

# City of San Diego

**CONTRACTOR'S NAME:** W. A. Rasic Construction Company, Inc.  
**ADDRESS:** 4150 Long Beach Blvd., Long Beach, CA 90807  
**TELEPHONE NO.:** 562-928-6111 **FAX NO.:**  
**CITY CONTACT:** Rosa I. Riego, Senior Contract Specialist, Email: [RRiego@sandiego.gov](mailto:RRiego@sandiego.gov)  
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M. Kargar / M. Jirjis Nakasha / N. Alkuree

## BIDDING DOCUMENTS



FOR

## MONTEZUMA/MID-CITY PIPELINE PHASE 2 AND 70TH ALVARADO TO SARANAC SIDEWALK

BID NO.: K-24-1821-DBB-3-D-C  
SAP NO. (WBS/IO/CC): S-11026, B-17065, B-24001  
CLIENT DEPARTMENT: 2013, 2116  
COUNCIL DISTRICT: 7, 9  
PROJECT TYPE: KA, IK

**THIS CONTRACT WILL BE SUBJECT TO THE FOLLOWING:**

- THE CITY'S SUBCONTRACTING PARTICIPATION REQUIREMENTS FOR SLBE PROGRAM
- ELIGIBLE FOR JOINT VENTURE PREQUALIFICATION STATUS (see Instructions to Bidders)
- PREVAILING WAGE RATES: STATE  FEDERAL
- APPRENTICESHIP

**THIS CONTRACT MAY BE SUBJECT TO THE FOLLOWING:**

- PHASED-FUNDING

**BID DUE DATE:**

**2:00 PM**

**JANUARY 4, 2024**

**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 Engineers:

*Marc Weinberger*

11-09-23

Seal:



1) Registered Engineer  
(Montezuma PPL/Mid-City Pipeline Ph 2)

Date

*Brian Warner Vitelle*

11-09-2023

Seal:



2) For City Engineer  
(Montezuma PPL/Mid-City Pipeline Ph 2)

Date

**ENGINEER OF WORK**

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



For City Engineer  
(70<sup>th</sup> Alvarado to Saranac Sidewalk)

11/9/23  
Date

Seal:



## TABLE OF CONTENTS

SECTION	PAGE
1. REQUIRED DOCUMENTS SCHEDULE.....	5
2. NOTICE INVITING BIDS.....	7
3. INSTRUCTIONS TO BIDDERS .....	10
4. PERFORMANCE AND PAYMENT BONDS .....	21
5. ATTACHMENTS:	
A. SCOPE OF WORK.....	24
B. PHASED FUNDING PROVISIONS .....	27
C. EQUAL OPPORTUNITY CONTRACTING PROGRAM .....	31
D. PREVAILING WAGE.....	51
E. SUPPLEMENTARY SPECIAL PROVISIONS.....	56
TECHNICALS .....	94
1. Appendix A - Final Mitigated Negative Declaration, Notice of Determination and Notice of Exemption .....	325
2. Appendix B - Fire Hydrant Meter Program .....	398
3. Appendix C - Materials Typically Accepted by Certificate of Compliance.....	412
4. Appendix D - Sample City Invoice with Cash Flow Forecast.....	414
5. Appendix E - Location Map.....	417
6. Appendix F - SWPPP Construction BMP Maintenance Log .....	419
7. Appendix G - Contractor’s Daily Quality Control Inspection Report.....	422
8. Appendix H - Monthly Drinking Water Discharge Monitoring Form.....	427
9. Appendix I - Caltrans Encroachment Permit.....	430
10. Appendix J - Permitted City of La Mesa Traffic Control Plans .....	431
11. Appendix K - Hazardous Waste Label/Forms .....	432
12. Appendix L - Sample Archaeology Invoice.....	438
13. Appendix M - Sample of Public Notice .....	441
14. Appendix N - Advanced Metering Infrastructure (AMI) Device Protection .....	443
15. Appendix O - OSHA Classification Mid-City .....	450
16. Appendix P - Permitted City of La Mesa Improvements (LM Sheets) .....	455
17. Appendix Q - Approved Helix Water District Relocation Plans (R Sheets) .....	483
18. Appendix R – Standard Drawings .....	490
F. RESERVED.....	510
G. CONTRACT AGREEMENT .....	511
6. CERTIFICATIONS AND FORMS.....	514

## 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 1 working day 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.	Phased Funding Schedule Agreement	Within 10 working days of the Notice of Intent to Award	AWARDED BIDDER
11.	If the Contractor is a Joint Venture: <ul style="list-style-type: none"> <li>• Joint Venture Agreement</li> <li>• Joint Venture License</li> </ul>	Within 10 working days of receipt by bidder of contract forms	AWARDED BIDDER

ITEM	DOCUMENT TO BE SUBMITTED	WHEN DUE	FROM
12.	Payment & Performance Bond: Certificates of Insurance & Endorsements	Within 10 working days of receipt by bidder of contract forms and NOI	AWARDED BIDDER
13.	Signed Contract Agreement Page	Within 3 working days of receipt by bidder of Contract Agreement	AWARDED BIDDER
14.	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 **Montezuma/Mid-City Pipeline Phase 2 and 70th Alvarado to Saranac Sidewalk**. 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 **\$43,500,000**.
4. **BID DUE DATE AND TIME ARE: JANUARY 4, 2024 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 classification: **A**
7. **BUSINESS COOPERATION TAX PROGRAM:** You must exercise your right to obtain a California State of Board of Equalization (BOE) sub-permit for the jobsite and allocate all eligible Bradley-Burns Uniform Local Sales and Use Tax (Use Tax) to the City. In addition, you will ensure that all eligible subcontractors will exercise their right to obtain this BOE sub-submit and allocate all eligible Use Tax to the City. The City will not issue a notice to proceed unless you and your eligible subcontractors have obtained this sub-permit from the BOE. More information on obtaining this permit can be found by contacting the local BOE office.
8. **SUBCONTRACTING PARTICIPATION PERCENTAGES:** Subcontracting participation percentages apply to this contract.
  - 8.1. 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	<b>6.6%</b>
2. ELBE participation	<b>8.4%</b>
3. Total mandatory participation	<b>15.0%</b>
  - 8.2. The current list of Certified SLBE/ELBE Firms to be used for outreach for this project is posted to the Documents tab on Planetbids.

**8.3.** The Bid may be declared non-responsive if the Bidder fails to meet the following requirements:

**8.3.1.** Include SLBE-ELBE certified subcontractors at the overall mandatory participation percentage identified in this document; **OR**

**8.3.2.** 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.**

**9. PRE-BID MEETING:**

**9.1. ENCOURAGED ONLINE PRE-BID MEETING:**

Prospective Bidders are **Encouraged** to attend the Pre-Bid Meeting.

The Pre-Bid Meeting will be held on **Wednesday, December 13, 2023**, at **10:00 AM** (PDT) at:

Microsoft Teams meeting

**Join on your computer, mobile app or room device**

[Click here to join the meeting](#)

Meeting ID: 225 191 294 610

Passcode: aYx4Dy

[Download Teams](#) | [Join on the web](#)

**Or call in (audio only)**

[+1 323-813-7079,,928275664#](#) United States, Los Angeles

Phone Conference ID: 928 275 664#

[Find a local number](#) | [Reset PIN](#)

[Learn More](#) | [Meeting options](#)

**Please Note:** You will need to join the meeting with a computer, tablet or smartphone with the **Microsoft Teams** in order to sign in via the Chat feature as attendance at the meeting will be evidenced by the Chat sign-in. The Chat feature will also be used for attendees to ask any questions.

The purpose of the meeting is to discuss the scope of the Project, submittal requirements, and any Equal Opportunity Contracting Program requirements and reporting procedures.

Upon entering the meeting, all attendees must use the chat feature to sign in with the following information: Name of firm, Attendee's name, Phone number and Email address.



**10. AWARD PROCESS:**

- 10.1.** 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.
- 10.2.** 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.
- 10.3.** 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.
- 10.4.** The low Bid will be determined by the Base Bid plus all the Alternates.
- 10.5.** Once the low bid has been determined, the City may, at its sole discretion, award the contract for the Base Bid alone; or for the Base Bid plus one or more alternates.

**11. SUBMISSION OF QUESTIONS:**

- 11.1.** The Director (or Designee) of the Purchasing & Contracting 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:  
  
[RRiego@sandiego.gov](mailto:RRiego@sandiego.gov)
- 11.2.** Questions received less than 14 days prior to the date for opening of Bids may not be considered.
- 11.3.** 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.
- 11.4.** 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.

