rubberized Crackfill	Mark Winn - managing member
	Dan Maas - managing member

Contractor Name: TC Construction Company, Inc.

Certified By Austin Cameron Title President

Name

 Signature

Date 4-16-21

*USE ADDITIONAL FORMS AS NECESSARY**

**DEBARMENT AND SUSPENSION CERTIFICATION
SUBCONTRACTORS, SUPPLIERS AND MANUFACTURERS
*TO BE COMPLETED BY BIDDER***

FAILURE TO COMPLETE AND SUBMIT AT TIME OF BID SHALL RENDER BID NON-RESPONSIVE

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Please indicate if principal owner is serving in the capacity of **subcontractor**, **supplier**, and/or **manufacturer**:

SUBCONTRACTOR SUPPLIER MANUFACTURER

NAME	TITLE
Roy Allen Slurry Seal	Gary Allen - Owner

SUBCONTRACTOR SUPPLIER MANUFACTURER

NAME	TITLE
Southwest Signal Service	Ryan Clark - President / General Manager

SUBCONTRACTOR SUPPLIER MANUFACTURER

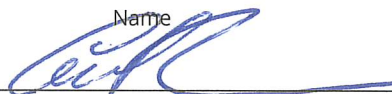
NAME	TITLE
Miramar General	Alex Karaja - President

SUBCONTRACTOR SUPPLIER MANUFACTURER

NAME	TITLE
Payco Specialties, Inc	Rebecca Hewelghn - President

Contractor Name: TC Construction Company, Inc.

Certified By Austin Cameron Title President

Name  Date 4-16-21

Signature

USE ADDITIONAL FORMS AS NECESSARY*

**DEBARMENT AND SUSPENSION CERTIFICATION
SUBCONTRACTORS, SUPPLIERS AND MANUFACTURERS
*TO BE COMPLETED BY BIDDER***

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Please indicate if principal owner is serving in the capacity of **subcontractor**, **supplier**, and/or **manufacturer**:

SUBCONTRACTOR SUPPLIER MANUFACTURER

NAME	TITLE
Casper Company	Roger Casper - CEO
	Ken Ringer - Vice President
	Bill Hawthcock - President
	Greg Casper - Vice President

SUBCONTRACTOR SUPPLIER MANUFACTURER

CFO - Isabel Marocco *Steve Casper - Vice President*

NAME	TITLE
Loveless & Linton	Rebekah Loveless - COO
	Brandon Linton - CEO

SUBCONTRACTOR SUPPLIER MANUFACTURER

NAME	TITLE
McGrath Consulting	Michael McGrath President/CEO

SUBCONTRACTOR SUPPLIER MANUFACTURER

NAME	TITLE
National Electric Works	Clint Morgan - President
	Travis Morgan - Vice President

Contractor Name: TC Construction Company, Inc.

Certified By Austin Cameron Title President

Name 

Date 4-16-21

Signature

USE ADDITIONAL FORMS AS NECESSARY*

**DEBARMENT AND SUSPENSION CERTIFICATION
SUBCONTRACTORS, SUPPLIERS AND MANUFACTURERS**

TO BE COMPLETED BY BIDDER

FAILURE TO COMPLETE AND SUBMIT AT TIME OF BID SHALL RENDER BID NON-RESPONSIVE

Names of the Principal individual owner(s)

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Please indicate if principal owner is serving in the capacity of **subcontractor**, **supplier**, and/or **manufacturer**:

SUBCONTRACTOR SUPPLIER MANUFACTURER

NAME	TITLE
Western Garden	Greg Vasilieff - President
	Robert Vasilieff - Vice President
	Mare Vasilieff - CFO

SUBCONTRACTOR SUPPLIER MANUFACTURER

NAME	TITLE

SUBCONTRACTOR SUPPLIER MANUFACTURER


NAME	TITLE

SUBCONTRACTOR SUPPLIER MANUFACTURER

NAME	TITLE

Contractor Name: TC Construction Company, Inc.

Certified By Austin Cameron Title President

Name 

Date 4-16-21

Signature

*USE ADDITIONAL FORMS AS NECESSARY**



Nu-Line Technologies, LLC Project References – CIPP/SPR

CIPP Project / Description	Owner / Contact	Contract Amount	Date
<u>2014 Wing Ave Flood Control</u> Clean/CCTV & CIPP lining of 159 LF of 18-inch & 24-inch Storm Drain, Flow Diversion.	Flatiron/City of El Cajon 1770 La Costa Meadows Drive San Marcos, Ca 92708 Ruben Claudio (760) 916-9100	\$ 33,030.00	<u>Start</u> 5/15/14 <u>Completion</u> 5/28/2014
<u>2014 Pipeline Rehabilitation Phase W-1</u> CIPP lining of 21,754 LF of 8-inch diameter sanitary sewer. Point Repairs, Manhole Rehabilitation, 425 Top Hats (SLC's) and 425 Lateral Launch Video, 425 4-inch CIPP Lateral Installation.	City of San Diego 525 B Street, Ste. 750 San Diego, CA 92101 Maryam Liaghat (619) 533-5192	\$ 2,465,095.10	<u>Start</u> 6/16/2014 <u>Completion</u> 3/19/2015
<u>2014 Sewer Rehabilitation Project No. 9</u> CIPP lining of 9,166 LF of 8" & 10" diameter sanitary sewer. Clean & CCTV, Bypass Pumping	Los Angeles Dept. of Public Works 900 South Fremont Ave Alhambra, CA 90014 Attn: Jose Pou (626) 458-2191	\$ 232,000.00	<u>Start</u> 9/2/2014 <u>Completion</u> 10/31/2014
<u>2014 Pipeline Rehabilitation Phase X-1</u> CIPP lining of 4,092 LF of 6", 8", 10" & 15" diameter sanitary sewer. Point Repairs, Manhole Rehabilitation, 44 Service Lateral Connections and 44 Lateral Launch Video, 44 CIPP Lateral Installation.	City of San Diego 9485 Aero Drive San Diego, CA 92101 Jericho Gallardo (619) 533-7523	\$ 513,000.00	<u>Start</u> 11/21/2014 <u>Completion</u> 3/16/2015
<u>2014 Sewer Pipeline and Storm Drain Repairs</u> CIPP lining of 3,367 LF of 6", 8" & 18" diameter sanitary sewer & Storm Drain. Point Repairs, Manhole Rehabilitation,	City of Solana Beach 9485 Aero Drive Solana Beach , CA 92075 Taryn Kjolsing (858) 720-2470	\$ 455,414.50	<u>Start</u> 9/22/2014 <u>Completion</u> 11/26/2014
<u>2014 Sewer & Water Group 833</u> CIPP lining of 3,876 LF of 6", 8" and 10" Sanitary Sewer Main Replacement. Point Repairs, Manhole Rehabilitation, Service Lateral Connections, Bypass Pumping.	City of San Diego 525 B Street, MS 908A San Diego, CA 92101 Bijan Shakiba, (619) 533-5191	\$ 513,000.00	<u>Start</u> 12/1/2014 <u>Completion</u> 1/26/2015
<u>2013 Sewer & Water Group 720</u> CIPP lining of 621 LF of 6-inch, Sanitary Sewer Main Replacement. Point Repairs, Manhole Rehabilitation, Service Lateral Connections, Bypass Pumping	City of San Diego 525 B Street, MS 908A San Diego, CA 92101 Bijan Shakiba (619) 533-5191	\$ 21,735.00	<u>Start</u> 11/8/2014 <u>Completion</u> 11/8/2014
<u>2013 Sewer & Water Group 758</u> CIPP lining of 2,612 LF of 8-inch and 10,135 LF sanitary sewer replacement. Point Repairs, Manhole Rehabilitation, 30 (SLC's), CIPP Lateral Installation, Bypass Pumping.	City of San Diego 1200 Third Avenue., Ste. 200 San Diego, CA 92101 Luis Schaar, R.E. (619) 533-4641	\$ 81,518.80	<u>Start</u> 5/29/2014 <u>Completion</u> 12/16/2014





Nu-Line Technologies, LLC Project References – CIPP/SPR

<p><u>2015 Sewer & Water Group 815</u> CIPP lining of 545 LF of 8-inch sanitary sewer. Point Repairs, Manhole Rehabilitation, 5 (SLC's), Bypass Pumping.</p>	<p>City of San Diego 525 B Street, MS 908A San Diego, CA 92101 Bijan Shakiba (619)533-5191</p>	<p>\$ 29,975.00</p>	<p><u>Completion</u> 2/17/2015</p>
<p><u>City of San Diego Skylark Canyon Rehabilitation</u> CIPP lining of 1,417 LF of 8-inch sanitary sewer. Bypass Pumping.</p>	<p>Weir Construction Corporation 2255 Barham Drive Escondido, Ca 92029 Brian Weir (760) 743-6776</p>	<p>\$ 95,215.00</p>	<p><u>Start</u> 12/24/2014 <u>Completion</u> 1/9/2015</p>
<p><u>Back Bay Drive Storm Drain Rehabilitation</u> CIPP/SPR lining of 1,892 LF of 12-inch to 42-Inch storm Drain. Bypass Pumping/Dewatering.</p>	<p>City of Newport Beach 100 Civic Center Drive Newport Beach, CA 92660 Peter Tauscher (949) 644-3309</p>	<p>\$ 297,208.80</p>	<p><u>Start</u> 1/19/2015 <u>Completion</u> 4/8/2015</p>
<p><u>Sewer Capital Improvements Project-Lemon Grove</u> CIPP Lining of 3,480 LF of 6-Inch and 8-Inch sanitary Sewer, manhole installations, cleanout installations, bypass pumping.</p>	<p>City of Lemon Grove 3232 Main Street Lemon Grove, Ca 91945 Scott Adamson (858) 413-2400</p>	<p>\$ 189,946.00</p>	<p><u>Start</u> 9/28/2015 <u>Completion</u> 10/15/2015</p>
<p><u>Bataquitos Force Main (B1/B2) Force Main</u> <u>City of Leucadia</u> Rehabilitation of 383 LF of 21-Inch sanitary sewer Force Main, Carlsbad Blvd from Proto Drive</p>	<p>Leucadia Wastewater District 1960 La Costa Ave Carlsbad Ca, 92009 Robin Morshita (760) 753-0155</p>	<p>\$ 76,500.00</p>	<p><u>Start</u> 5/5/2015 <u>Completion</u> 3/6/2015</p>
<p><u>Annual Sewer Rehabilitation Program CIP. 15701</u> CIPP Lining of 7,702 LF of 6-Inch, 8-Inch, 21-inch and 36-Inch sanitary Sewer and storm drain, manhole installations, cleanout installations, bypass pumping.</p>	<p>City of San Juan Capistrano 32400 Paseo Adelanto San Juan Capistrano CA, 92675 Mike Marquis (949) 443-6326</p>	<p>\$ 1,385,061.00</p>	<p><u>Start</u> 8/17/2015 <u>Completion</u> 12/28/2015</p>
<p><u>Pipeline Rehab F-2 (Laterals)</u> Clean & CCTV of 93,955 LF of sanitary sewer.</p>	<p>City of San Diego 525 B Street, MS 908A San Diego, CA 92101 Ryan Reed (619) 533-5191</p>	<p>\$ 101,471.00</p>	<p><u>Start</u> 2/15/2015 <u>Completion</u> 8/25/2015</p>
<p><u>Sewer and AC Water Group 752</u> CIPP Lining of 5,182 LF of 8-Inch sanitary Sewer and bypass pumping. Clean & CCTV, Top Hats</p>	<p>Public Utilities Department 9150 Topaz Way, MOC 1 San Diego, CA 92123 Ed M. Cartas (585) 614-4564</p>	<p>\$ 281,411.00</p>	<p><u>Start</u> 7/9/2015 <u>Completion</u> 7/17/2015</p>





Nu-Line Technologies, LLC Project References – CIPP/SPR

<p>Sewer and AC Water Group 1004 CIPP Lining of 948 LF of 8-Inch sanitary Sewer and bypass pumping. Clean & CCTV, 14 Top Hats</p>	<p>City of San Diego 9485 Aero Drive, San Diego, CA 92123 Armin Asadyari (858) 997-7989</p>	<p>\$ 70,159.00</p>	<p><u>Completion</u> 9/15/2015</p>
<p>South Oceanside Waterline Replacement Clean & CCTV, Post Video of 5,887 LF 8-Inch New Installation, Manhole Rehabilitation</p>	<p>City of Oceanside 300 North Coast Highway, Oceanside, CA 92054 Greg Keppler (760) 435-5913</p>	<p>\$ 90,092.75</p>	<p><u>Completion</u> 2015</p>
<p>Gravity Pipeline Rehabilitation Clean & CCTV, Post Video of 1,887 LF 6-Inch, 8-Inch and 12-Inch sanitary sewer. Sectional Lining</p>	<p>Leucadia Wastewater District 1960 La Costa Avenue, Carlsbad, CA 92009 Robin Morishita (760) 753-0155</p>	<p>\$ 137,987.00</p>	<p><u>Start</u> 7/9/2015 <u>Completion</u> 9/16/2015</p>
<p>Pipeline Rehab Z-1 Clean & CCTV, Post Video of 13,500 LF 8-Inch sanitary sewer, SPR/CIPP Lining of 13,500 LF of 8-Inch sanitary sewer and installation of 300 Top Hats</p>	<p>City of San Diego 9485 Aero Drive, San Diego, CA 92123 Dave Engel (619) 549-5451</p>	<p>\$ 507,079.50</p>	<p><u>Start</u> 10/6/2015 <u>Completion</u> 12/11/2015</p>
<p>Los Angeles County Dept of Public Work – Project #11 SPR/CIPP Lining of 13,842 LF of 8-Inch sanitary Sewer and bypass pumping.</p>	<p>LACDPW 900 South Fremont Avenue Alhambra, California 91803 Tim Bazinet (626) 458-4951</p>	<p>\$ 435,233.50</p>	<p><u>Start</u> 1/18/2016 <u>Completion</u> 2/29/2016</p>
<p>Industry Rd Sewer @ Ha-Hana Rd. CIPP Lining of 748 LF of 24-Inch sanitary Sewer and bypass pumping.</p>	<p>Just Construction 3103 Market Street San Diego, CA 92102 (619) 702-4002</p>	<p>\$ 136,127.00</p>	<p><u>Awaiting</u> <u>NTP</u></p>
<p>CULVERT REPAIR AND REPLACEMENT FISCAL YEAR 2014-15 CIPP/SPR Lining of 499LF of 18-Inch to 42-Inch storm drain culvert.</p>	<p>Tri-Group Construction 9580 Black Mountain Rd Ste. L San Diego, CA 92126 Hani Assi (858) 583-1846</p>	<p>\$ 159,239.00</p>	<p><u>Start</u> 10/5/2015 <u>Completion</u> 11/30/2015</p>
<p>Huntington Beach FY 201415 Sewer Lining Project CIPP Lining of 11,189 LF of 8-Inch sanitary Sewer and bypass pumping.</p>	<p>City of Huntington Beach 2000 Main Street, 1st Floor Huntington Beach, CA 92648 Jose Fuentes (714) 536-5431</p>	<p>\$ 250,000.00</p>	<p><u>Start</u> 3/1/2016 <u>Completion</u> 4/14/2016</p>





Nu-Line Technologies, LLC Project References – CIPP/SPR

<p><u>Encinitas 2014-2015 Annual Storm Drain Rehabilitation</u> CIPP Lining of 2,322LF of 12-Inch to 36-Inch storm drain culvert.</p>	<p>City of Encinitas 505 S. Vulcan Encinitas, CA 92024 Kipp Heffner (760) 633-2775</p>	<p>\$ 558,399.00</p>	<p><u>Start</u> 10/5/2015 <u>Completion</u> 3/30/2016</p>
<p><u>Sewer and AC Water Group 840</u> Final main video of 2,098 LF, 8-Inch sewer</p>	<p>City of San Diego 9485 Aero Drive, San Diego, CA 92123 Avram Yu (858) 573-5084</p>	<p>\$ 3,147.00</p>	<p><u>Completion</u> 9/21/2015</p>
<p><u>Sewer Group 798</u> Clean & Video, SPR/CIPP Lining of 11,894LF of 8-Inch sanitary sewer, 164 Service Lateral Connections</p>	<p>City of San Diego 9485 Aero Drive, San Diego, CA 92123 Avram Yu (858) 573-5084</p>	<p>\$ 410,114.30</p>	<p><u>Start</u> 12/15/2015 <u>Completion</u> 2/10/2016</p>
<p><u>2015 Sewer Repair Project - Rossmoor/Los Alamitos</u> Clean & Video, CIPP Lining 2,545 LF of 8-Inch, Point repairs, Top Hats</p>	<p>Vasilj Inc. 15531 Arrow Hwy, Irwindale, CA 91706 John Gavigan (626) 480-1442</p>	<p>\$ 123,124.00</p>	<p><u>Start</u> 3/3/2016 <u>Completion</u> 4/1/2016</p>
<p><u>2015 GRAVITY SEWER REHABILITATION</u> Clean & Video, CIPP Lining 2,237 LF of 6-Inch, 8-Inch and 12-Inch sanitary sewer, 29 Service Lateral Connections, Bypass Pumping</p>	<p>Leucadia Wastewater Division 1960 La Costa Avenue, Carlsbad, CA 92009 Robin Morishita (760) 753-0155</p>	<p>\$ 161,524.50</p>	<p><u>Start</u> 8/26/2015 <u>Completion</u> 12/23/2015</p>
<p><u>CIPP Lining of 15" & 18" CMP Storm Drain</u> Clean & Video, CIPP Lining 360 LF of 15-Inch and 18-Inch storm drains.</p>	<p>City of Buena Park 6650 Beach Blvd, Buena Park, Ca 90622 Francisco Gutierrez (714)562-3687</p>	<p>\$ 51,991.00</p>	<p><u>Start</u> 3/3/2016 <u>Completion</u> 3/4/2016</p>
<p><u>Storm Drain Lining of 21" to 54"</u> Clean & Video, CIPP Lining 2,415 LF of 18-Inch, 21-Inch, 24-Inch, 30-Inch and 36-Inch storm drains, Sectional Repairs, Invert Grouting of storm drains prior to rehabilitation.</p>	<p>City of Chula Vista 1800 Maxwell Road, Chula Vista, CA 91911 Kalani Camacho (619) 921-2922</p>	<p>\$ 433,391.00</p>	<p><u>Start</u> 1/4/2016 <u>Completion</u> 4/21/2016</p>
<p><u>Storm Drain Lining 2014-15; Project No. 52716</u> Clean & Video, CIPP Lining 2,420 LF of 8-Inch, 10-Inch sanitary sewer, 12-Inch and 18-Inch storm drains, Sectional Repairs, Invert Grouting of storm drains prior to rehabilitation.</p>	<p>City of Fullerton PWD Engineering 303 West Commonwealth Avenue, Fullerton, CA 92832 Vince Oseguera (714) 738-6845</p>	<p>\$ 117,973.00</p>	<p><u>Start</u> 2/22/2016 <u>Completion</u> 4/25/2016</p>





Nu-Line Technologies, LLC Project References – CIPP/SPR

<p><u>The Oaks - CIPP Lining of 36-Inch Storm Drain</u> Clean & CCTV 100 LF of 36-Inch storm Drain, Easement access installation of 100 LF of 36-Inch storm Drain, Post Video</p>	<p>Davidson Communities 1302 Camino Del Mar, Del Mar, CA 92014 Tim O'Grady (858) 259-8500</p>	<p style="text-align: center;">\$ 32,000.00</p>	<p style="text-align: center;"><u>Start</u> 4/29/2016 <u>Completion</u> 4/29/2016</p>
<p><u>Eastern Municipal Water District 12-Inch Sanitary Sewer</u> Clean & CCTV, Rehabilitate 413 LF of 12-Inch Sanitary Sewer, Reinstate 5 Lateral Connections, Bypass Pumping</p>	<p>Eastern Municipal Water District 2270 Trumble Road, Perris, CA 92572-8300 Mark Chamberlin (951) 928-3777</p>	<p style="text-align: center;">\$ 22,715.00</p>	<p style="text-align: center;"><u>Start</u> 2/26/2016 <u>Completion</u> 2/26/2016</p>
<p><u>City of Los Angeles – Sewers 5 Program</u> Clean & CCTV, Rehabilitate 7,147 LF of 8-Inch, 10-Inch, 16-Inch Sanitary Sewer, Reinstate 160 Lateral Connections, Bypass Pumping, Post Video</p>	<p>Mathew & Stewart Co Inc. 2841 Gardena Ave, Signal Hill, CA 90755 Bruce Flowers (562) 595-5471</p>	<p style="text-align: center;">\$ 304,603.00</p>	<p style="text-align: center;"><u>Start</u> 6/17/2015 <u>Completion</u> On Call</p>
<p><u>Rancho Palos Verdes Storm Drain</u> Clean & CCTV 134 LF of 18-Inch storm Drain, Easement access installation of 134 LF of 18-Inch storm Drain, Post Video</p>	<p>Grfco Inc Po Box 1747 Brea, CA 92822 Jim Jackson (714) 412-4712</p>	<p style="text-align: center;">\$ 21,942.50</p>	<p style="text-align: center;"><u>Start</u> 12/30/2015 <u>Completion</u> 12/30/2015</p>
<p><u>City of San Diego Group 703A</u> Clean & CCTV 627 LF of 8-Inch sanitary sewer, Easement access installation of 627 LF of 8-Inch sanitary sewer, Post Video</p>	<p>Weir Construction Corporation 2255 Barham Drive, Escondido, Ca 92029 Allan Weir (760) 743-6776</p>	<p style="text-align: center;">\$ 30,347.50</p>	<p style="text-align: center;"><u>Start</u> 3/8/2016 <u>Completion</u> 3/9/2016</p>
<p><u>La Costa Golf Course</u> Clean & CCTV 360 LF of 10-Inch sanitary sewer, Easement access installation of 360 LF of 10-Inch sanitary sewer, Post Video</p>	<p>Leucadia Wastewater Division 1960 La Costa Avenue, Carlsbad, CA 92009 Robin Morishita (760) 753-0155</p>	<p style="text-align: center;">\$ 18,720.00</p>	<p style="text-align: center;"><u>Start</u> 11/20/2015 <u>Completion</u> 11/20/2015</p>
<p><u>Manning Canyon Sewer and Water Replacement</u> Clean & CCTV 15,508 LF of 8-Inch sanitary sewer, Rehabilitate 2,582 LF of 8-Inch sanitary sewer w/SPR, 56 Sewer Lateral Connections, Post CCTV Video of 15,508 LF, Bypass Pumping</p>	<p>Burtech Pipeline Inc. 102 Second Street, Encinitas, CA 92024 Buddy Aquino (760) 634-2822</p>	<p style="text-align: center;">\$ 212,865.00</p>	<p style="text-align: center;"><u>Start</u> 3/22/2016 <u>Completion</u> 2/28/17</p>
<p><u>SAN DIEGO PIPELINE AC-1</u> Clean & CCTV, Post Video of 40,279 LF 8-Inch sanitary sewer, 889 Lateral Launch Video, SPR/CIPP Lining of 40,279 LF of 6", 8" and 10 -Inch sanitary sewer and installation of 889 Top Hats</p>	<p>Burtech Pipeline Inc. 102 Second Street, Encinitas, CA 92024 Buddy Aquino (760) 634-2822</p>	<p style="text-align: center;">\$ 1,040,214.00</p>	<p style="text-align: center;"><u>Start</u> 4/4/2016 <u>Completion</u> 10/18/2016</p>





Nu-Line Technologies, LLC Project References – CIPP/SPR

<p><u>SPR Lining of 36-Inch Storm Drain</u> Clean & CCTV 140 LF of 36-Inch Storm Drain under 805 Freeway Southbound Lane, Post Video</p>	<p>SKANSKA, Inc. 5196 Governor Drive, San Diego, California 92122 Keith Jackson (858) 646-0921</p>	<p>\$ 85,089.00</p>	<p><u>Start</u> 5/12/2016 <u>Completion</u> 5/14/2016</p>
<p><u>Sewer Rehabilitation Project No. 13</u> SPR/CIPP lining of 19,943 LF of 8-Inch diameter sanitary sewer, reinstate 459 House connections, Clean & CCTV, Bypass Pumping</p>	<p>Los Angeles Dept. of Public Works 900 South Fremont Ave Alhambra, CA 90014 Joel Zaragoza (626) 458-4973</p>	<p>\$ 476,649.00</p>	<p><u>Start</u> 4/7/2016 <u>Completion</u> 11/8/2016</p>
<p><u>Sewer & Water Group 834</u> Clean & CCTV, Post Video of 8,996 LF 8-Inch sanitary sewer, Lateral Launch Video, SPR Lining of 975 LF of 10", 12" and 14 -Inch sanitary sewer and installation Top Hats</p>	<p>Burtech Pipeline Inc. 102 Second Street, Encinitas, CA 92024 Buddy Aquino (760) 634-2822</p>	<p>\$ 109,284.50</p>	<p><u>Start</u> 3/21/2016 <u>Completion</u> 3/21/2017</p>
<p><u>LACDPW CRR. 436</u> CIPP lining of 598 LF of 18", 36" and 60-Inch diameter storm drain, Clean & CCTV, Spot Repairs, Frame and Cover Installations</p>	<p>Los Angeles Dept. of Public Works 900 South Fremont Ave Alhambra, CA 90014 Fred Kheradvar (626) 458-4973</p>	<p>\$ 297,203.50</p>	<p><u>Start</u> 5/27/2016 <u>Completion</u> 7/13/2016</p>
<p><u>2016 SEWER MAIN CIPP REHABILITATION</u> Clean & CCTV, Post Video of 3,700 LF 6", 8" and 10-Inch sanitary sewer, Traffic Control, Bypass Pumping.</p>	<p>Yorba Linda Water District 1717 E. Miraloma Avenue, Placentia, CA 92870 Alex Thomas (714) 701-3115</p>	<p>\$ 189,823.00</p>	<p><u>Start</u> 4/14/2016 <u>Completion</u> 7/28/2016</p>
<p><u>SSRP P08 Daly Street & Avenue 26</u> Clean & CCTV, Rehabilitate 5,405 LF of 8-Inch Sanitary Sewer, Reinstale 163 Lateral Connections, Bypass Pumping, Post Video</p>	<p>Vasilj Inc. 15531 Arrow Hwy, Irwindale, CA 91706 John Gavigan (626) 480-1442</p>	<p>\$ 258,160.00</p>	<p><u>Start</u> 12/12/2016 <u>Completion</u> 1/31/2018</p>
<p><u>City of Los Angeles ESRP #SWCO3077 - Avondale</u> Clean & CCTV, Rehabilitate 292 LF of 8-Inch Sanitary Sewer, Reinstale Lateral Connections, Bypass Pumping, Post Video</p>	<p>Vasilj Inc. 15531 Arrow Hwy, Irwindale, CA 91706 John Gavigan (626) 480-1442</p>	<p>\$ 14,600.00</p>	<p><u>Start</u> 6/2/16 <u>Completion</u> 6/2/2016</p>
<p><u>City of Los Angeles ESRP #SW02905 - Avondale</u> Clean & CCTV, Rehabilitate 134 LF of 8-Inch Sanitary Sewer, Reinstale Lateral Connections, Bypass Pumping, Post Video</p>	<p>Williams Pipeline Contractors, PO Box 1120 Somis, CA 93066 John Williams (805) 207-0148</p>	<p>\$ 8,710.00</p>	<p><u>Start</u> 5/17/2016 <u>Completion</u> 5/17/2016</p>





Nu-Line Technologies, LLC Project References – CIPP/SPR

<p><u>SANITARY SEWER MASTER PLAN PHASE 1</u> Clean & CCTV, Post Video of 2,230 LF 8", 10" & 12-Inch sanitary sewer, Traffic Control, Bypass Pumping, Point Repairs.</p>	<p>City of South El Monte 1415 Santa Anita Avenue, South El Monte, CA 91733 Aidan Mousavi (626) 652-3110</p>	<p>\$163,798.00</p>	<p><u>Start</u> 6/7/2016 <u>Completion</u> 10/28/2016</p>
<p><u>2016 GRAVITY PIPELINE REHABILITATION PROJECT</u> Clean & CCTV, CIPP Lining of 1,280 LF 8" & 15-Inch sanitary sewer, Traffic Control, Bypass Pumping, Point Repairs.</p>	<p>Leucadia Wastewater Division 1960 La Costa Avenue, Carlsbad, CA 92009 Robin Morishita (760) 753-0155</p>	<p>\$ 240,000.00</p>	<p><u>Start</u> 7/28/2016 <u>Completion</u> 12/15/2016</p>
<p><u>Caltrans No. 08-OJ8104</u> Clean & CCTV, SPR & CIPP Lining of 1,160 LF of 18", 24", 30", 36" and 42-Inch Storm Drain, Pipe Repairs, Post Video</p>	<p>Dreambuilder 1324 E. Lawson Ln, Placentia, CA 92870 Anu Singh (714) 646-3697</p>	<p>\$ 311,540.00</p>	<p><u>Start</u> 1/9/2017 <u>Completion</u> 3/3/2017</p>
<p><u>HillTop Area Sewer Lining Project</u> Clean & CCTV, CIPP Lining of 12,956 LF 6", 8", 10" & 12-Inch sanitary sewer, Traffic Control, Bypass Pumping, Point Repairs.</p>	<p>City of Redding 777 Cypress Avenue, Redding, CA 96001 Darren Langfield (530) 225-4469</p>	<p>\$ 519,330.00</p>	<p><u>Start</u> 7/5/2016 <u>Completion</u> 9/30/2016</p>
<p><u>Sewer & Water Group 701</u> Clean & CCTV, CIPP Lining of 1,280 LF 8" & 15-Inch sanitary sewer, Traffic Control, Bypass Pumping, Point Repairs.</p>	<p>City of San Diego 1200 Third Avenue., Ste. 200 San Diego, CA 92101 Luis Schaar, R.E. (619) 533-4641</p>	<p>\$ 27,864.75</p>	<p><u>Start</u> 3/5/2018 <u>Completion</u> 5/7/2017</p>
<p><u>Tyrian St and Soledad Ave and AC Water Main</u> Clean & CCTV, CIPP Lining of 6-Inch sanitary sewer, Traffic Control, Bypass Pumping, Point Repairs.</p>	<p>PK Mechanical Systems, Inc. 21335 Bundy Canyon Road Wildomar, CA 92595 David Spindler (951) 245-5537</p>	<p>\$ 13,164.00</p>	<p><u>Start</u> 3/15/2017 <u>Completion</u> 3/17/2017</p>
<p><u>RFB 7402 San Diego San District</u> Clean & CCTV, sectional Lining and Top Hat Installation, 8" VCP sanitary sewer.</p>	<p>County of San Diego 5560 South Overland Avenue, Suite B, San Diego CA 92123 Jaclyn Smith, (858) 505-6367</p>	<p>\$ 5,850.00</p>	<p><u>Start</u> 7/11/2016 <u>Completion</u> 7/12/2016</p>
<p><u>City of LA ESR 69th & Vermont</u> Clean & CCTV, CIPP Lining of 8-Inch sanitary sewer, Traffic Control, Bypass Pumping, Point Repairs.</p>	<p>Vasilj Inc. 15531 Arrow Hwy, Irwindale, CA 91706 John Gavigan (626) 480-1442</p>	<p>\$ 13,777.50</p>	<p><u>Start</u> 5/18/2016 <u>Completion</u> 5/19/2016</p>





Nu-Line Technologies, LLC Project References – CIPP/SPR

Fresno E. Home Avenue Sewer Rehab Clean & CCTV, CIPP Lining of 8-Inch sanitary sewer, Traffic Control, Bypass Pumping, Point Repairs.	City of Fresno 2600 Fresno Street, Room 2156 Fresno CA, 93721 Mike Brown (559) 621-1332	\$ 75,255.00	<u>Start</u> 3/15/2017 <u>Completion</u> 6/5/2017
Pacific Beach Pipeline South Video Inspecting 9,000 LF of Pipelines and Culverts for Acceptance.	TC Construction 10540 Prospect Avenue Santee, CA 92071 Elan Schier (619) 820-7811	\$ 41,207.00	<u>Start</u> 4/3/2017 <u>Completion</u> TBD
6-Inch CIPP Lining at U.C.L.A Clean & CCTV, CIPP Lining of 6-Inch sanitary sewer, Traffic Control, Bypass Pumping, Point Repairs.	PipeTec PO Box 2337 Irwindale, CA 91706 Mike Ashker (562) 699-3496	\$ 14,425.00	<u>Start</u> 6/17/2016 <u>Completion</u> 6/17/2016
Mission Trails Collection - Santee 1 Video Inspecting 1,001 LF of Pipelines and Culverts for Acceptance.	Burtech Pipeline Inc. 102 Second Street, Encinitas, CA 92024 Buddy Aquino (760) 634-2822	\$ 2,862.00	<u>Start</u> 9/1/2016 <u>Completion</u> (R) <u>11/29/2016</u>
City of El Monte – Sewer Lining Project Clean & CCTV, CIPP Lining of 8-Inch and 15-Inch sanitary sewer, Traffic Control, Bypass Pumping, Point Repairs.	City of El Monte 11333 Valley Blvd El Monte CA 91732 Richard Ruyle (626) 808-1909	\$ 163,098.00	<u>Start</u> 9/27/2016 <u>Completion</u> 11/23/2016
Ross Valley Sanitation Clean & CCTV, CIPP Lining of 22,202 LF of 6-Inch and 8-Inch sanitary sewer, Traffic Control, Bypass Pumping, Point Repairs.	Ranger Pipelines 1790 Yosemite Ave. San Francisco, CA 94124 Tom Grover (415) 822-3700	\$ 864,999.50	<u>Start</u> 6/12/2017 <u>Completion</u> 5/1/2018
Via De La Valle bridge in Del Mar, CA Clean & CCTV, CIPP Lining of 10-Inch Ductile Iron Pipe, Traffic Control	PAL General Engineering 10675 Treena Street, Ste. 103 San Diego, CA 92131 Diana Hsu (858) 860-5300	\$ 24,235.50	<u>Start</u> 10/26/2016 <u>Completion</u> 10/26/2016
Pipeline Rehabilitation AM-1 Clean & CCTV, Post Video of 41,127 LF 8-Inch sanitary sewer, 1,127 Lateral Launch Video, SPR/CIPP Lining of 41,127 LF of 8-Inch sanitary sewer and installation of 1,127 Top Hats	Burtech Pipeline Inc. 102 Second Street, Encinitas, CA 92024 Buddy Aquino (760) 634-2822	\$ 1,755,384.50	<u>Start</u> 11/15/2016 <u>Completion</u> (R) 9/23/2019