**12. PHASED FUNDING:** This contract may be subject to phased funding, for Conditions, see Attachment B.

**13. ADDITIVE/DEDUCTIVE ALTERNATES:**

- 13.1.** 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.
- 13.2.** 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 Purchasing & Contracting Department, Public Works Division 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”) <a href="http://www.greenbookspecs.org/">http://www.greenbookspecs.org/</a>	2021	ECPI010122-01
City of San Diego Standard Specifications for Public Works Construction (“The WHITEBOOK”)* <a href="https://www.sandiego.gov/ecp/edocref/greenbook">https://www.sandiego.gov/ecp/edocref/greenbook</a>	2021	ECPI010122-02
City of San Diego Standard Drawings* <a href="https://www.sandiego.gov/ecp/edocref/standarddraw">https://www.sandiego.gov/ecp/edocref/standarddraw</a>	2021	ECPI010122-03
Citywide Computer Aided Design and Drafting (CADD) Standards <a href="https://www.sandiego.gov/ecp/edocref/drawings">https://www.sandiego.gov/ecp/edocref/drawings</a>	2018	PWPI010119-04
California Department of Transportation (CALTRANS) Standard Specifications <a href="https://dot.ca.gov/programs/design/july-2023-ccs-standard-plans-and-standard-specifications">https://dot.ca.gov/programs/design/july-2023-ccs-standard-plans-and-standard-specifications</a>	2023	ECPD092023-05

Title	Edition	Document Number
CALTRANS Standard Plans <a href="https://dot.ca.gov/programs/design/july-2023-ccs-standard-plans-and-standard-specifications">https://dot.ca.gov/programs/design/july-2023-ccs-standard-plans-and-standard-specifications</a>	2023	ECPD092023-06
California Manual on Uniform Traffic Control Devices Revision 7 (CA MUTCD Rev 7) <a href="https://dot.ca.gov/programs/safety-programs/camutcd">https://dot.ca.gov/programs/safety-programs/camutcd</a>	2014	ECPD081023-07
<p><b>NOTE:</b> *Available online under Engineering Documents and References at: <a href="https://www.sandiego.gov/ecp/edocref/">https://www.sandiego.gov/ecp/edocref/</a></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 alternate items, bidder shall use the provided "Subcontractors For Alternates" form and shall indicate for each alternate subcontract whether it is an additive or deductive alternate; the subcontractor's name, location, phone number, email address, CA license number, and DIR registration number; whether the subcontractor is a designer, constructor or supplier; the type of work the subcontractor will be performing; and the dollar value of the subcontract for that alternate item. Failure to comply with this requirement may result in the bid being rejected as nonresponsive and ineligible for award.

**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 Purchasing & Contracting Department, Public Works 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, 1 working day 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 5 PM, 1 working day after the bid opening date shall cause the bid to be rejected and deemed **non-responsive**.

Original Bid Bond shall be submitted to:  
Purchasing & Contracting Department, Public Works Division  
1200 3rd Ave., Suite 200, MS 56P  
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 of Intent to 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**

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**FAITHFUL PERFORMANCE BOND AND LABOR AND MATERIALMEN'S BOND:**

W.A. Rasic 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 **Forty Million One  
Hundred Twenty Five Thousand Dollars and Zero Cents (\$40,125,000.00)** for the faithful  
performance of the annexed contract,\* and in the sum of **Forty Million One Hundred Twenty Five  
Thousand Dollars and Zero Cents (\$40,125,000.00)** for the benefit of laborers and materialmen  
designated below.

\*Montezuma/Mid-City Pipeline Phase 2 and 70th Alvarado to Saranac Sidewalk, K-24-1821-DBB-3-D-C

**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 shall pay reasonable attorney's fees should suit be brought to enforce the  
provisions of this bond.

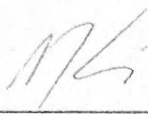
The Surety expressly agrees that the City of San Diego may reject any contractor or  
subcontractor which may be proposed by Surety in fulfillment of its obligations in the event of default  
by the Principal.

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)

THE CITY OF SAN DIEGO

APPROVED AS TO FORM

By: 

Mara W. Elliott, City Attorney

By: 

Print Name: Alia Khouri  
Deputy Chief Operating Officer

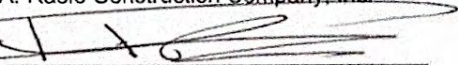
Print Name: Bonny Hsu  
Deputy City Attorney

Date: 05/07/2024

Date: 5/20/24

CONTRACTOR

W.A. Rasic Construction Company, Inc.

By: 

SURETY

Liberty Mutual Insurance Company

By: 

Print Name: Peter L. Rasic, President

Print Name: Daniel Huckabay, Attorney-in-Fact

Date: 04 MAR 2024  
RF2 2024-12

Date: March 1st, 2024

790 The City Drive South, Suite 200, Orange, CA 92868  
Local Address of Surety

(800) 763-9268  
Local Phone Number of Surety

\$245,520.00  
Premium

024274840  
Bond Number

## 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 Orange )

On 03/01/2024 before me, Melissa Ann Vaccaro, Notary Public  
(insert name and title of the officer)

personally appeared Daniel Huckabay,  
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 Melissa Ann Vaccaro (Seal)  
Melissa Ann Vaccaro





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. 8209029-969561

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, Arturo Ayala, Daniel Huckabay, Adrian Langrell, Chelsea Liberatore, Frank Morales, R. Nappi, Dwight Reilly, Shaunna Rozelle Ostrom, Ben Stong, Michael D. Stong, Benjamin Wolfe

all of the city of Orange 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 21st day of November, 2023



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 21st day of November, 2023 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 Plymouth Meeting, Pennsylvania, on the day and year first above written



Commonwealth of Pennsylvania - Notary Seal
Teresa Pastella, Notary Public
Montgomery County
My commission expires March 28, 2025
Commission number: 11270244
Member: Pennsylvania Association of Notaries

By: Teresa Pastella, Notary Public

For bond and/or Power of Attorney (POA) verification inquiries, please call 610-832-8240 or email HOSUR@libertymutual.com.

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 1st day of March, 2024



By: Renee C. Llewellyn, Assistant Secretary



## 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 Los Angeles )

On 3/4/24 before me, Tanya C. Romero, Notary Public  
(insert name and title of the officer)

personally appeared Peter L. Rasic  
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)



## ATTACHMENTS

**ATTACHMENT A**  
**SCOPE OF WORK**

## SCOPE OF WORK

- 1. SCOPE OF WORK: 70TH-ALVARADO TO SARANAC-SIDEWALK:** To install new concrete sidewalk on the west side of 70th street between Alvarado Road and Saranac Street. The work is to include installation of new 4' and 5' wide concrete sidewalk, curb ramp, curb and gutter, retaining walls, pedestrian push buttons, chain link fencing, bike lane striping, traffic and signing, and relocation/adjustment of pedestrian barricade and signs.

MONTEZUMA PPL/MID-CITY PIPELINE PH 2: To install new water pipeline, which consists of approximately 4,880 linear feet of new 66" diameter CML & TC steel transmission main and 374 linear feet of 8-inch PVC distribution main. Work also includes associated required street ADA improvements and paving. The 66-inch transmission main will run southward from the Alvarado Water Treatment Plant (AWTP) to the intersection of 69th and Mohawk Street. The north terminus of the pipeline will be connected to existing Valve Vault No. 3 located where the Earl Thomas Reservoir Outlet Pipeline intersects the Clear Wells Interconnection Pipeline. The south terminus will connect to the Mid-City Phase 2A Pipeline just easterly of the 69th and Mohawk Street intersection. Additionally, work includes the relocation and construction of a Helix Water District 8-inch PVC distribution main running across Lake Murray Blvd and relocation of a City of La Mesa 8-inch sewer pipeline and associated manholes. Lastly, the landscaped medians along Lake Murray Blvd will be removed and rebuilt as part of this project.

**1.1.** The Work shall be performed in accordance with:

**1.1.1.** The Notice Inviting Bids and Plans numbered **37333-01-D** through **37333-104-D**, inclusive, and Traffic Control Plans numbered **37333-T1-D** through **37333-T84-D**, for Montezuma PPL/Mid-City Pipeline Phase 2, inclusive.

**1.1.2.** The Notice Inviting Bids and Plans numbered **40522-01-D** through **40522-07-D** for 70<sup>th</sup> Alvarado to Saranac Sidewalk, 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 **640 Working Days**.