Nu-Line Technologies, LLC Project References – CIPP/SPR

<p><u>Fresno Sewer Rehabilitation in Congo and H-Broadway Downtown</u> Clean & CCTV, CIPP Lining of 1,441 LF of 8-Inch and 10-Inch sanitary sewer, Traffic Control, Bypass Pumping, Point Repairs.</p>	<p>Emmitt's Excavation Inc 6207 E. Clinton Ave Fresno CA 93727 David Walsh (559) 347-9188</p>	<p style="text-align: center;">\$ 114,434.50</p>	<p style="text-align: center;"><u>Start</u> April 2017 <u>Completion</u> 4/15/2018</p>
<p><u>Massachusetts Avenue Sewer Improvements - La Mesa</u> Clean & CCTV, CIPP Lining of 937 LF of 6-Inch, 8-Inch and 15-Inch sanitary sewer, Traffic Control, Bypass Pumping, Point Repairs.</p>	<p>S.C. Valley Engineering, Inc. 656 Front St. El Cajon, CA 92020 Kevin Prescott (619) 444-2366</p>	<p style="text-align: center;">\$ 85,709.81</p>	<p style="text-align: center;"><u>Start</u> 12/12/2016 <u>Completion</u> 2/3/2017</p>
<p><u>Sewer Capital Improvements – Lemon Grove</u> Clean & CCTV, CIPP Lining of 112 LF of 6-Inch sanitary sewer, Traffic Control, Bypass Pumping, Point Repairs.</p>	<p>S.C. Valley Engineering, Inc. 656 Front St. El Cajon, CA 92020 Kevin Prescott (619) 444-2366</p>	<p style="text-align: center;">\$ 10,080.00</p>	<p style="text-align: center;"><u>Start</u> 6/1/2015 <u>Completion</u> (R) 10/31/2017</p>
<p><u>Val Sereno Storm Drain Rehabilitation & Extension</u> Clean & CCTV, CIPP Lining of 143LF of 24-Inch storm drain, clearing and grubbing, Traffic Control, Concrete Headwall, Invert Paving Repairs.</p>	<p>City of Encinitas 505 S. Vulcan Avenue Encinitas, CA 92024 Kipp Hefner (760) 633-2775</p>	<p style="text-align: center;">\$ 49,000.00</p>	<p style="text-align: center;"><u>Start</u> 10/27/2016 <u>Completion</u> 11/7/2016</p>
<p><u>Small Diameter Sewer Rehabilitation - 2017-1</u> Clean & CCTV, CIPP Lining of 143LF of 24-Inch storm drain, clearing and grubbing, Traffic Control, Concrete Headwall, Invert Paving Repairs.</p>	<p>AUI Incorporated 7420 Reading Ave. SE Albuquerque New Mexico 87105 Mike Rocco (505) 242-4848</p>	<p style="text-align: center;">\$ 253,674.00</p>	<p style="text-align: center;"><u>Start</u> 3/1/2017 <u>Completion</u> 3/28/2017</p>
<p><u>Fresno Sewer Rehab & Replace in N Central Downtown</u> Clean & CCTV, CIPP Lining of 857 LF of 6-Inch sanitary sewer, lateral reinstatement.</p>	<p>Bill Nelson GEC, Inc. 2741 E. Malaga Avenue Fresno, CA 93725 Jeff Nelson (559) 439-1756</p>	<p style="text-align: center;">\$ 83,942.59</p>	<p style="text-align: center;"><u>Start</u> 4/5/2017 <u>Completion</u> 5/31/2017</p>
<p><u>Trenchless Repair Replacement & Rehab Los Alamos</u> Clean & CCTV, SPR Lining of 1,450 LF of 8-Inch sanitary sewer, lateral reinstatement.</p>	<p>AUI Incorporated 7420 Reading Ave. SE Albuquerque New Mexico 87105 Mike Rocco (505) 242-4848</p>	<p style="text-align: center;">\$ 106,515.00</p>	<p style="text-align: center;"><u>Start</u> 12/12/2016 <u>Completion</u> 12/16/2016</p>
<p><u>Rehabilitation of 2 Sewer Lift Stations 24th St & Oak St</u> Clean & CCTV, CIPP Lining of 486 LF of 15-Inch sanitary sewer, lateral reinstatement.</p>	<p>GSE Construction Company, Inc. 6950 Preston Avenue Livermore, CA 94551 Alexia Leon (925) 447-0292</p>	<p style="text-align: center;">\$ 53,415.00</p>	<p style="text-align: center;"><u>Start</u> 4/5/2017 <u>Completion</u> 10/17/2017</p>





Nu-Line Technologies, LLC Project References – CIPP/SPR

<p><u>Yorba Linda Water District 8in DIP</u> Clean & CCTV, CIPP Lining of 208 LF of 8-Inch Ductile Iron sanitary sewer, lateral reinstatement.</p>	<p>Murrieta Development Inc. 42540 Rio Nedo Rd. Temecula, CA 92590 Bill Estrada (909) 721-0362</p>	<p>\$ 12,376.00</p>	<p><u>Start</u> 11/16/2016 <u>Completion</u> 11/16/2016</p>
<p><u>City of Bell - Sewer Modernization Project</u> Clean & CCTV, CIPP Lining of 4,839LF of 8-Inch sanitary sewer, lateral reinstatement.</p>	<p>Tunnelworks Services Inc. 13502-H Whittier Blvd. Ste. 165 Whittier, CA 90605 William Duarte (562) 553-2734</p>	<p>\$ 142,862.75</p>	<p><u>Start</u> 2/14/2017 <u>Completion</u> 4/10/2017</p>
<p><u>I-25 South 18-Inch Sanitary Sewer</u> Clean & CCTV, SPR Lining of 550 LF of 18-Inch sanitary sewer, lateral reinstatement.</p>	<p>AUI Incorporated 7420 Reading Ave. SE Albuquerque New Mexico 87105 Mike Rocco (505) 242-4848</p>	<p>\$ 168,440.00</p>	<p><u>Start</u> 12/15/2016 <u>Completion</u> 3/31/2017</p>
<p><u>Pipeline Rehabilitation AG-1</u> Clean & CCTV, SPR/CIPP Lining of 35,992 LF of 8-Inch sanitary sewer and installation of 797 Top Hats</p>	<p>Burtech Pipeline Inc. 102 Second Street, Encinitas, CA 92024 Buddy Aquino (760) 634-2822</p>	<p>\$ 1,414,852.50</p>	<p><u>Start</u> 4/3/2017 <u>Completion</u> (R) 4/15/19</p>
<p><u>Bonillo Drive Storm Drain</u> Cleaning and Video Inspection of 24" Storm Drain</p>	<p>Burtech Pipeline Inc. 102 Second Street, Encinitas, CA 92024 Buddy Aquino (760) 634-2822</p>	<p>\$ 2,169.11</p>	<p><u>Start</u> 2/7/2017 <u>Completion</u> 2/7/2017</p>
<p><u>Lemon Drive 8-Inch Lining</u> Clean & CCTV, CIPP Lining of 10 LF of 10-Inch sanitary sewer.</p>	<p>Yorba Linda Water District 1717 E. Miraloma Avenue, Placentia, CA 92870 Diane Dalton (714) 701-3115</p>	<p>\$ 7,385.00</p>	<p><u>Start</u> 3/10/2017 <u>Completion</u> 3/10/2017</p>
<p><u>Sunset Lane Easement 8-Inch Lining</u> Clean & CCTV, CIPP Lining of 345 LF of 8-Inch sanitary sewer.</p>	<p>Yorba Linda Water District 1717 E. Miraloma Avenue, Placentia, CA 92870 Diane Dalton (714) 701-3115</p>	<p>\$ 17,424.75</p>	<p><u>Start</u> 2/27/2017 <u>Completion</u> 2/27/2017</p>
<p><u>Sierra Madre Rehab Project</u> Clean & CCTV, CIPP Lining of 2,785LF of 8-Inch sanitary sewer.</p>	<p>City of Sierra Madre 232 W. Sierra Madre Blvd Sierra Madre, CA Chris Cimino (626) 335-6615</p>	<p>\$ 150,752.50</p>	<p><u>Start</u> 4/6/2017 <u>Completion</u> 6/23/2017</p>





Nu-Line Technologies, LLC Project References – CIPP/SPR

<p>City of Pasadena - La Loma Clean & CCTV, CIPP Lining of 140LF of 8-Inch sanitary sewer, Bypass Pumping.</p>	<p>Ramona Inc 302 N 1st Ave Ste 1 Arcadia, CA 91006 Michael Grbavac (626) 355-1350</p>	<p>\$ 12,950.00</p>	<p><u>Start</u> 3/9/2017 <u>Completion</u> 3/9/2017</p>
<p>North Long Beach Sewer Improvement Project Clean & CCTV, CIPP Lining of 4,229LF of 8-Inch, 10-inch and 12-inch sanitary sewer, Bypass Pumping, Traffic Control, Top Hats, Point Repairs.</p>	<p>City of Long Beach 1800 East Wardlow Road, Long Beach, CA 90807 Valeri Karaknov (562) 570-2419</p>	<p>\$ 529,504.35</p>	<p><u>Start</u> 10/2/2017 <u>Completion</u> 12/18/2017</p>
<p>2017 CMP Storm Drain Relining and Point Repair Clean & CCTV, CIPP Lining of 912LF of 12-Inch, 15-inch and 18-inch & 21-Inch storm drain, Point Repairs, Traffic Control,</p>	<p>City of Pasadena 100 N. Garfield Ave, Pasadena, CA 91109 Diego Juarez (626) 744-3921</p>	<p>\$ 201,368.10</p>	<p><u>Start</u> 3/5/2018 <u>Completion</u> (R) 6/21/2018</p>
<p>CalTrans 12-0Q0604 Huntington Beach CA Clean & CCTV, CIPP Lining of 1,100LF of 12-Inch, 18-inch and 24-Inch storm drain, Point Repairs, Traffic Control,</p>	<p>Jabra Contracting 1813 Manzanita Lane, Manhattan Beach, CA 90266 Bob Collins (310) 545-5015</p>	<p>\$ 113,650.00</p>	<p><u>Start</u> 12/4/2017 <u>Completion</u> 11/6/2017</p>
<p>La Mesa 24-Inch Storm Drain CCTV Inspection 24-Inch storm drain</p>	<p>Wayne Pointer 4740 Alta Rica Drive La Mesa, CA 91941 (619) 818-1116</p>	<p>\$ 660.00</p>	<p><u>Start</u> 3/8/2016 <u>Completion</u> 3/8/2016</p>
<p>Water & Sewer Group 954 Clean & CCTV 1,816LF, CIPP Lining of 1,316LF of 8-Inch sanitary sewer, Traffic Control,</p>	<p>Burtech Pipeline Inc. 102 Second Street, Encinitas, CA 92024 Buddy Aquino (760) 634-2822</p>	<p>\$ 55,710.00</p>	<p><u>Start</u> 4/25/2017 <u>Completion</u> 11/3/2018</p>
<p>Imperial Beach – Sewer Pump Station 4 & 6 Rehabilitation Clean & CCTV 128LF, CIPP Lining of 128 LF of 8-Inch sanitary sewer, Bypass Pumping, Traffic Control,</p>	<p>NEWest Construction 9235 Trade Pl. Suite A, San Diego, CA 92126 Corey Jennette (858) 436-4880</p>	<p>\$ 14,164.00</p>	<p><u>Start</u> 4/7/2017 <u>Completion</u> 4/13/2017</p>
<p>Goleta West Sanitary District Project #16-04 Clean & CCTV 5,882 LF, SPR & CIPP Lining of 5,882 LF of 6", 8", 10", 12" 15" & 18-Inch sanitary sewer, Bypass Pumping, Traffic Control, Manhole Rehabilitation at various locations.</p>	<p>Goleta West Sanitary District PO Box 4 Goleta, CA 93116 Mark Nation (805) 968-2617</p>	<p>\$ 566,502.00</p>	<p><u>Start</u> 7/27/2017 <u>Completion</u> 12/8/2017</p>





Nu-Line Technologies, LLC Project References – CIPP/SPR

<p><u>CalTrans No. 07-3W1104 Place Pipeliner & Repair Culverts</u> Clean & CCTV, CIPP Lining of 1,400 LF of 18-Inch, 24-inch and 39-Inch storm drain in various locations of San Fernando CA</p>	<p>Jabra Contracting 1813 Manzanita Lane, Manhattan Beach, CA 90266 Bob Collins (310) 545-5015</p>	<p style="text-align: center;">\$ 236,767.50</p>	<p style="text-align: center;"><u>Start</u> 7/10/2017 <u>Completion</u> 9/29/2017</p>
<p><u>San Diego Sewer Group 818</u> Clean & CCTV 133LF, CIPP Lining of 133LF of 6-Inch sanitary sewer, Top Hats, Bypass Pumping, Traffic Control,</p>	<p>Dick Miller Jean Grace (760) 471-6842 ext 13</p>	<p style="text-align: center;">\$ 18,569.75</p>	<p style="text-align: center;"><u>Start</u> 6/18/2018 <u>Completion</u> 10/6/2018</p>
<p><u>San Diego - AC Water & Sewer Group 1017</u> Clean & CCTV 350 LF, CIPP Lining of 350LF of 8-Inch sanitary sewer, Top Hats, Bypass Pumping, Traffic Control,</p>	<p>Burtech Pipeline Inc. 102 Second Street, Encinitas, CA 92024 Buddy Aquino (760) 634-2822</p>	<p style="text-align: center;">\$ 20,650.00</p>	<p style="text-align: center;"><u>Start</u> 10/20/2017 <u>Completion</u> (R) 4/30/2019</p>
<p><u>Lake Arrowhead Shelter Cove Agua-Fria</u> Clean & CCTV 3,170 LF, CIPP Lining of 3,170LF of 8-Inch sanitary sewer, Top Hats, Bypass Pumping, Traffic Control,</p>	<p>Lake Arrowhead Community Services District 27307 State Highway 189, Blue Jay, CA Richard Pretzinger (909) 336-7139</p>	<p style="text-align: center;">\$ 325,329.00</p>	<p style="text-align: center;"><u>Start</u> 8/7/2017 <u>Completion</u> 10/31/2017</p>
<p><u>San Diego - AC Water & Sewer Group 955</u> Post Video Inspection 1,796LF various diameters</p>	<p>Burtech Pipeline Inc. 102 Second Street, Encinitas, CA 92024 Buddy Aquino (760) 634-2822</p>	<p style="text-align: center;">\$ 4,041.00</p>	<p style="text-align: center;"><u>Start</u> 3/13/2018 <u>Completion</u> 10/20/2018</p>
<p><u>La Mesa 8-Inch Cast Iron Pipe</u> Clean & CCTV 8" Cast Iron Pipe x 450ft</p>	<p>PSOMAS 401 B Street, Suite San Diego, CA 92101 Sean Diaz (619) 961-2812</p>	<p style="text-align: center;">\$ 4,000.00</p>	<p style="text-align: center;"><u>Start</u> 6/1/2017 <u>Completion</u> 6/30/2017</p>
<p><u>Leucadia 18-Inch Ductile Iron Pipe Rehabilitation</u> Clean & CCTV, Cured In Place Lining and end seal 18" Ductile Iron Pipe</p>	<p>CCL Contracting Inc 1938 Don Lee Pl Escondido, CA 92029 Rod Chilcote (760) 743-2254</p>	<p style="text-align: center;">\$ 39,232.00</p>	<p style="text-align: center;"><u>Start</u> 7/23/2017 <u>Completion</u> 7/26/2017</p>





Nu-Line Technologies, LLC Project References – CIPP/SPR

<p><u>Sewer Rehabilitation in N Abby and E Hammond</u> Clean & CCTV 1,714 LF, SPR Lining of 1,714 LF of 20-Inch sanitary sewer, Top Hats, Bypass Pumping, Traffic Control,</p>	<p>City of Fresno 2600 Fresno Street, Room 2015, Fresno, CA 93721 Jesus Gonzales (559) 621-1332</p>	<p style="text-align: center;">\$ 702,673.50</p>	<p style="text-align: center;"><u>Start</u> 3/16/2018 <u>Completion</u> 5/24/2018</p>
<p><u>LACDPW - Project No. 15</u> Clean & CCTV 22,132 LF, SPR & CIPP Lining of 22,132 LF of 8", 10"and 12-Inch sanitary sewer, Bypass Pumping, Traffic Control, Point Repairs at various locations.</p>	<p>LACDPW 900 South Fremont Ave Alhambra, CA 90014 Fred Kheradvar (626) 458-4973 Office</p>	<p style="text-align: center;">\$ 664,667.00</p>	<p style="text-align: center;"><u>Start</u> 10/3/2017 <u>Completion</u> 1/16/2018</p>
<p><u>Beale Air Force Base - Repair Sub Basins 1, 2, 3, 9 and MUNS</u> Clean & CCTV 5,638 LF, CIPP Lining of 5,638 LF of 6", 8", 10"and 12" and 21-Inch sanitary sewer, Bypass Pumping, Traffic Control, Point Repairs at various locations.</p>	<p>Allright Construction Inc 1485 S. Industrial Way Kerman, CA 93630 Steve Martinez (559) 284-3236</p>	<p style="text-align: center;">\$ 522,566.00</p>	<p style="text-align: center;"><u>Start</u> 7/31/2018 <u>Completion</u> 9/29/2018</p>
<p><u>2016-2017 Citywide Annual Sewer Rehabilitation</u> Clean & CCTV 17,980 LF, CIPP Lining of 17,980 LF of 6", 8", 10"and 14-Inch sanitary sewer, Top Hats, Bypass Pumping, Traffic Control, Manhole Rehabilitation Point Repairs at various locations.</p>	<p>City of Encinitas 505 S. Vulcan Avenue Encinitas, CA 92024 Kipp Hefner (760) 633-2775</p>	<p style="text-align: center;">\$ 1,351,415.75</p>	<p style="text-align: center;"><u>Start</u> 11/6/2017 <u>Completion</u> 5/18/2019</p>
<p><u>Monrovia Renewal – Northwest Area Infrastructure Improvements Project</u> Clean & CCTV 6,035 LF, CIPP Lining of 6,035LF of 6"and 8-Inch sanitary sewer, Top Hats, Bypass Pumping, Traffic Control, Manhole Rehabilitation Point Repairs at various locations.</p>	<p>Sully-Miller Contracting, Inc. 135 S. State College Blvd, Brea CA 92821 Jesse Flores (714) 578-9600</p>	<p style="text-align: center;">\$ 335,935.00</p>	<p style="text-align: center;"><u>Start</u> 11/15/2017 <u>Completion</u> (R) 3/31/19</p>
<p><u>Sewer System Repair Project- Montclair CA</u> Clean & CCTV 766 LF, CIPP Lining of 766 LF of 8-Inch sanitary sewer, Bypass Pumping, Traffic Control at various locations.</p>	<p>Vasilj Inc. 15531 Arrow Hwy, Irwindale, CA 91706 John Gavigan (626) 480-1442</p>	<p style="text-align: center;">\$ 31,980.50</p>	<p style="text-align: center;"><u>Start</u> 9/18/2017 <u>Completion</u> 10/9/2017</p>
<p><u>Sewer and AC Water Group 764A</u> Clean & CCTV 7,791 LF, CIPP Lining of 617 LF of 8-Inch sanitary sewer, Bypass Pumping, Traffic Control at various locations.</p>	<p>KTA Construction 821 Tavern Rd. Alpine, CA Adam Ogden (619) 562-9464</p>	<p style="text-align: center;">\$ 46,611.00</p>	<p style="text-align: center;"><u>Start</u> 2/13/2018 <u>Completion</u> 2/15/2019</p>
<p><u>Techite Sewer Replacement, Diversion Structure- Padre Dam</u> Clean & CCTV 390 LF, CIPP Lining of 390 LF of 6-Inch sanitary sewer, Top Hats, Bypass Pumping, Traffic Control at various locations.</p>	<p>Charles King Company 2841 Gardena Avenue Signal Hill, CA 90755 Scott King (562) 426-2974</p>	<p style="text-align: center;">\$ 36,864.00</p>	<p style="text-align: center;"><u>Start</u> 1/24/2018 <u>Completion</u> 3/31/2018</p>





Nu-Line Technologies, LLC Project References – CIPP/SPR

<p><u>Sewer Rehabilitation Project 2016/2017</u> Clean & CCTV 8,620 LF, CIPP Lining of 8,620 LF of 8” and 10-Inch sanitary sewer, Top Hats, Bypass Pumping, Point Repairs and Traffic Control at various locations.</p>	<p>City of West Hollywood 5 Hutton Centre Drive, Suite 500 Santa Ana, CA 92707 Kieler Smith (949) 330-4172</p>	<p style="text-align: center;">\$ 861,970.00</p>	<p style="text-align: center;"><u>Start</u> 12/11/2017 <u>Completion</u> 9/22/2018</p>
<p><u>2017 CMP Repairs – City of Poway</u> Clean & CCTV 1,031 LF, CIPP Lining of 1,031 LF of 18” and 24-Inch storm drain, Invert Repairs, Point Repairs and Traffic Control at various locations.</p>	<p>City of Poway 13325 Civic Center Drive Poway, CA 92064 Brian Banzuelo (858) 668-4623</p>	<p style="text-align: center;">\$ 318,244.00</p>	<p style="text-align: center;"><u>Start</u> 11/10/2017 <u>Completion</u> 12/27/2017</p>
<p><u>18-inch Storm Drain Rehabilitation</u> Clean & CCTV 1,308 LF, CIPP Lining of 1,280 LF of 18” storm drain, invert grouting and Traffic Control at various locations.</p>	<p>The Gill Company 28069 Diaz Rd, Suite B Temecula, CA 92590 Darren Gill (951)501-5623</p>	<p style="text-align: center;">\$ 108,191.00</p>	<p style="text-align: center;"><u>Start</u> 12/11/2017 <u>Completion</u> 2/1/2018</p>
<p><u>JOC Task P15S004</u> Clean & CCTV 69 LF, CIPP Lining of 69 LF of 24” storm drain, invert grouting and Traffic Control at various locations.</p>	<p>Burtech Pipeline Inc. 102 Second Street, Encinitas, CA 92024 Buddy Aquino (760) 634-2822</p>	<p style="text-align: center;">\$ 12,915.00</p>	<p style="text-align: center;"><u>Start</u> 4/26/2018 <u>Completion</u> 4/26/2018</p>
<p><u>Caltrans – Contract No. 08-0Q6804</u> Clean & CCTV 520 LF, CIPP Lining of 520 LF of 18” & 24” storm drain, invert grouting and Traffic Control at various locations.</p>	<p>American Pacific Construction 7161 Citrus Valley Ave Eastvale, CA 92880 Ashish Sehgal (559) 577-9999</p>	<p style="text-align: center;">\$ 130,875.00</p>	<p style="text-align: center;"><u>Start</u> 2/1/2018 <u>Completion</u> 4/25/2018</p>
<p><u>Caltrans – Contract No. 08-0Q6904</u> Clean & CCTV 1,810 LF, CIPP Lining of 1,810 LF of 24” and 30” storm drain, invert grouting and Traffic Control at various locations.</p>	<p>United Engineering & Cons., Inc., 336 N. Central Ave. 10A Glendale, CA 91203 Reza Fard (818) 662-8055</p>	<p style="text-align: center;">\$ 381,090.00</p>	<p style="text-align: center;"><u>Start</u> 2/1/2018 <u>Completion</u> 5/23/2018</p>
<p><u>Lake Helix Sewer Rehabilitation</u> Clean & CCTV 344LF LF, CIPP Lining of 344LF of 8” sanitary sewer, invert grouting and Traffic Control at various locations.</p>	<p>United Engineering & Cons., Inc., 336 N. Central Ave. 10A Glendale, CA 91203 Reza Fard (818) 662-8055</p>	<p style="text-align: center;">\$ 381,090.00</p>	<p style="text-align: center;"><u>Start</u> 2/1/2018 <u>Completion</u> 5/23/2018</p>
<p><u>FY2016/17 Gravity Sewer Rehabilitation Project</u> Clean & CCTV, CIPP Lining of 24,064 LF of 6-Inch and 8-Inch sanitary sewer, Traffic Control, Bypass Pumping, Point Repairs.</p>	<p>Ranger Pipelines 1790 Yosemite Ave. San Francisco, CA 94124 Tom Grover (415) 822-3700</p>	<p style="text-align: center;">\$ 1,072,720.00</p>	<p style="text-align: center;"><u>Start</u> 7/24/2018 <u>Completion</u> 10/30/2019</p>





Nu-Line Technologies, LLC Project References – CIPP/SPR

<p><u>Rehabilitate 10-Inch Siphon</u> Clean & CCTV, CIPP Lining of 250 LF of 10-Inch sanitary sewer siphon, Traffic Control, Bypass Pumping.</p>	<p>City of Laguna Beach Water Quality Department 505 Forest Avenue Laguna Beach, CA 92651 Hannah Johnson (949) 464-6615</p>	<p style="text-align: center;">\$ 56,625.00</p>	<p style="text-align: center;"><u>Start</u> 12/1/2017 <u>Completion</u> 12/5/2017</p>
<p><u>Culvert Repair and Replacement Fiscal Year 2016-17, Oracle Project No. 1020695</u> Clean & CCTV, CIPP Lining of 721 LF of 18", 24", 30", 42" and 71 x 47-Inch storm drain, Traffic Control and invert repairs.</p>	<p>Tri-Group Construction 9580 Black Mountain Road, Ste L San Diego CA, 92126 Hani Assi (858) 689-0058</p>	<p style="text-align: center;">\$ 262,898.00</p>	<p style="text-align: center;"><u>Start</u> 2/22/2018 <u>Completion</u> 5/30/2018</p>
<p><u>CIPP Lining of 18" CMP Storm Drain & Void Repair</u> Clean & CCTV, CIPP Lining of 100 LF of 18-Inch storm drain, Traffic Control and invert repairs.</p>	<p>City of Buena Park 6955 Aragon Circle Buena Park, Ca 90622 Frank Moore (714) 562-3708</p>	<p style="text-align: center;">\$ 30,000.00</p>	<p style="text-align: center;"><u>Start</u> 12/18/2018 <u>Completion</u> 12/22/2018</p>
<p><u>Regal Road Sewer Main Extension</u> Clean & CCTV 133 LF of 8-Inch sanitary sewer and Traffic Control.</p>	<p>Burtech Pipeline Inc. 102 Second Street, Encinitas, CA 92024 Buddy Aquino (760) 634-2822</p>	<p style="text-align: center;">\$ 1,100.00</p>	<p style="text-align: center;"><u>Start</u> 1/18/2018 <u>Completion</u> 1/18/2018</p>
<p><u>Sewer & Water Group -701</u> Clean & CCTV 10,013 LF of 8-Inch sanitary sewer, Rehabilitate 8-inch Sewer, Top Hats and Traffic Control.</p>	<p>Ortiz Corporation 2000 Mc Kinley Avenue National City, CA 91950 Jose Ortiz (619) 434-7925</p>	<p style="text-align: center;">\$ 27,864.00</p>	<p style="text-align: center;"><u>Start</u> 3/5/2018 <u>Completion</u> (R) 6/15/2018</p>
<p><u>Brio & Symphony 12" CIPP</u> Clean & CCTV 336 LF of 12-Inch sanitary sewer, Rehabilitate 12-inch Sewer and Traffic Control.</p>	<p>National Plant Services, Inc. 1461 Harbor Avenue Long Beach, CA 90813 Jeff Garcia (562) 436-7600</p>	<p style="text-align: center;">\$ 26,880.00</p>	<p style="text-align: center;"><u>Start</u> 2/6/2018 <u>Completion</u> 2/6/2018</p>
<p><u>Contract No. 02-4G2504 Replace and Rehabilitate Culverts, and Construct RSP</u> Clean & CCTV 460 LF of 21" & 24-Inch storm drain, Rehabilitate 21" & 24-inch storm drain with SPR.</p>	<p>R. Brown Construction Company, Inc. P.O. Box 406 Willow Creek, CA 95573 Roger Brown (530) 629-3702</p>	<p style="text-align: center;">\$ 154,060.00</p>	<p style="text-align: center;"><u>Start</u> 7/1/2018 <u>Completion</u> 7/28/2018</p>
<p><u>Ceres Trunk Rehabilitation Project No. 2017-23</u> Clean & CCTV 723 LF of 21-Inch sanitary sewer, Rehabilitate 21-inch sanitary sewer with cured in place liner.</p>	<p>Rolfe Construction 3573 Southern Pacific Ave Atwater, CA 95301 Jorge C. Avelar (209) 358-5548</p>	<p style="text-align: center;">\$ 133,241.00</p>	<p style="text-align: center;"><u>Start</u> 3/19/2019 <u>Completion</u> 3/21/2019</p>





Nu-Line Technologies, LLC Project References – CIPP/SPR

<p>Caltrans 08-0Q6904 Culvert Repair Clean & CCTV 1,810 LF of 24" & 30-Inch storm drain, Rehabilitate 21" & 24-inch storm drain with CIPP, Cement Spray & SPR lining systems.</p>	<p>United Engineering & Construction, Inc., 336 N. Central Ave. 10A Glendale, CA 91203 Reza Fard (818) 662-8055</p>	<p style="text-align: center;">\$ 981,090.00</p>	<p style="text-align: center;"><u>Start</u> 2/21/2018 <u>Completion</u> 6/23/2018</p>
<p>FY 2018 Gravity Pipeline CIPP Lining Rehabilitation Project Clean & CCTV 7,410 LF of 8", 12" 14" & 15-Inch sanitary sewer, Point repairs, top hats, manhole rehab.</p>	<p>Leucadia Wastewater Division 1960 La Costa Avenue, Carlsbad, CA 92009 Robin Morishita (760) 753-0155</p>	<p style="text-align: center;">\$ 667,998.00</p>	<p style="text-align: center;"><u>Start</u> 5/21/2018 <u>Completion</u> (R) 7/29/19</p>
<p>Renewal South Area Infrastructure Improvements Clean & CCTV 2,850 LF of 6", 8" & 15-Inch sanitary sewer, Point repairs, top hats, sectional lining.</p>	<p>Sequel Contractors, Inc 13546 Imperial Hwy., Santa Fe Springs, CA 90670</p>	<p style="text-align: center;">\$ 215,569.00</p>	<p style="text-align: center;"><u>Start</u> 7/2/2018 <u>Completion</u> 1/17/2019</p>
<p>Pipeline Rehabilitation AK-1 Clean & CCTV, SPR/CIPP Lining of 29,295 LF of 8-Inch sanitary sewer and installation of 497 Top Hats</p>	<p>Burtech Pipeline Inc. 102 Second Street, Encinitas, CA 92024 Buddy Aquino (760) 634-2822</p>	<p style="text-align: center;">\$ 993,200.00</p>	<p style="text-align: center;"><u>Start</u> 4/25/2018 <u>Completion</u> (R) 7/3/2019</p>
<p>Cal State San Bernardino Sewer Lining Quote Clean & CCTV, SPR/CIPP Lining of 380 LF of 6-Inch and 10-Inch sanitary sewer.</p>	<p>W.A. Rasic Construction Company, Inc. 4150 Long Beach Blvd. Long Beach, CA 90807 Keith Fouts (562) 928-6111</p>	<p style="text-align: center;">\$ 35,700.00</p>	<p style="text-align: center;"><u>Start</u> TBD <u>Completion</u> TBD</p>
<p>City of San Diego - Water and Sewer Group 966 Clean & CCTV 3,462LF, SPR/CIPP Lining of 477 LF of 12-Inch sanitary sewer and installation of 2 Top Hats</p>	<p>El Cajon Grading & Engineering Co. Inc P.O. Box 967 Lakeside, Ca 92040 Wendy Frisch (619) 561-9840</p>	<p style="text-align: center;">\$ 49,355.00</p>	<p style="text-align: center;"><u>Start</u> 9/20/2018 <u>Completion</u> 10/29/2018</p>
<p>8-Inch Sanitary Sewer Rehabilitation Clean & CCTV 640 LF, CIPP Lining of 640 LF of 8-Inch sanitary sewer and Top Hats</p>	<p>City of Carlsbad 1200 Carlsbad Village Drive Carlsbad, CA 92008 Don Wasco (619) 561-9840</p>	<p style="text-align: center;">\$ 30,665.00</p>	<p style="text-align: center;"><u>Start</u> 6/22/2018 <u>Completion</u> 6/25/2018</p>
<p>Lining of IVY Glenn Drive Storm Drain Facilities Clean & CCTV 1,200LF, CIPP Lining of 1,200 LF of 18-Inch storm drain.</p>	<p>City of Laguna Niguel, Public Works Department 30111 Crown Valley Pkwy Laguna Niguel, CA 92677 JC Herrera (949) 362-4337</p>	<p style="text-align: center;">\$ 95,000.00</p>	<p style="text-align: center;"><u>Start</u> 5/2/2018 <u>Completion</u> 6/15/2018</p>





Nu-Line Technologies, LLC Project References – CIPP/SPR

<p><u>Country Club Infiltration Project</u> Clean & CCTV 2,620LF, CIPP Lining of 2,620 LF of 18", 24", 36" 42" & 48-Inch storm drain. Point Repairs Dewatering.</p>	<p>City of Coronado 1825 Strand Way, Coronado, CA 92118 Katherine Odiorne (619) 522-2424</p>	<p>\$ 1,370,000.00</p>	<p><u>Start</u> 5/24/2018 <u>Completion</u> 12/21/2018</p>
<p><u>City of San Joaquin - Sewer Collection System Improvements Project</u> Clean & CCTV 17,585 LF of 6', 8", 10", 12" & 16-Inch sanitary sewer, Rehabilitate 17,585 LF various diameters sanitary sewer with cured in place liner.</p>	<p>Rolfe Construction 3573 Southern Pacific Ave Atwater, CA 95301 Jorge C. Avelar (209) 358-5548</p>	<p>\$ 598,972.50</p>	<p><u>Start</u> 8/7/2018 <u>Completion</u> 4/27/2019</p>
<p><u>El Cajon Sewer & Storm Drain Repair & Replacement</u> Clean & CCTV 8,589 LF of 6-inch to 60-Inch sanitary sewer & storm drain, Rehabilitate 8,589 LF various diameters sanitary sewer and storm drain with cured in place liner.</p>	<p>Burtech Pipeline Inc. 102 Second Street, Encinitas, CA 92024 Buddy Aquino (760) 634-2822</p>	<p>\$ 701,604.00</p>	<p><u>Start</u> 6/11/2018 <u>Completion</u> 3/11/2019</p>
<p><u>San Rafael Storm Drain (Lindaro Pump Station)</u> Clean & CCTV 250LF, CIPP Lining of 250 LF of 24-Inch storm drain. Point Repairs Dewatering.</p>	<p>Terra Pacific Group 201 N. Civic Drive, Suite 135 Walnut Creek, CA 94596 Pat Barrese (925) 667-7464</p>	<p>\$ 202,750.00</p>	<p><u>Start</u> 9/24/2019 <u>Completion</u> 9/26/2019</p>
<p><u>Caltrans 12-0Q7504 Culvert Repair</u> Clean & CCTV 1,730 LF of 18", 24" & 30-Inch storm drain, Rehabilitate 18", 24" & 30-inch storm drain with CIPP lining system.</p>	<p>Jabre Contracting Inc., 1813 Manzanita Lane Manhattan Beach, CA 90206 Bob Collins (310) 720-0277</p>	<p>\$ 199,140.00</p>	<p><u>Start</u> 9/17/2018 <u>Completion</u> (R) 1/29/2018</p>
<p><u>Lake Helix Sewer Rehabilitation</u> Clean & CCTV 344 LF of 8 cast-iron sanitary sewer, Rehabilitate with CIPP lining system.</p>	<p>City of La Mesa 8130 Allison Avenue La Mesa CA, 91942 Casey Crown (619) 667-1380</p>	<p>\$ 48,422.00</p>	<p><u>Start</u> 7/17/2018 <u>Completion</u> 8/31/2018</p>
<p><u>Sanitary Sewer Rehab and Replacement Prgm Project</u> <u>1</u> Clean & CCTV 10,594 LF of 8", 10" & 12" sanitary sewer, UV Sectionals & Top Hats, Rehabilitate with CIPP lining system.</p>	<p>City of Long Beach 333 W. Ocean Blvd/7th Floor Long Beach, CA 90802 Valeri Karakanov (562) 570-2331</p>	<p>\$ 575,000.00</p>	<p><u>Start</u> 10/9/2018 <u>Completion</u> (R) 3/27/2019</p>
<p><u>RFP - Sewer Cured in Place Pipe Repairs 2018</u> Clean & CCTV 3,308 LF of 8" & 10" sanitary sewer, Top Hats, Rehabilitate with CIPP lining system.</p>	<p>Padre Dam Municipal Water District 9300 Fanita Parkway Santee, CA 719003 (619) 258-4635</p>	<p>\$ 200,003.00</p>	<p><u>Start</u> 9/27/2018 <u>Completion</u> (R) 5/14/2019</p>





Nu-Line Technologies, LLC Project References – CIPP/SPR

<p><u>Santa Barbara – Anacapa St 8” Emergency</u> Clean & CCTV 290 LF of 8” sanitary sewer. Rehabilitate with SPR lining system.</p>	<p>City of Santa Barbara Public Works 630 Garden Street Santa Barbara, CA 93101 Bradley Rahrer (619) 258-4635</p>	<p>\$ 36,270.00</p>	<p><u>Start</u> 6/19/2018 <u>Completion</u> 6/19/2018</p>
<p><u>CalTrans 07-3W9704 -105 Freeway</u> Clean & CCTV 1,320 LF of 18”, 24”, 30” & 36” CMP storm drain. Rehabilitate with CIPP lining system.</p>	<p>Jabre Contracting Inc., 1813 Manzanita Lane Manhattan Beach, CA 90206 Bob Collins (310) 720-0277</p>	<p>\$ 227,790.00</p>	<p><u>Start</u> 8/7/2018 <u>Completion</u> 11/17/2018</p>
<p><u>2018 Sewer Main Rehabilitation Project</u> Clean & CCTV 14,425 LF of 8” & 10” rehabilitate sanitary sewer with CIPP lining system.</p>	<p>Ojai Valley Sanitary District 1072 Tico Road Ojai , CA 93023 Jon Turner (805) 658-6800</p>	<p>\$ 425,000.00</p>	<p><u>Start</u> 10/8/2018 <u>Completion</u> 4/20/2019</p>
<p><u>CIP 18-100 CIPP Lining of Sanitary Sewer System</u> Clean & CCTV 30,480 LF of 6”, 8”, 10”, 15” & 18” rehabilitate sanitary sewer with CIPP lining system.</p>	<p>City of Laguna Beach 505 Forest Avenue Laguna Beach, CA 92651 Hannah Johnson (949) 464-6615</p>	<p>\$ 1,259,748.00</p>	<p><u>Start</u> 9/6/2018 <u>Completion</u> (R) 10/22/2019</p>
<p><u>Summerland Emergency 8” Cast Iron Repair</u> Clean & CCTV 150 LF of 8”, rehabilitate sanitary sewer with SPR lining system.</p>	<p>CUSHMAN CONTRACTING CORP. P.O. Box 147 Goleta, California Blair Cushman (805) 964-8661</p>	<p>\$ 30,025.00</p>	<p><u>Start</u> 8/27/2018 <u>Completion</u> 8/28/2018</p>
<p><u>ESR City of Los Angeles - Bonnie Brae</u> Clean & CCTV 110 LF of 8” sanitary sewer with CIPP lining system.</p>	<p>Pipe Tec 5103 Elton Street Baldwin Park, CA 91706 Tom Vukojevic (626) 222-1998</p>	<p>\$ 19,060.00</p>	<p><u>Start</u> TBD <u>Completion</u> TBD</p>
<p><u>Palisades Slip Lining Phase 2</u> Clean & CCTV 2,348 LF of 6” sanitary sewer. Rehabilitate with CIPP lining system and install new manhole structures & cleanouts.</p>	<p>Lake Arrowhead Comm. Services PO Box 700 Lake Arrowhead, CA 92352 Scott Schroeder (909) 336-7136</p>	<p>\$ 366,930.00</p>	<p><u>Start</u> 10/30/2018 <u>Completion</u> 1/15/2019</p>
<p><u>AC Water & Sewer Group 1018</u> Clean & CCTV 1,000 LF of 8” sanitary sewer. Rehabilitate 1,953 with CIPP lining system and install UV Top Hats.</p>	<p>Orion Construction Corp. Rob Wilson (760) 597-9660</p>	<p>\$ 192,402.50</p>	<p><u>Start</u> 3/21/2019 <u>Completion</u> 4/8/2019</p>





Nu-Line Technologies, LLC Project References – CIPP/SPR

<u>City of Vista - Pilot Project Information</u> Clean & CCTV 329 LF of 8" sanitary sewer. Rehabilitate with SPR lining system.	City of Vista 200 Civic Center Drive Vista CA 92804 Elmer Alex (760) 726-1340	\$ 15,802.00	<u>Start</u> 10/18/18 <u>Completion</u> 10/18/18
<u>Fulton Road Rehab</u> Clean & CCTV 1,592 LF of 8" sanitary sewer. Rehabilitate with CIPP & SPR lining systems.	Burtech Pipeline Inc. 102 Second Street Encinitas CA 92024 Buddy Aquino (760) 726-1340	\$ 200,525.00	<u>Start</u> 6/2/2018 <u>Completion</u> 8/13/18
<u>JOC - Sewer Rehab Phase AT-1</u> Clean & CCTV 39,685 LF of 8" sanitary sewer. Rehabilitate with CIPP & SPR lining systems, install 1,023 UV Top Hats & Post Video.	Burtech Pipeline Inc. 102 Second Street Encinitas CA 92024 Buddy Aquino (760) 726-1340	\$ 1,907,764.00	<u>Start</u> 12/28/2018 <u>Completion</u> 10/31/2019
<u>CMP Rehabilitation FY 2017-18 Measure P</u> 20,659 LF of 18" to 54" CMP Storm Drain Repairs. Rehabilitate with CIPP & SPR lining systems.	Spiniello Companies 2650 Pomona Blvd. Pomona, CA 91768 Abby De La Cruz (562) 305-5219	\$ 1,984,764.00	<u>Start</u> 2/14/19 <u>Completion</u> 10/30/2019
<u>LACSD Belvedere Trunk Sewer Rehabilitation</u> 10,260 LF of 15", 21" & 24" sanitary sewer. Rehabilitate with CIPP lining systems.	Spiniello Companies 2650 Pomona Blvd. Pomona, CA 91768 Eugenio Mateo (562) 458-7757	\$ 1,248,340.00	<u>Start</u> 1/2/19 <u>Completion</u> 3/19/19
<u>SKF Gilroy 18th Avenue Sewer Project</u> 797 LF of 12", 14" & 18" sanitary sewer. Rehabilitate with SPR lining systems.	Emmitt's Excavation Inc 6207 E. Clinton Ave Fresno CA 93727 David Walsh (559) 347-9188	\$ 155,713.00	<u>Start</u> 12/8/2018 <u>Completion</u> (R) 10/18/2019
<u>Santa Monica - FY 17/18 Annual Wastewater Main Improvements</u> Clean & CCTV 2,135 LF of 8" sanitary sewer. Rehabilitate with CIPP lining system, install UV Top Hats.	Mike Prlich & Sons Inc. 5103 Elton St Baldwin Park, CA 91706 Lonny Lavin (626) 813-1700	\$ 156,265.00	<u>Start</u> TBD <u>Completion</u> TBD
<u>Vellicitos Rock Springs Sewer Replacement</u> Clean & CCTV 2,701 LF of 8", 12" & 15" sanitary sewer. Rehabilitate 303 LF with CIPP lining system.	Burtech Pipeline Inc. 102 Second Street Encinitas CA 92024 Buddy Aquino (760) 726-1340	\$ 20,814.00	<u>Start</u> 3/22/2019 <u>Completion</u> (R) 10/2/2019





Nu-Line Technologies, LLC Project References – CIPP/SPR

<p><u>JOC - Sewer Rehab Phase AO-1</u> Clean & CCTV 42,800 LF of 8", 10" & 12" sanitary sewer. Rehabilitate with CIPP & SPR lining systems, install 413 UV Top Hats & Post Video.</p>	<p>Burtech Pipeline Inc. 102 Second Street Encinitas CA 92024 Buddy Aquino (760) 726-1340</p>	<p>\$ 1,332,009.00</p>	<p><u>Start</u> 4/25/19 <u>Completion</u> On-Going</p>
<p><u>Caltrans – State Minor B, Solicitation No. 10A2041</u> Clean & CCTV 85 LF of 18" & 30" storm drain. Rehabilitate with CIPP lining systems, install 85LF & Post Video.</p>	<p>Jabre Contracting Inc., 1813 Manzanita Lane Manhattan Beach, CA 90206 Bob Collins (310) 720-0277</p>	<p>\$ 62,850.00</p>	<p><u>Start</u> 6/11/19 <u>Completion</u> 9/30/2019</p>
<p><u>(SSRP) H31 Beachwood Drive & Scenic Avenue</u> Clean & CCTV 12,419 LF of 6" & 8" sanitary sewer. Rehabilitate with CIPP lining systems, install 12,419 LF, Top Hats & Post Video.</p>	<p>Vasilj Inc. 15531 Arrow Hwy, Irwindale, CA 91706 Joe Vasilj (626) 480-1442</p>	<p>\$ 1,120,089.00</p>	<p><u>Start</u> 9/19/18 <u>Completion</u> On-Going</p>
<p><u>La Costa Avenue - Storm Drain Improvements</u> Pre and Post Clean & CCTV of 15" & 18" Storm Drain.</p>	<p>Tri-Group Construction, Inc. 9580 Black Mountain Road, Ste L San Diego CA, 92126 Hani Assi (858) 689-0058</p>	<p>\$ 5,020.00</p>	<p><u>Start</u> 2/1/2019 <u>Completion</u> (R) 4/9/2019</p>
<p><u>PAL Project – Lateral Launch and Locate</u> Lateral Launch & CCTV of 56 sanitary sewer laterals.</p>	<p>Burtech Plumbing 102 Second Street Suite C Encinitas CA, 92024 Bill Schramm (760) 305-2016</p>	<p>\$ 17,180.00</p>	<p><u>Start</u> 11/15/2018 <u>Completion</u> 5/25/2019</p>
<p><u>City of Lynwood PROJECT No. 4011.67.912</u> Installation of 8-Inch UV sectional patches</p>	<p>Sully-Miller Contracting Co. 135 S. State College Blvd, Ste 400 Brea, CA 92821 Jessie Flores (513) 984-2222</p>	<p>\$ 48,550.00</p>	<p><u>Start</u> 4/1/19 <u>Completion</u> 4/30/19</p>
<p><u>Caltrans #07-4W3004 - 91 Freeway to 110 Freeway</u> Clean & CCTV 85 LF of 18" & 30" storm drain. Rehabilitate with CIPP lining systems, install 85LF & Post Video.</p>	<p>Jabre Contracting Inc., 1813 Manzanita Lane Manhattan Beach, CA 90206 Bob Collins (310) 720-0277</p>	<p>\$ 315,580.00</p>	<p><u>Start</u> 1/28/2019 <u>Completion</u> (R) 10/30/2019</p>
<p><u>RFQ - Point Repair by CIPP Sectional and Top Hat</u> Clean & CCTV, installation of CIPP Sectionals and UV Top Hats at various location, Post Video.</p>	<p>San Diego County Gen. Services 5500 Overland Ave, Suite 315 San Diego, CA Wasim Hanna (858) 694-2723</p>	<p>\$ 25,678.00</p>	<p><u>Start</u> 3/15/2019 <u>Completion</u> 5/18/2019</p>





Nu-Line Technologies, LLC Project References – CIPP/SPR

<p><u>AC Water & Sewer Group 1026</u> Post CCTV inspection of 2,569LF of sanitary sewer at various locations.</p>	<p>PK Mechanical Systems, Inc. 21335 Bundy Canyon Road Wildomar, CA 92595 David Spindler (951) 245-5537</p>	<p style="text-align: center;">\$ 8,675.85</p>	<p style="text-align: center;"><u>Start</u> 1/25/2019 <u>Completion</u> (R) 5/22/2019</p>
<p><u>Vista V-1 West Vista Sewer Phase 1-L</u> Pre & Post CCTV inspections of 3,954LF of v8", 10" 12" & 15" diameters at various locations.</p>	<p>Orion Construction 2185 La Mirada Drive Vista, CA 92081 Richard Newall (760) 597-9660</p>	<p style="text-align: center;">\$ 18,385.00</p>	<p style="text-align: center;"><u>Start</u> 5/13/2019 <u>Completion</u> On-Going</p>
<p><u>Monrovia Renewal North Section Infrastructure Improvement Project</u> Clean & CCTV 12,066LF of 6" & 8" diameter, CIPP rehabilitate 12,831LF of 6" & 8" sanitary sewer, Install 69 SLC's, and 136 UV sectional patches, bypass pumping and 22,470LF of Post CCTV inspection.</p>	<p>Sully-Miller Contracting Co. 135 S. State College Blvd, Ste 400 Brea, CA 92821 Jessie Flores (513) 984-2222</p>	<p style="text-align: center;">\$ 780,216.50</p>	<p style="text-align: center;"><u>Start</u> 2/4/2019 <u>Completion</u> TBD</p>
<p><u>ESR City of Los Angeles - Stone Canyon Road (N. 100 Block)</u> Clean & CCTV, CIPP rehabilitation of 289LF of 10" sanitary sewer, lateral reinstatement and post CCTV.</p>	<p>Spiniello Companies 2650 Pomona Blvd. Pomona, CA 91768 Eugenio Mateo (562) 458-7757</p>	<p style="text-align: center;">\$ 34,494.31</p>	<p style="text-align: center;"><u>Start</u> 2/1/2019 <u>Completion</u> 3/30/2019</p>
<p><u>Sewer & AC Water Group 697A</u> Clean & CCTV 2,200LF of 6" & 8" sanitary sewer, rehabilitate 198LF of 6" & 8" sanitary sewer, SLC's and Post CCTV inspection of 4,089LF of various diameters.</p>	<p>Burtech Pipeline Inc. 102 Second Street Encinitas CA 92024 Buddy Aquino (760) 726-1340</p>	<p style="text-align: center;">\$ 40,272.40</p>	<p style="text-align: center;"><u>Start</u> 6/19/2019 <u>Completion</u> 10/16/2019</p>
<p><u>Pasadena Storm Drain Repair</u> Clean & CCTV 586LF various diameter storm drain, rehabilitate by CIPP 466LF of 12" & 18" storm drain, post CCTV inspection of 386LF of various diameter storm drain.</p>	<p>GRFCO, Inc. P O Box 1747 Brea, CA 92822 Jim Jackson (800) 375-7272</p>	<p style="text-align: center;">\$ 37,312.00</p>	<p style="text-align: center;"><u>Start</u> TBD <u>Completion</u> TBD</p>
<p><u>Hallmark Sewer Rehabilitation</u> Clean & CCTV, Bypass Pumping, 4,222LF 6" & 8" CIPP rehabilitation at various locations, lateral reinstatement and Post Video CCTV.</p>	<p>Eddie Axner Construction, Inc 5249A Old Oregon Trail Redding, CA 96002 Trevor Olds (530) 710-3533</p>	<p style="text-align: center;">\$ 240,178.00</p>	<p style="text-align: center;"><u>Start</u> 4/29/2019 <u>Completion</u> (R) 9/13/2019</p>
<p><u>Chino ITB - Sewer Re-Lining Project</u> Clean & CCTV 13,452LF of 8" & 10" sanitary sewer, rehabilitate by CIPP 13,452LF of 8" & 10" sanitary sewer, traffic control, bypassing, lateral reinstatement and post CCTV inspection.</p>	<p>City of Chino PO Box 667 Chino, CA 91708 Austin Postvoit (909) 334-3250</p>	<p style="text-align: center;">\$ 567,655.00</p>	<p style="text-align: center;"><u>Start</u> 9/11/2019 <u>Completion</u> 2/10/2020</p>





Nu-Line Technologies, LLC Project References – CIPP/SPR

<p><u>Oceanside Point Repair Program</u> Pre & Post CCTV video inspection of 1,359LF of 6", 8" & 10" sanitary sewer repairs.</p>	<p>Charles King Company 2841 Gardena Ave. Signal Hill, CA 90755 Debi Hawkins (562) 426-2974</p>	<p style="text-align: center;">\$ 4,756.50</p>	<p style="text-align: center;"><u>Start</u> 3/4/2019 <u>Completion</u> 5/18/2019</p>
<p><u>Cal-Trans 07A4593, 3-Year System Inspection and Repair</u> Clean & CCTV approx. 20,000LF of various diameter storm drain in LA and Ventura counties, approx. 6,500LF of CIPP rehabilitation of various diameters over a 3 year on call project.</p>	<p>Dreambuilder Const. Corp. 1324 E Lawson Ln Placentia Ca 92870 Alex Singh (714) 646-3697</p>	<p style="text-align: center;">\$ 2,634,600.00</p>	<p style="text-align: center;"><u>Start</u> 3/12/2019 <u>Completion</u> On-Going</p>
<p><u>RFP Warner Ranch Siphon 1B</u> Clean & CCTV, CIPP rehabilitate 24-Inch storm drain siphon.</p>	<p>Vista Irrigation District 1391 Engineer Street, Vista, CA 92081 Mark Saltz (760) 597-3112</p>	<p style="text-align: center;">\$ 71,535.00</p>	<p style="text-align: center;"><u>Start</u> 9/30/2019 <u>Completion</u> 10/2/2019</p>
<p><u>Sewer Group 786</u> Clean & CCTV and lateral launch inspections of various diameter sanitary sewers.</p>	<p>Ortiz Corporation 2000 Mc Kinley Avenue National City, CA 91950 Jose Ortiz (619) 434-7925</p>	<p style="text-align: center;">\$ 5,000.00</p>	<p style="text-align: center;"><u>Start</u> 4/4/2019 <u>Completion</u> TBD</p>
<p><u>University 21-inch Repair</u> Installation of 380LF x 21" SPR sanitary sewer rehabilitation.</p>	<p>AUI Incorporated 7420 Reading Ave. SE Albuquerque New Mexico 87105 Mike Rocco (505) 242-4848</p>	<p style="text-align: center;">\$ 48,250.00</p>	<p style="text-align: center;"><u>Start</u> 4/22/2019 <u>Completion</u> (R) 7/1/2019</p>
<p><u>Lemon Grove FY2017-18 Sewer Capital Improvement Project</u> Clean & CCTV, 1,300LF x 8" CIPP rehabilitation, lateral reinstatement, bypass pumping and post video inspection.</p>	<p>Charles King Company 2841 Gardena Ave. Signal Hill, CA 90755 Debi Hawkins (562) 426-2974</p>	<p style="text-align: center;">\$ 66,800.00</p>	<p style="text-align: center;"><u>Start</u> 4/18/2019 <u>Completion</u> 8/9/2019</p>
<p><u>Fullerton - Miscellaneous Storm Drain Improvements</u> Clean & CCTV, 426LF of various diameter CIPP storm drain rehabilitation, traffic control, grouting repairs and post video inspection.</p>	<p>City of Fullerton 303 West Commonwealth Ave Fullerton, CA 92832 (714) 738-6886</p>	<p style="text-align: center;">\$ 164,360.00</p>	<p style="text-align: center;"><u>Start</u> 7/15/2019 <u>Completion</u> (R) 11/4/2019</p>
<p><u>El Centro Emergency Sewer Repairs at Villa Ave</u> Clean & CCTV, 380LF x 27" CIPP rehabilitation, infiltration grouting, bypass operations, traffic control and post video inspection.</p>	<p>City of El Centro 1275 W. Main Street El Centro, CA 92243 Javier Luna, P.E. (760) 337-5182</p>	<p style="text-align: center;">\$ 260,225.00</p>	<p style="text-align: center;"><u>Start</u> 6/5/2019 <u>Completion</u> 12/4/2019</p>





Nu-Line Technologies, LLC Project References – CIPP/SPR

<p><u>LACDPW Culvert Repair and Lining Project, Phase 1</u> Clean & CCTV, 1,029LF x various diameter storm drain CIPP rehabilitation, traffic control and post CCTV inspection.</p>	<p>Los Angeles County Public Works 900 South Fremont Street Alhambra, CA 91803 Joel Zaragoza (626) 458-4951</p>	<p>\$ 248,358.00</p>	<p><u>Start</u> 12/9/2019 <u>Completion</u> 2/26/2020</p>
<p><u>Buena Park 24-Inch CMP Repair</u> Clean & CCTV, 100LF x 24" CIPP storm drain rehabilitation, traffic control and post CCTV inspection.</p>	<p>City of Buena Park 6955 Aragon Circle Buena Park, Ca 90622 Frank Moore (714) 562-3708</p>	<p>\$ 44,050.00</p>	<p><u>Start</u> 10/21/2019 <u>Completion</u> 10/21/2019</p>
<p><u>City of LA - Albion Riverside Park Project - W.O.# EW40060F</u> Clean & CCTV, 380LF x 10" CIPP rehabilitation, clean and video, lateral reinstatement, post video</p>	<p>Sully-Miller Contracting Co. 135 S. State College Blvd, Ste 400 Brea, CA 92821 Mauricio Arreola (714) 449-2277</p>	<p>\$ 33,201.00</p>	<p><u>Start</u> 6/7/2019 <u>Completion</u> 6/7/2019</p>
<p><u>Point Loma Storm Drain</u> Clean & CCTV, 64LF x 24" CIPP storm drain rehabilitation and post video</p>	<p>AMA Diversified Constr. Group. 1305 Simpson Way, Suite L Escondido, CA 92029 Dillon Vissering (760) 444-1010</p>	<p>\$ 35,634.00</p>	<p><u>Start</u> 12/1/2019 <u>Completion</u> 12/31/2019</p>
<p><u>Countywide Sewer Improvements FY 2018-19</u> Clean & CCTV, installation of 4,954LF, 8" & 16" CIPP liner at various location, Post Video.</p>	<p>Burtech Pipeline Inc. 102 Second Street Encinitas CA 92024 Buddy Aquino (760) 726-1340</p>	<p>\$ 291,352.00</p>	<p><u>Start</u> 10/17/2019 <u>Completion</u> 12/10/2019</p>
<p><u>City of LA - ESR Keswick Str. W.O. # SWC05476</u> Clean & CCTV, 400LF x 8" CIPP rehabilitation, clean and video, lateral reinstatement, post video</p>	<p>Miramontes Const. Co, Inc. P.O. Box 219 Rialto, CA 92377 Yvette Morales (909) 787-3012</p>	<p>\$ 42,200.00</p>	<p><u>Start</u> 12/13/2019 <u>Completion</u> 12/13/2019</p>
<p><u>JOC - P17N006 - CMP Storm Drain Lining Right of Way Pipeline North</u> Clean & CCTV, CIPP Lining of 977 LF of 21", 24" & 30" storm drain and Traffic Control at various locations.</p>	<p>Burtech Pipeline Inc. 102 Second Street, Encinitas, CA 92024 Buddy Aquino (760) 634-2822</p>	<p>\$ 122,566.50</p>	<p><u>Start</u> 12/2/2019 <u>Completion</u> 12/6/2019</p>
<p><u>JOC - Task P18N003 Accelerated TS Referral Group</u> Clean & CCTV, CIPP Lining of 3,003 LF of 10", 12", 21" & 30" sanitary sewer, and Traffic Control at various locations.</p>	<p>Burtech Pipeline Inc. 102 Second Street, Encinitas, CA 92024 Buddy Aquino (760) 634-2822</p>	<p>\$ 534,933.28</p>	<p><u>Start</u> 11/21/2019 <u>Completion</u> 12/18/2019</p>





Nu-Line Technologies, LLC Project References – CIPP/SPR

<p><u>CIP 19-100 CIPP Lining of Sanitary Sewer System</u> Clean & CCTV CIPP lining of 3,193 LF of 8", 10" & 12" sanitary sewer with CIPP lining system, top hats and post video work.</p>	<p>City of Laguna Beach 505 Forest Avenue Laguna Beach, CA 92651 Hannah Johnson (949) 464-6615</p>	<p style="text-align: center;">\$ 208,073.00</p>	<p style="text-align: center;"><u>Start</u> 11/12/2019 <u>Completion</u> 12/3/2019</p>
<p><u>Sewer Line By CIPP - Loma Linda</u> Clean & CCTV, CIPP Lining of 300LF of 8" sanitary sewer at various locations.</p>	<p>City of Loma Linda 25541 Barton Road Loma Linda, CA Jeff Peterson (909) 799-4400</p>	<p style="text-align: center;">\$ 28,700.00</p>	<p style="text-align: center;"><u>Start</u> 11/25/2019 <u>Completion</u> 11/25/2019</p>
<p><u>OVSD Sewer Rehabilitation Project</u> Clean & CCTV, traffic control, CIPP Lining of 14,425LF of 8" and 10" sanitary sewer at various locations.</p>	<p>Ojai Valley Sanitary District 1072 Tico Road Ojai, CA 93023 Jon Turner (805) 658-6800</p>	<p style="text-align: center;">\$ 425,000.00</p>	<p style="text-align: center;"><u>Start</u> 11/6/2018 <u>Completion</u> 1/3/2019</p>
<p><u>JOC - Sewer Rehab Phase AW-1</u> Clean & CCTV 39,321 LF of 8" sanitary Sewer. Rehabilitate with CIPP & SPR lining systems & Post Video.</p>	<p>Burtech Pipeline Inc. 102 Second Street Encinitas CA 92024 Buddy Aquino (760) 726-1340</p>	<p style="text-align: center;">\$ 886,688.55</p>	<p style="text-align: center;"><u>Start</u> 10/4/2019 <u>Completion</u> On-Going</p>
<p><u>Sewer and AC Water Group 807</u> Clean & CCTV (POST) 11,088LF, CIPP Lining of 863LF of 8" sanitary sewer at various locations and top hats.</p>	<p>Burtech Pipeline Inc. 102 Second Street Encinitas CA 92024 Buddy Aquino (760) 726-1340</p>	<p style="text-align: center;">\$ 90,193.00</p>	<p style="text-align: center;"><u>Start</u> 12/11/2019 <u>Completion</u> 12/17/2019</p>
<p><u>Sewer Pipe Lining - Rainbow-Fallbrook</u> Clean & CCTV, CIPP Lining of 1,054LF of 6" & 8" sanitary sewer at various locations.</p>	<p>Rainbow Municipal Water District 3707 Old Highway 395 Fallbrook, CA 92028 Ryan Stockton (760) 728-1178</p>	<p style="text-align: center;">\$ 69,000.00</p>	<p style="text-align: center;"><u>Start</u> 10/1/2019 <u>Completion</u> 10/31/2019</p>
<p><u>Caltrans – 07-313704 Glendale Freeway</u> Clean & CCTV 320 LF of 18" storm drain. Rehabilitate with CIPP lining system and Post Video.</p>	<p>Highland Construction, Inc 133 N Pixley Street Orange, CA 92868 Erin Richardson (714) 538-5156</p>	<p style="text-align: center;">\$ 85,000.00</p>	<p style="text-align: center;"><u>Start</u> 1/13/2020 <u>Completion</u> 1/25/2020</p>
<p><u>City of LA - ESR Canyon View Drive -SWC05478</u> Clean & CCTV, 315LF x 8" CIPP rehabilitation, lateral reinstatement, post video</p>	<p>Mike Bubalo Construction 5102 Gayhurst Ave, Baldwin Park, CA 91706 Brad Sorem (562) 818-4035</p>	<p style="text-align: center;">\$ 32,247.50</p>	<p style="text-align: center;"><u>Start</u> 1/28/2020 <u>Completion</u> 1/28/2020</p>





Nu-Line Technologies, LLC Project References – CIPP/SPR

<p><u>City of LA - ESR Parthenia Street - SWC05582</u> Clean & CCTV, 382LF x 8" CIPP rehabilitation, lateral reinstatement, post video.</p>	<p>Mike Bubalo Construction 5102 Gayhurst Ave, Baldwin Park, CA 91706 Brad Sorem (562) 818-4035</p>	<p style="text-align: center;">\$ 29,830.00</p>	<p style="text-align: center;"><u>Start</u> 1/28/2020 <u>Completion</u> 1/29/2020</p>
<p><u>Hermosa Beach-Sewer Impr. Ph 2 CIP 17-416</u> Clean & CCTV, 6,400LF x 8" & 10" CIPP rehabilitation, Lateral reinstatements, rootball removal, traffic Control, top hats and post CCTV.</p>	<p>MNR Construction, Inc 1880 Wright Ave , La Verne, CA 91750 Scott Barnett (626) 383-1019</p>	<p style="text-align: center;">\$ 305,695.00</p>	<p style="text-align: center;"><u>Start</u> 1/21/2020 <u>Completion</u> 3/27/2020</p>
<p><u>Paseo De Valencia - 12 -Inch Vertical Drop Repair</u> 30LF x 12" CIPP vent line repair.</p>	<p>T.E. Roberts Inc 306 W Katella Ave, Orange, CA 92867 Justin Roberts (714) 559-2291</p>	<p style="text-align: center;">\$ 9,500.00</p>	<p style="text-align: center;"><u>Start</u> 1/31/2020 <u>Completion</u> 1/31/2020</p>
<p><u>RFP - Storm Drain Culvert Rehabilitation Point Loma</u> 272LF x 15" & 24" CIPP storm drain rehabilitation. Clean & CCTV and post CCTV inspection.</p>	<p>California Constructors 7062 Convoy Court , San Diego, CA 92111 Tony Gutierrez (858) 775-9920</p>	<p style="text-align: center;">\$ 97,086.00</p>	<p style="text-align: center;"><u>Start</u> 1/6/2020 <u>Completion</u> 2/5/2020</p>
<p><u>Sewer Rehabilitation N Fresno and E Shields</u> Clean & CCTV, CIPP Lining of 2,659 LF of 12" and 15-Inch sanitary sewer, Traffic Control, Bypass Pumping, Point Repairs.</p>	<p>Emmitt's Excavation Inc 6207 E. Clinton Ave Fresno CA 93727 David Walsh (559) 347-9188</p>	<p style="text-align: center;">\$ 240,624.00</p>	<p style="text-align: center;"><u>Start</u> 2/20/2020 <u>Completion</u> 3/6/2020</p>
<p><u>Sewer Improvements in the Vicinity of N First Street and E Dakota Avenue</u> Clean & CCTV, CIPP Lining of 5,711LF of 6", 8" and 12-Inch sanitary sewer, Traffic Control, Bypass Pumping, Point Repairs.</p>	<p>Emmitt's Excavation Inc 6207 E. Clinton Ave Fresno CA 93727 David Walsh (559) 347-9188</p>	<p style="text-align: center;">\$ 230,648.00</p>	<p style="text-align: center;"><u>Start</u> 12/20/2019 <u>Completion</u> 3/27/2020</p>
<p><u>AC Water & Sewer Group 1020</u> Final Post CCTV, 303LF 8-Inch Cured In Place lining.</p>	<p>Burtech Pipeline Inc. 102 Second Street Encinitas CA 92024 Buddy Aquino (760) 726-1340</p>	<p style="text-align: center;">\$ 20,787.00</p>	<p style="text-align: center;"><u>Start</u> TBD <u>Completion</u> TBD</p>
<p><u>AC Water & Sewer Group 1026</u> Final Post CCTV, 303LF 8-Inch Cured In Place lining.</p>	<p>PK Mechanical Systems, Inc. 21335 Bundy Canyon Road Wildomar, CA 92595 David Spindler (951) 245-5537</p>	<p style="text-align: center;">\$ 84,968.00</p>	<p style="text-align: center;"><u>Start</u> 3-30-2020 <u>Completion</u> TBD</p>





Nu-Line Technologies, LLC Project References – CIPP/SPR

<p><u>AC Water & Sewer Group 1027</u> Final Post CCTV, 188LF 8-Inch Cured In Place lining.</p>	<p>Burtech Pipeline Inc. 102 Second Street Encinitas CA 92024 Buddy Aquino (760) 726-1340</p>	<p>\$ 3,243.00</p>	<p><u>Start</u> 11-1-2019 <u>Completion</u> 11-1-2019</p>
<p><u>AC Water & Sewer Group 1042</u> Final Post CCTV, 1,274LF post CCTV inspection.</p>	<p>S.C. Valley Engineering, Inc 656 Front St, El Cajon, CA 92020 Scott Miller (619) 444-2326</p>	<p>\$ 3,822.00</p>	<p><u>Start</u> TBD <u>Completion</u> TBD</p>
<p><u>Buena Park 2019-2020 Sewer Main Rehabilitation</u> Clean & CCTV, 7,019LF 8", 10" & 12" sanitary sewer rehabilitation with SPR, traffic control, bypassing and post CCTV</p>	<p>City of Buena Park 656 Front St, Buena Park, CA 92020 Teddy Luong (714) 562-3670</p>	<p>\$ 349,570.00</p>	<p><u>Start</u> 4-20-2020 <u>Completion</u> TBD</p>
<p><u>Caltrans – 07-313404 Monterey Park 710 Freeway</u> Clean & CCTV 2,246LF of 18", 24" & 36" storm drain Rehabilitation with CIPP lining system and Post Video.</p>	<p>Jabre Contracting Inc., 1813 Manzanita Lane Manhattan Beach, CA 90206 Bob Collins (310) 720-0277</p>	<p>\$ 400,331.11</p>	<p><u>Start</u> 2-3-2020 <u>Completion</u> 4-29-2020</p>
<p><u>Caltrans – 08-1C9304 Big Pines Creek Lake Arrowhead</u> Clean & CCTV 560LF of 18", 24" & 36" storm drain Rehabilitation with CIPP, SPR & Alternative pipe lining system and Post Video.</p>	<p>Jabre Contracting Inc., 1813 Manzanita Lane Manhattan Beach, CA 90206 Bob Collins (310) 720-0277</p>	<p>\$ 241,295.00</p>	<p><u>Start</u> 4-13-2020 <u>Completion</u> TBD</p>
<p><u>Caltrans – 11-422114 Culvert Repair and Replace Guardrail and Fence</u> Clean & CCTV 5,570 LF of 18", 24", 30", 36" & 48" storm drain Rehabilitation with CIPP pipe lining system, preparing culvert structures and Post Video.</p>	<p>Hazard Construction Company 10529 Vine Street Lakeside, CA 92040 Brad Lothers (858) 587-3600</p>	<p>\$ 842,260.00</p>	<p><u>Start</u> 5-21-2020 <u>Completion</u> TBD</p>
<p><u>North Norwalk Trunk Sewer Rehabilitation</u> Clean & CCTV 650LF of 15" sanitary sewer Rehabilitation with CIPP pipe lining System, manhole rehabilitation and Post Video.</p>	<p>LACSD 1955 Workman Mill Road Whittier, Ca 90601 Jenny Hsu (562) 699-7411</p>	<p>\$ 105,770.00</p>	<p><u>Start</u> 3-27-2020 <u>Completion</u> 3-30-2020</p>
<p><u>Claremont Trunk Sewer Rehabilitation</u> Clean & CCTV 13,198LF of 12" and 15" sanitary sewer Rehabilitation with CIPP pipe lining System, manhole rehabilitation, point repairs, bypass and Post Video.</p>	<p>LACSD 1955 Workman Mill Road Whittier, Ca 90601 Jenny Hsu (562) 699-7411</p>	<p>\$ 1,172,893.00</p>	<p><u>Start</u> 11-20-2019 <u>Completion</u> TBD</p>