**3.1. INTERIM MILESTONES:** The following table is provided to the Contractor to adhere to work duration timelines. The intent is to set a maximum number of mobilized working days for each segment to minimize disruptions for City of San Diego and City of La Mesa's residents. In the total estimated 640 Working Days, several segments within the Plans numbered 37333-D of the project are expected to be constructed concurrently with one another. If the proposed working days in conjunction with the working hours do not fit within the Contractor's scheduling means, submit a proposed schedule to the Construction Manager for review and approval. If the contractor cannot meet the agreed upon duration for these specific milestones, Contractor shall pay liquidated damages as defined in Section 6-9 in the Supplementary Special Provisions (SSP).

<b>From Station</b>	<b>To Station</b>	<b>Segment</b>	<b>Duration (Working Days)</b>
9+20	30+73	Mohawk St to Launching pit	165
30+73	38+10	I-8 crossing	160
38+02	38+22	Receiving pit at Lake Murray BI (LMB)	100
38+22	45+98	Receiving pit to SDCWA pipe crossing	120
45+98	57+95	LMB to Alvarado WTP valve vault	70
		Helix Water District 8" waterline replacement	50
		City of La Mesa 8" sewer main replacement	35

**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

The particulars left blank below, such as the total number of phases and the amounts assigned to each phase, will be completed with funding specific information from the Pre-Award Schedule and Construction Cost Loaded Schedule submitted to and approved by the City.

**BID NUMBER:** K-24-1821-DBB-3-D-C

**CONTRACT OR TASK TITLE:** Montezuma/Mid-City Pipeline Phase 2 and 70<sup>th</sup> Alvarado to Saranac Sidewalk

**CONTRACTOR:** W.A. Rasic Construction Company, Inc

Funding Phase	Phase Description	Phase Start	Phase Finish	Not-to-Exceed Amount
1. (S11026)	Mobilization, early site work, installation of 66-inch CML&TC Steel Pipe south installation (Mohawk St, 70 <sup>th</sup> St).	NTP	12/31/2024	\$13,250,000.00
2. (B17065)	70 <sup>th</sup> Alvarado to Saranac Sidewalk	01/01/2025	NOC	\$242,679.00
2. (S11026)	66-inch CML&TC Steel Pipe north installation (Lake Murray Blvd). Establish tunneling shafts, tunneling, restoration.	01/01/2025	NOC	\$26,632,321.00
<b>Contract Total</b>				<b>\$40,125,000.00</b>

**Notes:**

- 1) WHITEBOOK section 7-3.10, "Phased Funding Compensation" applies.
- 2) The total of all funding phases shall be equal to the TOTAL BID PRICE as shown on BID SCHEDULE 1 - PRICES.
- 3) This PHASED FUNDING SCHEDULE AGREEMENT will be incorporated into the CONTRACT and shall only be revised by written modifications to the CONTRACT.
  - 4) **Phase 1 to include the following: Long lead material procurement for Phase 2, sewer/water relocation and median modifications to accommodate work at the I-8 receiving shaft.**
  - 5) **Start of phase 2 is not contingent on the completion of Phase 1 work.**



**CITY OF SAN DIEGO**

PRINT NAME: Dino Ciafre-Garay  
**Construction Senior Engineer**

Signature: 

Date: 4/5/2024

PRINT NAME: Brian Vitelle  
**Design Senior Engineer**

Signature: 

Date: 4/5/2024

**CONTRACTOR**

PRINT NAME: Ben Sebat

Title: Senior Estimator

Signature: 

Date: April 5, 2024

**ATTACHMENT C**  
**EQUAL OPPORTUNITY CONTRACTING PROGRAM**

## EQUAL OPPORTUNITY CONTRACTING PROGRAM (EOCP)

### SECTION A - GENERAL REQUIREMENTS

#### A. INTRODUCTION.

1. This document sets forth the following specifications:
  - a) The City's general EOCP requirements for all Construction Contracts.
  - b) Special Provisions for Contracts subject to SLBE and ELBE requirements only.
2. Additional requirements may apply for state or federally funded projects.
3. These requirements shall be included as Contract provisions for all Subcontracts.
4. The City specified forms, instructions, and guides are available for download from the EOCP's web site at: <http://www.sandiego.gov/eoc/forms/index.shtml>

#### B. GENERAL.

1. The City of San Diego promotes equal employment and subcontracting opportunities.
2. The City is committed to ensuring that taxpayer dollars spent on public Contracts are not paid to businesses that practice discrimination in employment or subcontracting.
3. The City encourages all companies seeking to do business with the City to share this commitment.

#### C. DEFINITIONS.

1. For the purpose of these requirements: Terms "Bid" and "Proposal", "Bidder" and "Proposer", "Subcontractor" and "Subconsultant", "Contractor" and "Consultant", "Contractor" and "Prime Contractor", "Consultant" and "Professional Service Provider", "Suppliers" and "Vendors", "Suppliers" and "Dealers", and "Suppliers" and "Manufacturers" may have been used interchangeably.
2. The following definitions apply:
  - a) **Emerging Business Enterprise (EBE)** - A for-profit business that is independently owned and operated; that is not a subsidiary or franchise of another business and whose gross annual receipts do not exceed the amount set by the City Manager and that meets all other criteria set forth in regulations implementing Municipal Code Chapter 2, Article 2, Division 36. The City Manager shall review the threshold amount for EBEs on an annual basis and adjust as necessary to reflect changes in the marketplace.
  - b) **Emerging Local Business Enterprise (ELBE)** - A Local Business Enterprise that is also an Emerging Business Enterprise.

- c) **Minority Business Enterprise (MBE)** - A certified business that is at least fifty-one percent (51%) owned by one or more minority individuals, or, in the case of a publicly owned business at least fifty-one percent (51%) of the stock is owned by one or more minority individuals; and (2) whose daily business operations are managed and directed by one or more minorities owners. Minorities include the groups with the following ethnic origins: African, Asian Pacific, Asian Subcontinent, Hispanic, Native Alaskan, Native American, and Native Hawaiian.
- d) **Women Business Enterprise (WBE)** - A certified business that is at least fifty-one percent (51%) owned by a woman or women, or, in the case of a publicly owned business at least fifty-one percent (51%) of the stock is owned by one or more women; and (2) whose daily business operations are managed and directed by one or more women owners.
- e) **Disadvantaged Business Enterprise (DBE)** - a certified business that is at least fifty-one percent (51%) owned by socially and economically disadvantaged individuals, or, in the case of a publicly owned business at least fifty-one percent (51%) of the stock is owned by one or more socially and economically disadvantaged individuals; and (2) whose daily business operations are managed and directed by one or more socially and economically disadvantaged owners.
- f) **Disabled Veteran Business Enterprise (DVBE)** - A certified business that is at least fifty-one percent (51%) owned by one or more disabled veterans; and (2) business operations must be managed and controlled by one or more disabled veterans. Disabled Veteran is a veteran of the U.S. military, naval, or air service; the veteran must have a service-connected disability of at least 10% or more; and the veteran must reside in California.
- g) **Other Business Enterprise (OBE)** - Any business which does not otherwise qualify as a Minority, Woman, Disadvantaged, or Disabled Veteran Business Enterprise.
- h) **Small Business Enterprise (SBE)** - A for-profit business that is independently owned and operated; that is not a subsidiary or franchise of another business and whose gross annual receipts do not exceed the amount set by the City Manager and that meets all other criteria set forth in regulations implementing Municipal Code Chapter 2, Article 2, Division 36. The City Manager shall review the threshold amount for SBEs on an annual basis and adjust as necessary to reflect changes in the marketplace. A business certified as a Micro Business (MB) or a Disabled Veteran Business Enterprise (DVBE) by the State of California and that has provided proof of such certification to the City Manager shall be deemed to be an SBE.

- i) **Small Local Business Enterprise (SLBE)** - A Local Business Enterprise that is also a Small Business Enterprise.

**D. CITY'S EQUAL OPPORTUNITY COMMITMENT.**

**1. Nondiscrimination in Contracting Ordinance.**

- a) You, your Subcontractors, and Suppliers shall comply with the requirements of the City's Nondiscrimination in Contracting Ordinance, San Diego Municipal Code §§22.3501 through 22.3517.

You shall not discriminate on the basis of race, gender, gender expression, gender identity, religion, national origin, ethnicity, sexual orientation, age, or disability in the solicitation, selection, hiring, or treatment of subcontractors, vendors, or suppliers. You shall provide equal opportunity for Subcontractors to participate in subcontracting opportunities. You understand and agree that the violation of this clause shall be considered a material breach of the Contract and may result in Contract termination, debarment, or other sanctions.