Nu-Line Technologies, LLC Project References – CIPP/SPR

<p><u>Millennium Hawthorne</u> Clean & CCTV 1,070LF of 12” and 15” sanitary sewer Rehabilitation with CIPP pipe lining System, manhole rehabilitation, point repairs, bypass and Post Video.</p>	<p>Mark Company 2288 North Batavia, Orange, CA 92865 Isaiah Apodaca (714) 685-3462</p>	<p>\$ 110,470.00</p>	<p><u>Start</u> TBD <u>Completion</u> TBD</p>
<p><u>2017-18 Pipeline Rehabilitation and Replacement</u> Clean & CCTV 25,576LF of 6”, 8”, 10”, 14”, 15” & 16” Sanitary sewer Rehabilitation with CIPP pipe lining System, manhole rehabilitation, point repairs, pipe-Bursting, bypass, top hats, lateral lining and Post Video.</p>	<p>Napa Sanitation District 1515 Soscol Ferry Road, Napa, CA 94558 Simon Kobayashi (707) 258-6030</p>	<p>\$ 6,445,000.00</p>	<p><u>Start</u> 1-28-2020 <u>Completion</u> TBD</p>
<p><u>2020 Collection System Rehabilitation Project CIP 19703</u> Clean & CCTV 3,585LF of 8”, 12” and 18” sanitary sewer Rehabilitation with CIPP pipe lining System, manhole rehabilitation, point repairs, bypass and Post Video.</p>	<p>Moulton Niguel Water District 26880 Aliso Viejo Parkway, Aliso Viejo, Ca 92656 Sheldon Yu, PE (949) 831-2500</p>	<p>\$ 325,000.00</p>	<p><u>Start</u> 4-27-2020 <u>Completion</u> TBD</p>
<p><u>Manhole and Pipe Repair (SPR)</u> Clean & CCTV 350LF of 24-Inch sanitary sewer Rehabilitation with SPR lining system, manhole installation, point repairs, bypass and Post Video.</p>	<p>Orange County Sanitation District 10844 Ellis Avenue, Fountain Valley, CA Brandon Garcia (714) 593-7306AW-1</p>	<p>\$ 350,000.00</p>	<p><u>Start</u> TBD <u>Completion</u> TBD</p>
<p><u>OCSD Boulevard Force Main Replacement</u> Clean & CCTV 280LF of 27” dual sanitary sewer siphons. Rehabilitate with CIPP pipe lining system and Post Video.</p>	<p>Teichert Utilities 3780 Kilroy Airport Way, Suite 700, Long Beach, CA 90806 Fladio Godines (916) 634-3161</p>	<p>\$ 198,160.00</p>	<p><u>Start</u> TBD <u>Completion</u> TBD</p>
<p><u>Pipeline Rehab Phase AV-1</u> Clean & CCTV 33,313LF of 8” sanitary sewer. Rehabilitate with CIPP & SPR lining systems, reinstate 413 service laterals & Post Video.</p>	<p>Burtech Pipeline Inc. 102 Second Street Encinitas CA 92024 Buddy Aquino (760) 726-1340</p>	<p>\$ 749,542.50</p>	<p><u>Start</u> 3-2-2020 <u>Completion</u> On-Going</p>
<p><u>Paseo De Valencia</u> Clean & CCTV 12” Vertical Drop. Rehabilitate with CIPP & Post Video.</p>	<p>T.E. Roberts Inc. 306 W Katella Ave, Orange, CA 92867 Justin Roberts (714) 559-2291</p>	<p>\$ 9,500.00</p>	<p><u>Start</u> 2-3-2020 <u>Completion</u> 2-3-2020</p>
<p><u>Carlsbad - Storm Drain System Rehabilitation</u> Clean & CCTV 840 LF of 12” to 42” storm drain. Rehabilitate with CIPP lining systems & Post Video.</p>	<p>City of Carlsbad 1635 Faraday Avenue, Carlsbad, CA 92024 Emily Hasegawa (760) 602-2460</p>	<p>\$ 297,975.00</p>	<p><u>Start</u> TBD <u>Completion</u> TBD</p>





Nu-Line Technologies, LLC Project References – CIPP/SPR

<u>Oceanside Post</u> Post CCTV new sewer construction.	Burtech Pipeline Inc. 102 Second Street Encinitas CA 92024 Buddy Aquino (760) 726-1340	\$ 11,740.00	<u>Start</u> 2-1-2020 <u>Completion</u> 2-29-2020
<u>Leucadia Wastewater District – Emergency Repair</u> Clean & CCTV, installation of 8” UV Sectional liner & Post Video.	Leucadia Wastewater District 1960 La Costa Avenue, Carlsbad, CA 92024 Marvin Gonzalez (760) 753-0155	\$ 4,425.00	<u>Start</u> 3-11-2020 <u>Completion</u> 3-11-2020
<u>Buena Vista Storm Drain</u> Post CCTV new storm drain construction.	Burtech Pipeline Inc. 102 Second Street Encinitas CA 92024 Buddy Aquino (760) 726-1340	\$ 2,705.00	<u>Start</u> 3-31-2020 <u>Completion</u> 3-31-2020
<u>W.B. Rte.91 Freeway at Santa Fe/Alameda Off-Ramp</u> Post CCTV new storm drain construction.	Peterson – Chase 16351 Construction Circle West Irvine, CA 92606 Jon Vandersloot (949) 677-0295	\$ 5,586.00	<u>Start</u> 4-28-2020 <u>Completion</u> 4-28-2020
<u>City of San Diego - Sewer Group 841</u> Post CCTV 3,138 LF new sanitary sewer construction.	Burtech Pipeline Inc. 102 Second Street Encinitas CA 92024 Buddy Aquino (760) 726-1340	\$ 7,845.00	<u>Start</u> 5-5-2020 <u>Completion</u> On-Going
<u>City of Downey – Fidler Ave Sewer Rehabilitation</u> Clean & CCTV 1,209LF of 8” sanitary sewer. Rehabilitate with CIPP lining systems, reinstate 38 service laterals & Post Video.	City of Downey 11111 Brookshire Avenue PO Box 7018 Downey, CAS 90241 Janet Ortega (562) 658-9565	\$ 115,290.00	<u>Start</u> TBD <u>Completion</u> TBD
<u>City of San Diego – AC Water & Sewer Group 1023</u> Post CCTV 697LF new sanitary sewer construction.	Burtech Pipeline Inc. 102 Second Street Encinitas CA 92024 Buddy Aquino (760) 726-1340	\$ 2,788.00	<u>Start</u> TBD <u>Completion</u> TBD
<u>City of San Diego – Sewer & AC Water Group 765</u> Pre & Post CCTV of 5,383LF new sanitary sewer construction.	Burtech Pipeline Inc. 102 Second Street Encinitas CA 92024 Buddy Aquino (760) 726-1340	\$ 20,186.25	<u>Start</u> TBD <u>Completion</u> TBD





Nu-Line Technologies, LLC Project References – CIPP/SPR

Experience by Diameter

Size	2014	2015	2016	2017	2018	2019	2020 WIP*	Total
6"	1,668	4,543	8,249	8,654	36,158	42,537	3,527	105,336
8"	38,410	44,062	133,915	119,261	99,197	151,155	70,920	656,920
10"	516	773	4,878	1,250	9,294	16,861	3,149	36,721
12"	0	1,779	2,607	4,389	2,758	6,556	10,993	29,082
14"	0	102	448	0	641	221	0793	2,205
15"	330	1,222	768	3,368	718	6,943	3,656	17,005
16"	0	285	0	0	0	1,594	0	1,879
18"	327	962	938	3,425	3,857	9,123	1,922	20,554
20"	0	0	0	0	1,720	0	0	1,720
21"	0	5,478	309	506	775	3,830	0	10,898
24"	95	952	1,141	2,053	4,038	9,436	4,016	21,731
27"	0	0	0	0	288	380	0	668
30"	0	656	779	701	1,003	5,117	887	9,143
33"	0	144	0	0	44	0	0	188
36"	0	40	882	40	1,448	1,364	951	4,725
39"	0	0	0	190	0	0	0	190
42"	0	61	0	180	1,166	332	95	1,834
48"	0	0	0	0	574	0	649	1,223
54"	0	0	0	0	214	0	0	214
60"	0	0	542	0	483	0	0	1,025
Total	41,346	61,059	155,456	144,017	164,376	255,449	101,558*	923,261





Education

- Azusa High School, Azusa, CA

Training

- Confined Space training Boom certification
- Forklift certification
- CPR training
- Alcohol and Drug training.

Jorge Beltran

Superintendent

Professional Experience

Mr. Beltran has over twenty years' experience in the construction, trenchless technology and pipeline rehabilitation industry with a Career progression from a Laborer to Foreman up to a Superintendent. His expertise with the large diameter CIPP and Rib Loc sewer/storm drain lining include extensive knowledge in sewer bypass operations.

Nu-Line Technologies Operations Manager

- Leads scheduling, managing and organization of Nu-Line Technologies, LLC field activities.
- Provides technical and project approach guidance to Nu-Line Technologies field personnel.
- Communicates with owner's field representatives, site engineers, inspectors and subcontractor supervisors on project-related matters.
- Assist GM and Estimator with Project Estimates for bids
- Analyze and solve all field-related problems (Equipment, Installation, Personnel, Etc.).
- Develop and implement sewer bypass systems. Train field employees with proper use.
- Identifies, initiates and controls project revisions and field changes.
- Reviews project costs and assists in developing project budgets.

RePipe-California Superintendent

- Responsible for management of crews for the installation of Both CIPP and RibLoc Pipe Rehabilitation Systems.
- Reports to the Operations and Project Managers with regard to Daily construction progress and activities.
- Schedules and manages weekly construction work and man-hours, and reports daily
- Construction hours and progress from lining Foremen and Cutters, to Operations and Accounting.
- Oversee daily bypass and traffic control (set-up, operation, tear-down)
- Provides field technical support, problem solving and Troubleshooting.
- Interaction and contact with City Engineers and Inspectors.
- Works in conjunction with Project Estimator on job walks prior To project bid.

**Preussag Pipe Rehabilitation, Inc.
Superintendent**

Management of crews for the installation of the RibLoc Pipe Rehabilitation System.

- Reported construction progress and activities.
- Managed weekly schedules.
- Provides field technical support, problem solving and Troubleshooting.
- Worked directly with project managers

**G.B. Cooke Pipeline Rehabilitation
Installation Supervisor**

- Responsibility for the supervision and scheduling of crews.
- Schedule projects, complete daily reports, complete employee time sheets, run projects and complete yearly employee evaluations.

**Insituform, Southwest
Installation Supervisor**

- Responsibility for the supervision and scheduling of crews.
- Schedule projects, complete daily reports, complete employee time sheets, run projects and complete yearly employee evaluations.
- Began employment as a Laborer and was promoted to a Supervisor.



Education

- Lynwood High School, Lynwood, CA

Training

- Confined Space training Boom certification
- Forklift certification
- CPR training
- Alcohol and Drug training.

Cesar Magana

Foreman

Professional Experience

Mr. Magana has over six years' experience in the construction, trenchless technology and pipeline rehabilitation industry, with a Career progression from a Laborer to Foreman. His expertise is with CIPP sewer/storm drain lining and includes extensive knowledge in sewer bypass operations.

Nu-Line Technologies Foreman

- Leads scheduling, managing, and organization of Nu-Line Technologies CIPP installation field activities.
- Provides technical and project approach guidance to Nu-Line Technologies field personnel.
- Communicates with owner's field representatives, site engineers, inspectors and subcontractor supervisors on project-related matters.
- Assists GM and Estimator with Project Estimates for bids.
- Analyzes and solves all field-related problems (Equipment, Installation, Personnel, Etc.).
- Develops and implements sewer bypass systems.
- Identifies, initiates, and controls project revisions and field changes.
- Reviews project costs and assists in developing project budgets.

RePipe-California Laborer/Driver

- Responsible for the installation of CIPP Pipe Rehabilitation Systems.
- Oversaw daily bypass and traffic control (set-up, operation, and tear-down).

Kenny Construction Foreman

- Management of crews for the installation of the CIPP Pipe Rehabilitation System.
- Reported construction progress and activities.
- Managed weekly schedules.
- Provide field technical support, problem solving, and troubleshooting.
- Worked directly with project managers

RePipe-California Laborer/Driver

- Responsible for the installation of CIPP Pipe Rehabilitation Systems.
- Oversaw daily bypass and traffic control (set-up, operation, and tear-down).



Education

- Covina High School

Training

- Confined Space Training
- CCTV, Lateral Cutting and Chemical Grouting

Fernando Uribe

CCTV/Cutter Operator

West Coast Region

Professional Experience

With Over ten years' experience in the construction and pipeline rehabilitation industry, Mr. Uribe has progressed from a Technician, Supervisor and Superintendent in the Rib Loc, Cured-In-Place, and Fold & Form pipelining methods. Additionally he has successfully trained CCTV and Cutter operators for Burtech Pipeline.

Nu-Line Technologies, LLC

Cutter/CCTV Operator

Oversee Cutting and CCTV Crew

Operation and maintenance of Cues equipment

Development and training of new employees.

Continuing education and research for development of efficiencies for lateral cutting.

Investigation, development and training of new technologies.

Repipe-California

Cutter/CCTV Operator

CCTV, Cutting and Lateral Grouting

Operation and maintenance of Cues equipment

Development and training of new employees.

Continuing education and research for development of efficiencies for lateral cutting.

Investigation, development and training of new technologies.

Preussag Pipe Rehabilitation, Inc.

Cutter/CCTV Operator

Operation and maintenance of Cues equipment.

Coordination of the Training for new technicians.

Research and development for efficiency of lateral cutting.



Education

- Serrano High School – Phelan, CA

Training

- Confined Space training Boom certification
- Forklift certification
- CPR training
- Alcohol and Drug training.

Joe Zilius

Foreman

Professional Experience

Mr. Zilius has over fifteen years' experience in the construction, trenchless technology and pipeline rehabilitation industry with a Career progression from a Laborer to Foreman. His expertise is with both CIPP and Spiral Wound Lining systems in sewer/storm drain lining include extensive knowledge in sewer bypass operations.

Nu-Line Technologies Foreman

- Responsible for management of crews for the installation of both CIPP and RibLoc Pipe Rehabilitation Systems
- Provides technical and project approach guidance to Nu-Line Technologies field personnel.
- Communicates with owner's field representatives, site engineers, inspectors and subcontractor supervisors on project-related matters.
- Assist GM and Estimator with Project Estimates for bids
- Analyze and solve all field-related problems (Equipment, Installation, Personnel, Etc.).
- Develop and implement sewer bypass systems. Identifies, initiates and controls project revisions and field changes.
- Reviews project costs and assists in developing project budgets.

Arizona Pipeline Laborer

- Responsible for management of crews for the installation of dig and replace pipeline systems.
- Oversee daily bypass and traffic control (set-up, operation, and tear-down)
- Provides field technical support, problem solving and troubleshooting.



Education

- Rio Hondo Community College
- Arroyo High School, El Monte, CA

Training

- Small Crane Truck Certificate
- Commercial Class A Drivers License,
- Forklift certification.

Certifications

- 1995 Employee of the Year –Insituform Southwest.

Frank Durazo

*Operations Manager
West Coast Region*

Professional Experience

Mr. Durazo has over twenty years' experience in the trenchless technology industry with experience in Cured-In-Place and Rib Loc pipelining processes including CIPP Wetout. Using his expertise he has progressed from a supervisor to Warehouse Foreman and was promoted to the position of Project Manager.

Nu-Line Technologies Operations Manager

- Leads scheduling, managing and organization of Burtech Pipeline field activities.
- Provides technical and project approach guidance to Nu-Line Technologies field personnel.
- Communicates with owner's field representatives, site engineers, inspectors and subcontractor supervisors on project-related matters.
- Assist GM and Estimator with Project Estimates for bids
- Analyze and solve all field-related problems (Equipment, Installation, Personnel, Etc.).
- Develop and implement sewer bypass systems. Train field employees with proper use.
- Identifies, initiates and controls project revisions and field changes.
- Reviews project costs and assists in developing project budgets.

Repipe-California, Inc., Ontario, CA Operations Manager

- Leads scheduling, managing and organization of Repipe-CA field activities.
- Provides technical and project approach guidance to Repipe-CA field personnel.
- Communicates with owner's field representatives, site engineers, inspectors and subcontractor supervisors on project-related matters.
- Assist GM and Estimator with Project Estimates for bids
- Analyze and solve all field-related problems (Equipment, Installation, Personnel, Etc.).
- Develop and implement sewer bypass systems. Train field employees with proper use.
- Identifies, initiates and controls project revisions and field changes.
- Reviews project costs and assists in developing project budgets.

Repipe-California, Inc. Ontario, CA Project Manager/Project Scheduler

- Responsible for scheduling and ordering of all lining materials, wet-out and delivery.
- Manage multiple CIPP and Rib Loc projects simultaneously from \$100k to \$2.5M.
- Review of job costs to ensure profitable projects.
- Prepare submittals, schedules, cost estimates, and interact with clients and contractors
- Assist GM and Estimator with Project Estimates for bids

**Repipe-California, Inc, Santa Ana, CA
Warehouse Foreman/Project Scheduler**

- Responsible for scheduling and ordering of all lining materials, wet-out and delivery.
- Maintain and repair of all Repipe-CA construction equipment and vehicles, management of all inventory and job-related materials, ordering of equipment materials and supplies, assistance to field as required on-site with Rib Loc, or CIPP installations, and establishment and maintenance of warehouse operations.
- Identify and negotiate with new suppliers
- Performs as the acting Safety Director and assures that OSHA safety compliance is adhered to in the field, corporate office and within the warehouse environment.

**Preussag Pipe Rehabilitation
Warehouse Foreman**

- Responsible for the maintenance and repair of all PPR construction equipment and vehicles, management of all inventory and job-related materials, ordering of equipment materials and supplies, assistance to field as required on-site with RibLoc, or CIPP installations, and establishment and maintenance of warehouse operations.
- Responsible for resourcing equipment and material vendors.
- Mechanical assistance to jobsite and field personnel.
- Oversee Driver Vehicle Inspection Reports and Driver Daily Logs for DOT Bit Inspections and coordinates quarterly maintenance for corporate fleet in preparation of DOT bit inspections.
- Performs as the acting Safety Director and assures that OSHA safety compliance is adhered to in the field, corporate office and within the warehouse environment.

**National Liner-West, Gardena, CA
Installation Supervisor**

- Supervision of the impregnation and installation for Cured-In-Place trenchless lining system for the Western Region of the United States.
- Installation Supervisor for 10 crewmembers for the U-Liner Fold and Form Lining System.
- Additional responsibilities included daily reporting to inspectors from various cities and counties, purchasing and ordering of equipment and materials and scheduling of equipment and personnel for projects.

**Cooke Pipeline Rehabilitation
Installation Supervisor**

- Supervision for the impregnation and installation procedures for Cured-In-Place trenchless pipeliners and the Ultra-Liner Fold and Form System pipelining system.
- Acted as Purchasing Agent for equipment and materials for the jobsites and was responsible for bypass planning and traffic control setup.

**Insituform, Southwest
Installation Supervisor**

- Responsible for the impregnation procedure for the trenchless Cured-In-Place Lining System.
- Responsible for job scheduling; personnel and equipment, purchasing and ordering of materials and field sample testing and reporting.

Senior Welder

- Responsible for welding and fabrication of equipment for the snack food industry.
- Additional responsibilities included blueprint design, research and development for prototypes.



20520 Unico Road
McKenney, VA 23872
804.451.3667

January 15, 2015

To Whom it may concern:

Hector Mora is certified and approved by Ferratex Inc. as a boiler technician. He has vast experience in the installation and curing of Ferratex products.

Sincerely,

Gerhardt Rodenberger



October 29, 2017

To Whom It May Concern:

This letter is to certify that the following licensee of Sekisui SPR Americas LLC has been trained and certified to install SPR-EX spiral wound liners.

Nuline Technologies – Effective date – November 2015

With the license, the customer has purchased equipment as well as completed a training course on the proper installation method of SPR-EX spiral wound rehabilitation process.

Kind Regards,

Joseph P. Dominguez
Sr. Technical Services Engineer,
Sekisui SPR Americas LLC



August 14, 2015

Nu-Line Technologies, LLC
102 Second Street
Encinitas, CA 92024

CERTIFICATE OF INSTALLER

To Whom It May Concern:

This certificate verifies that **Nu-Line Technologies, LLC** has received all necessary Training for the preparation and installation procedures for the **Cosmic "TOPHAT" Lateral connection & Short liner spot repair sealing systems.** Nu-Line Technologies, LLC has been certified since January 2015.

If there are any questions, please contact Chris Scarratt at information listed below.

Sincerely,

A handwritten signature in blue ink, appearing to read "Chris Scarratt". The signature is fluid and cursive, with a large loop at the end.

Chris Scarratt
Cosmic Engineering GmbH

CERTIFICATE OF TRAINING

THIS IS TO CERTIFY THAT

Jorge Beltran
(NAME OF EMPLOYEE)

HAS SUCCESSFULLY COMPLETED THE TRAINING PROGRAM

Confined Spaces

TRAINING WAS COMPLETED ON

September 14, 2018
(DATE)

TRAINING WAS CONDUCTED BY

Sharr Martin
(NAME OF INSTRUCTOR)

NATIONAL
safety
COMPLIANCE
www.osha-safety-training.net

CERTIFIED BY

(SIGNATURE OF INSTRUCTOR)

CERTIFICATE OF TRAINING

THIS IS TO CERTIFY THAT

Hector Mora

(NAME OF EMPLOYEE)

HAS SUCCESSFULLY COMPLETED THE TRAINING PROGRAM

Confined Spaces

TRAINING WAS COMPLETED ON

September 14, 2018

(DATE)

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(NAME OF INSTRUCTOR)

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safety
COMPLIANCE
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CERTIFIED BY

Sharr Martin

(SIGNATURE OF INSTRUCTOR)

CERTIFICATE OF TRAINING

THIS IS TO CERTIFY THAT

Mike A. Covarrubias
(NAME OF EMPLOYEE)

HAS SUCCESSFULLY COMPLETED THE TRAINING PROGRAM

Confined Spaces

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September 14, 2018
(DATE)

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CERTIFIED BY


(SIGNATURE OF INSTRUCTOR)

CERTIFICATE OF TRAINING

THIS IS TO CERTIFY THAT

Jose D. Correa

(NAME OF EMPLOYEE)

HAS SUCCESSFULLY COMPLETED THE TRAINING PROGRAM

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safety

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CERTIFIED BY

Sharr Martin

(SIGNATURE OF INSTRUCTOR)

CERTIFICATE OF TRAINING

THIS IS TO CERTIFY THAT

Jonathan L. Moss

(NAME OF EMPLOYEE)

HAS SUCCESSFULLY COMPLETED THE TRAINING PROGRAM

Confined Spaces

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September 14, 2018

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safety
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CERTIFIED BY

Sharr Martin

(SIGNATURE OF INSTRUCTOR)

CERTIFICATE OF TRAINING

THIS IS TO CERTIFY THAT

Njabulo Mbelu
(NAME OF EMPLOYEE)

HAS SUCCESSFULLY COMPLETED THE TRAINING PROGRAM

Confined Spaces

TRAINING WAS COMPLETED ON

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(DATE)

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(NAME OF INSTRUCTOR)

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(SIGNATURE OF INSTRUCTOR)

CERTIFICATE OF TRAINING

THIS IS TO CERTIFY THAT

Juan J. Exiga

(NAME OF EMPLOYEE)

HAS SUCCESSFULLY COMPLETED THE TRAINING PROGRAM

Confined Spaces

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September 14, 2018

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Sharr Martin

(NAME OF INSTRUCTOR)



www.osha-safety-training.net

CERTIFIED BY



(SIGNATURE OF INSTRUCTOR)

CERTIFICATE OF TRAINING

THIS IS TO CERTIFY THAT

Juan M. Contreras

(NAME OF EMPLOYEE)

HAS SUCCESSFULLY COMPLETED THE TRAINING PROGRAM

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September 14, 2018

(DATE)


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COMPLIANCE
www.osha-safety-training.net

CERTIFIED BY



(SIGNATURE OF INSTRUCTOR)

CERTIFICATE OF TRAINING

THIS IS TO CERTIFY THAT

Scott D. Meyer

(NAME OF EMPLOYEE)

HAS SUCCESSFULLY COMPLETED THE TRAINING PROGRAM

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www.osha-safety-training.net

CERTIFIED BY



(SIGNATURE OF INSTRUCTOR)

CERTIFICATE OF TRAINING

THIS IS TO CERTIFY THAT

Roberto Caratachea

(NAME OF EMPLOYEE)

HAS SUCCESSFULLY COMPLETED THE TRAINING PROGRAM

Confined Spaces

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September 14, 2018

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NATIONAL
safety

COMPLIANCE
www.osha-safety-training.net

CERTIFIED BY



(SIGNATURE OF INSTRUCTOR)

CERTIFICATE OF TRAINING

THIS IS TO CERTIFY THAT

Juan J. Diaz

(NAME OF EMPLOYEE)

HAS SUCCESSFULLY COMPLETED THE TRAINING PROGRAM

Confined Spaces

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COMPLIANCE
www.osha-safety-training.net

CERTIFIED BY

Sharr Martin

(SIGNATURE OF INSTRUCTOR)

CERTIFICATE OF TRAINING

THIS IS TO CERTIFY THAT

Fernando Uribe

(NAME OF EMPLOYEE)

HAS SUCCESSFULLY COMPLETED THE TRAINING PROGRAM

Confined Spaces

TRAINING WAS COMPLETED ON

September 14, 2018

(DATE)

TRAINING WAS CONDUCTED BY

Sharr Martin

(NAME OF INSTRUCTOR)

NATIONAL
safety
COMPLIANCE
www.osha-safety-training.net

CERTIFIED BY



(SIGNATURE OF INSTRUCTOR)

CERTIFICATE OF TRAINING

THIS IS TO CERTIFY THAT

Caesar M. Magana

(NAME OF EMPLOYEE)

HAS SUCCESSFULLY COMPLETED THE TRAINING PROGRAM

Confined Spaces

TRAINING WAS COMPLETED ON

September 14, 2018

(DATE)

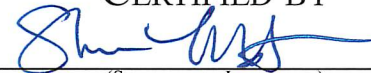
TRAINING WAS CONDUCTED BY

Sharr Martin

(NAME OF INSTRUCTOR)

NATIONAL
safety
COMPLIANCE
www.osha-safety-training.net

CERTIFIED BY



(SIGNATURE OF INSTRUCTOR)

CERTIFICATE OF TRAINING

THIS IS TO CERTIFY THAT

Joseph Zilius

(NAME OF EMPLOYEE)

HAS SUCCESSFULLY COMPLETED THE TRAINING PROGRAM

Confined Spaces

TRAINING WAS COMPLETED ON

September 14, 2018

(DATE)

TRAINING WAS CONDUCTED BY

Sharr Martin

(NAME OF INSTRUCTOR)

NATIONAL
safety

COMPLIANCE
www.osha-safety-training.net

CERTIFIED BY



(SIGNATURE OF INSTRUCTOR)



Statement of Qualifications

Nu-Line Technologies, LLC has been successfully protecting infrastructure utilities since January of 2015. Nu-Line Technologies, LLC was introduced to the local wastewater and storm water infrastructure with the City of San Diego in 2015. Prior to our name change in January of 2015, we successfully completed infrastructure projects with the City of San Diego and other local agencies as Burtech Pipeline Inc. since 2007. With a new focus on infrastructure rehabilitation in our immediate San Diego Market, Nu-Line Technologies, LLC was launched to focus strictly on infrastructure rehabilitation methodologies with the advancement of mainline Cured-In-Place lining as well as service lateral connections (UV Curing) and lateral lining rehabilitation.

Installation Experience

Our installation crews have a minimum 10 years of experience in the Cured in Place field and have successfully completed projects throughout the western United States. Our Field Superintendent, Jorge Beltran has overseen and completed smaller to large scale projects throughout the western region since 1999. We are a fully licensed and bonded General Engineering Contractor and have completed many projects as Nu-Line Technologies, LLC similar in size and scale in California and New Mexico. Nu-Line Cured In Place and Spiral Wound Crews have installed over 920,000 linear feet ranging from 6" to 60" diameters for both sanitary sewer and storm drain applications.

Industry Qualifications

- Licensed General Contractor in the State of California, License No. 997520 - A
- City of Los Angeles/Greenbook Approved materials for Cured In Place and UV Service Lateral Connections
- Confined Space Certified, First aid and CPR certified.
- Certified Installer of Cosmic UV Top Hats & Sectional Liner
- Certified Installer of Applied Felts CIPP liner materials.
- Certified Installer of Sekisui SPR Americas Spiral Wound Pipeline products.
- Certified Installer of MTC (Aegion) CIPP Liner Products.
- ISNetworld trained and certified

Nu-Line Technologies, LLC. and its employees are fully cognizant and comply with all Federal and State OSHA regulations regarding confined space entry and procedures.

Frank Durazo

A handwritten signature in blue ink, appearing to read "Frank Durazo", written over a light blue horizontal line.

Operations Manager — Nu-Line Technologies, LLC.



APPLIED FELTS

Applied Felts, Inc. 450 College Drive, Martinsville, Virginia 24112
Telephone (276) 656-1904 Fax: (276) 656-1909
office@appliedfelts.com

April 3, 2015

To Whom It May Concern:

This letter certifies that Applied Felts manufactured tubes meet the material requirements of ASTM F1216-09 (paragraph 5.1) and ASTM F 1743-08(section 6) as well as meet the minimum strength requirements of ASTM-D5813-04 (paragraph 6.1). All our materials and finished products are tested to ensure suitability to the application. Each liner is typically tested in 28 different ways and traceable test data is available for any particular liner.

Applied Felts has provided polymer coated felt tubes for use in Cured In Place Pipe (CIPP) lining for more than fifteen years, and supplied materials for the CIPP industry for more than twenty years. Over 75 million feet of our liner has been successfully installed in North America. Our liners are assembled in Martinsville, VA, using only components made in the USA.

Applied Felts is a registered ISO 9001:2008 company.
Nu-Line Technologies, LLC is a certified installer of Applied Felts lining products.

Sincerely,

A handwritten signature in black ink, appearing to read "W. Mark Sanders".

W. Mark Sanders
General Manager



FERRATEX
Professional Cured-In-Place wet out services built on 25 years of experience!

20520 Unico Road
McKenney, VA 23872
804.451.3667
www.FerraTex.com

LINER INSTALLATION LICENSE

Date: January 3, 2015

This is to certify that Nu-Line Technologies, LLC is a licensed CIPP installer of the FerraTex Liner. FerraTex is a subsidiary of Spiniello Companies and has 25 years' experience of liner manufacturing in the United States. FerraTex Liners are manufactured in accordance with the specifications of FerraTex and comply with the requirements of ASTM F1216. FerraTex liners are comprised of Felt and coated felt components from Applied Felts, Non-Woven Solutions, and Haartz Materials. Additionally the liner utilizes a resin from AOC or interplastics with a catalyst system from Akzo Nobel.

Gerhardt Rodenberger
Division Manager, CIPP



By Royal Charter

COPY

Certificate of Registration

QUALITY MANAGEMENT SYSTEM - ISO 9001:2008

This is to certify that:

Applied Felts Inc.
450 College Drive
Martinsville
Virginia
24112
USA

Holds Certificate No:

FM 55735

and operates a Quality Management System which complies with the requirements of ISO 9001:2008 for the following scope:

Manufacture of textile products used in pipeline rehabilitation.

For and on behalf of BSI:

Pietro Foschi - Strategic Delivery Director

Originally registered: 08/15/2000

Latest Issue: 03/05/2015

Expiry Date: 05/31/2018



Page: 1 of 1

...making excellence a habit.™



APPLIED FELTS

Applied Felts, Inc. 450 College Drive, Martinsville, Virginia 24112
Telephone (276) 656-1904 Fax: (276) 656-1909
office@appliedfelts.com



Material Health and Safety Data Sheet

EFFECTIVE DATE: APRIL 26, 2012

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND THE COMPANY

PRODUCT NAME: POLYURETHANE COATED LINER

SUPPLIER: Applied Felts, Inc
450 College Drive
Martinsville, VA 24112

TELEPHONE: (276) 656-1904

FAX: (276) 656-1909

2. COMPOSITION/INFORMATION ON INGREDIENTS

COATING: Thermoplastic Polyurethane Polymer
SUBSTRATE: Polyethylene Terephthalate Felt

3. HAZARDS IDENTIFICATION

HAZARDS DESIGNATION: Not Classified as a Hazardous Material.
POTENTIAL HEALTH HAZARDS: During decomposition or combustion, the product can cause irritation to eyes, skin, or respiratory tract. As a delayed effect, sensitization to isocyanates may occur.