You shall include the foregoing clause in all Contracts between you and your Subcontractors and Suppliers.

- b) **Disclosure of Discrimination Complaints.** As part of its Bid or Proposal, you shall provide to the City a list of all instances within the past 10 years where a complaint was filed or pending against you in a legal or administrative proceeding alleging that you discriminated against your employees, Subcontractors, vendors, or suppliers, and a description of the status or resolution of that complaint, including any remedial action taken.
- c) Upon the City's request, You agree to provide to the City, within 60 Calendar Days, a truthful and complete list of the names of all Subcontractors and Suppliers that you have used in the past 5 years on any of your Contracts that were undertaken within the San Diego County, including the total dollar amount paid by you for each Subcontract or supply Contract.
- d) You further agree to fully cooperate in any investigation conducted by the City pursuant to the City's Nondiscrimination in Contracting Ordinance, Municipal Code §§22.3501 through 22.3517. You understand and agree that violation of this clause shall be considered a material breach of the Contract and may result in remedies being ordered against you up to and including contract termination, debarment, and other sanctions for the violation of the provisions of the Nondiscrimination in Contracting Ordinance. You further understand and agree that the procedures, remedies, and sanctions provided for in the Nondiscrimination in Contracting Ordinance apply only to violations of the Ordinance.

**E.**

**EQUAL EMPLOYMENT OPPORTUNITY OUTREACH PROGRAM.**

1. You, your Subcontractors, and Suppliers shall comply with the City's Equal Employment Opportunity Outreach Program, San Diego Municipal Code §§22.2701 through 22.2707.

You shall not discriminate against any employee or applicant for employment on any basis prohibited by law. You shall provide equal opportunity in all employment practices. You shall ensure that your Subcontractors comply with this program. Nothing in this section shall be interpreted to hold you liable for any discriminatory practices of your Subcontractors.

You shall include the foregoing clause in all Contracts between you and your Subcontractors and Suppliers.

2. If the Contract is competitively solicited, the selected Bidder shall submit a Work Force Report (Form BB05) within 10 Working Days after receipt by the Bidder to the City for approval as specified in the Notice of Intent to Award letter.
3. The selected Bidder shall submit an Equal Employment Opportunity Plan if a Work Force Report is submitted and if the City determines that there are under-representations when compared to County Labor Force Availability data.
4. If the selected Bidder submits an Equal Employment Opportunity Plan, it shall include the following assurances:
  - a) You shall maintain a working environment free of discrimination, harassment, intimidation, and coercion at all Sites and in all facilities at which your employees are assigned to Work.
  - b) You shall review your EEO Policy annually with all on-Site supervisors involved in employment decisions.
  - c) You shall disseminate and review your EEO Policy with all employees at least once a year, post the policy statement and EEO posters on all company bulletin boards and job sites, and document every dissemination, review, and posting with a written record to identify the time, place, employees present, subject matter, and disposition of meetings.
  - d) You shall review, at least annually, all supervisors' adherence to and performance under the EEO Policy and maintain written documentation of these reviews.
  - e) You shall discuss your EEO Policy Statement with Subcontractors with whom you anticipate doing business, including the EEO Policy Statement in your Subcontracts, and provide such documentation to the City upon request.
  - f) You shall document and maintain a record of all Bid solicitations and outreach efforts to and from Subcontractors, contractor associations, and other business associations.

- g) You shall disseminate your EEO Policy externally through various media, including the media of people of color and women, in advertisements to recruit. Maintain files documenting these efforts and provide copies of these advertisements to the City upon request.
- h) You shall disseminate your EEO Policy to union and community organizations.
- i) You shall provide immediate written notification to the City when any union referral process has impeded your efforts to maintain your EEO Policy.
- j) You shall maintain a current list of recruitment sources, including those outreaching to people of color and women, and provide written notification of employment opportunities to these recruitment sources with a record of the organizations' responses.
- k) You shall maintain a current file of names, addresses and phone numbers of each walk-in applicant, including people of color and women, and referrals from unions, recruitment sources, or community organizations with a description of the employment action taken.
- l) You shall encourage all present employees, including people of color and women employees, to recruit others.
- m) You shall maintain all employment selection process information with records of all tests and other selection criteria.
- n) You shall develop and maintain documentation for on-the-job training opportunities, participate in training programs, or both for all of your employees, including people of color and women, and establish apprenticeship, trainee, and upgrade programs relevant to your employment needs.
- o) You shall conduct, at least annually, an inventory and evaluation of all employees for promotional opportunities and encourage all employees to seek and prepare appropriately for such opportunities.
- p) You shall ensure that the company's working environment and activities are non-segregated except for providing separate or single-user toilets and necessary changing facilities to assure privacy between the sexes.

**F. SUBCONTRACTING.**

1. The City encourages all eligible business enterprises to participate in City contracts as a Contractor, Subcontractor, and joint venture partner with you, your Subcontractors, or your Suppliers. You are encouraged to take positive steps to diversify and expand your Subcontractor solicitation base and to offer subcontracting opportunities to all eligible business firms including SLBEs, ELBEs, MBEs, WBEs, DBEs, DVBEs, and OBEs.
2. For Subcontractor participation level requirements, see the Contract Documents where applicable.

3. For the purposes of achieving the mandatory Subcontractor participation percentages, City percentage calculations will not account for the following:
  - a) "Field Orders" and "City Contingency" Bid items.
  - b) Alternate Bid items.
  - c) Allowance Bid items designated as "EOC Type II".
4. Allowance Bid items designated as "EOC Type I" will be considered as part of the Base Bid and will be included in the percentage calculation.
5. Each joint venture partner shall be responsible for a clearly defined Scope of Work. In addition, an agreement shall be submitted and signed by all parties identifying the extent to which each joint venture partner shares in ownership, control, management, risk, and profits of the joint venture.

**G. LISTS OF SUBCONTRACTORS AND SUPPLIERS.**

1. You shall comply with the Subletting and Subcontracting Fair Practices Act, Public Contract Code §§4100 through 4113, inclusive.
2. You shall list all Subcontractors who will receive more than 0.5% of the total Bid amount or \$10,000, whichever is greater on the form provided in the Contract Documents (Subcontractors list).
3. The Subcontractors list shall include the Subcontractor's name, telephone number including area code, physical address, Scope of Work, the dollar amount of the proposed Subcontract, the California contractor license number, the Public Works contractor registration number issued pursuant to Section 1725.5 of the Labor Code, and the Subcontractor's certification status with the name of the certifying agency.
4. The listed Subcontractor shall be appropriately licensed pursuant to Contractor License Laws.
5. For Design-Build Contracts, refer to the RFQ and RFP for each Project or Task Order.

**H. SUBCONTRACTOR AND SUPPLIER SUBSTITUTIONS.**

1. Listed Subcontractors and Suppliers shall not be substituted without the Express authorization of the City or its duly authorized agent.
2. Request for Subcontractor or Supplier substitution shall be made in writing to Purchasing & Contracting Department, Public Works Division, 1200 3rd Ave., Suite 200, MS 56P, San Diego, CA 92101 with a copy to the Engineer.
3. The request shall include a thorough explanation of the reason(s) for the substitution, including dollar amounts and a letter from each substituted Subcontractor or Supplier stating that they (the Subcontractors or Suppliers) release all interest in working on the Project and written confirmation from the new Subcontractor or Supplier stating that they agree to work on the Project along with the dollar value of the Work to be performed.



4. Written approval of the substitution request shall be received by you or from the City or its authorized officer prior to any unlisted Subcontractor or Supplier performing Work on the Project.
5. Substitution of Subcontractors and Suppliers without authorization shall subject you to those penalties set forth in Public Contract Code §4110.
6. Requests for Supplier substitution shall be made in writing at least 10 Days prior to the provision of materials, supplies, or services by the proposed Supplier and shall include proof of written notice to the originally listed Supplier of the proposed substitution.
7. A Contractor whose Bid is accepted shall not:
  - a) Substitute a person as Subcontractor or Supplier in place of the Subcontractor or Supplier listed in the original bid, except that the City, or its duly authorized officer, may consent to the substitution of another person as a Subcontractor or Supplier in any of the following situations:
    - i. When the Subcontractor or Supplier listed in the Bid, after having a reasonable opportunity to do so, fails or refuses to execute a written Contract for the scope of work specified in the subcontractor's bid and at the price specified in the subcontractor's bid, when that written contract, based upon the general terms, conditions, plans, and specifications for the project involved or the terms of the subcontractor's written bid, is presented to the subcontractor by the prime contractor.
    - ii. When the listed Subcontractor or Supplier becomes insolvent or the subject of an order for relief in bankruptcy.
    - iii. When the listed Subcontractor or Supplier fails or refuses to perform his or her subcontract.
    - iv. When the listed Subcontractor fails or refuses to meet bond requirements as set forth in Public Contract Code §4108.
    - v. When you demonstrate to the City or its duly authorized officer, subject to the provisions set forth in Public Contract Code §4107.5, that the name of the Subcontractor was listed as the result of an inadvertent clerical error.
    - vi. When the listed Subcontractor is not licensed pursuant to Contractor License Law.
    - vii. When the City, or its duly authorized officer, determines that the Work performed by the listed Subcontractor or that the materials or supplies provided by the listed Supplier are substantially unsatisfactory and not in substantial accordance with the Plans and specifications or that the Subcontractor or

Supplier is substantially delaying or disrupting the progress of the Work.