4. FIRST AID MEASURES

INHALATION: No effects anticipated
INGESTION: No effects anticipated
SKIN: No effects anticipated
EYES: No effects anticipated



APPLIED FELTS

Applied Felts, Inc. 450 College Drive, Martinsville, Virginia 24112
 Telephone (276) 656-1904 Fax: (276) 656-1909
 office@appliedfelts.com



5. FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA:	Water, Foam, Dry Chemical
HAZARDOUS DECOMPOSITION PRODUCTS:	Carbon Dioxide (CO ²), Carbon Monoxide (CO), Hydrogen Cyanide (HCN), Oxides of Nitrogen, Hydrocarbons and Diisocyanate
SPECIAL PROTECTIVE EQUIPMENT:	Positive pressure self-contained breathing apparatus

6. ACCIDENTAL RELEASE MEASURES

SPILL CLEAN-UP METHODS:	N/A
--------------------------------	-----

7. HANDLING AND STORAGE

USAGE PRECAUTIONS:	N/A
STORAGE PRECAUTIONS:	N/A

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

PROTECTIVE EQUIPMENT	
VENTILATION:	N/A
RESPIRATORS:	N/A
PROTECTIVE GLOVES:	N/A
EYE PROTECTION:	N/A
GENERAL PROTECTIVE AND HYGIENIC MEASURES:	Standard industry safety and hygiene principles should be exercised

9. PHYSICAL AND CHEMICAL PROPERTIES

FORM:	Polyurethane coated liner
COLOR:	White
ODOR:	Faint
MELT POINT – FELT	260° C
MELT POINT – COATING	> 177° C
DENSITY – FELT	150 – 200 Kg/m ³
DENSITY – COATING	1100 – 1300 Kg/m ³
FLAMMABILITY	N/A



APPLIED FELTS

Applied Felts, Inc. 450 College Drive, Martinsville, Virginia 24112
Telephone (276) 656-1904 Fax: (276) 656-1909
office@appliedfelts.com



10. STABILITY AND REACTIVITY

STABILITY:	Normally Stable
CONDITIONS/MATERIALS TO BE AVOIDED:	Excessive heat, Organic solvents
HAZARDOUS DECOMPOSITION PRODUCTS:	Carbon Dioxide (CO ²), Carbon Monoxide (CO), Hydrogen Cyanide (HCN), Oxides of Nitrogen, Hydrocarbons and Diisocyanate, are all anticipated at levels above trace
FIRE CREATES:	

11. TOXICOLOGICAL INFORMATION

HEALTH WARNINGS:	No health risk at ambient temperatures. Elevated temperatures may cause this product to emit irritating vapors
-------------------------	---

12. ECOLOGICAL INFORMATION

ENVIRONMENTAL HAZARDS:	Not biologically degradable. Bioaccumulation improbable Generally not hazardous to water
-------------------------------	--

13. DISPOSAL CONSIDERATIONS

DISPOSAL METHODS:	Dispose of waste by incineration or in landfill in accordance with local regulations
--------------------------	--

14. TRANSPORT INFORMATION

NOT CLASSIFIED AS A DANGEROUS CARGO

15. REGULATORY INFORMATION

DESIGNATION ACCORDING TO EUROPEAN COMMISSION GUIDELINES:	No known regulations related to this product. Observe the local safety regulations for handling chemicals.
---	---



APPLIED FELTS

Applied Felts, Inc. 450 College Drive, Martinsville, Virginia 24112
Telephone (276) 656-1904 Fax: (276) 656-1909
office@appliedfelts.com



16. OTHER INFORMATION

This data is based on our present knowledge. However, they shall not be constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

NFPA® HAZARD RATING

HEALTH:	1	Slight
FIRE:	1	Slight
REACTIVITY	0	Minimal

HMIS® HAZARD RATING

HEALTH:	1	Slight
FIRE:	1	Slight
PHYSICAL:	0	Minimal

SUPERSEDES MSDS DATED: JUNE 4, 2008

Product Information

Vipel® Isophthalic Based Resin for Underground Sewer Pipe Liners

TYPICAL LIQUID RESIN PROPERTIES*(1) Vipel® L704-NET-11 see back page

	Nominal
Viscosity @ 77°F/25°C, RVF Brookfield	
Spindle #4 @ 20 RPM, cps.	5,600
Thix Index 2/20	4.3
Color	Opaque
Specific Gravity @ 77°F/25°C	1.11
Non-Volatiles, %	62
Gel Time @ 140°F with (1.0% Di-(4-tert-butyl-cyclohexyl) peroxydicarbonate and 0.5% Trigonox® KSM), minutes	11
Pot Life @ 77°F/25°C (1% Di-(4-tert-butyl-cyclohexyl) peroxydicarbonate and + 0.5% Trigonox® KSM), hours	40

Trigonox is a trademark of Akzo Nobel Chemicals

TYPICAL CAST MECHANICAL PROPERTIES* (2) see back page

		Test Method
Tensile Strength, psi/MPa	13,500/93.1	ASTM D 638
Tensile Modulus, psi/GPa	600,000/4.1	ASTM D 638
Tensile Elongation, %	3.0	ASTM D 638
Flexural Strength, psi/MPa	23,300/161	ASTM D 790
Flexural Modulus, psi/GPa	630,000/4.3	ASTM D 790
Heat Distortion Temperature, °F/°C @ 264 psi	212/100	ASTM D 648
Barcol Hardness	40	ASTM D 2583

*Typical properties are not to be construed as specifications.



DESCRIPTION

The Vipel® L704-NET-11 is a high molecular weight isophthalic/unsaturated polyester resin. Vipel® L704-NET-11 Series provides the corrosion resistance, durability and toughness that is required for cured in place pipe applications. Refer to the AOC Corrosion Resistant Resin Guide for corrosion resistance information listed under Vipel® F701.

FEATURES

- Excellent catalyzed pot life
- Superior mechanical properties
- High molecular weight
- High viscosity version

BENEFITS

Adaptability

AOC's Vipel® L704-NET-11 molecular architecture provides an excellent balance of corrosion and physical properties.

Vipel® L704-NET-11 Polyester Resin

PERFORMANCE GUIDELINES

A. Keep full strength catalyst levels between 1.0% - 3.0% of the total resin weight.

B. Maintaining shop temperatures between 65°F/ 18°C and 90°F/32°C and humidity between 40% and 90% will help the fabricator make a high quality part. Consistent shop conditions contribute to consistent gel times.

STORAGE STABILITY

Resins are stable for three months from date of production when stored in the original containers away from sunlight at no more than 77°F/25°C. After extended storage, some drift may occur in gel time.

During the hot summer months, no more than two months stability at 86°F/30°C should be anticipated.

SAFETY

See appropriate Material Safety Data Sheet for guidelines.

ISO 9001:2000 CERTIFIED

The Quality Management Systems at every AOC manufacturing facility have been certified as meeting ISO 9001:2000 standards. This certification recognizes that each AOC facility has an internationally accepted model in place for managing and assuring quality. We follow the practices set forth in this model to add value to the resins we make for our customers.

FOOTNOTES

(1)

The pot life times shown are typical but may be affected by catalyst, promoter and inhibitor concentrations in resin, and environmental temperature. Variations in gelling characteristics can be expected between different lots of catalysts and at extremely high humidities. Pigment and fillers can retard or accelerate gelation. It is recommended that the fabricator check the gelling characteristics of a small quantity of resin under actual operating conditions prior to use.

(2)

Based on tests on Vipel™ L704-NET-11 pipe at 77°F/25° and 50% relative humidity. Castings were prepared using 1.0% Perkadox 16 and 0.5 Trigonox C.

The information contained in this data sheet is based on laboratory data and field experience. We believe this information to be reliable, but do not guarantee its applicability to the user's process or assume any liability for occurrences arising out of its use. The user, by accepting the products described herein, agrees to be responsible for thoroughly testing each such product before committing to production.

Our recommendations should not be taken as inducements to infringe any patent or violate any law, safety code or insurance regulation.



950 HIGHWAY 57 EAST
COLLIERVILLE, TN 38017
www.aoc-resins.com

NORTH AMERICA
Tel: 001(901) 854-2800
Fax: 001 (901) 854-7277
sales@aoc-resins.com

**ASIA, MIDDLE EAST
& LATIN AMERICA**
Tel: 001 (863) 815-5016
Fax: 001 (863) 815-4733
international@aoc-resins.com

EUROPE
Tel: (44) 1473 288997
Fax: (44) 1473 216080
europe@aoc-resins.com






**ASTM F1216 TEST RESULTS ON L704 SERIES
ONE MONTH RESULTS AT 77°F**

	L704 (Isophthalic)	REQUIREMENTS %	PASS OR FAIL
CONTROL SAMPLE			
FLEXURAL STRENGTH, psi	9,544		
STANDARD DEVIATION	252		
FLEXURAL MODULUS, psi	564,989		
STANDARD DEVIATION	15,329		
TAP WATER			
FLEXURAL STRENGTH, psi	10,915		
STANDARD DEVIATION	432		
% FLEXURAL STRENGTH, psi RETENTION	100	>80	PASS
FLEXURAL MODULUS, psi	563,496		
STANDARD DEVIATION	10,993		
% FLEXURAL MODULUS RETENTION	100	>80	PASS
5% NITRIC ACID			
FLEXURAL STRENGTH, psi	10,672		
STANDARD DEVIATION	894		
% FLEXURAL STRENGTH, psi RETENTION	100	>80	PASS
FLEXURAL MODULUS, psi	528,173		
STANDARD DEVIATION	13,842		
% FLEXURAL MODULUS RETENTION	100	>80	PASS
10% PHOSPHORIC ACID			
FLEXURAL STRENGTH, psi	10,301		
STANDARD DEVIATION	1,439		
% FLEXURAL STRENGTH, psi RETENTION	100	>80	PASS
FLEXURAL MODULUS, psi	552,544		
STANDARD DEVIATION	9,333		
% FLEXURAL MODULUS RETENTION	98	>80	PASS
10% SULFURIC ACID			
FLEXURAL STRENGTH, psi	12,438		
STANDARD DEVIATION	620		
% FLEXURAL STRENGTH, psi RETENTION	100	>80	PASS
FLEXURAL MODULUS, psi	545,889		
STANDARD DEVIATION	6,319		
% FLEXURAL MODULUS RETENTION	97	>80	PASS
AMOCO GASOLINE			
FLEXURAL STRENGTH, psi	9,209		
STANDARD DEVIATION	1278		
% FLEXURAL STRENGTH, psi RETENTION	97	>80	PASS
FLEXURAL MODULUS, psi	567,531		
STANDARD DEVIATION	4,611		
% FLEXURAL MODULUS RETENTION	100	>80	PASS

VEGETABLE OIL			
FLEXURAL STRENGTH, psi	11,809		
STANDARD DEVIATION	2,484		
% FLEXURAL STRENGTH, psi RETENTION	100	>80	PASS
FLEXURAL MODULUS, psi	549,755		
STANDARD DEVIATION	27,235		
% FLEXUARAL MODULUS RETENTION	97	>80	PASS
0.1% DETERGENT			
FLEXURAL STRENGTH, psi	8,073		
STANDARD DEVIATION	1,732		
% FLEXURAL STRENGTH, psi RETENTION	85	>80	PASS
FLEXURAL MODULUS, psi	511,284		
STANDARD DEVIATION	15,837		
% FLEXUARAL MODULUS RETENTION	91	>80	PASS
0.1% SOAP			
FLEXURAL STRENGTH, psi	11,756		
STANDARD DEVIATION	325		
% FLEXURAL STRENGTH, psi RETENTION	100	>80	PASS
FLEXURAL MODULUS, psi	549,192		
STANDARD DEVIATION	11,869		
% FLEXURAL MODULUS RETENTION	97	>80	PASS

August 1, 1999

The information contained in this data sheet is based on laboratory data and field experience. We believe this information to be reliable, but do not guarantee its applicability to the user's process or assume any liability for occurrences arising out of its use. The user, by accepting the products described herein, agrees to be responsible for thoroughly testing any application before committing to production.
Our recommendation should not be taken as inducements to infringe any patent or violate any law, safety code or insurance regulation.

<p>WHMIS (Canada)</p>  <p>B-2 D-2A D-2B</p>	<p>NFPA (USA)</p> <p>Fire: 3, Health: 2, Reactivity: 2</p>  <p>Specific hazard</p>	<p>HMIS (USA)</p> <table border="1"> <tr> <td>Health hazards</td> <td>* 2</td> </tr> <tr> <td>Flammability</td> <td>3</td> </tr> <tr> <td>Physical hazards</td> <td>2</td> </tr> <tr> <td>Personal protection</td> <td>X</td> </tr> </table>	Health hazards	* 2	Flammability	3	Physical hazards	2	Personal protection	X	<p>Protective clothing</p> 
Health hazards	* 2										
Flammability	3										
Physical hazards	2										
Personal protection	X										

Section 1. Chemical product and company identification

Trade name	L704-NET-11	
Product type	Polyester Resin Solution	
Chemical family	Aromatic.	
Material uses	Used in the manufacture of thermoset plastic parts.	
Manufacturer	AOC, LLC 950 Highway 57 East Collierville, TN U.S.A. 38017 Website: www.aoc-resins.com Phone Number: (901) 854-2800 8am-5pm (Central Time) Mon-Fri	<p>In case of emergency</p> <p>CHEMTREC (US): 24 hours/7 days (800) 424-9300 CANUTEC (Canada): 24 hours/7 days (613) 996-6666</p>

Section 2. Hazards identification

OSHA status	This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
Routes of entry	Eye contact, Skin contact, Inhalation, Ingestion
Potential acute health effects	<p>Eyes: Severe eye irritant which may result in redness, burning, tearing and blurred vision.</p> <p>Skin: Skin irritant which may result in burning sensation. Repeated or prolonged skin contact may cause dermatitis.</p> <p>Ingestion: Ingestion may result in mouth, throat and gastrointestinal irritation, nausea, vomiting and diarrhea.</p> <p>Inhalation: Inhalation of spray mist or liquid vapors may cause upper respiratory irritation and possible central nervous system effects including headaches, nausea, vomiting, dizziness, drowsiness, loss of coordination, impaired judgement and general weakness.</p>
Potential chronic health effects	<p>CARCINOGENIC EFFECTS: Styrene: Classified A4 (not classifiable for human or animal) by ACGIH. Classified 2B (possible for human) by IARC. An increased incidence of lung tumors was observed in mice from a recent inhalation study. The relevance of this finding is uncertain since data from other long-term animal studies and from epidemiology studies of workers exposed to styrene do not provide a basis to conclude that styrene is carcinogenic to humans. Lung effects have been observed in mouse studies following repeated exposure.</p> <p>Silica, Amorphous: Classified 3 (not classifiable for human) by IARC.</p> <p>MUTAGENIC or TERATOGENIC EFFECTS: No known effect according to our database.</p>

Section 3. Composition/information on ingredients

Name	CAS #	% by weight
1) Styrene	100-42-5	40.7
2) Silica, Amorphous	7631-86-9	1 - 5

Section 4. First aid measures

Eye contact	Flush with a continuous flow of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Use of buffered baby shampoo will aid in removal. Seek medical attention.
Skin contact	Gently and thoroughly wash the contaminated skin with running water and non-abrasive soap. If irritation persists, seek medical attention.
Inhalation	Move the victim to a safe area as soon as possible. Allow the victim to rest in a well-ventilated area. If breathing is difficult, give oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek immediate medical attention.
Ingestion	Do not induce vomiting. Seek immediate medical attention.

Section 5. Fire-fighting measures

The product is:	Flammable liquid, Class IC.
Auto-ignition temperature	914°F(490°C) Styrene
Flash point	87.6°F (31°C) Styrene
Flammable limits	Lower: 0.9% Upper: 6.8% (Styrene)
Products of combustion	May produce carbon monoxide, carbon dioxide, and irritating or toxic vapors, gases or particulate.
Fire hazard	Flammable in the presence of open flames, sparks, or heat.
Explosion hazard	Can react with oxidizing materials. Explosive in the form of vapor when exposed to heat or flame. Material may polymerize when container is exposed to heat (fire) and polymerization will increase pressure in a closed container which may cause the container to rupture violently.
Fire-fighting media and instructions	SMALL FIRE: Use carbon dioxide, foam, dry chemical or water fog to extinguish. LARGE FIRE: Evacuate surrounding areas. Use carbon dioxide, foam, dry chemical or water fog to extinguish. Wear self-contained breathing apparatus (SCBA) and full fire-fighting protective clothing. Cool containing vessels with water spray in order to prevent pressure build-up, autoignition or explosion. Prevent run off to sewers or other water ways.

Section 6. Accidental release measures

Small spill	Absorb with an inert material and place in an appropriate waste disposal container.
Large spill	Stop leak if without risk. Eliminate all ignition sources. Contain with an inert material, recover as much as possible and place the remainder in an appropriate waste disposal container. Warn unauthorized personnel to move away. Prevent entry into sewers or confined areas.

Section 7. Handling and storage

Handling	WARNING! Use only in well-ventilated areas. Store away from direct sunlight. Avoid inhalation and contact with eyes, skin, and clothing. Wear appropriate personal protective equipment for your task. Ground and bond all containers when transferring the material. Empty containers may retain product and product vapor. Do not expose to heat, flame, sparks or other ignition sources such as cutting, welding, drilling, grinding or static electricity. Do not pressurize. Provide adequate safety showers and eyewashes in the area of use. Note: If product contains metal compounds (Section III), avoid dust from dried product or grinding of articles made from this material.
Storage	Keep away from heat. Keep away from sources of ignition. Keep container tightly closed. Keep in a cool, well-ventilated place. Containers should be grounded.

Section 8. Exposure controls/personal protection

Exposure limits	Styrene	<p>ACGIH TLV (United States, 2/2010). Absorbed through skin. TWA: 20 ppm 8 hour(s). TWA: 85 mg/m³ 8 hour(s). STEL: 40 ppm 15 minute(s). STEL: 170 mg/m³ 15 minute(s).</p> <p>OSHA PEL Z2 (United States, 11/2006). TWA: 100 ppm 8 hour(s). CEIL: 200 ppm AMP: 600 ppm 5 minute(s).</p> <p>NIOSH REL (United States, 6/2009). TWA: 50 ppm 10 hour(s). TWA: 215 mg/m³ 10 hour(s). STEL: 100 ppm 15 minute(s). STEL: 425 mg/m³ 15 minute(s).</p> <p>NIOSH REL (United States, 6/2009). TWA: 6 mg/m³ 10 hour(s).</p> <p>While the federal workplace exposure limit for styrene is 100 ppm, OSHA accepted the styrene industry's proposal to voluntarily meet a PEL of 50 ppm on an 8 hours TWA.</p>
	Silica, Amorphous	
Engineering controls	Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective occupational exposure limits. Provide adequate safety showers and eyewashes in the area of use.	
Personal protection	<p>Personal protective equipment may vary depending on the job being performed.</p> <p>Eye/face: Wear eye protection such as safety glasses with side shields, splash goggles or face shield with safety glasses.</p> <p>Skin: Avoid skin contact. Impervious gloves should be worn. Other items may include long sleeves, lab coats, or impervious jackets.</p> <p>Respiratory: Determine if airborne concentrations are below the recommended exposure limits in accordance your company's PPE program and regulatory requirements. If they are not, select a NIOSH-approved respirator that provides adequate protection from the concentration levels encountered. Air-purifying respirators are generally adequate for organic vapors. Use positive pressure, supplied-air respirators if there is potential for an uncontrolled release, if exposure levels are unknown, or under circumstances where air-purifying respirators may not provide adequate protection. Reference OSHA 29 CFR 1910.134.</p>	
Personal protection in case of a large spill	Chemical resistant gloves, full protective suit, and boots. Respiratory protection in accordance with OSHA regulation 29 CFR 1910.134. A self-contained breathing apparatus should be used to avoid inhalation of the product vapors.	

Section 9. Physical and chemical properties

Physical state	Liquid.
Color	Clear to Amber.
Odor	Aromatic.
Molecular weight (g/mol)	1000 to 15000
Boiling point	293°F(145°C) Styrene
Melting point	Not available.
pH (1% soln/water)	Not applicable.
Vapor pressure	4.5 mm Hg@ 68°F (20°C) Styrene
Vapor density	3.59 Styrene (Air = 1)
Specific gravity	1.1 (Water = 1)
Water/oil dist. coeff.	Not available.
Evaporation rate	Not available.

Section 9. Physical and chemical properties

Odor threshold	0.14 ppm Styrene
Solubility in water	Slight.
Dispersibility properties	Not dispersed in water.

Section 10. Stability and reactivity

Stability	This product is normally stable, but can become unstable at elevated temperatures and undergo polymerization, which could produce heat and fumes resulting in over-pressurization and rupture in a closed container.
Instability temperature	>170°F (77°C)
Conditions of instability	Heat.
Incompatibility with various substances	Polymerizes in the presence of organic peroxides, oxidizing materials, or heat.
Corrosivity	Our database contains no additional remark on the corrosivity of this product

Section 11. Toxicological information

Toxicity to animals	Name	Result	Species	Dose	Exposure
	Styrene	LD50 Oral	Rat	2650 mg/kg	-
		LC50 Inhalation Vapor	Rat	5634.2 ppm	4 hours
Special remarks on toxicity to animals	Lung effects have been observed in mouse studies following repeated exposure.				
Special remarks on chronic effects on humans	No additional remark.				
Special remarks on other toxic effects on humans	No additional remark.				


Section 12. Ecological information

Ecotoxicity	Toxic to aquatic organisms. Should not be released to sewage system or other bodies of water at concentrations above limits established in regulations or permits.
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Section 13. Disposal considerations

Waste disposal	Recycle to process, if possible. Consult your local or regional authorities. Ignitable characteristic.
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Section 14. Transport information

DOT	UN1866; Resin Solution; 3; III.	Labels 
TDG	UN1866; Resin Solution; 3; III.	
IATA/IMDG	UN1866; Resin Solution; 3; III	
Additional information	US regulations require the reporting of spills when the amount exceeds the Reportable Quantity (RQ) for specific components of this material. See CERCLA in Section 15, Regulatory Information, for the Reportable Quantities.	

Section 14. Transport information**Section 15. Regulatory information****Other regulations**

This section does not reference all applicable regulatory compliance lists.

TSCA: All ingredients are listed or compliant with TSCA.

DSL: All ingredients are listed or compliant with the NSNR.

Proposition 65 Warning: This product contains a chemical(s) known to the State of California to cause cancer, birth defects and/or reproductive harm.

SARA 302 component(s): None.

SARA 313 component(s): Styrene.

CERCLA(RQ): Styrene - 1000 lbs. (453.6 kg)

Section 16. Other information**Prepared by**

AOC, LLC - Corporate Regulatory Affairs.

CA; FL; ON

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CLIENT: AOC
950 Hwy 57 East
Collierville, TN 38017
Attn: Bruce Curry

Re: PO 5061

MATERIAL: One set of fifty rectangular coupons made with 6mm felt impregnated with Vipel™L704 resin were submitted and identified by the client.

TESTING: Chemical Resistance testing per ASTM D5813-95, paragraphs 6.4.1 and 8.2.1 was conducted. Coupons were exposed in accordance with ASTM D543-95 in the solutions shown in the table below at room temperature for a one-year immersion period. Flexural properties testing as described below will be conducted at the conclusion of the immersion period.

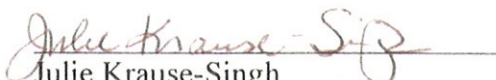
Chemical Solution	Concentration, %
Nitric acid	1
Sulfuric acid	5
ASTM Fuel C	100
Vegetable oil	100
Detergent	0.1
Soap	0.1


One set of Control coupons was tested for initial flexural properties as reported in Hauser Laboratories Test Report No. M00248A on August 31, 1999. A second set of Control coupons was exposed for one year at 50% Relative Humidity, and 23°C. These coupons were tested on August 9, 2000 along with the exposed coupons. All testing was conducted in accordance with ASTM D790-98, Procedure A using a span-to-depth ratio of 16:1.

RESULTS: The results are summarized in Table 1 and presented in detail in Table 2. All values exceeded the ASTM D5813 requirements of at least 80% retention of flexural modulus after one-year immersion in all solutions.

TESTING SUPERVISED BY:

TESTING CONDUCTED BY:


Julie Krause-Singh
Department Manager


Dale J. Beasley
Technician III

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public and these Laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from Hauser Laboratories. This report may be copied only in its entirety.



TABLE 1
SUMMARY OF CHEMICAL RESISTANCE TEST RESULTS

Solution	Average Retention of Flexural Strength*	Average Retention of Flexural Modulus*
	%	%
Nitric Acid	89	96
Sulfuric Acid	103	95
ASTM Fuel C	145	97
Mineral Oil	112	98
Detergent	118	95
Soap	90	94
ASTM D5813 Requirement		80 minimum

*These calculations were based on the data from the Control sample tested 8/9/00.

TABLE 2
 CHEMICAL RESISTANCE TEST RESULTS

Specimen No.	Flexural Strength psi	Flexural Modulus psi
Vipel™L704		
Control 8/31/99		
1	4570	736000
2	5300	709000
3	5410	686000
4	4680	682000
5	7600	665000
6	8670	726000
7	8560	681000
Average	6400	698000
Std. Dev.	1820	26300
Control 8/9/00		
1	8530	528000
2	5180	548000
3	7750	548000
4	4520	590000
5	5340	586000
6	4530	556000
Average	5980	559000
Std. Dev.	1730	24200
1% Nitric Acid		
1	5580	528000
2	5650	531000
3	5800	543000
4	4400	527000
5	5080	521000
6	5300	555000
Average	5300	534000
Std. Dev.	510	12700

TABLE 2 CONTINUED
 CHEMICAL RESISTANCE TEST RESULTS

Specimen No.	Flexural Strength psi	Flexural Modulus psi
5% Sulfuric Acid		
1	5820	530000
2	5220	519000
3	5430	520000
4	5750	545000
5	7550	538000
6	6980	537000
Average	6130	531000
Std. Dev.	930	10300
ASTM Fuel C		
1	10300	521000
2	7640	535000
3	4990	536000
4	8490	574000
5	9080	542000
6	11600	560000
Average	8670	545000
Std. Dev.	2280	19200
Mineral Oil		
1	6680	523000
2	5930	509000
3	7790	582000
4	8610	571000
5	5030	566000
6	6290	548000
Average	6720	550000
Std. Dev.	1290	29000

TABLE 2 CONTINUED
 CHEMICAL RESISTANCE TEST RESULTS

Specimen No.	Flexural Strength psi	Flexural Modulus psi
Detergent		
1	7320	529000
2	7690	564000
3	4890	514000
4	7480	536000
5	7000	549000
6	7920	507000
Average	7050	533000
Std. Dev.	1100	21600
Soap		
1	5170	508000
2	5410	517000
3	4600	535000
4	5630	526000
5	4330	520000
6	6980	537000
Average	5350	524000
Std. Dev.	940	11100

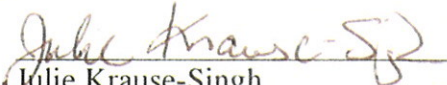
CLIENT: AOC
950 Highway 57 East
Collierville, TN 38017
Attn: Dave Treadwell

MATERIAL: Six each rectangular specimens from two plastic materials identified as felt composites L471 and L704 were submitted by the client. The specimens were each approximately 6 inches x ½ inch x 0.3 inches.

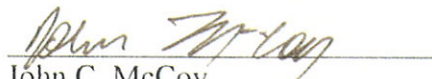
TESTING: Flexural creep testing per ASTM D2990-95 using a three-point static-load configuration with a span to depth ratio of approximately 16:1 and a stress level of 400 psi at 23°C and 50% Relative Humidity.

RESULTS: The results for 10000 hours are presented as both graphical and tabular data of flexural modulus versus time for each group of five specimens tested. Tabular results for sample L471 are presented in Table 1 and tabular results for sample L704 are presented in Table 2

TESTING SUPERVISED BY:


Julie Krause-Singh
Department Manager

TESTING CONDUCTED BY:


John C. McCoy
Technician II

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TABLE 2
 FLEXURAL CREEP DATA
 SAMPLE L704

TEMPERATURE: 23° C/ 50% RH
 STRESS: 400 psi

Elapsed Time Hours	FLEXURAL MODULUS, psi					Average
	1	2	3	4	5	
0.00						
0.02	810900	879100	649100	664400	739500	748600
0.10	810900	879100	649100	655900	729500	744900
0.20	798400	879100	641200	631600	710300	732100
0.50	774600	865200	633400	631600	710300	723000
1.00	774600	851700	618500	601900	666400	702600
2.00	741400	838600	604300	588000	666400	687800
3.43	720800	825900	597500	574800	658300	675500
22.08	632900	707900	547700	522000	580400	598200
68.58	625300	681300	505500	491900	550800	571000
114.2	570300	656700	469400	465100	509200	534200
257.4	503900	524100	381000	409300	461400	455900
456.0	439800	514200	378200	362800	412100	421400
792.8	393200	454200	339200	332200	374900	378700
1414.3	368100	436000	326600	321800	350500	360600
1651.6	360400	425800	320600	315800	339500	352400
1802.0	341400	400800	303900	292300	325200	332700
2011.3	339200	400800	303900	292300	323200	331900
2109.6	337000	400800	302200	290700	321300	330400
2154.9	337000	397900	302200	290700	321300	329800
2322.8	332700	397900	302200	289000	317500	327900
2660.8	332700	397900	300400	289000	315700	327100
2808.1	330600	395000	300400	287400	313800	325400
3002.1	330600	395000	300400	287400	313800	325400
3193.5	328500	386600	292100	285800	312000	321000
3312.6	314500	378500	288900	278000	305000	313000
3547.9	310800	373300	282700	272100	301600	308100
3618.8	309800	372100	282700	272100	301600	307700
3834.1	308900	370800	282700	272100	299900	306900
4003.4	307100	370800	282700	272100	299900	306500
4171.3	305300	370800	282700	270700	298200	305500
4513.7	300000	365800	281200	267900	295000	302000

TABLE 2 CONTINUED
 FLEXURAL CREEP DATA
 SAMPLE L704

Elapsed Time Hours	FLEXURAL MODULUS, psi					Average
	1	2	3	4	5	
4676.1	298300	365800	279700	266500	295000	301000
5012.2	298300	363400	278200	265100	295000	300000
5186.1	298300	363400	278200	265100	295000	300000
5392.3	296600	361000	278200	262400	293400	298300
5689.7	296600	361000	276700	262400	293400	298000
5901.7	294900	361000	275300	262400	293400	297400
6021.8	294900	361000	273800	262400	291800	296800
6167.8	291600	361000	273800	259700	290200	295300
6331.0	291600	361000	275300	259700	290200	295500
6719.3	291600	358600	273800	259700	290200	294800
7338.3	283600	349400	268200	254500	281100	287400
7507.1	283600	349400	271000	253300	281100	287700
7866.4	285200	349400	266900	254500	282600	287700
8251.8	285200	347200	266900	253300	281100	286700
8376.1	282100	347200	266900	253300	281100	286100
8512.6	282100	347200	266200	253300	281100	286000
9016.1	279800	345000	266900	252000	278200	284400
9261.1	279000	342800	265500	250800	278200	283300
9324.3	278300	342800	265500	250800	276800	282800
9571.7	278300	342800	265500	249600	276800	282600
9911.3	274600	338600	264200	248400	275400	280200
10025.4	274600	338600	264200	248400	275400	280200

FLEXURAL CREEP DATA SAMPLE L704
AT 400 PSI STRESS

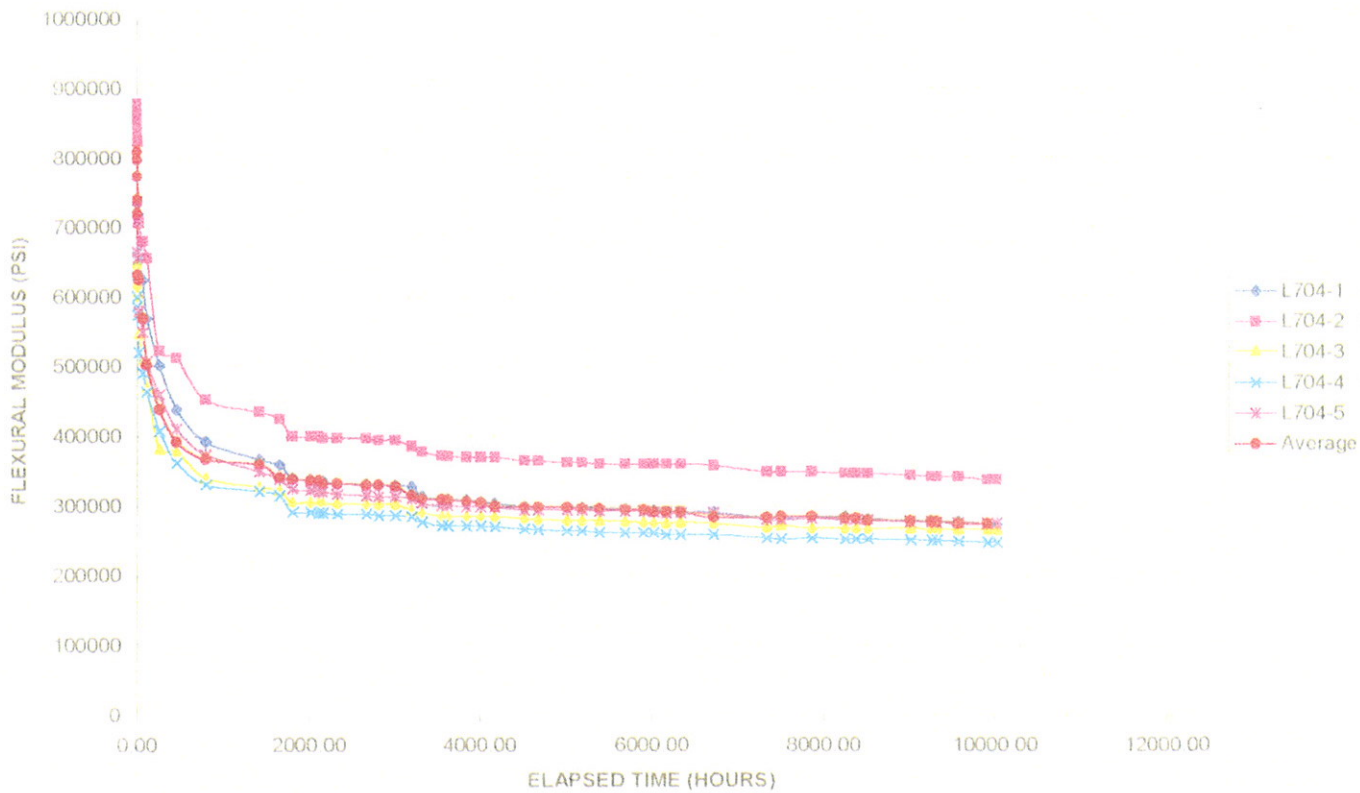


TABLE 1
 FLEXURAL CREEP DATA
 SAMPLE L471

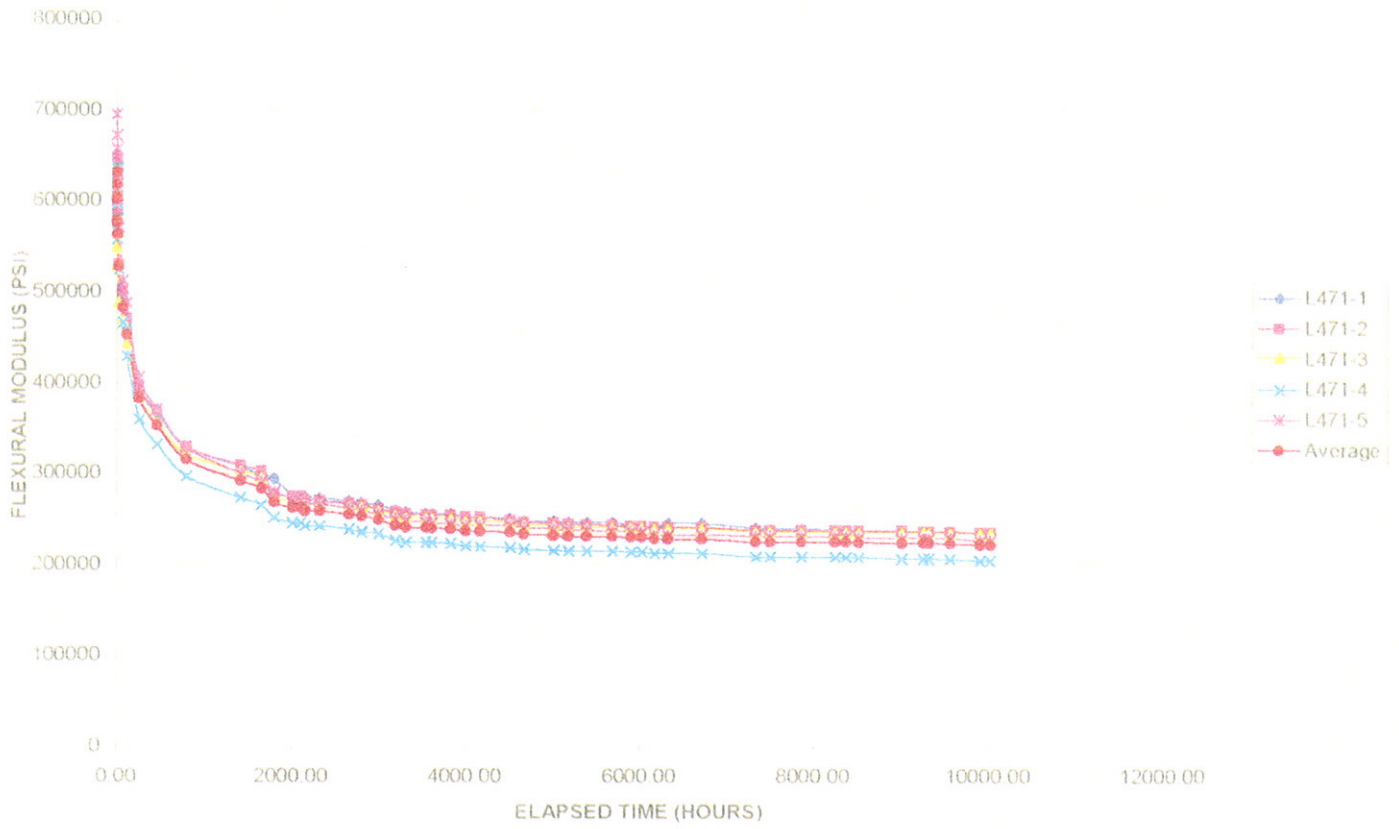
TEMPERATURE: 23° C/ 50% RH
 STRESS: 400 psi

Elapsed Time Hours	FLEXURAL MODULUS, psi					Average
	1	2	3	4	5	
0.00						
0.02	643500	648300	562900	635700	696200	631600
0.10	643500	648300	562900	616100	672900	617300
0.20	629900	626200	547800	603600	658300	603300
0.50	623400	626200	547800	597600	658300	601300
1.00	604500	605600	528900	574600	630900	578200
2.00	598400	605600	528900	569100	630900	576300
3.67	586700	592500	524400	558500	605700	562900
22.4	529600	529900	487000	524200	571400	527500
68.8	498700	501000	468400	466900	513300	482800
114.4	460300	471000	441400	429900	488400	453300
257.6	393700	393600	383500	360000	406500	383300
456.3	367100	369800	354700	332000	371600	352700
793.1	328800	330000	319600	297300	329200	315300
1414.6	308500	309600	302300	274100	299800	292100
1651.9	297700	302800	295000	265600	291200	283900
1802.3	294800	278300	272700	252200	280400	268400
2011.5	275800	275500	269100	245900	272800	262600
2109.8	275800	275500	269100	245900	271600	262200
2155.2	274500	271500	266800	242900	266800	258800
2323.0	273300	270100	266773	242900	266800	258800
2661.0	270800	267500	263300	239000	262200	254900
2808.4	268400	266200	263300	236200	259900	253200
3002.4	266000	261200	258900	234400	255500	249600
3193.7	260200	258700	2535500	227200	250300	243700
3312.9	257900	256300	251466	224700	248200	241400
3548.2	256800	255100	250400	224700	247200	240800
3619.0	255700	255100	250400	224700	246200	240400
3834.4	255700	255100	250400	223800	245200	239800
4003.7	252500	252800	247400	221300	243200	237300
4171.6	252500	252800	247400	220500	243200	237100
4513.9	251400	249300	245400	219700	243233	236124

TABLE 1 CONTINUED
 FLEXURAL CREEP DATA
 SAMPLE L471

Elapsed Time Hours	FLEXURAL MODULUS, psi					Average
	1	2	3	4	5	
4676.4	248300	247100	243500	218100	241300	234300
5012.4	248300	246000	241600	216500	239400	232500
5186.3	247300	244900	240600	215700	238400	231600
5392.6	247300	244400	240600	215700	238400	231600
5689.9	247300	243800	240600	215700	237500	231300
5901.9	243300	242800	240600	215000	237500	231000
6022.0	242300	242800	240600	215000	236600	230700
6168.1	241300	241700	239700	213400	233800	229000
6331.3	246300	241700	239700	213400	233800	229000
6719.6	246300	241700	239700	213400	233800	229000
7338.6	241300	238600	236000	209700	232100	225900
7507.4	240300	238600	236000	209700	232100	225900
7866.7	240300	238600	236000	209700	232100	225900
8252.1	239400	238600	236000	209700	232100	225900
8376.3	239400	238600	235991	209700	232100	225909
8512.8	238400	238600	236000	209000	231200	225400
9016.3	237500	238600	236000	208200	230300	224800
9261.4	236500	237500	236000	208200	230300	224800
9324.6	236500	237500	236000	208200	230300	224800
9572.0	236500	237500	235100	207500	230300	224800
9911.6	235600	236500	234600	206100	227700	222800
10025.7	235600	236500	234600	206100	227700	222800

FLEXURAL CREEP DATA SAMPLE L471
AT 400 PSI STRESS



City of San Diego

CITY CONTACT: Brittany Friedenreich, Senior Contract Specialist, Email: BFriedenreic@sandiego.gov
Phone No. (619) 533-3104

ADDENDUM A



FOR

AC WATER AND SEWER GROUP 1056

BID NO.:	<u>K-21-2000-DBB-3</u>
SAP NO. (WBS/IO/CC):	<u>B-18181, B-18182</u>
CLIENT DEPARTMENT:	<u>2000</u>
COUNCIL DISTRICT:	<u>7</u>
PROJECT TYPE:	<u>KB, JA</u>

BID DUE DATE:

2:00 PM
APRIL 16, 2021

CITY OF SAN DIEGO'S ELECTRONIC BIDDING SITE, PLANETBIDS

<http://www.sandiego.gov/cip/bidopps/index.shtml>

ENGINEER OF WORK

The engineering Specifications and Special Provisions contained herein have been prepared by or under the direction of the following Registered Engineer:

Samuel Lake McWhorter 4/6/21
1) Registered Engineer Date



Seal:

Sheila Bose 4/6/21
2) For City Engineer Date



Seal:

A. CHANGES TO CONTRACT DOCUMENTS

The following changes to the Contract Documents are hereby made effective as though originally issued with the bid package. Bidders are reminded that all previous requirements to this solicitation remain in full force and effect.

B. BIDDER'S QUESTIONS

- Q1. Section 3-12.8.8 states that we are supposed to price the work in accordance with section 3-12.8.6 Dewatering System of the bidding documents. This section has not been provided to the contractors to bid. Please provide. Thank you.
- A1. Bid Item 3: Dewatering Permit and Discharge Fees (EOC Type 1) and Bid Item 4: Dewatering Hazardous Contaminated Water have been removed from the bid list.
- Q2. Section 3-12.8.8 states that the bidder is to provide documentation and pricing for the following items. Without borings and geotechnical information on the groundwater we are not able to estimate the proper equipment size, containment equipment, or treatment equipment. Additionally, the contract documents do not provide a location where this work would take place which prevents us from selecting equipment that would work and be able to be used. Please provide a set of guidelines for exactly what we are to bid for this bid item. Thank you.
- A2. See response to Q1.
- Q3. In reference to section 5-15.17 Contaminated soil, the contract bidding documents do not specify where the contaminated soil is to be stockpiled in order for the monitoring to take place. The City of San Diego is responsible for this soil until it is released to be properly disposed of. Please provide direction where the stockpile locations for the project will be. Thank you.
- A3. The Contractor can temporarily store the contaminated soil within the Right of Way in an area allowed for on street parking. This location must be approved by the Resident Engineer before use.
- Q4. Section 3-12.8.8 makes reference to section 7-2.1 Schedule of Values. There is not a specific schedule of values provided for this specific contract, the section references a very broad outline for a schedule of

values. Please provide a specific Schedule of Values for this bid item. Thank you.

A4. See response to Q1.

Q5. The Bidding Documents do not provide information for what the existing pavement structural section is. Please provide. Thank you.

A5. See Appendix Q for pavement coring data.

Q6. In regards to the above mentioned project, is there a geotechnical report for the project? Soil condition is always a concern with trenching and even more so when groundwater is introduced. The plans and the special provisions make no indication of where we could encounter groundwater especially the groundwater with petroleum. Additionally, the cost and work associated with these different groundwater encounters would be quite substantial and a huge risk for all parties involved with the project. Please provide direction on how to proceed with this lack of information.

A6. No geotechnical report is available for this project. Also, see response to Q1.

Q7. Is there a soils/Geotech report?

A7. No geotechnical report is available for this project.

Q8. If there is not, how are we supposed to estimate the amount of Dewatering under Bid Item #4?

A8. See Response to Q1.

Q9. There is bid item #8, for dewatering monitoring of 300 Hours. That is a very large number of hours for a project that does not have a soils report. That sure indicates a lot of dewatering that we can't estimate because we do not have any parameters or measures.

A9. See Response to Q1.

Q10. Where are the areas that may have contaminated soil (Bid Item #9 and #10)?

A10. For Bid Items 6-11, refer to website <https://geotracker.waterboards.ca.gov/>

- Q11. Is the dewatering only for the Contaminated Soil?
- A11. See response to Q1.
- Q12. Section 7-3.1 specifically items 3, 4, and 5 state the bids items shall include the price to complete all work listed in the contract documents for the removals of the stations at Rueda Drive, Tambor Road, and Pavo Real Drive. The exact locations are not clearly defined on the plans and as-builts have not been provided to arcuately depict what we are removing and what equipment is existing. Please provide a schedule of values for each existing station with quantities for what needs to be removed. Please provide specifics for scope of work. Thank you.
- A12. Refer to Section 300-1.1.1 entitled Removal of Pressure Reducing Station for items to be removed inclusive under the lump sump removal bid item. Detailed as-builts of existing stations are not available. Recommend Bidder perform Site visit to verify size/location/valving for removal.
- Q13. Plan Sheet M-2 shows a Gravity Wall Type B on the plans. There is not a pay item for this work, additionally the Standard Plan only references some dimensions. The Bidding Documents do not provide a measured length and cubic yardage for the work. Please provide. Thank you.
- A13. Wall is intended to be part of the lump sump payment for the Pressure Reducing Station. Height and length provided in plans (see sheets M-2 and M-5).
- Q14. Section 7-3.1 provides a list of what each Lump Sum Item pays for and mentions irrigation lines and electrical to be removed and replaced. The Contract documents do not provide what these items are or where they are located. Please provide information. Thank you.
- A14. Extent of irrigation and electrical relocation to be verified by contractor during construction. The extent of the work is limited to the work area only.
- Q15. Please confirm that this project will require 3 pressure reducing stations. Please confirm that a pressure reducing stations is required at Rueda drive (bid item 98). We do not see this on the civil drawings.
- A15. A pressure reducing station is required at Rueda Drive and is located on sheet 60 of 72 at Viacha and Rueda. See the mechanical drawings (M-5) for location.

C. NOTICE INVITING BIDS

1. To 3. ESTIMATED CONSTRUCTION COST, Item 3, page 6, **DELETE** in its entirety and **SUBSTITUTE** with the following:
 3. **ESTIMATED CONSTRUCTION COST:** The City's estimated construction cost for this project is **\$11,410,000**.

D. SUPPLEMENTARY SPECIAL PROVISIONS

1. To **SECTION 3, CONTROL OF THE WORK**, Subsection 3-12.8.7, HAZARDOUS WASTE OPERATIONS AND EMERGENCY RESPONSE (HAZWOPER) CERTIFICATE, page 42, **DELETE** in its entirety.
2. To **SECTION 3, CONTROL OF THE WORK**, Subsection 3-12.8.8, PAYMENT, page 42, **DELETE** in its entirety.
3. To **SECTION 6, PROSECUTION AND PROGRESS OF THE WORK**, Subsection 6-1.1, Construction Schedule, pages 56 through 57, **DELETE** in its entirety and **SUBSTITUTE** with the following:

6-1.1 Construction Schedule. To the "GREENBOOK", paragraph (1), sentence (1), **DELETE** in its entirety and **SUBSTITUTE** with the following:

After notification of award of the Contract and prior to the start of any Work, you shall submit your proposed Cost Loaded Construction Schedule to the Engineer at the pre-construction meeting.

To the "WHITEBOOK", item 1, subsection "e" and "s", **DELETE** in their entirety and **SUBSTITUTE** with the following:

- e) Monthly progress payments are contingent upon the submittal of an updated Schedule to the Engineer. The Engineer may refuse to process the whole or part of any monthly payment if you refuse or fail to provide an acceptable schedule.
- s) Submit an updated cash flow forecast with every pay request (for each Project ID or WBS number provided in the Contract) showing periodic and cumulative construction billing amounts for the duration of the Contract Time. If there has been any Extra Work since the last update, include only the approved amounts.
 - i. Refer to the Sample City Invoice materials in **Appendix D - Sample City Invoice with Cash Flow Forecast** and use the format shown.

- ii. See also the “Cash Flow Forecast Example” at the location below:

<https://www.sandiego.gov/ecp/edocref/>

To the “WHITEBOOK”, ADD the following:

The **120 Calendar Day** Plant Establishment Period is included in the stipulated Contract Time and shall begin with the acceptance of installation of the vegetation plan in accordance with Section 801-6, “MAINTENANCE AND PLANT ESTABLISHMENT”

- 4. To **SECTION 6, PROSECUTION AND PROGRESS OF THE WORK**, page 57, **ADD** the following:

6-1.1.2 Contracts More Than \$500,000 In Value. To the “WHITEBOOK”, item 1, DELETE in its entirety and SUBSTITUTE with the following:

- 1. Provide the Schedule to the Engineer in accordance with 6-1.1, “Construction Schedule” and 6-1.2, “Commencement of the Work”.

To the “WHITEBOOK”, item 2, DELETE in its entirety.

6-1.2 Commencement of the Work. To the “WHITEBOOK”, ADD the following:

- 1. You shall submit a Cost Loaded Construction Schedule in accordance with 6-1.1, “Construction Schedule” at the scheduled pre-construction meeting.
- 2. If a Cost Loaded Construction Schedule is not provided, the pre-construction meeting will still be held. The Contract Time shall commence at issuance of the NTP, but you shall be limited to the following activities until the Cost Loaded Construction Schedule has been submitted to the Resident Engineer with no exceptions taken:
 - a) Mobilization of your trailers, associated utility setup, and grading for trailer area
 - b) Permit Procurement

- c) Fencing and temporary utilities for your storage areas
- d) Submittal of anticipated critical path submittals

5. To **ATTACHMENT E, SUPPLEMENTARY SPECIAL PROVISIONS, ADD** the following:

SECTION 600 - ACCESS

600-1 GENERAL. To the "WHITEBOOK", item 5, DELETE in its entirety and SUBSTITUTE with the following:

- 5. You shall notify Environmental Services Department via email (trash@sandiego.gov) of street closures affecting the regular scheduled solid waste collection at least 3 Working Days prior to the street closure. Include your business name and phone number, days of closure, time of scheduled closure, and date of anticipated street reopening in the notification.
 - a) You shall verify waste collection schedules via the Environmental Services website at:
<http://www.sandiego.gov/environmental-services/collection/index.shtml>
 - b) You shall comply with the following requirements for trash, recycling, and yard waste collection:
 - i. Provide advance written notice to every property affected by blocked public right of way.
 - ii. Coordinate the relocation of trash, recycling, and yard waste containers to an accessible public street for the City's waste collection crews on collection day.
 - iii. When necessary, relocate the containers from the blocked streets to the accessible public right of way before the City's collection vehicles arrive to assist with collection on existing schedules. Return the containers to their point of origin to ensure the accuracy of inventory assignment by address.

If the City's crews are unable to provide the citizens with the mandated services due to your failure to comply with these specifications, you shall collect trash, recyclables, and yard waste on the City's schedule and deliver to the City's designated locations. If you fail to perform this Work, you shall incur additional costs for the City to reschedule pick up of an area.

6. To **ATTACHMENT E, SUPPLEMENTARY SPECIAL PROVISIONS APPENDICES, ADD** "Appendix Q – Pavement Coring Data", pages 10 through 14.
7. To **APPENDICES, page 295, DELETE** and **SUBSTITUTE** with page 15 of this addendum,

E. ADDITIONAL CHANGES

1. The following are additional changes to the Line Items in the PlanetBids Tab:

For clarity where applicable, **ADDITIONS**, if any, have been **Underlined** and **DELETIONS**, if any, have been **Stricken out**.

Section	Item Code	Description	UoM	Quantity	Payment Reference	Extension
Main Bid	237110	Dewatering Permit and Discharge Fees (EOC Type I)	AL	1	3-12.8.8	10000
Main Bid	237110	Dewatering Hazardous Contaminated Water	LS	1	3-12.8.8	
Main Bid	237310	Pedestrian Barricade (Type A/C)	EA	1	701-2	
Main Bid	237310	Pedestrian Barricade (Type B)	SF	1	701-2	

James Nagelvoort, Director
 Engineering & Capital Projects Department
 Dated: *April 6, 2021*
 San Diego, California

JN/AJ/wf

APPENDIX Q
PAVEMENT CORING DATA

**CITY OF SAN DIEGO
MEMORANDUM**

DATE: October 3, 2019

TO: Daniel Yelsits, Project Engineer, Right of Way Design Division

FROM: Ray Cerezo, Assistant Engineer, Materials Testing Laboratory

**SUBJECT: Request for Pavement Coring, AC Water & Sewer Group 1056
B-18181(W) / B-18182(S)**

Per your Memo requesting coring of the existing street pavement to determine the type and thickness of the pavement for the subject project dated September 3, 2019. Our results are as follow:

Sample No.	Location	Paving Thickness
1	Calle De Vida (~300' E/O Rueda Dr.)	2 ½" AC SE=13
2	Calle De Vida (~80' E/O Calamar Dr.)	2 ½" AC SE=10
3	Colina Dorada Dr. (~285' S/O Madrugada Ct.)	3 ¾" AC SE=17
4	Colina Dorada Dr. (~80' S/O Invierno Dr.)	3 ½" AC SE=15
5	Colina Dorada Dr. (~70' S/O Cacao Ct.)	3 ½" AC SE=15
6	4025 Buho Ct.	4" AC SE=11
7	11615 papagallo Ct.	8" AC SE=13

8	Colina Dorada Dr. (~150' S/O Papagallo Ct.)	1 ¾" AC SE=53
9	Colina Dorada Dr. (~170' S/O Petirrojo Ct.)	4" AC SE=16
10	Colina Dorada Dr. (~500' W/O Joyas Ct.)	3 ¼" AC SE=12
11	3823 Colina Dorada Dr.	3 ½" AC SE=10
12	3828 Colina Dorada Dr.	5" AC SE=7
13	Tierrasanta Blvd. (~1500' W/O Santo Rd.)	8" AC SE=21
14	10585 Tierrasanta Blvd	3 ¾" AC SE=18
15	10809 Tierrasanta Blvd	4 ½" AC SE=17
16	10881 Tierrasanta Blvd	5 ¼" AC SE=14
17	Tierrasanta Blvd (~300' W/O Rueda Dr.)	6" AC SE=12
18	Tierrasanta Blvd (~160' W/O Tampor Rd.)	4 ½" AC SE=14
19	Tierrasanta Blvd (~500' W/O Canyon Trail)	5" AC SE=12

20

Tierrasanta Blvd
(~300' W/O Colina Dorada Dr.)

5 ¼" AC
SE=32

Should you have any further questions or need additional assistance, please feel free to contact me at (858) 627-3278.

Ray Cerezo

Cc: Randy Encinas

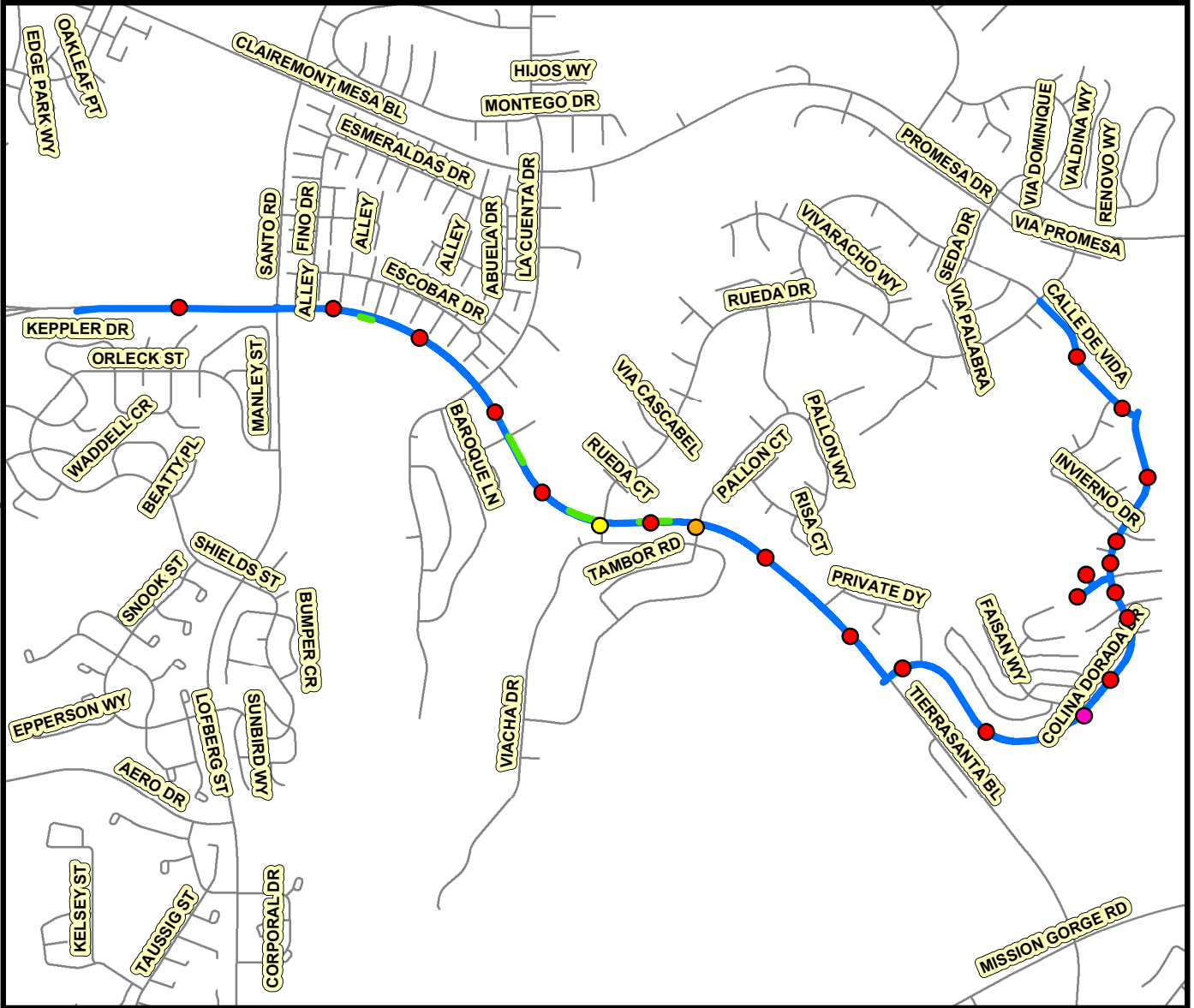
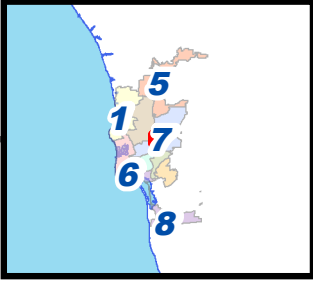
AC WATER AND SEWER GROUP 1056

SENIOR ENGINEER
SHEILA BOSE
619-533-4649

PROJECT MANAGER
ELHAM LOTFI
619-533-5212

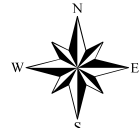
PROJECT ENGINEER
DANIEL YELSITS
619-533-5215

FOR QUESTIONS ABOUT THIS PROJECT
Call: 619-533-4207
Email: engineering@sandiego.gov



Legend

- Proposed Sewer Rehab / Point Repair
- Proposed Water
- Proposed Replacement of Ex PRS @ Tierrasanta Blvd & Rueda Dr
- Proposed Replacement of Ex PRS @ Tierrasanta Blvd & Tambor Rd
- Proposed Replacement of Ex Red GV & Ex 8-inch PRV
- Proposed Coring Location



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APPENDIX P
LONG-TERM PLANT ESTABLISHMENT AGREEMENT

City of San Diego

CITY CONTACT: Brittany Friedenreich, Senior Contract Specialist, Email: BFriedenreic@sandiego.gov
Phone No. (619) 533-3104

ADDENDUM B



FOR

AC WATER AND SEWER GROUP 1056

BID NO.:	<u>K-21-2000-DBB-3</u>
SAP NO. (WBS/IO/CC):	<u>B-18181, B-18182</u>
CLIENT DEPARTMENT:	<u>2000</u>
COUNCIL DISTRICT:	<u>7</u>
PROJECT TYPE:	<u>KB, JA</u>

BID DUE DATE:

2:00 PM
APRIL 26, 2021

CITY OF SAN DIEGO'S ELECTRONIC BIDDING SITE, PLANETBIDS

<http://www.sandiego.gov/cip/bidopps/index.shtml>

ENGINEER OF WORK

The engineering Specifications and Special Provisions contained herein have been prepared by or under the direction of the following Registered Engineer:

Sheila Bose
For City Engineer

4/12/21
Date

Seal:



A. CHANGES TO CONTRACT DOCUMENTS

The following changes to the Contract Documents are hereby made effective as though originally issued with the bid package. Bidders are reminded that all previous requirements to this solicitation remain in full force and effect.

THE SUBMITTAL DATE FOR THIS PROJECT HAS BEEN **EXTENDED AS STATED ON THE COVER PAGE.**

B. BIDDER'S QUESTIONS

Q1. The highline plans shown on sheets C29-C31 do not match up with the Phases called out in the Solicitation section 306-1.1. Can you please clarify as this is a major difference in the way the item would be bid? Thank you.

A1. See revised Section 306-1.1 and revised Bid Item #39 Phased Paving in this Addendum.

C. NOTICE INVITING BIDS

1. To Item 3, Estimated Construction Cost, page 6, **DELETE** in its entirety and **SUBSTITUTE** with the following:

3. ESTIMATED CONSTRUCTION COST: The City's estimated construction cost for this project is **\$11,440,000.**

2. To Item 4, Bid Due Date and Time, page 6, **DELETE** in its entirety and **SUBSTITUTE** with the following:

4. BID DUE DATE AND TIME ARE: APRIL 26, 2021 at 2:00 PM.

CI. SUPPLEMENTARY SPECIAL PROVISIONS

1. To Section 306, Open Trench Conduit Construction, Subsection 306-1.1, High-line Phasing, page 66, **DELETE** in its entirety and **SUBSTITUTE** with the following:

306-1.1 High-line Phasing.

1. Build the Project in accordance with the water high-lining phasing shown on the Plans and in phases as follows:
 - a) Phase I: Tierrasanta Blvd. from beginning of project to Santo Rd.
 - b) Phase II: Tierrasanta Blvd. from Santo Rd to Esplendente Blvd.
 - c) Phase III: Tierrasanta Blvd. from Esplendente Blvd. to La Cuenta Dr.

- d) Phase IV: Tierrasanta Blvd. from La Cuenta Dr. to Rueda Dr.
- e) Phase V: Tierrasanta Blvd. from Rueda Dr. to Tambor Rd.
- f) Phase VI: Tierrasanta Blvd. from Tambor Rd. to Colina Dorada Dr.
- g) Phase VII: Colina Dorada Dr. from Tierrasanta Blvd. to E/O Pendiente Ct.
- h) Phase VIII: Colina Dorada Dr. from E/O Pendiente Ct. to Pavo Real Dr.
- i) Phase IV: Colina Dorada Dr. from Pavo Real Dr. to Joyas Ct.
- j) Phase V: Colina Dorada Dr. from Joyas Ct. to Papagallos Ct.
- k) Phase V: Colina Dorada Dr. from Papagallos Ct. to Calle De Vida.
- l) Phase VI: Papagallos Ct.
- m) Phase VII: Colina Dorada Dr. from Papagallos Ct. to Calle De Vida.
- n) Phase VIII: Calle De Vida from Colina Dorada Dr. to Rueda Dr.

E. ADDITIONAL CHANGES

1. The following are additional changes to the Line Items in the PlanetBids Tab:

For clarity where applicable, **ADDITIONS**, if any, have been **Underlined** and **DELETIONS**, if any, have been **~~Stricken out.~~**

Section	Item Code	Description	UoM	Quantity	Payment Reference
Main Bid	237110	Phased Paving	EA	6 <u>13</u>	306-1.2.1

James Nagelvoort, Director
 Engineering & Capital Projects Department

Dated: *April 13, 2021*
 San Diego, California

JN/AJ/wf

ENGINEER OF WORK

The engineering Specifications and Special Provisions contained herein have been prepared by or under the direction of the following Registered Engineer:

Samuel Lake McWhorter 4/15/21
1) Registered Engineer Date



Seal:

Sheila Bose 4/15/21
2) For City Engineer Date



Seal:

A. CHANGES TO CONTRACT DOCUMENTS

The following changes to the Contract Documents are hereby made effective as though originally issued with the bid package. Bidders are reminded that all previous requirements to this solicitation remain in full force and effect.

B. BIDDER'S QUESTIONS

Q1. Should Bid item #4 be included in bid item #5? Please confirm?

A1. Bid as advertised.

Q2. Please confirm that Bid item #52 is supposed to be a 16" Gate valve or 16" butterfly valve? If it is to be a Butterfly valve, then will "Bypasses" be required?

A2. Please see the revised bid list in this Addendum. See revised Sheet 41288-28-D provided in this Addendum.

Q3. Please confirm that bid item #15 does not include backfill of the void? Only excavation and export? Is this item for subgrade export below street surface? Or for the pipe zone? Or below pipe zone?

A3. Bid item #15 Excavate and Export (Unclassified) includes excavation and export of poor backfill material, as indicated in Appendix Q of this contract.

Q4. Bid item #18 calls for Class 2 base, however bid item #19 calls for Crushed Aggregate Base? We are unsure as to why there are two bid items for the same thing? Where do these materials get installed? Should these bid items include removal for the same quantity?

A4. Please see the revised bid list in this Addendum.

Q5. There appears to be no bid items for the 12" and smaller connections? Please confirm if the Contractor is to perform those or the City? If the City will be performing those, typically there is a bid item for "Furnish City materials for 12" & Smaller connections". There doesn't appear to be any such bid items?

A5. Please see the revised bid list in this Addendum.

Q6. Please confirm that the Rueda Dr PRS and the Colina Dorada Dr PRS do not require any electrical or instrumentation for the PRVs?

- A6. Confirmed, only Tambor PRS will require electrical/instrumentation.
- Q7. Plan sheet M-6 (Tambor RD PRS) Shows a 3" Flow Meter before the pressure Relief Valve. However drawing E-5 does not show the Flow meter in the line up? Please confirm if a Flow meter is to be installed? Or is this FM internal to the PRV? Please provide manufacture make and model of flow meter if required.
- A7. Flowmeter not required on Valve 1 and Valve 2 (E-5). Flowmeter to be installed on storm drain PRV line only (Valve 3/E-5). Magmeter to be Sparling Tigermag EP Electromagnetic Flow Meter or approved equal.
- Q8. Spec section 13414-1.4 & 2.1 call for 16" PRVs, however there are no 16" PRVs located on the plans? Please confirm typo? They also call out drawing E-11? E-11 is not provided.
- A8. PRV sizes are per plan (see sheets M-5 to M-7). Confirmed, no 16" PRVs are included in this project. Confirmed, E-11 is not included in this project and the reference is incorrect.
- Q9. M-Drawings do not call out locations for Pipe Flange isolation kits, however it is discussed in spec section 13111-2.8. Please provide locations of where flange isolation kits are to be installed?
- A9. Flange isolation kits are not required.
- Q10. Plan sheet E-5 calls for Pressure Transmitters on the suction and discharge lines in the vault. Are these mounted on the PRV's? or on the piping? If on the piping then please provide a mounting detail as the M-Drawings do not show where they are to be mounted. If the PRV manufacture installs 1EA Differential Pressure transmitter will that be acceptable in lieu of the two different pressure transmitters?
- A10. Pressure transmitter to be part of Pressure Reducing Valve Provided by the Manufacturer. One (1) differential pressure transmitter is acceptable for each Pressure Reducing Valve. No Separate pressure gauges are required on inlet and outlet piping.
- Q11. Per the plans the waterline on tierrasanta is to be installed parallel to the existing 16" AC main. However there are several fire services that are called out to be installed in the exact same alignment (example Sheet C-4 Call out #10). Is the City planning on highlining this fire service

while construction is going on? How is the fire service supposed to be maintained? Suggestion would be to move the tee upstream or downstream to run parallel with the existing then perform a double 45° connection when it is ready to be put on the new main? Please confirm the City's intention on how these services are to be installed?

- A11. Fire services are to remain in service during in-parallel construction of replacement water mains.
- Q12. The cover sheet usually states streets requiring 12" thick paving per Type 1 SDG-107. Are we to assume that this project will not require 12" thick paving on any streets?
- A12. Refer to City of San Diego Standard Drawing SDG-107, as noted on the cover page of the design plans.
- Q13. Bid Item #15 "Excavate and Export (Unclassified)" 9,000CY – Is this quantity correct? We think it is incorrect as this volume of export would equal nearly 25,00LF of trench (assuming 2' wide by 5' deep), that is more than the entire project. Given this item description is outside of the trench, we cannot justify the volume on this project unless we are totally missing the intent of this item. Please adjust quantity or clarify/justify the location for this item.
- A13. The quantity for bid item 15 is correct and was estimated for the anticipated volume of unsuitable trench backfill.

C. ADDENDUM

1. To Addendum B, Section C - Notice Inviting Bids, Item 1, Estimated Construction Cost, page 3, **DELETE** in its entirety and **SUBSTITUTE** with the following:
 3. **ESTIMATED CONSTRUCTION COST:** The City's estimated construction cost for this project is **\$11,730,000.**

D. ADDITIONAL CHANGES

- The following are additional changes to the Line Items in the PlanetBids Tab:

For clarity where applicable, **ADDITIONS**, if any, have been **Underlined** and **DELETIONS**, if any, have been **Stricken out**.

Section	Item Code	Description	UoM	Quantity	Payment Reference
Main Bid	301-2.4	Crushed Aggregate Base	TON	15	301-2.4
Main Bid	237110	Connections to The Existing System by Contractor (16 Inch)	EA	1 <u>3</u>	901-2.5
Main Bid	237110	Gate Valve (16 Inch) <u>Butterfly Valve (16-in, Class 150B)</u>	EA	2	306-15.5
<u>Additive Alternate G</u>	<u>237110</u>	<u>Connections to The Existing System by Contractor (4 Inch through 12 Inch)</u>	<u>EA</u>	<u>34</u>	<u>901-2.5</u>
<u>Additive Alternate G</u>	<u>237110</u>	<u>Cut and Plug by Contractor</u>	<u>EA</u>	<u>35</u>	<u>901-2.5</u>

E. PLANS

- To Drawing numbers 41288-1-D and 41288-28-D, **DELETE** in their entirety and **REPLACE** with pages 7 and 8 in this addendum.