- viii. When the listed Subcontractor is ineligible to work on a public works project pursuant to §§1777.1 or 1777.7 of the Labor Code.
  - ix. When the City or its duly authorized agent determines that the listed Subcontractor is not a responsible contractor.
  - b) Permit a Contract to be voluntarily assigned or transferred or allow it to be performed by anyone other than the original Subcontractor, Supplier listed in the original Bid without the consent of the City, or its duly authorized officer.
  - c) Other than in the performance of "Change Orders" causing changes or deviations from the Contract, sublet or subcontract any portion of the Work, or contract for materials or supplies in excess of 0.5% of your total bid or \$10,000, whichever is greater, as to which his or her original Bid did not designate a Subcontractor or Supplier.
8. Following receipt of notice from you of the proposed substitution of a Subcontractor or Supplier, the listed Subcontractor or Supplier who has been so notified shall have 5 Working Days within which to submit written objections to the substitution to the Contract Specialist with a copy to the Engineer. Failure to file these written objections shall constitute the listed Subcontractor or Supplier's consent to the substitution. If written objections are filed, the City shall give notice in writing of at least 5 Working Days to the listed Subcontractor or Supplier of a hearing by the City on your request for substitution.

**I. PROMPT PAYMENT.**

- 1. You or your Subcontractors shall pay to any subcontractor, not later than 7 Calendar Days of receipt of each progress payment, unless otherwise agreed to in writing, the respective amounts allowed you on account of the Work performed by the Subcontractors, to the extent of each Subcontractor's interest therein. In cases of Subcontractor performance deficiencies, you shall make written notice of any withholding to the Subcontractor with a copy to the Contracts Specialist. Upon correction of the deficiency, you shall pay the Subcontractor the amount previously withheld within 14 Calendar Days after payment by the City.
- 2. Any violation of California Business and Professions Code, §7108.5 concerning prompt payment to Subcontractors shall subject the violating Contractor or Subcontractor to the penalties, sanctions, and other remedies of that section. This requirement shall not be construed to limit or impair any contractual, administrative, or judicial remedies otherwise available to you or your Subcontractor in the event of a dispute involving late payment or nonpayment by the Prime Contractor, deficient subcontract performance, or noncompliance by a Subcontractor.

**J. PROMPT PAYMENT OF FUNDS WITHHELD TO SUBCONTRACTORS.**

1. The City will hold retention from you and will make prompt and regular incremental acceptances of portions, as determined by the Engineer, of the Work and pay retention to you based on these acceptances.
2. You or your Subcontractors shall return all monies withheld in retention from a Subcontractor within 30 Calendar Days after receiving payment for Work satisfactorily completed and accepted including incremental acceptances of portions of the Work by the City.
3. Federal law (49CFR26.29) requires that any delay or postponement of payment over 30 Calendar Days may take place only for good cause and with the City's prior written approval. Any violation of this provision by you or your Subcontractor shall subject you or your Subcontractor to the penalties, sanctions, and other remedies specified in §7108.5 of the Business and Professions Code.
4. These requirements shall not be construed to limit or impair any contractual, administrative, or judicial remedies otherwise available to you or your Subcontractor in the event of a dispute involving late payment or nonpayment by you, deficient subcontract performance, or noncompliance by a Subcontractor.

**K. CERTIFICATION.**

1. The City accepts certifications of DBE, DVBE, MBE, SMBE, SWBE, or WBE by any of the following certifying agencies:
  - a) Current certification by the State of California Department of Transportation (CALTRANS) as DBE, SMBE, or SWBE.
  - b) Current MBE, WBE, or DVBE certification from the California Public Utilities Commission.
  - c) DVBE certification is received from the State of California's Department of General Services, Office of Small and Minority Business.
  - d) Current certification by the City of Los Angeles as DBE, WBE, or MBE.
  - e) Subcontractors' valid proof of certification status (copies of MBE, WBE, DBE, or DVBE certifications) shall be submitted as required.

**L. CONTRACT RECORDS AND REPORTS.**

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 10<sup>th</sup> 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.

**EQUAL OPPORTUNITY CONTRACTING PROGRAM (EOCP)**  
SECTION B - SLBE-ELBE SUBCONTRACTING REQUIREMENTS

**THESE SPECIAL PROVISIONS SUPPLEMENT THE POLICIES AND REQUIREMENTS ESTABLISHED BY THE CITY OF SAN DIEGO EQUAL OPPORTUNITY CONTRACTING PROGRAM SPECIFIED IN THE CITY'S GENERAL EOCP REQUIREMENTS.**

**A. GENERAL.**

1. It is the City's policy to encourage greater availability, capacity development, and contract participation by SLBE and ELBE firms in City contracts. This policy is, in part, intended to further the City's compelling interest to stimulate economic development through the support and empowerment of the local community, ensure that it is neither an active nor passive participant in marketplace discrimination, and promote equal opportunity for all segments of the contracting community.
2. The City is committed to maximizing subcontracting opportunities for all qualified and available firms.
3. This policy applies to City-funded construction contracts. Bidders shall be fully informed of this policy as set forth in these specifications. Mandatory or voluntary subcontracting percentages, Bid Discounts, and restricted competitions are specified in the Contract Documents.
4. You shall make subcontracting opportunities available to a broad base of qualified Subcontractors and shall achieve the minimum SLBE-ELBE Subcontractor participation identified for your project.
5. Failure to subcontract the specified minimum (mandatory) percentages of the Bid to qualified available SLBE-ELBE Subcontractors will cause a Bid to be rejected as non-responsive unless the Bidder has demonstrated compliance with the affirmative steps as specified in the City's document titled "Small Local Business (SLBE) Program, INSTRUCTIONS FOR BIDDERS COMPLETING THE GOOD FAITH EFFORT SUBMITTAL" and has submitted documentation showing that all required positive efforts were made prior to the Bid submittal due date. The required Good Faith Effort (GFE) documentation shall be submitted to the Contract Specialist. The instructions for completing the good faith effort submittal can be found on the City's website:  
<https://www.sandiego.gov/sites/default/files/legacy/eoc/pdf/slbefgest.pdf>
6. The current list of certified SLBE-ELBE firms and information for completing the GFE submittal can be found on the City's EOC Department website:  
<http://www.sandiego.gov/eoc/programs/slbe.shtml>
7. These requirements may be waived, at the City's sole discretion, on projects deemed inappropriate for subcontracting participation.

**B.**

**DEFINITIONS.**

1. The following definitions shall be used in conjunction with these specifications:

- a) **Bid Discount** – Additional inducements or enhancements in the bidding process that are designed to increase the chances for the selection of SLBE firms in competition with other firms.
- b) **Commercially Useful Function** – An SLBE-ELBE performs a commercially useful function when it is responsible for the execution of the Work and is carrying out its responsibilities by actually performing, managing, and supervising the Work involved. To perform a commercially useful function, the SLBE-ELBE shall also be responsible, with respect to materials and supplies used on the Contract, for negotiating price, determining quantity and quality, ordering the material, and installing (where applicable) and paying for the material itself.

To determine whether an SLBE-ELBE is performing a commercially useful function, an evaluation will be performed of the amount of Work subcontracted, normal industry practices, whether the amount the SLBE-ELBE firm is to be paid under the contract is commensurate with the Work it is actually performing and the SLBE-ELBE credit claimed for its performance of the Work, and other relevant factors. Specifically, an SLBE-ELBE does not perform a commercially useful function if its role is limited to that of an extra participant in a transaction, contract, or project through which funds are passed in order to obtain the appearance of meaningful and useful SLBE-ELBE participation, when in similar transactions in which SLBE-ELBE firms do not participate, there is no such role performed.

- c) **Good Faith Efforts (GFE)** – Documentation of the Bidder’s intent to comply with SLBE Program goals and procedures included in the City’s SLBE Program, Instructions for Completing Good Faith Effort Submittal available from the City’s EOCP website or the Contract Specialist.
- d) **Independently Owned, Managed, and Operated** – Ownership of a SLBE-ELBE firm shall be direct, independent, and by individuals only. Business firms that are owned by other businesses or by the principals or owners of other businesses that cannot themselves qualify under the SLBE-ELBE eligibility requirements shall not be eligible to participate in the Program. Moreover, the day-to-day management of the SLBE-ELBE firm shall be direct and independent of the influence of any other businesses that cannot themselves qualify under the SLBE-ELBE eligibility requirements.
- e) **Joint Venture** – An association of two or more persons or business entities that is formed for the single purpose of carrying out a single defined business enterprise for which purpose they combine their capital, efforts, skills, knowledge, or property. Joint ventures shall be established by written agreement to qualify for this program.

- f) **Local Business Enterprise (“LBE”)** – A firm having a Principal Place of Business and a Significant Employment Presence in San Diego County, California that has been in operation for 12 consecutive months and a valid business tax certificate. This definition is subsumed within the definition of Small Local Business Enterprise.
- g) **Minor Construction Program** – A program developed for bidding exclusively among SLBE-ELBE Construction firms.
- h) **Principal Place of Business** – A location wherein a firm maintains a physical office and through which it obtains no less than 50% of its overall customers or sales dollars.
- i) **Protégé** – A firm that has been approved and is an active participant in the City’s Mentor-Protégé Program and that has signed the required program participation agreement and has been assigned a mentor.
- j) **Significant Employee Presence** – No less than 25% of a firm’s total number of employees are domiciled in San Diego County.

**C. SUBCONTRACTOR PARTICIPATION.**

1. For the purpose of satisfying subcontracting participation requirements, only 1<sup>st</sup> tier SLBE–ELBE Subcontractors will be recognized as participants in the Contract according to the following criteria:
  - a) For credit to be allowed toward a respective participation level, all listed SLBE-ELBE firms shall have been certified by the Bid due date.
  - b) The Subcontractor shall perform a commercially useful function for credit to be allowed toward subcontractor participation levels. The Subcontractor shall be required by you to be responsible for the execution of a distinct element of the Work and shall carry out its responsibility by actually performing and supervising its own workforce.
  - c) If the Bidder is seeking the recognition of materials, supplies, or both towards achieving any mandatory subcontracting participation level, the Bidder shall indicate on Form AA40 – Named Equipment/Material Supplier List with the Bid the following:
    - i. If the materials or supplies are obtained from a SLBE-ELBE manufacturer, the Bidder will receive 100% of the cost of the materials or supplies toward SLBE participation. For the purposes of counting SLBE-ELBE participation, a manufacturer is a firm that operates or maintains a factory or establishment that produces, on the premises, the materials, supplies, articles, or equipment required under the Contract and of the general character described by the specifications.
    - ii. If the materials or supplies are obtained from a SLBE-ELBE supplier, the Bidder will receive 60% of the cost of the

materials or supplies toward SLBE participation. For the purposes of counting SLBE-ELBE participation a Supplier is a firm that owns, operates, or maintains a store, warehouse, or other establishment in which the materials, supplies, articles or equipment of the general character described by the specifications and required under the Contract are bought, kept in stock, and regularly sold or leased to the public in the usual course of business. To be a supplier, the firm shall be an established, regular business that engages, as its principal business and under its own name, in the purchase and sale or lease of the products in question. A person may be a supplier in such bulk items as petroleum products, steel, cement, gravel, stone, or asphalt without owning, operating, or maintaining a place of business if the person both owns and operates distribution equipment for the products. Any supplementing of the suppliers' own distribution equipment shall be by a long-term lease agreement and shall not be on an ad hoc or contract-by-contract basis.

- iii. If the materials or supplies are obtained from a SLBE-ELBE, which is neither a manufacturer nor a supplier, the entire amount of fees or commissions charged for assistance in the procurement of the materials and supplies, fees or transportation charges for the delivery of materials or supplies required on a job site will be counted toward SLBE-ELBE participation, provided the fees are reasonable and not excessive as compared with fees customarily allowed for similar services. No portion of the cost of the materials and supplies themselves will be counted toward SLBE-ELBE participation.
- d) If the Bidder is seeking the recognition of SLBE-ELBE Trucking towards achieving any mandatory subcontracting participation level, the Bidder shall indicate it on Form AA35 – List of Subcontractors with the Bid. The following factors will be evaluated in determining the credit to be allowed toward the respective participation level:
  - i. The SLBE-ELBE shall be responsible for the management and supervision of the entire trucking operation for which it is getting credit on a particular Contract and there shall not be a contrived arrangement for the purpose of counting SLBE-ELBE participation.
  - ii. The SLBE-ELBE shall itself own and operate at least 1 fully licensed, insured, and operational truck used on the Contract.



- iii. The SLBE-ELBE receives credit for the total value of the transportation services it provides on the Contract using trucks it owns, insures, and operates using drivers it employs.
- iv. The SLBE-ELBE may lease trucks from another SLBE-ELBE firm including an owner-operator who is certified as a SLBE-ELBE. The SLBE-ELBE who leases trucks from another SLBE-ELBE receives credit for the total value of the transportation services the lessee SLBE-ELBE provides on the contract.
- v. The SLBE-ELBE may also lease trucks from a non-SLBE-ELBE firm, including an owner-operator. The SLBE-ELBE who leases trucks from a non-SLBE-ELBE is entitled to credit for the total value of transportation services provided by non-SLBE-ELBE lessees not to exceed the value of transportation services provided by SLBE-ELBE owned trucks on the contract. Additional participation by non-SLBE-ELBE lessees receive credit only for the fee or commission it receives as a result of the lease arrangement.
- vi. A lease shall indicate that the SLBE-ELBE has exclusive use of and control over the truck. This does not preclude the leased truck from working for others during the term of the lease with the consent of the SLBE-ELBE so long as the lease gives the SLBE-ELBE absolute priority for use of the leased truck.

**D. SLBE-ELBE SUBCONTRACTOR PARTICIPATION PERCENTAGES.**

1. Contracts valued at \$1,500,000 and above will be considered Major Public Works Contracts and will include a mandatory Subcontractor participation requirement for SLBE-ELBE firms.
  - a) The Bidder shall achieve the mandatory Subcontractor participation requirement or demonstrate GFE.
  - b) The Bidders shall indicate the participation on Forms AA35 - List of Subcontractors and AA40 - Named Equipment/Material Supplier List as applicable regardless of the dollar value.
  - c) An SLBE-ELBE Bidder may count its own participation toward achieving the mandatory goal as long as the SLBE-ELBE Bidder performs 51% of the Contract Price.
2. Contracts Valued over \$1,000,000 and under \$1,500,000 will also be considered Major Public Works Contracts and will include the mandatory subcontractor participation requirements described above and the following:
  - a) 5% bid discount for SLBE-ELBE firms.
  - b) Non-certified Contractor will receive 5% bid discount if they achieve the specified mandatory Subcontracting participations.

- c) Bid discounts shall not apply if the award will result in a total contract cost of \$50,000 in excess of the apparent lowest Bid.
  - d) In the event of a tie bid between a SLBE-ELBE Bidder and a non-SLBE-ELBE Bidder, the SLBE-ELBE Bidder will be awarded the Contract.
  - e) In the event of a tie bid between a discounted Bid and a non-discounted Bid, the discounted Bid will be awarded the Contract.
3. Contracts valued over \$500,000 up to \$1,000,000 will be considered Minor Public Works Contracts and will be awarded through a competitive Bid process open only to City certified SLBE-ELBE firms. If there are no bidders or no responsible bidders, the Contract will be made available to all Bidders and will be subject to requirements listed in items 1 and 2 for Major Public Works Contracts above.
4. Contracts valued at \$500,000 and below will also be considered Minor Public Works Contracts and will be awarded through a competitive bid process open only to City certified ELBEs unless there are less than 2 firms available at which it will be awarded through a competitive process open only to the City certified SLBE-ELBE firms. If there are no bidders or no responsible bidders, the Contract will be made available to all Bidders and subject to requirements listed in items 1 and 2 for Major Public Works Contracts above.