James Nagelvoort, Director
Engineering & Capital Projects Department

Dated: *April 15, 2021*
San Diego, California

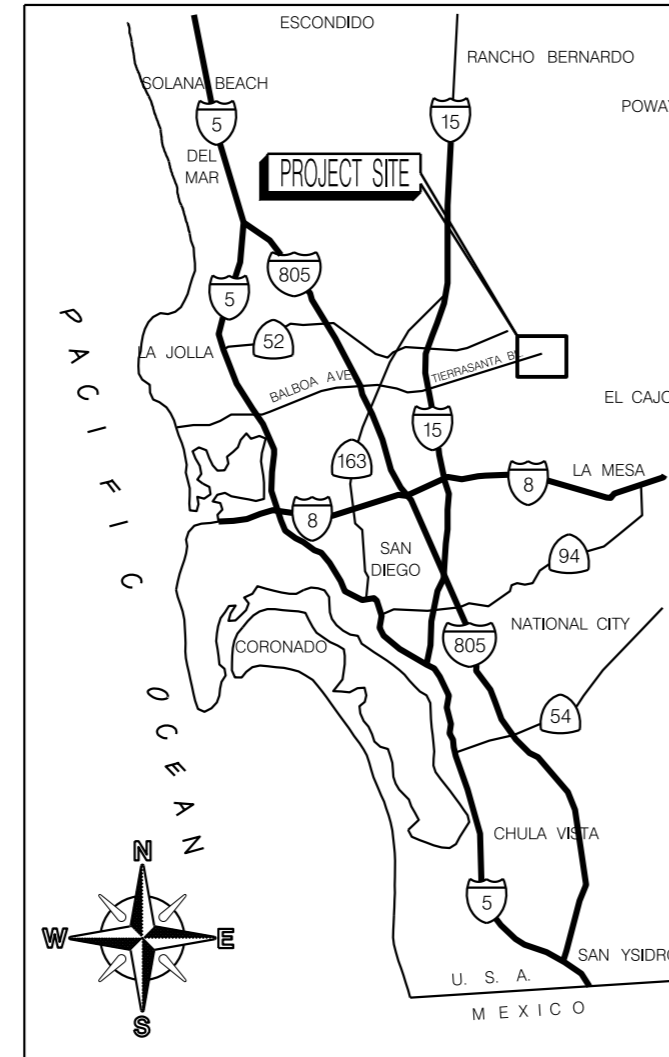
JN/AJ/wf

CONTRACTOR'S RESPONSIBILITIES

- PURSUANT TO SECTION 4216 OF THE GOVERNMENT CODE, AT LEAST 2 WORKING DAYS PRIOR TO EXCAVATION, YOU MUST CONTACT THE REGIONAL NOTIFICATION CENTER (E.G. UNDERGROUND SERVICE ALERT OF SOUTHERN CALIFORNIA) AND OBTAIN AN INQUIRY IDENTIFICATION NUMBER.
- NOTIFY SDG&E AT LEAST 10 WORKING DAYS PRIOR TO EXCAVATING WITHIN 10' OF SDG&E UNDERGROUND HIGH VOLTAGE TRANSMISSION POWER LINES. (I.E., 69 KV & HIGHER)
- LOCATE AND RECONNECT ALL SEWER LATERALS. LOCATIONS AS SHOWN ON THE PLANS ARE APPROXIMATE ONLY. LATERAL RECORDS ARE AVAILABLE TO THE CONTRACTOR AT THE WATER DEPARTMENT, 2797 CAMINITO CHOLLAS. LOCATE THE IMPROVEMENTS THAT WILL BE AFFECTED BY LATERAL REPLACEMENTS.
- EXCAVATE AROUND WATER METER BOX (CITY PROPERTY SIDE) TO DETERMINE IN ADVANCE, THE SIZE OF EACH SERVICE BEFORE TAPPING MAIN.
- CITY FORCES, WHEN SPECIFIED OR SHOWN ON THE PLANS, WILL MAKE PERMANENT CUTS & PLUGS AND CONNECTIONS.
- KEEP EXISTING MAINS IN SERVICE IN LIEU OF HIGH-LINING, UNLESS OTHERWISE SPECIFIED SHOWN ON PLANS.
- THE LOCATIONS OF EXISTING BUILDINGS AS SHOWN ON THE PLAN ARE APPROXIMATE.
- STORM DRAIN INLETS SHALL REMAIN FUNCTIONAL AT ALL TIMES DURING CONSTRUCTION.
- UNLESS OTHERWISE NOTED AS PREVIOUSLY POTHOLED (PH), ELEVATIONS SHOWN ON THE PROFILE FOR EXISTING UTILITIES ARE BASED ON A SEARCH OF THE AVAILABLE RECORD INFORMATION ONLY AND ARE SOLELY FOR THE CONTRACTOR'S CONVENIENCE. THE CITY DOES NOT GUARANTEE THAT IT HAS REVIEWED ALL AVAILABLE DATA. THE CONTRACTOR SHALL POTHOLE ALL EXISTING UTILITIES EITHER SHOWN ON THE PLANS OR MARKED IN THE FIELD IN ACCORDANCE WITH THE SPECIFICATIONS SECTION 402-UTILITIES.
- EXISTING UTILITY CROSSING AS SHOWN ON THE PLANS ARE APPROXIMATE AND ARE NOT REPRESENTATIVE OF ACTUAL LENGTH AND LOCATION OF CONFLICT AREAS. SEE PLAN VIEW.
- ALL ADVANCE METERING INFRASTRUCTURE (AM) DEVICES ATTACHED TO THE WATER METER OR LOCATED IN OR NEAR WATER METER BOXES, COFFINS, OR VAULTS SHALL BE PROTECTED AT ALL TIMES IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
- FOR NON-METALLIC PIPELINE ALIGNMENTS, PROVIDE A HOLIDAY FREE CORROSION PREVENTATIVE COATING AND LINING ON ALL BURIED DUCTILE IRON PIPE AND FITTINGS INCLUDING ALL BENDS, TEES, CROSSES, FLEW COUPLINGS, FLANGE BOLTS, AND VALVES PER CONTRACT SPECIFICATIONS. WHEN THE MAIN PIPING IS NON-METALLIC BUT SPECIAL CIRCUMSTANCES REQUIRE THE USE OF METALLIC PIPE RUNS, E.G. STEEP SLOPING LANDSCAPES, TRENCHLESS CROSSINGS, ETC., RETAIN THE SERVICES OF A LICENSED OR CERTIFIED CORROSION ENGINEER TO DESIGN A CATHODIC PROTECTION SYSTEM FOR SUBMITTAL AND REVIEW BY THE CITY'S CORROSION CONTROL SECTION BEFORE INSTALLATION.
- WHEN JOINING TWO DISSIMILAR METALS (EX. DUCTILE IRON FITTING AND COPPER SERVICE LATERALS), A DIELECTRIC UNION MUST BE INSTALLED BETWEEN THE TWO IN ORDER TO PREVENT GALVANIC CORROSION. WAX TAPE UP TO AND INCLUDING THE DIELECTRIC UNION.
- FOR COORDINATION OF THE SHUTDOWN OF MAINS, THE ASSIGNED INSPECTOR RESIDENT ENGINEER, AND NOT THE CONTRACTOR, SHOULD CONTACT THE FOLLOWING:
TRANSMISSION MAINS (6 INCHES AND LARGER) - JESUS RAMOS (619-527-7438)
DISTRIBUTION MAINS (LESS THAN 6 INCHES) - TISA AGUERO (619-527-3143)
WATER FACILITIES - TATYANA FIKHMAN (619-527-7465) & JESUS RAMOS (619-527-7438)

AC WATER AND SEWER GROUP 1056

SHEET INDEX



SHEET NO.	DISCIPLINE CODE	TITLE	LIMITS	PIPE		LENGTH (FT)
				SIZE (IN)	MATERIAL	
1	G-1	COVER SHEET				
2	G-2	KEY MAP				
3	C-1	COLINA DORADA DR	PETIRROJO CT TO PAPAGALLO CT	8		311
4	C-2	TIERRASANTA BL	E/O I-15 TO W/O SANTO RD	12		800
5	C-3	TIERRASANTA BL	E/O I-15 TO W/O SANTO RD	12		700
6	C-4	TIERRASANTA BL	W/O SANTO RD TO E/O SANTO RD	12		800
7	C-5	TIERRASANTA BL	E/O SANTO RD TO ESPLENDENTE BL	12		700
8	C-6	TIERRASANTA BL	ESPLENDENTE BL TO W/O LA CUENTA DR	12		800
9	C-7	TIERRASANTA BL	W/O LA CUENTA DR TO E/O LA CUENTA DR	12		700
10	C-8	TIERRASANTA BL	E/O LA CUENTA DR TO E/O DUCOS PL	12		700
11	C-9	TIERRASANTA BL	E/O DUCOS PL TO W/O RUEDA DR	12		700
12	C-10	TIERRASANTA BL	W/O RUEDA DR TO W/O TAMBOR RD	12		600
13	C-11	TIERRASANTA BL	W/O TAMBOR RD TO E/O TAMBOR RD	12		800
14	C-12	TIERRASANTA BL	E/O TAMBOR RD TO N/WO COLINA DORADA DR	12		700
15	C-13	TIERRASANTA BL	E/O TAMBOR RD TO N/WO COLINA DORADA DR	12		800
16	C-14	TIERRASANTA BL	W/O COLINA DORADA DR TO COLINA DORADA DR	12		630
17	C-15	COLINA DORADA DR	TIERRASANTA BL TO E/O PENDIENTE CT	12		520
18	C-16	COLINA DORADA DR	E/O PENDIENTE CT TO COLINA DORADA DR	12		700
19	C-17	COLINA DORADA DR	E/O PENDIENTE CT TO W/O PAVO REAL DR	12		600
20	C-18	COLINA DORADA DR	W/O PAVO REAL DR TO E/O PAVO REAL DR	12		700
21	C-19	COLINA DORADA DR	COLINA DORADA DR TO NW/O COLINA DORADA DR	8		105
22	C-20	COLINA DORADA DR	E/O PAVO REAL DR TO W/O JOYAS CT	12		600
23	C-21	COLINA DORADA DR	W/O JOYAS CT TO E/O PETIRROJO CT	12		650
24	C-22	COLINA DORADA DR	E/O PETIRROJO CT TO E/O INVIERNO CT	12		600
25	C-23	COLINA DORADA DR	W/O MADRUGADA CT TO N/O CALLE DE VIDA	12		600
26	C-24	COLINA DORADA DR	S/O CALLE DE VIDA TO CALLE DE VIDA	12		524
27	C-25	COLINA DORADA DR	COLINA DORADA DR TO W/O CALAMAR DR	12		600
28	C-26	COLINA DORADA DR	W/O CALAMAR DR TO SE/O RUEDA DR	12		600
29	C-27	PAPAGALLO CT	SE/O RUEDA DR TO RUEDA DR	12		320
30	C-28	PAPAGALLO CT	COLINA DORADA DR TO CUL-DE-SAC	8		397
31	C-28	PAPAGALLO CT	PAPAGALLO CT TO CUL-DE-SAC	8		132
32	C-28	TIERRASANTA BL	W/O ESPLENDENTE BL TO ESPLENDENTE BL	8		122
33	C-28	TIERRASANTA BL	DUCCOS PL TO E/O DUCOS PL	8		299
34	C-28	TIERRASANTA BL	W/O RUEDA DR TO RUEDA DR	8		340
35	C-28	TIERRASANTA BL	E/O RUEDA DR TO W/O TAMBOR RD	12		270
36	C-29	CITY FORCES			TOTAL SEWER	1,342
37	C-32	WATER ABANDONMENT			TOTAL WATER	17,128
38	C-33	BATCH DISCHARGE PLAN				
39	C-36	SURVEY MONUMENTS				
40	C-39	STREET RESURFACING				
41	C-43	CURB RAMP LOCATIONS & DETAILS				
42	C-51	HORIZONTAL ALIGNMENT				
43	C-52	ALTERNATE STREET RESURFACING				
44	M-1	WATER DETAILS (PRESSURE REGULATING STATIONS)				
45	M-5	PRESSURE REGULATING STATIONS				
46	E-1	ELECTRICAL DETAILS (PRESSURE REGULATING STATIONS)				

IMPROVEMENTS

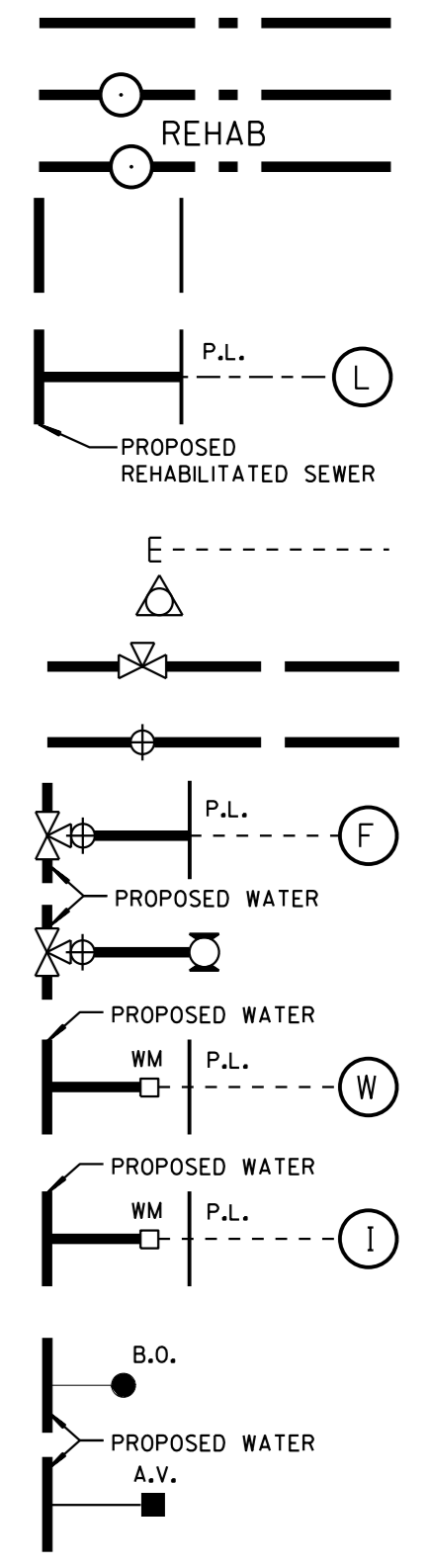
- TRENCH RESURFACING
- SEWER MAIN
- REHAB. EX. SEWER MANHOLE
- SEWER MAIN REHAB.
- REHAB SEWER LATERAL (LINED) WITH C.O.
- CUTTING AND PLUGGING ABANDONED WATER MAIN
- SURVEY MONUMENT
- WATER MAIN & APPURTENANCES
- VALVES WITH CAPS AND WELLS
- FIRE SERVICE CONNECTION & ASSEMBLY
- 6" FIRE HYDRANT ASSEMBLY & MARKER 2-PORT UNLESS SPECIFIED AS 3-PORT
- 1" WATER SERVICE UNLESS OTHERWISE SPECIFIED
- 1" IRRIGATION SERVICE UNLESS OTHERWISE SPECIFIED
- BLOW-OFF ASSEMBLY
- AIR & VACUUM VALVE
- HIGHLINING BY CONTRACTOR

LEGEND

REFERENCE

- SDG-107, SDG-108
- SDS-101, SDS-110 (TYPE C)
- SEE PLANS & SPECS
- SEE PLANS & SPECS
- SEE PLANS & SPECS
- WP-03
- M-10A, M-10B, M-10C
- SDM-105, SDW-110, SDW-151, SDW-161
- SDW-109, SDW-152, SDW-153, WV-05
- SDM-105, SDW-109, SDW-118, SDW-152, SDW-153
- SDM-105, SDW-104, SDW-109, SDW-152, SDW-153
- SDM-105, SDW-107, SDW-134, SDW-135, SDW-136, SDW-137, SDW-138, SDW-149, SDW-150, WS-03
- SDM-105, SDW-107, SDW-134, SDW-135, SDW-136, SDW-137, SDW-138, SDW-149, SDW-150, WS-03
- SDM-105, SDW-106, SDW-143, SDW-144, SDW-145, SDW-146, WB-05.
- SDM-105, SDW-117, SDW-158, SDW-159, SDW-160
- SDW-170, SDW-171, SDW-172, SDW-173, SDW-174 IF APPLICABLE

SYMBOL



PERMANENT STORM WATER BMP CATEGORY:

- PRIORITY DEVELOPMENT PROJECT
- STANDARD DEVELOPMENT PROJECT
- PDP EXEMPT
- NOT SUBJECT TO PERMANENT STORM WATER REQUIREMENTS

CONSTRUCTION STORM WATER PROTECTION NOTES

- TOTAL SITE DISTURBANCE AREA (ACRES) 1.19 ACRES
HYDROLOGIC UNIT & WATERSHED SAN DIEGO HU/SAN DIEGO RIVER WATERSHED
HYDROLOGIC SUBAREA NAME & NO. MISSION SAN DIEGO - 907.11
- THE CONTRACTOR SHALL COMPLY WITH THE REQUIREMENTS OF THE
 MINOR WPCP
THE PROJECT IS SUBJECT TO MUNICIPAL STORM WATER (MS4) PERMIT NO. R9-2013-0001 AS AMENDED BY R9-2015-0001 AND R9-2015-0100
 WPCP
THE PROJECT IS SUBJECT TO MUNICIPAL STORM WATER (MS4) PERMIT NO. R9-2013-0001 AS AMENDED BY R9-2015-0001 AND R9-2015-0100
 SWPPP
THE PROJECT IS SUBJECT TO MUNICIPAL STORM WATER (MS4) PERMIT NO. R9-2013-0001 AS AMENDED BY R9-2015-0001 AND R9-2015-0100 AND CONSTRUCTION GENERAL PERMIT (CGP) ORDER 2009-0009-DWQ AS AMENDED BY ORDER 2010-0014-DWQ AND 2012-0006-DWQ
TRADITIONAL: RISK LEVEL 1 2 3
LUP: RISK TYPE 1 2 3
- CONSTRUCTION SITE PRIORITY
 ASBS HIGH MEDIUM LOW

FIELD DATA

TOPOGRAPHY SOURCE: BASED ON FIELD SURVEY PERFORMED BY CITY OF SAN DIEGO SURVEYING DIVISION ON SEPTEMBER 12, 2018, WORK ORDER NO. B-18181/B-18182
BENCHMARK: SWBP RUEDA DR & CARTULINA (PT #1003) ELEVATION 453.902 MSL, BASED ON NGVD 29 FEET AS SHOWN IN THE CITY OF SAN DIEGO BENCH BOOK.
FIELD NOTES: CHIEF DELATORRE/HARRIS
INSTRUMENT: TICE/ MAYER
DATE: 9/12/2018
BASIS OF BEARING / COORDINATES: THE BASIS OF BEARINGS FOR THIS PROJECT WAS DERIVED FROM A PREVIOUS STATIC GPS SURVEY USING R.O.F. S. 14492 NAD 83 FEET, ZONE 6 (EPOCH 1991.35), UTILIZING RTK/GPS FIELD PROCEDURES WITH A CALVRS BASE STATION BROADCAST OF 2018 AND CONSTRAINING TO GPS 17 (PT #20017) AND CHECKING GPS 855, I.E. N89° 39'58" E.

ABBREVIATIONS

ABAND	ABANDON	EL, ELEV	ELEVATION	OVHD	OVER HEAD
ABAND'D	ABANDONED	ELEC	ELECTRIC	PVC	POLYVINYL CHLORIDE
AC	ASBESTOS CEMENT PIPE	EX, EXIST	EXISTING	PROP	PROPOSED
AHD	AHEAD	E/O	EAST OF	RED	REDUCER
ASSY	ASSEMBLY	F	FLANGE	RT	RIGHT
BFV	BUTTERFLY VALVE	FH	FIRE HYDRANT	S	SURVEY LINE
BK	BACK	FS	FIRE SERVICE	SD&E	SAN DIEGO & ARIZONA EASTERN RAILROAD
BTWN	BETWEEN	GV	GATE VALVE	SDR	STANDARD DIMENSION RATIO
CATV	CABLE TV	HDPE	HIGH-DENSITY POLYETHYLENE	SO	STUB OUT
CI	CAST IRON PIPE	HP	HIGH PRESSURE	S/O	SOUTH OF
C	CENTER LINE	IE	INVERT ELEVATION	SWR	SEWER
COND	CONDUIT	LT	LEFT	TEL	TELEPHONE
CONT	CONTINUED	MJ	MECHANICAL JOINT	UNK	UNKNOWN
CONTR	CONTRACTOR	MTS	SAN DIEGO METROPOLITAN	VC	VITRIFIED CLAY PIPE
DB	DIRECT BURIED	MTD	MULTIPLE TELEPHONE DUCT	WM	WATER METER
DI	DUCTILE IRON	N/O	NORTH OF	WTR	WATER
EB	ENCASED BURIED			W/O	WEST OF

EXISTING STRUCTURES

EX WATER MAIN & VALVES	-----●-----	EX GROUND LINE (PROFILE)	=====
EX WATER METER	-----□-----	EX TRAFFIC SIGNAL	⊗ TS
EX FIRE HYDRANT	⊗	EX STREET LIGHT	+ SL
EX SEWER MAIN & MANHOLES	-----○-----	GAS MAIN	-----
EX DRAINS	=====	ELEC. COND., TEL. COND., CATV	---E---T---C---
EX PAVEMENT (PROFILE)	//////	RAILROAD, TROLLEY TRACKS	=====

WORK TO BE DONE

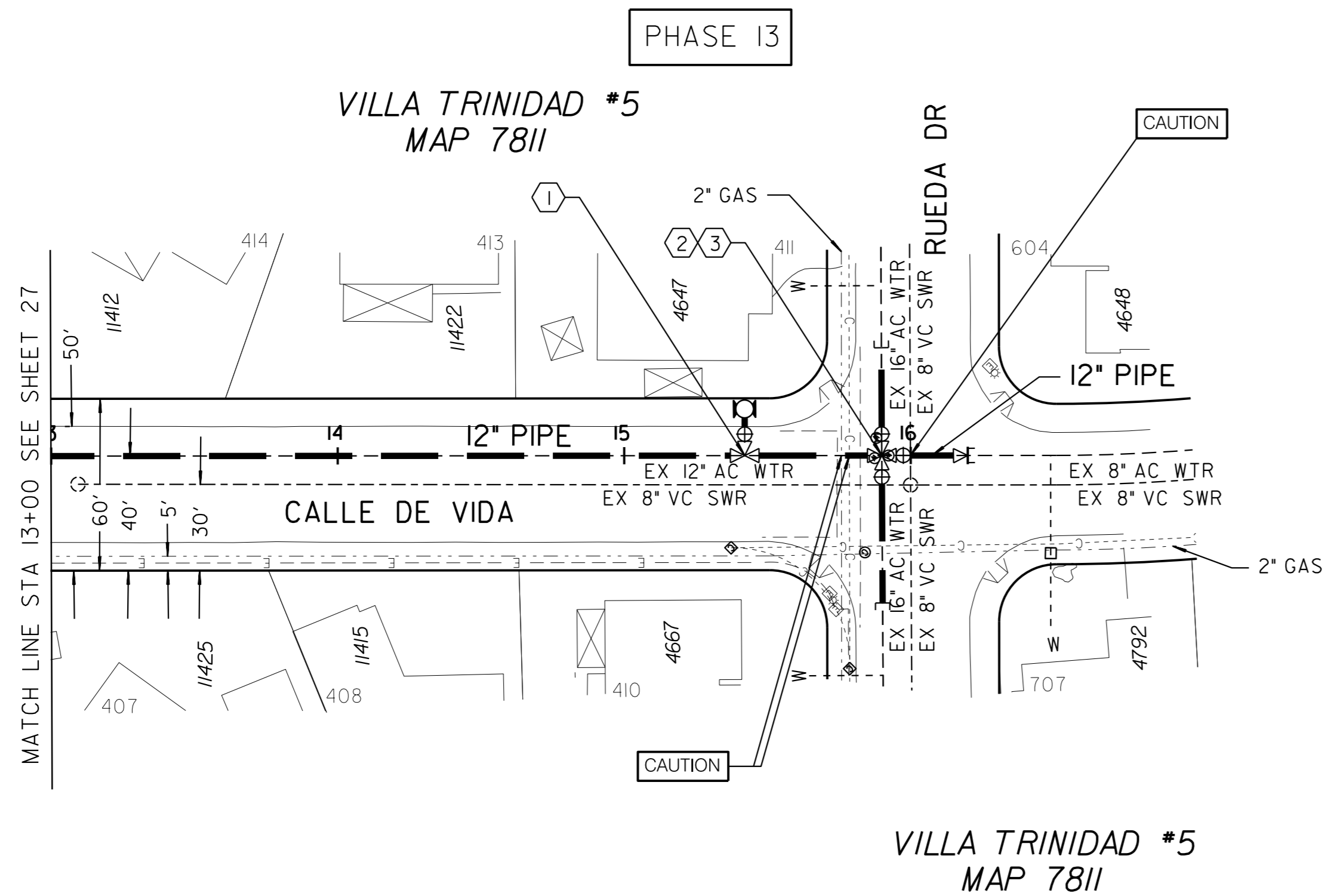
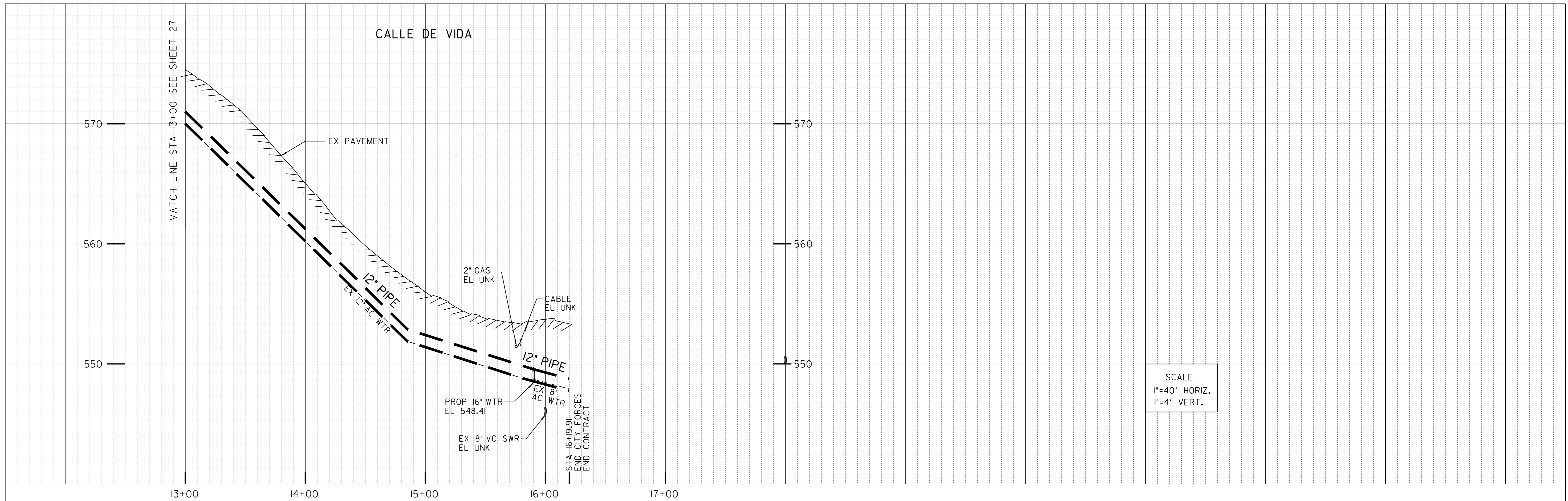
CONSTRUCTION OF AC WATER AND SEWER GROUP 1056 CONSISTS OF THE INSTALLATION OF 17,128 LF (3.24 MILES) 8-INCH AND 12-INCH WATER MAINS, REPLACEMENT OF 3 PRESSURE REGULATING STATIONS, REPLACEMENT OF 31LF (0.06 MILES) OF 8-INCH SEWER MAINS, AND REHABILITATION OF 1,031LF (0.20 MILES) EXISTING VC SEWER MAINS INCLUDING ALL ASSOCIATED WATER SERVICES, FIRE HYDRANTS, LATERALS, MANHOLES, CURB RAMPS, TRAFFIC CONTROL, TRENCH RESTORATION, PAVEMENT RESURFACING, AND ALL OTHER WORK AND APPURTENANCES IN ACCORDANCE WITH THESE SPECIFICATIONS AND DRAWINGS NUMBERED 41288-01-D THROUGH 41288-12-D.

DISCIPLINE CODE

- G GENERAL
- C CIVIL
- M MECHANICAL
- E ELECTRICAL

PLANS FOR THE CONSTRUCTION OF AC WATER AND SEWER GROUP 1056 COVER SHEET

<p>APPROVED: <i>Sheila B</i> 01/21/2021 FOR CITY ENGINEER SHEILA BOSE DATE PRINTED NAME: SHEILA BOSE RCE# C59403</p>		<p>WATER WBS B-18181 SEWER WBS B-18182</p>
<p>CITY OF SAN DIEGO, CALIFORNIA ENGINEERING & CAPITAL PROJECTS DEPARTMENT SHEET 1 OF 72 SHEETS</p>		<p>DESIGNED BY: ELHAM LOTFI PROJECT MANAGER CHECKED BY: DANIEL YELSITS PROJECT ENGINEER</p>
<p>DESCRIPTION ORIGINAL BY/CT DATE APPROVED DATE FILMED</p>		<p>DATE STARTED DATE COMPLETED</p>
<p>CONTRACTOR INSPECTOR</p>		<p>41288-01-D</p>



①
 BY CONTRACTOR
 FURNISH & INSTALL
 STA 15+42.06
 1- 12" X 6" TEE (M, J, F)
 1- 6" FH ASSY & MARKER

②
 BY CITY FORCES
 AHD OF CONTRACTOR
 STA 15+89.91
 CUT & PLUG:
 EX 8" AC WTR, 30' ±, AHD
 EX 16" AC WTR, 35' ±, LT
 EX 16" AC WTR, 50' ±, RT

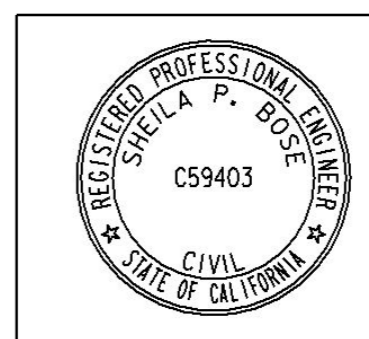
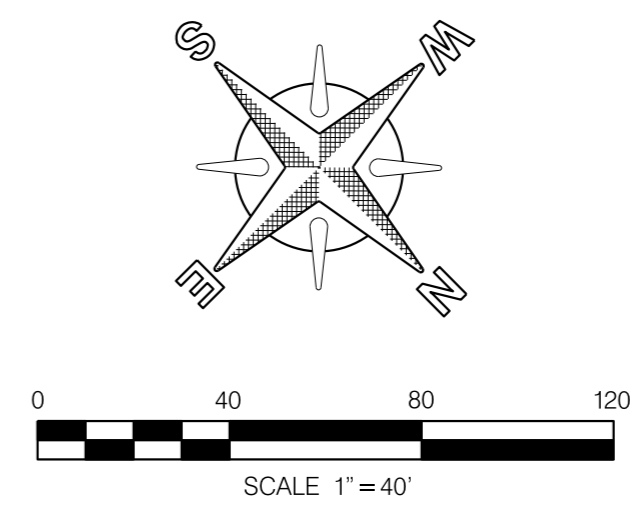
RECONNECT AFTER NEW MAIN
 (PHASE 13) HAS BEEN ACCEPTED

③
 BY CONTRACTOR
 FURNISH & INSTALL
 STA 15+89.91
 1- 12" X 16" CROSS (M, J, F, F)
 1- 12" GATE VALVE (F, M, J, AHD)
 2- 16" BUTTERFLY VALVES (CLASS 150B) (F, M, J, LT, RT)
 1- 12" X 8" REDUCER (F, M, J), 30' ±, AHD
 30' - 12" PIPE, 30' ±, AHD
 35' - 16" PIPE, 35' ±, LT
 50' - 16" PIPE, 50' ±, RT

REFERENCE:
 WATER: 15866-15-D
 SEWER: 15866-15-D
 STORM DRAIN: NONE
 GAS: 16155-119150
 ELECTRIC: NONE
 CABLE TV: NONE
 TELEPHONE: AT&T BLG2001
 IMPROVEMENTS:
 100' SCALE/FIELD BOOK: K12S
 THOMAS BROS.: I250-A-2
 HGL: 752

RETIREMENTS:
 16" - AC - 320' - 1973

CITY FORCES NOTES:
 LIMITS OF HIGHLINING APPROXIMATELY FROM STA. 13+00.00 TO STA. 16+19.91 CALLE DE VIDA SHALL BE HIGHLINED BY CITY FORCES PRIOR TO CONSTRUCTION. CITY FORCES TO FURNISH HIGHLINING MATERIALS AND PERFORM TRANSFER OF SERVICES.