**E. JOINT VENTURES.**

1. The City may allow for Joint Venture bid discounts on some Contracts. Contracts that allow for Joint Venture bid discounts will be designated in Bid documents. A firm that is bidding or competing for City Contracts may partner with a certified SLBE or ELBE to compete for Contracts as a Joint Venture.
2. A Joint Venture shall be between two entities with the same discipline or license as required by the City. Joint ventures will receive bid discounts depending on the SLBE or ELBE percentage of participation. To be eligible for a discount, a Joint Venture Agreement shall be approved by the City at the time of Bid submittal. The maximum allowable discount shall be 5%. The parties shall agree to enter in the relationship for the life of the projects.
3. Joint Venture shall submit a Joint Venture Management Plan, a Joint Venture Agreement, or both at least 2 weeks prior to the Bid due date. Copies of the Joint Venture applications are available upon request to the Contract Specialist. Each agreement or management plan shall include the following:
- a) Detailed explanation of the financial contribution for each partner.
  - b) List of personnel and equipment used by each partner.
  - c) Detailed breakdown of the responsibilities of each partner.
  - d) Explanation of how the profits and losses will be distributed.
  - e) Description of the bonding capacity of each partner.
  - f) Management or incentive fees available for any one of the partners (if any).

4. Each Joint Venture partner shall perform a Commercially Useful Function. An SLBE or ELBE that relies on the resources and personnel of a non-SLBE or ELBE firm will not be deemed to perform a Commercially Useful Function.
5. Each Joint Venture partner shall possess licenses appropriate for the discipline for which a proposal is being submitted. If a Joint Venture is bidding on a single trade project, at the time of bid submittal, each Joint Venture partner shall possess the requisite specialty license for that trade bid.
6. The SLBE or ELBE partner shall clearly define the portion of the Work to be performed. This Work shall be of the similar type of Work the SLBE or ELBE partner performs in the normal course of its business. The Joint Venture Participation Form shall specify the Bid items to be performed by each individual Joint Venture partner. Lump sum Joint Venture participation shall not be acceptable.
7. Responsibilities of the SLBE or ELBE Joint Venture Partner:
  - a) The SLBE or ELBE partner shall share in the control, management responsibilities, risks and profits of the Joint Venture in proportion with the level of participation in the project.
  - b) The SLBE or ELBE partner shall perform Work that is commensurate with its experience.
  - c) The SLBE or ELBE partner shall use its own employees and equipment to perform its portion of the Work.
  - d) The Joint Venture as a whole shall perform Bid items that equal or exceed 50% of the Contract Price, excluding the cost of manufactured items, in order to be eligible for a Joint Venture discount.

**F. MAINTAINING PARTICIPATION LEVELS.**

1. Credit and preference points are earned based on the level of participation proposed prior to the award of the Contract. Once the Project begins you shall achieve and maintain the SLBE-ELBE participation levels for which credit and preference points were earned. You shall maintain the SLBE-ELBE percentages indicated at the Award of Contract and throughout the Contract Time.
2. If the City modifies the original Scope of Work, you shall make reasonable efforts to maintain the SLBE-ELBE participation for which creditor preference points were earned. If participation levels will be reduced, approval shall be received from the City prior to making changes.
3. You shall notify and obtain written approval from the City in advance of any reduction in subcontract scope, termination, or substitution for a designated SLBE-ELBE Subcontractor. Failure to do so shall constitute a material breach of the Contract.
4. If you fail to maintain the SLBE-ELBE participation listed at the time the Contract is awarded and have not received prior approval from the City, the

City may declare you in default and will be considered grounds for debarment under Chapter 2, Article 2, Division 8, of the San Diego Municipal Code.

**G. SUBCONTRACTING EFFORTS REVIEW AND EVALUATION.**

1. Documentation of your subcontracting efforts will be reviewed by EOCP to verify that you made subcontracting opportunities available to a broad base of qualified Subcontractors, negotiated in good faith with interested Subcontractors, and did not reject any bid for unlawful discriminatory reasons. The EOCP review is based on the federal “Six Good Faith Efforts” model.
2. The GFEs are required methods to ensure that all ELBE and SLBE firms have had the opportunity to compete for the City’s Public Works procurements. The Six Good Faith Efforts, also known as affirmative steps, attract and utilize ELBE and SLBE firms:
  - a) Ensure ELBE firms are made aware of contracting opportunities to the fullest extent practicable through outreach and recruitment activities.
  - b) Make information of forthcoming opportunities available to SLBE-ELBE firms and arrange time for Contracts and establish delivery schedules, where requirements permit, in a way that encourages and facilitates participation by SLBE-ELBE firms in the competitive process. This includes posting solicitations for Bids or proposals to SLBE-ELBE firms for a minimum of 10 Working Days before the Bid or Proposal due date.
  - c) Consider in the contracting process whether firms competing for large Contracts could subcontract with SLBE-ELBE firms.
  - d) Encourage contracting with a consortium of ELBE-SLBE firms when a Contract is too large for one of these firms to handle individually.
  - e) Use the services and assistance of the City’s EOC Office and the SLBE-ELBE Directory.
  - f) If you award subcontracts, require your Subcontractors to take the steps listed above.

**H. GOOD FAITH EFFORT DOCUMENTATION.**

1. If the specified SLBE-ELBE Subcontractor participation percentages are not met, you shall submit information necessary to establish that adequate GFEs were taken to meet the Contract Subcontractor participation percentages. See the City’s document titled “Small Local Business (SLBE) Program, INSTRUCTIONS FOR BIDDERS COMPLETING THE GOOD FAITH EFFORT SUBMITTAL.” The instructions for completing the good faith effort submittal can be found on the City’s website:

<https://www.sandiego.gov/sites/default/files/legacy/eoc/pdf/slbegfeinst.pdf>

**I. SUBCONTRACTOR SUBSTITUTION.**

1. Evidence of fraud or discrimination in the substitution of Subcontractors will result in sanctions including assessment of penalty fines, termination of Contract, or debarment. This section does not replace applicable California Public Contract Code.

**J. FALSIFICATION OF SUB-AGREEMENT AND FRAUD.**

1. Falsification or misrepresentation of a sub-agreement as to company name, Contract amount or actual Work performed by Subcontractors, or any falsification or fraud on the part your submission of documentation and forms pursuant to this program, will result in sanctions against you including assessment of penalty fines, termination of the Contract, or debarment. Instances of falsification or fraud which are indicative of an attempt by you to avoid subcontracting with certain categories of Subcontractors on the basis of race, gender, gender expression, gender identity, religion, national origin, ethnicity, sexual orientation, age, or disability shall be referred to the Equal Opportunity Contracting Program's Investigative Unit for possible violations of Article 2, Division 35 of the City Administrative Code, §§22.3501 et seq. (Nondiscrimination in Contracting).

**K. RESOURCES.**

1. The current list of certified SLBE-ELBE firms and information for completing the GFE submittal can be found on the City's EOC Department website:  
<https://www.sandiego.gov/eoc/programs/slbe>
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**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 **2021 Edition** of the Standard Specifications for Public Works Construction (The "GREENBOOK").
2. The **2021 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.

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

#### 1-2 **TERMS AND DEFINITIONS.** To the "WHITEBOOK":

To item 47, "Holiday", ADD the following:

<b>Holiday</b>	<b>Observed On</b>
Juneteenth	June 19

To item 55, "Normal Working Hours", DELETE in its entirety and SUBSTITUTE with the following:

The **Normal Working Hours** are **7:00 AM to 5:00 PM** except for:

- a) Work from Station 30+33 (Denny's Parking Lot) to Station 38+20 is allowed 24 hours a day. Security guard working hours for Denny's parking lot will be **11:30 AM to 1:30 PM** and **5:00 PM to 7:00 PM** Monday through Friday until site has been restored.
- b) Work in City of La Mesa: See Traffic Control Plans
- c) See Traffic Control Plans for alternate times and locations at no additional cost to City.

### SECTION 2 - SCOPE OF THE WORK

#### 2-2.2 **Caltrans Encroachment Permit.** To the "WHITEBOOK", item 1, DELETE in its entirety and SUBSTITUTE with the following:

1. Contractor shall apply and obtain the Caltrans Encroachment Permit.
  - a) Contractor shall pay for and secure the permit prior to construction.
  - b) Contractor shall arrange and pay for inspection as required by Caltrans.

To the "WHITEBOOK", ADD the following:

3. Contractor shall comply with all Caltrans permitting requirement, including, but not limited to tunneling operation, traffic control, and signal operations. Please refer to **Appendix I** for additional requirements.