AC WATER AND SEWER GROUP 1056 CALLE DE VIDA SEO RUEDA DR TO RUEDA DR			
CITY OF SAN DIEGO, CALIFORNIA ENGINEERING & CAPITAL PROJECTS DEPARTMENT SHEET 28 OF 72 SHEETS		WATER WBS B-18181 SEWER WBS B-18182	ELHAM LOTFI PROJECT MANAGER
APPROVED: <i>Sheila Bose</i> FOR CITY ENGINEER SHEILA BOSE PRINT: DGE NAME	DATE: 01/21/2021 DATE: 1/21/21 RCE#: C59403	DANIEL YELSITS PROJECT ENGINEER	238-1743 CCS27 COORDINATE
DESCRIPTION: <i>C</i>	BY: JT	APPROVED: <i>Sheila Bose</i>	DATE FILMED: 4-14-21
CONTRACTOR INSPECTOR		DATE STARTED DATE COMPLETED	
		6304407-1878444 CCS83 COORDINATE	
		41288-28-D	

C-26

Changed 16" Gate Valve to 16" Butterfly Valve

Addendum C

Bid Results

Bidder Details

Vendor Name TC Construction Company, Inc.
Address 10540 Prospect Avenue Austin Cameron 619-726-7023
Santee, California 92071
United States
Respondee Elan Schier
Respondee Title Chief Estimator
Phone 619-820-7811
Email eschier@tcincsd.com
Vendor Type CAU, MALE, PQUAL, CADIR
License # 402459
CADIR 1000003132

Bid Detail

Bid Format Electronic
Submitted 04/26/2021 1:50 PM (PDT)
Delivery Method
Bid Responsive
Bid Status Submitted
Confirmation # 246131
Ranking 0

Respondee Comment

Buyer Comment

Attachments

File Title	File Name	File Type
Bid Bond 1056.pdf	Bid Bond 1056.pdf	Bid Bond
Debarment Prime 1056.pdf	Debarment Prime 1056.pdf	Debarment and Suspension Cert for Prime
Contractors Experience and Past Project Documentation - NuLine.pdf	Contractors Experience and Past Project Documentation - NuLine.pdf	Contractor's Experience and Past Project Documentation
Debarment Subcontractors 1056.pdf	Debarment Subcontractors 1056.pdf	Debarment and Suspension Cert for Subs
Subcontractor Add Ded 1056.pdf	Subcontractor Add Ded 1056.pdf	Subcontractor Listing for Alternate Items
Contractors Certification 1056.pdf	Contractors Certification 1056.pdf	Contractor's Certification of Pending Actions
Mandatory Disclosure 1056.pdf	Mandatory Disclosure 1056.pdf	Mandatory Disclosure of Business Interests
MFR Authorized Installer Cert - NuLine.pdf	MFR Authorized Installer Cert - NuLine.pdf	Manufacturer Authorized Installer Cert

Subcontractors

Showing 13 Subcontractors

Name & Address	Desc	License Num	CADIR	Amount	Type
Casper Company 3825 Bancroft Dr. #105 Spring Valley, California 91977	Asbestos Pipe Abatement Constructor	478960	1000002917	\$110,955.00	
Jerusalem Construction, Inc. DBA M 1827 Cleveland Ave National City, California 91950	Concrete Flatwork Constructor ELBE	1009541	1000033057	\$712,232.00	ELBE, PQUAL, CADIR
Loveless Linton, Inc. Archaeological 1421 W. Lewis St San Diego, California 92103	Archeo/Paleo Consultant SLBE	N/A	1000047263	\$52,635.50	NAT, MALE, DBE, MBE, CADIR, SDB
MD Rubberized Crackfill, LLC 32 Rancho Circlly Lake Forest, California 92630	Crack Seal Constructor	986686	1000006438	\$36,261.12	
McGrath Consulting PO Box 2488 El Cajon, California 92021	WPCP Consultant ELBE	000000	1000037165	\$575.00	
National Electric Works, Inc. 4440 Rainer Ave., Ste. 101 San Diego, California 92120	Electrical & Instrumentation / Control Constructor	591191	1000003595	\$80,747.00	NAT, MALE, MBE, CADIR, PQUAL
Nu-Line Technologies, LLC 102 Second Street, Suite B Encinitas, California 92024	Sewer Rehab Constructor	997520	1000003808	\$45,019.00	FEM, MBE, CADIR, WBE, PQUAL
Payneco Specialties Inc 120 North Second Ave Chula Vista, California 91910	Striping Constructor SLBE	298637	1000003515	\$73,531.80	CAU, FEM, DBE, CADIR, SDB, WBE, WOSB
ROY ALLAN SLURRY SEAL, INC 11922 BLOOMFIELD AVE SANTA FE SPRINGS, California 906	Slurry Seal Constructor	372798	1000001156	\$456,885.17	PQUAL, CADIR
Soclaris Contracting 7437 Lowell Ct. La Mesa, California 91942	Hazardous Materials Constructor SLBE	793838	1000011964	\$55,000.00	CAU, MALE, DVBE, CADIR, SDVSB
Southwest Traffic Signal Service, Inc 9201 Isaac St Suite A Santee, California 92071	Traffic Loops/Push Buttons/Pedestrian Barricades Constructor SLBE	451115	1000004265	\$19,250.00	DVBE
Vic Salazar Communications 5205 Kearny Villa Road Suite 107 San Diego, California 92123	Community Liaison Consultant ELBE	00000	1000364796	\$30,000.00	LAT, MALE, ELBE, DBE, MBE, CADIR
Western Gardens Landscaping, Inc. 4616 Pannonia Rd. Carlsbad, California 92008	Landscaping Constructor SLBE	662550	1000004289	\$43,000.00	SLBE, CADIR

Line Items

Discount Terms No Discount

Item #	Item Code	Type	Item Description	UOM	QTY	Unit Price	Line Total	Response	Comment
Main Bid							\$8,291,822.62		
1	524126		Bonds (Payment and Performance)	LS	1	\$61,000.00	\$61,000.00	Yes	
2	237110		Sewage Bypass and Pumping Plan (Diversion Plan)	LS	1	\$3,500.00	\$3,500.00	Yes	
3	541820		Exclusive Community Liaison Services	LS	1	\$35,000.00	\$35,000.00	Yes	
4	238910		Preparation of Waste Management Form	LS	1	\$2,500.00	\$2,500.00	Yes	
5	238990		Preparation of Hazardous Waste Management Plan and Reporting	LS	1	\$8,700.00	\$8,700.00	Yes	
6	541690		Monitoring of Contaminated Soil	HR	300	\$120.00	\$36,000.00	Yes	
7	238990		Testing, Sampling, Site Storage, and Handling of Petroleum Contaminated Soil	TON	100	\$80.00	\$8,000.00	Yes	
8	238990		Loading, Transportation, and Disposal of Petroleum Contaminated Soil	TON	100	\$115.00	\$11,500.00	Yes	
9	562910		Hazardous Waste Operations and Emergency Response (HAZWOPER) Certification (EOC Type I)	AL	1	\$4,280.00	\$4,280.00	Yes	
10	541690		Archaeological and Native American Monitoring Program	LF	9915	\$5.00	\$49,575.00	Yes	
11	541690		Suspension of Work - Resources	DAY	10	\$400.00	\$4,000.00	Yes	
12	541690		Archaeological and Native American Mitigation and Curation (EOC Type I)	AL	1	\$10,000.00	\$10,000.00	Yes	
13	237110		Mobilization	LS	1	\$205,000.00	\$205,000.00	Yes	
14			Field Orders (EOC Type II)	AL	1	\$300,000.00	\$300,000.00	Yes	
15	237310		Excavate and Export (Unclassified)	CY	9000	\$26.00	\$234,000.00	Yes	
16	237310		Asphalt Pavement Repair	TON	180	\$320.00	\$57,600.00	Yes	
17	237310		Subgrade Imported Backfill	TON	100	\$29.00	\$2,900.00	Yes	
18	237310		Class 2 Aggregate Base	TON	100	\$185.00	\$18,500.00	Yes	
19	237310		Rubber Polymer Modified Slurry (RPMS) Type I	SF	287284	\$0.31	\$89,058.04	Yes	
20	237310		Rubber Polymer Modified Slurry (RPMS) Type II	SF	644318	\$0.36	\$231,954.48	Yes	
21	237310		Rubber Polymer Modified Slurry (RPMS) Type III	SF	357034	\$0.38	\$135,672.92	Yes	
22	237310		Rubber Polymer Modified Slurry (RPMS) Type I (Bike Lane)	SF	25659	\$0.52	\$13,342.68	Yes	
23	237310		Pavement Restoration Adjacent to Trench	SF	17023	\$10.00	\$170,230.00	Yes	
24	237310		Crack Seal	LB	852	\$43.00	\$36,636.00	Yes	
25	237310		Remove and Replace Existing Sidewalk	SF	3200	\$10.00	\$32,000.00	Yes	
26	237310		Additional Curb and Gutter Removal and Replacement	LF	225	\$75.00	\$16,875.00	Yes	
27	237310		Additional Sidewalk Removal and Replacement	SF	900	\$9.00	\$8,100.00	Yes	
28	237310		Median Curb and Gutter (Type B-2)	LF	225	\$57.00	\$12,825.00	Yes	
29	237310		Cross Gutter	SF	20563	\$18.00	\$370,134.00	Yes	
30	237310		Curb Ramp (Type A) with Stainless Steel Detectable Warning Tiles	EA	23	\$4,300.00	\$98,900.00	Yes	
31	237310		Curb Ramp (Type B) with Stainless Steel Detectable Warning Tiles	EA	4	\$4,200.00	\$16,800.00	Yes	
32	237310		Curb Ramp (Type C1) with Stainless Steel Detectable Warning Tiles	EA	24	\$4,300.00	\$103,200.00	Yes	
33	237310		Curb Ramp (Type C2) with Stainless Steel Detectable Warning Tiles	EA	37	\$4,300.00	\$159,100.00	Yes	
34	237310		Curb Ramp Modified (Type A, Per 41288-49-D) with Stainless Steel Detectable Warning Tiles	EA	2	\$4,200.00	\$8,400.00	Yes	
35	237310		Curb Ramp Modified (Type B, Per 41288-50-D) with Stainless Steel Detectable Warning Tiles	EA	2	\$4,200.00	\$8,400.00	Yes	
36	237310		Curb Ramp Modified (Type C-1, Per 41288-51-D) with Stainless Steel Detectable Warning Tiles	EA	1	\$4,300.00	\$4,300.00	Yes	
37	237310		Curb Ramp Modified (Type C-1, Per 41288-52-D) with Stainless Steel Detectable Warning Tiles	EA	2	\$4,100.00	\$8,200.00	Yes	
38	237110		Phased Paving	EA	13	\$6,800.00	\$88,400.00	Yes	
39	237110		Abandon and Fill Existing Water Main Outside of the Trench Limit	LF	9349	\$10.00	\$93,490.00	Yes	
40	237110		Handling and Disposal of Non-friable Asbestos Material	LF	7094	\$18.00	\$127,692.00	Yes	
41	237110		4-Inch or Larger Meter for Construction Flushing (EOC Type I)	AL	1	\$2,500.00	\$2,500.00	Yes	
42	237110		Additional Bedding	CY	480	\$68.00	\$32,640.00	Yes	
43	237110		Water Main (16 Inch)	LF	85	\$380.00	\$32,300.00	Yes	
44	237110		Water Main (12 Inch)	LF	17020	\$138.00	\$2,348,760.00	Yes	
45	237110		Water Main (12 Inch, Class 305)	LF	42	\$350.00	\$14,700.00	Yes	
46	237110		Water Main (8 Inch)	LF	849	\$135.00	\$114,615.00	Yes	
47	237110		Water Main (8 Inch, Class 305)	LF	603	\$152.00	\$91,656.00	Yes	
48	237110		Sewer Main (8 Inch)	LF	311	\$142.00	\$44,162.00	Yes	
49	237110		Gate Valve (8 Inch)	EA	24	\$2,100.00	\$50,400.00	Yes	

Item #	Item Code	Type	Item Description	UOM	QTY	Unit Price	Line Total	Response	Comment
50	237110		Gate Valve (12 Inch)	EA	45	\$3,500.00	\$157,500.00	Yes	
51	237110		Butterfly Valve (16-in, Class 150B)	EA	2	\$5,700.00	\$11,400.00	Yes	
52	237110		Fire Hydrant Assembly and Marker (6 Inch)	EA	39	\$11,000.00	\$429,000.00	Yes	
53	237110		Fire Hydrant Assembly (3-Port) and Marker (6 Inch)	EA	7	\$11,500.00	\$80,500.00	Yes	
54	237110		Fire Service Connection and Assembly (6 Inch)	EA	4	\$17,000.00	\$68,000.00	Yes	
55	237110		Fire Service Connection and Assembly (8 Inch)	EA	2	\$23,000.00	\$46,000.00	Yes	
56	237110		Water Service (2 Inch)	EA	26	\$6,900.00	\$179,400.00	Yes	
57	237110		Water Service (1 Inch)	EA	40	\$4,600.00	\$184,000.00	Yes	
58	237110		Blow-Off Valve Assembly (2 Inch)	EA	3	\$7,400.00	\$22,200.00	Yes	
59	237110		Air and Vacuum (Air Release) Valve Assembly (1 Inch)	EA	4	\$6,000.00	\$24,000.00	Yes	
60	237310		Temporary Resurfacing	TON	810	\$116.00	\$93,960.00	Yes	
61	237110		Imported Trench Backfill	TON	9200	\$14.00	\$128,800.00	Yes	
62	237110		Manhole (4 Ft x 3 Ft)	EA	2	\$6,800.00	\$13,600.00	Yes	
63	237110		Cleaning and Video Inspection of Existing Pipelines	LF	1028	\$3.00	\$3,084.00	Yes	
64	237110		Video Inspection of Pipelines for Acceptance	LF	1339	\$1.50	\$2,008.50	Yes	
65	237310		Removal and Replacement of Existing Paint Striping	LS	1	\$38,000.00	\$38,000.00	Yes	
66	237310		Continental Crosswalks	SF	14625	\$3.00	\$43,875.00	Yes	
67	238990		Video Recording of Existing Conditions	LS	1	\$3,600.00	\$3,600.00	Yes	
68	238910		Tree Removal and Disposal (24-Inch Trunk Diameter and Greater)	EA	1	\$2,500.00	\$2,500.00	Yes	
69	237110		Potholing Existing Utilities Not Shown on Plans (Depth Up to 7 feet)	EA	48	\$1,200.00	\$57,600.00	Yes	
70	237310		Traffic Signal Loop and Appurtenance Replacement (Modified Type E)	EA	16	\$550.00	\$8,800.00	Yes	
71	237110		Point Repair for Existing Sewer Main (8 Inch)	EA	5	\$6,900.00	\$34,500.00	Yes	
72	237110		Point Repair for Existing Sewer Main (12 Inch)	EA	1	\$6,100.00	\$6,100.00	Yes	
73	237110		Additional Point Repair for Existing Sewer Main (8 Inch)	LF	32	\$356.00	\$11,392.00	Yes	
74	237110		Additional Point Repair for Existing Sewer Main (12 Inch)	LF	16	\$380.00	\$6,080.00	Yes	
75	237110		Rehabilitate Sewer Main (8 Inch)	LF	761	\$35.00	\$26,635.00	Yes	
76	237110		Rehabilitate Sewer Main (12 Inch)	LF	270	\$46.00	\$12,420.00	Yes	
77	237110		Service Lateral Connection	EA	1	\$4,200.00	\$4,200.00	Yes	
78	237110		Rehabilitate Existing Manhole	EA	7	\$2,300.00	\$16,100.00	Yes	
79	237110		Service Lateral Rehabilitation with Cleanout Greater Than 7 Ft in Depth	EA	1	\$8,500.00	\$8,500.00	Yes	
80	541330		Traffic Control and Working Drawings	LS	1	\$176,000.00	\$176,000.00	Yes	
81	237310		Pedestrian Barricade (Type A)	EA	1	\$690.00	\$690.00	Yes	
82	238210		Pedestrian Push Button	EA	14	\$870.00	\$12,180.00	Yes	
83	561730		Tree (24 Inch Box)	EA	2	\$10,000.00	\$20,000.00	Yes	
84	237110		36 Month Long Term Plant Establishment	LS	1	\$29,000.00	\$29,000.00	Yes	
85	237110		Contractor Furnished Materials for City Forces Connection, Cut and Plug, and Cut-in Work for Mains 16-Inch and Larger	LS	1	\$43,000.00	\$43,000.00	Yes	
86	237110		Connections to The Existing System by Contractor (16 Inch)	EA	3	\$27,000.00	\$81,000.00	Yes	
87	237110		Pavement Restoration for Final Connection	SF	2400	\$17.00	\$40,800.00	Yes	
88	541330		WPCP Development	LS	1	\$2,500.00	\$2,500.00	Yes	
89	237310		WPCP Implementation	LS	1	\$120,000.00	\$120,000.00	Yes	
90	237110		Removal of Rueda Dr Pressure Reducing Station	LS	1	\$10,000.00	\$10,000.00	Yes	
91	237110		Removal of Tambor Rd Pressure Reducing Station	LS	1	\$3,400.00	\$3,400.00	Yes	
92	237110		Removal of Pavo Real Dr Pressure Reducing Station	LS	1	\$4,000.00	\$4,000.00	Yes	
93	237110		Installation of Rueda Dr Pressure Reducing Station	LS	1	\$73,000.00	\$73,000.00	Yes	
94	237110		Installation of Tambor Rd Pressure Reducing Station	LS	1	\$200,000.00	\$200,000.00	Yes	
95	237110		Installation of Pavo Real Dr Pressure Reducing Station	LS	1	\$69,000.00	\$69,000.00	Yes	
96	237110		Instrumentation & Control for Tambor Rd Pressure Reducing Station	LS	1	\$66,000.00	\$66,000.00	Yes	
Additive Alternate A							\$1,416,530.00		
97	237310		Asphalt Concrete Overlay	TON	10275	\$105.00	\$1,078,875.00	Yes	
98	237310		Cold Mill AC Pavement (3 Inch)	SF	560250	\$0.50	\$280,125.00	Yes	

Item #	Item Code	Type	Item Description	UOM	QTY	Unit Price	Line Total	Response	Comment
99	237310		Excavate and Export (Unclassified)	CY	183	\$35.00	\$6,405.00	Yes	
100	237310		Class 2 Aggregate Base	TON	321	\$125.00	\$40,125.00	Yes	
101	237310		Traffic Signal Loop and Appurtenance Replacement (Type E)	EA	22	\$500.00	\$11,000.00	Yes	
Additive Alternate B							\$29,000.00		
102	237310		Tierrasanta Blvd Striping Improvement Sheets 42147-2-D through 42147-14-D	LS	1	\$29,000.00	\$29,000.00	Yes	
Additive Alternate C							\$35,000.00		
103	237310		Colina Dorada Dr Striping Improvement Sheets 42147-15-D through 42147-26-D	LS	1	\$35,000.00	\$35,000.00	Yes	
Additive Alternate D							\$33,000.00		
104	237310		Tierrasanta Blvd (Alternate) Striping Improvement Sheets 42147-27-D through 42147-39-D	LS	1	\$33,000.00	\$33,000.00	Yes	
Additive Alternate E							\$127,983.70		
105	237110		High-lining Installation by the Contractor	LF	15146	\$5.00	\$75,730.00	Yes	
106	237110		High-lining Removed by the Contractor	LF	15146	\$3.00	\$45,438.00	Yes	
107	237110		Furnished Materials for Contractor High-line Work	LF	15146	\$0.45	\$6,815.70	Yes	
Deductive Alternate F							\$-288,403.84		
108	237310		Crack Seal ((Deductive) ((Deductive) Enter Unit Price As Negative (-))	LB	472	\$-23.00	\$-10,856.00	Yes	
109	237310		Rubber Polymer Modified Slurry (RPMS) Type II ((Deductive) Enter Unit Price As Negative (-))	SF	357034	\$-0.36	\$-128,532.24	Yes	
110	237310		Rubber Polymer Modified Slurry (RPMS) Type III ((Deductive) Enter Unit Price As Negative (-))	SF	357034	\$-0.38	\$-135,672.92	Yes	
111	237310		Rubber Polymer Modified Slurry (RPMS) Type I (Bike Lane) ((Deductive) Enter Unit Price As Negative (-))	SF	25659	\$-0.52	\$-13,342.68	Yes	
Additive Alternate G							\$415,300.00		
112	237110		Connections to The Existing System by Contractor (4 Inch through 12 Inch)	EA	34	\$8,200.00	\$278,800.00	Yes	
113	237110		Cut and Plug by Contractor	EA	35	\$3,900.00	\$136,500.00	Yes	

Line Item Subtotals

Section Title	Line Total
Main Bid	\$8,291,822.62
Additive Alternate A	\$1,416,530.00
Additive Alternate B	\$29,000.00
Additive Alternate C	\$35,000.00
Additive Alternate D	\$33,000.00
Additive Alternate E	\$127,983.70
Deductive Alternate F	\$-288,403.84
Additive Alternate G	\$415,300.00
Grand Total	\$10,060,232.48

Line Totals (Unit Price * Quantity)								
Item Num	Section	Item Code	Description	Reference	Unit of Measure	Quantity	TC Construction Company, Inc. - Unit Price	TC Construction Company, Inc. - Line Total
1	Main Bid	524126	Bonds (Payment and Performance)	1-7.2.1	LS	1	\$61,000.00	\$61,000.00
2	Main Bid	237110	Sewage Bypass and Pumping Plan (Diversion Plan)	3-12.5.4	LS	1	\$3,500.00	\$3,500.00
3	Main Bid	541820	Exclusive Community Liaison Services	5-10.4	LS	1	\$35,000.00	\$35,000.00
4	Main Bid	238910	Preparation of Waste Management Form	5-14.9	LS	1	\$2,500.00	\$2,500.00
5	Main Bid	238990	Preparation of Hazardous Waste Management Plan and Reporting	5-15.17	LS	1	\$8,700.00	\$8,700.00
6	Main Bid	541690	Monitoring of Contaminated Soil	5-15.17	HR	300	\$120.00	\$36,000.00
7	Main Bid	238990	Testing, Sampling, Site Storage, and Handling of Petroleum Contaminated Soil	5-15.17	TON	100	\$80.00	\$8,000.00

8	Main Bid	238990	Loading, Transportation, and Disposal of Petroleum Contaminated Soil	5-15.17	TON	100	\$115.00	\$11,500.00
9	Main Bid	562910	Hazardous Waste Operations and Emergency Response (HAZWOPER) Certification (EOC Type I)	5-15.17	AL	1	\$4,280.00	\$4,280.00
10	Main Bid	541690	Archaeological and Native American Monitoring Program	6-6.2.1.1	LF	9915	\$5.00	\$49,575.00
11	Main Bid	541690	Suspension of Work - Resources	6-6.2.1.1 OR 6-6.2.2.1	DAY	10	\$400.00	\$4,000.00
12	Main Bid	541690	Archaeological and Native American Mitigation and Curation (EOC Type I)	6-6.2.3.1	AL	1	\$10,000.00	\$10,000.00
13	Main Bid	237110	Mobilization	7-3.4.1	LS	1	\$205,000.00	\$205,000.00
14	Main Bid		Field Orders (EOC Type II)	7-3.9	AL	1	\$300,000.00	\$300,000.00
15	Main Bid	237310	Excavate and Export (Unclassified)	300-2.9	CY	9000	\$26.00	\$234,000.00
16	Main Bid	237310	Asphalt Pavement Repair	301-1.7	TON	180	\$320.00	\$57,600.00

17	Main Bid	237310	Subgrade Imported Backfill	301-1.7	TON	100	\$29.00	\$2,900.00
18	Main Bid	237310	Class 2 Aggregate Base	301-2.4	TON	100	\$185.00	\$18,500.00
19	Main Bid	237310	Rubber Polymer Modified Slurry (RPMS) Type I	302-4.12.4	SF	287284	\$0.31	\$89,058.04
20	Main Bid	237310	Rubber Polymer Modified Slurry (RPMS) Type II	302-4.12.4	SF	644318	\$0.36	\$231,954.48
21	Main Bid	237310	Rubber Polymer Modified Slurry (RPMS) Type III	302-4.12.4	SF	357034	\$0.38	\$135,672.92
22	Main Bid	237310	Rubber Polymer Modified Slurry (RPMS) Type I (Bike Lane)	302-4.12.4	SF	25659	\$0.52	\$13,342.68
23	Main Bid	237310	Pavement Restoration Adjacent to Trench	302-5.2.1	SF	17023	\$10.00	\$170,230.00
24	Main Bid	237310	Crack Seal	302-15.5	LB	852	\$43.00	\$36,636.00
25	Main Bid	237310	Remove and Replace Existing Sidewalk	303-5.9	SF	3200	\$10.00	\$32,000.00
26	Main Bid	237310	Additional Curb and Gutter Removal and Replacement	303-5.9	LF	225	\$75.00	\$16,875.00
27	Main Bid	237310	Additional Sidewalk Removal and Replacement	303-5.9	SF	900	\$9.00	\$8,100.00

28	Main Bid	237310	Median Curb and Gutter (Type B-2)	303-5.9	LF	225	\$57.00	\$12,825.00
29	Main Bid	237310	Cross Gutter	303-5.9	SF	20563	\$18.00	\$370,134.00
30	Main Bid	237310	Curb Ramp (Type A) with Stainless Steel Detectable Warning Tiles	303-5.10.2	EA	23	\$4,300.00	\$98,900.00
31	Main Bid	237310	Curb Ramp (Type B) with Stainless Steel Detectable Warning Tiles	303-5.10.2	EA	4	\$4,200.00	\$16,800.00
32	Main Bid	237310	Curb Ramp (Type C1) with Stainless Steel Detectable Warning Tiles	303-5.10.2	EA	24	\$4,300.00	\$103,200.00
33	Main Bid	237310	Curb Ramp (Type C2) with Stainless Steel Detectable Warning Tiles	303-5.10.2	EA	37	\$4,300.00	\$159,100.00
34	Main Bid	237310	Curb Ramp Modified (Type A, Per 41288-49-D) with Stainless Steel Detectable Warning Tiles	303-5.10.2	EA	2	\$4,200.00	\$8,400.00
35	Main Bid	237310	Curb Ramp Modified (Type B, Per 41288-50-D) with Stainless Steel Detectable Warning Tiles	303-5.10.2	EA	2	\$4,200.00	\$8,400.00

36	Main Bid	237310	Curb Ramp Modified (Type C-1, Per 41288-51-D) with Stainless Steel Detectable Warning Tiles	303-5.10.2	EA	1	\$4,300.00	\$4,300.00
37	Main Bid	237310	Curb Ramp Modified (Type C-1, Per 41288-52-D) with Stainless Steel Detectable Warning Tiles	303-5.10.2	EA	2	\$4,100.00	\$8,200.00
38	Main Bid	237110	Phased Paving	306-1.2.1	EA	13	\$6,800.00	\$88,400.00
39	Main Bid	237110	Abandon and Fill Existing Water Main Outside of the Trench Limit	306-3.3.4	LF	9349	\$10.00	\$93,490.00
40	Main Bid	237110	Handling and Disposal of Non-friable Asbestos Material	306-3.3.5.5	LF	7094	\$18.00	\$127,692.00
41	Main Bid	237110	4-Inch or Larger Meter for Construction Flushing (EOC Type I)	306-8.9.4.5	AL	1	\$2,500.00	\$2,500.00
42	Main Bid	237110	Additional Bedding	306-15.1	CY	480	\$68.00	\$32,640.00
43	Main Bid	237110	Water Main (16 Inch)	306-15.1	LF	85	\$380.00	\$32,300.00
44	Main Bid	237110	Water Main (12 Inch)	306-15.1	LF	17020	\$138.00	\$2,348,760.00
45	Main Bid	237110	Water Main (12 Inch, Class 305)	306-15.1	LF	42	\$350.00	\$14,700.00

46	Main Bid	237110	Water Main (8 Inch)	306-15.1	LF	849	\$135.00	\$114,615.00
47	Main Bid	237110	Water Main (8 Inch, Class 305)	306-15.1	LF	603	\$152.00	\$91,656.00
48	Main Bid	237110	Sewer Main (8 Inch)	306-15.1	LF	311	\$142.00	\$44,162.00
49	Main Bid	237110	Gate Valve (8 Inch)	306-15.5	EA	24	\$2,100.00	\$50,400.00
50	Main Bid	237110	Gate Valve (12 Inch)	306-15.5	EA	45	\$3,500.00	\$157,500.00
51	Main Bid	237110	Butterfly Valve (16- in, Class 150B)	306-15.5	EA	2	\$5,700.00	\$11,400.00
52	Main Bid	237110	Fire Hydrant Assembly and Marker (6 Inch)	306-15.6	EA	39	\$11,000.00	\$429,000.00
53	Main Bid	237110	Fire Hydrant Assembly (3-Port) and Marker (6 Inch)	306-15.6	EA	7	\$11,500.00	\$80,500.00
54	Main Bid	237110	Fire Service Connection and Assembly (6 Inch)	306-15.6	EA	4	\$17,000.00	\$68,000.00
55	Main Bid	237110	Fire Service Connection and Assembly (8 Inch)	306-15.6	EA	2	\$23,000.00	\$46,000.00
56	Main Bid	237110	Water Service (2 Inch)	306-15.8	EA	26	\$6,900.00	\$179,400.00
57	Main Bid	237110	Water Service (1 Inch)	306-15.8	EA	40	\$4,600.00	\$184,000.00
58	Main Bid	237110	Blow-Off Valve Assembly (2 Inch)	306-15.8	EA	3	\$7,400.00	\$22,200.00

59	Main Bid	237110	Air and Vacuum (Air Release) Valve Assembly (1 Inch)	306-15.8	EA	4	\$6,000.00	\$24,000.00
60	Main Bid	237310	Temporary Resurfacing	306-15.9	TON	810	\$116.00	\$93,960.00
61	Main Bid	237110	Imported Trench Backfill	306-15.11	TON	9200	\$14.00	\$128,800.00
62	Main Bid	237110	Manhole (4 Ft x 3 Ft)	306-16.6	EA	2	\$6,800.00	\$13,600.00
63	Main Bid	237110	Cleaning and Video Inspection of Existing Pipelines	306-18.7	LF	1028	\$3.00	\$3,084.00
64	Main Bid	237110	Video Inspection of Pipelines for Acceptance	306-18.7	LF	1339	\$1.50	\$2,008.50
65	Main Bid	237310	Removal and Replacement of Existing Paint Striping	314-4.3.7	LS	1	\$38,000.00	\$38,000.00
66	Main Bid	237310	Continental Crosswalks	314-4.4.6	SF	14625	\$3.00	\$43,875.00
67	Main Bid	238990	Video Recording of Existing Conditions	400-1.1.1	LS	1	\$3,600.00	\$3,600.00
68	Main Bid	238910	Tree Removal and Disposal (24-Inch Trunk Diameter and Greater)	401-7	EA	1	\$2,500.00	\$2,500.00

69	Main Bid	237110	Potholing Existing Utilities Not Shown on Plans (Depth Up to 7 feet)	402-8	EA	48	\$1,200.00	\$57,600.00
70	Main Bid	237310	Traffic Signal Loop and Appurtenance Replacement (Modified Type E)	404-12	EA	16	\$550.00	\$8,800.00
71	Main Bid	237110	Point Repair for Existing Sewer Main (8 Inch)	500-4.7	EA	5	\$6,900.00	\$34,500.00
72	Main Bid	237110	Point Repair for Existing Sewer Main (12 Inch)	500-4.7	EA	1	\$6,100.00	\$6,100.00
73	Main Bid	237110	Additional Point Repair for Existing Sewer Main (8 Inch)	500-4.7	LF	32	\$356.00	\$11,392.00
74	Main Bid	237110	Additional Point Repair for Existing Sewer Main (12 Inch)	500-4.7	LF	16	\$380.00	\$6,080.00
75	Main Bid	237110	Rehabilitate Sewer Main (8 Inch)	500-12	LF	761	\$35.00	\$26,635.00
76	Main Bid	237110	Rehabilitate Sewer Main (12 Inch)	500-12	LF	270	\$46.00	\$12,420.00
77	Main Bid	237110	Service Lateral Connection	501-9	EA	1	\$4,200.00	\$4,200.00

78	Main Bid	237110	Rehabilitate Existing Manhole	502-8	EA	7	\$2,300.00	\$16,100.00
79	Main Bid	237110	Service Lateral Rehabilitation with Cleanout Greater Than 7 Ft in Depth	503-6	EA	1	\$8,500.00	\$8,500.00
80	Main Bid	541330	Traffic Control and Working Drawings	601-7	LS	1	\$176,000.00	\$176,000.00
81	Main Bid	237310	Pedestrian Barricade (Type A)	701-2	EA	1	\$690.00	\$690.00
82	Main Bid	238210	Pedestrian Push Button	7-3.1	EA	14	\$870.00	\$12,180.00
83	Main Bid	561730	Tree (24 Inch Box)	801-9	EA	2	\$10,000.00	\$20,000.00
84	Main Bid	237110	36 Month Long Term Plant Establishment	7-3.1	LS	1	\$29,000.00	\$29,000.00
85	Main Bid	237110	Contractor Furnished Materials for City Forces Connection, Cut and Plug, and Cut-in Work for Mains 16-Inch and Larger	900-2.3	LS	1	\$43,000.00	\$43,000.00
86	Main Bid	237110	Connections to The Existing System by Contractor (16 Inch)	901-2.5	EA	3	\$27,000.00	\$81,000.00

87	Main Bid	237110	Pavement Restoration for Final Connection	901-2.5	SF	2400	\$17.00	\$40,800.00
88	Main Bid	541330	WPCP Development	1001-4.2	LS	1	\$2,500.00	\$2,500.00
89	Main Bid	237310	WPCP Implementation	1001-4.2	LS	1	\$120,000.00	\$120,000.00
90	Main Bid	237110	Removal of Rueda Dr Pressure Reducing Station	7-3.1	LS	1	\$10,000.00	\$10,000.00
91	Main Bid	237110	Removal of Tambor Rd Pressure Reducing Station	7-3.1	LS	1	\$3,400.00	\$3,400.00
92	Main Bid	237110	Removal of Pavo Real Dr Pressure Reducing Station	7-3.1	LS	1	\$4,000.00	\$4,000.00
93	Main Bid	237110	Installation of Rueda Dr Pressure Reducing Station	7-3.1	LS	1	\$73,000.00	\$73,000.00
94	Main Bid	237110	Installation of Tambor Rd Pressure Reducing Station	7-3.1	LS	1	\$200,000.00	\$200,000.00
95	Main Bid	237110	Installation of Pavo Real Dr Pressure Reducing Station	7-3.1	LS	1	\$69,000.00	\$69,000.00

96	Main Bid	237110	Instrumentation & Control for Tambor Rd Pressure Reducing Station	7-3.1	LS	1	\$66,000.00	\$66,000.00
							Subtotal	\$8,291,822.62
97	Additive Alternate A	237310	Asphalt Concrete Overlay	302-5.9	TON	10275	\$105.00	\$1,078,875.00
98	Additive Alternate A	237310	Cold Mill AC Pavement (3 Inch)	404-12	SF	560250	\$0.50	\$280,125.00
99	Additive Alternate A	237310	Excavate and Export (Unclassified)	300-2.9	CY	183	\$35.00	\$6,405.00
100	Additive Alternate A	237310	Class 2 Aggregate Base	301-2.4	TON	321	\$125.00	\$40,125.00
101	Additive Alternate A	237310	Traffic Signal Loop and Appurtenance Replacement (Type E)	404-12	EA	22	\$500.00	\$11,000.00
							Subtotal	\$1,416,530.00
102	Additive Alternate B	237310	Tierrasanta Blvd Striping Improvement Sheets 42147-2-D through 42147-14-D	7-3.1	LS	1	\$29,000.00	\$29,000.00
							Subtotal	\$29,000.00

103	Additive Alternate C	237310	Colina Dorada Dr Striping Improvement Sheets 42147-15-D through 42147-26-D	7-3.1	LS	1	\$35,000.00	\$35,000.00
							Subtotal	\$35,000.00
104	Additive Alternate D	237310	Tierrasanta Blvd (Alternate) Striping Improvement Sheets 42147-27-D through 42147-39-D	7-3.1	LS	1	\$33,000.00	\$33,000.00
							Subtotal	\$33,000.00
105	Additive Alternate E	237110	High-lining Installation by the Contractor	901-1.3	LF	15146	\$5.00	\$75,730.00
106	Additive Alternate E	237110	High-lining Removed by the Contractor	901-1.3	LF	15146	\$3.00	\$45,438.00
107	Additive Alternate E	237110	Furnished Materials for Contractor High-line Work	900-1.9	LF	15146	\$0.45	\$6,815.70
							Subtotal	\$127,983.70
108	Deductive Alternate F	237310	Crack Seal ((Deductive) ((Deductive) Enter Unit Price As Negative (-))	302-15.5	LB	472	(\$23.00)	(\$10,856.00)

109	Deductive Alternate F	237310	Rubber Polymer Modified Slurry (RPMS) Type II ((Deductive) Enter Unit Price As Negative (-))	302-4.12.4	SF	357034	(\$0.36)	(\$128,532.24)
110	Deductive Alternate F	237310	Rubber Polymer Modified Slurry (RPMS) Type III ((Deductive) Enter Unit Price As Negative (-))	302-4.12.4	SF	357034	(\$0.38)	(\$135,672.92)
111	Deductive Alternate F	237310	Rubber Polymer Modified Slurry (RPMS) Type I (Bike Lane) ((Deductive) Enter Unit Price As Negative (-))	302-4.12.4	SF	25659	(\$0.52)	(\$13,342.68)
							Subtotal	(\$288,403.84)
112	Additive Alternate G	237110	Connections to The Existing System by Contractor (4 Inch through 12 Inch)	901-2.5	EA	34	\$8,200.00	\$278,800.00
113	Additive Alternate G	237110	Cut and Plug by Contractor	901-2.5	EA	35	\$3,900.00	\$136,500.00
							Subtotal	\$415,300.00
							Total	\$10,060,232.48