**2-2.3**

**Payment.** To the "WHITEBOOK", item 2, DELETE in its entirety and SUBSTITUTE with the following:

2. The payment for applying and obtaining the Caltrans Encroachment Permit shall be included in the Allowance Bid item for "**Caltrans Encroachment Permit Submittal**" and shall include preparing plans and addressing Caltrans comments.
3. The Contractor will be responsible for paying any fees from the City of La Mesa and Helix Water District, San Diego County Water Authority. Payment for these fees will be covered under the Allowance Bid item for "**Miscellaneous Agency Fees**".

**2-3**

**RIGHT-OF-WAY.** To the "WHITEBOOK", ADD the following:

2. Gas supply trucks shall have access to Shell gas station at the corner of Wisconsin Avenue and Lake Murray Boulevard at all times.

**ADD:**

**2-10.2.5**

**Dispute Resolution Board.**

1. If mediation is unsuccessful in settling the dispute and if both parties agree, a no mandatory dispute resolution board process may be used.
2. The parties may impanel a Dispute Resolution Board (DRB) and the DRB process shall be conducted in accordance with the City's alternative dispute resolution process, utilizing board members who are individuals who have expertise in construction. The selection process shall be administered by the American Arbitration Association or any other such neutral organization selected by the City hereinafter called the "Administrator". Claims made for \$60,000 or less shall be heard by 1 DRB member and claims for more than \$60,000 shall be heard by 3 DRB members.
3. To initiate the DRB procedures, the parties shall jointly execute and file a "Submission to Dispute Resolution Board Procedures" request with the Administrator. Upon receipt by the Administrator of the submission form, the Administrator will furnish to the parties a list of individuals skilled in dispute resolution and that have expertise in construction from which to select for the Dispute Resolution Board.
4. Within 10 Working Days from the date the list is sent to the parties, the parties shall return the list to the Administrator and shall strike out any individuals to

which the parties have any factual objections to and shall number the remaining individuals in preference order. The Administrator will appoint the highest mutually preferred individuals to the DRB that are available to serve in the time frame designated above.

### **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.

**3-8.7 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 - Contractor’s Daily Quality Control Inspection Report.**

**3-9 TECHNICAL STUDIES AND SUBSURFACE DATA.** To the “WHITEBOOK”, ADD the following:

5. In preparation of the Contract Documents, the designer has relied upon the following reports of explorations and tests at the Work Site:
  - a) Geotechnical Investigation Mid-City Pipeline - Phase 2 Project, dated June 18, 2015, by Southland Geotechnical Consultants (SGC).
  - b) Monitoring Well Construction Report (Installation & Groundwater Sampling [Report No. 3]), dated October 28, 2015, by SCST Engineering.
  - c) Report for Utility Locating and Potholing Area (X140197), dated March 2015, by AIRX Utility Surveyors
  - d) Potholing Report dated July 13, 2017, by AIRX Utility Surveyors.
  - e) San Diego County Water Authority Construction of the 96" Pipeline No. 4 Extension Phase 1 (Specifications No. 422), by Woodward-Clyde Consultants
  - f) Geotechnical Report – MVE LA Mesa (Field Inspections), dated 6-16-00, by Kleinfelder, Inc. with Group and Delta Consultants, Inc.
  - g) Geotechnical Report Boring Log 127 and 135 – MVE LRT, dated 2/28/00, by Kleinfelder, Inc. with Group Delta Consultants, Inc.

- h) Limited Geotechnical Investigation (Parkway Drive Sewer Main Upgrade), dated January 26, 2012 by AMEC Environment & Infrastructure, Inc.
- i) City of La Mesa Alvarado Trunk Sewer - Phase 3, dated November 5, 2013, by AMEC Enviromental & Infrastructure, Inc.
- j) Supplemental Geotechnical Data for Alvarado Trunk Sewer - Phase 3, dated March 11, 2014, by AMEC Environmental & Infrastructure, Inc.

6. The reports listed above are available for review at the following link:

<https://drive.google.com/drive/folders/1T1OPg77-gGCxUwqOj1YOhtROuuk4VzQ?usp=sharing>

**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. Unless otherwise noted, monument perpetuation, including mark-outs, will be performed by the City. Coordination of these services will be your duty, through the Resident Engineer. If, at any time, an existing survey monument is, or will be, destroyed or disturbed during the course of construction you shall notify the Resident Engineer so that the monument is preserved or perpetuated in accordance with state law.
- 2. The following surveying services, as defined in Cal. Bus. & Prof. Code §8726, shall be provided by the City:
  - a) Locating or establishing a minimum of 4 project geodetic survey control points that provide horizontal and vertical reference values for site feature and structure layout reference locations.
  - b) Locating, establishing, or reestablishing project site boundary lines, survey monuments, right-of-way lines, or easement lines.
  - c) Locating or establishing building design structure locations (building corners or envelope limits) sufficient for structure construction.

**3-10.3 Payment.**

1. 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:

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.**

**3-12.8.3 Equipment.** To the "WHITEBOOK", item 4, DELETE in its entirety and SUBSTITUTE with the following:

4. The approved dewatering system shall include a suitably sized pipeline to transport extracted groundwater from the Work Site to the indicated point of discharge as applicable under the dewatering permit in force during the dewatering operations. The alignment of this pipeline shall be subject to the approval by the Engineer. Where the pipeline is allowed to cross roadways or parking areas, you shall be required to install a conduit below the traveled surface. The installation shall provide protection for the temporary pipeline and a smooth transition across the in accordance with Standard Drawing SDG-107, "Pavement Restoration for Asphalt Concrete Surfaced Streets - Major Excavation" or a concrete trench cap in accordance with Standard Drawing SDG-108, "Pavement Restoration for Concrete Surfaced Streets and Alleys - Major Excavation" as included in **Appendix R - Standard Drawings.**

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

7. Payment for dewatering excludes excavation of the pits associated with tunneling operations. Dewatering for the tunnel pits shall be paid in accordance with 307-2.10 "Payment". No dewatering is allowed during the interstate 8 pipeline crossing tunneling operation and it does not eliminate the requirement for "in-the-wet" techniques and "watertight" shoring.



## SECTION 4 - CONTROL OF MATERIALS

**4-3.4 Specialty Inspection Paid for by the Contractor.** To the "WHITEBOOK", ADD the following:

2. The specialty inspections required are listed as follows:
  - a) Welding of Pipelines (Welding Inspectors)
  - b) 3<sup>rd</sup> Party Inspection of Manufacture of valves 48" and larger, including the valves that have been already purchased.
  - c) 3<sup>rd</sup> Party Inspection of Manufacture of Steel Pipe
  - d) 3<sup>rd</sup> Party Inspection of previously manufactured Steel Pipe stored at Thompson Pipe Group Pressure, Grand Prairie, Texas

**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 issuance of the Notice of Intent to Award** 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 and defense duties set forth in the Contract.

**5-4.1 Policies and Procedures.**

1. You shall procure the insurance described below, at your 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 as required by this Contract and at all times thereafter when you are correcting, removing, or replacing Work in accordance with this Contract. Your duties under the Contract, including your indemnity obligations, are not limited to the insurance coverage required by this Contract.

4. If you maintain broader coverage or higher limits than the minimums shown below, City requires and shall be entitled to the broader coverage or the higher limits maintained by you. Any available insurance proceeds in excess of the specified minimum limits of insurance and coverage shall be available to City.
5. Your payment for insurance shall be included in the Contract Price you bid. You are not entitled to any additional payment from the City to cover your insurance, unless the City specifically agrees to payment in writing. Do not begin any Work under this Contract or allow any Subcontractors to begin work, until you have provided, and the City has approved, all required insurance.
6. Policies of insurance shall provide that the City is entitled to 30 days advance written notice of cancellation or non-renewal of the policy or 10 days advance written notice for cancellation due to non-payment of premium. Maintenance of specified insurance coverage is a material element of the Contract. Your failure to maintain or renew coverage and 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 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	\$10,000,000
Products/Completed Operations Aggregate Limit	\$10,000,000
Personal Injury Limit	\$5,000,000
Each Occurrence	\$5,000,000

**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 Workers' Compensation Insurance and Employers Liability Insurance.**

1. In accordance with the provisions of California Labor Code section 3700, 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 this requirement.
2. Statutory Limits shall be provided for Workers' Compensation Insurance as required by the state of California, and Employer's Liability Insurance with limits of no less than \$1,000,000 per accident for bodily injury or disease.
3. By signing and returning the Contract, you certify that you are aware of the provisions of California's Workers' Compensation laws, including Labor Code section 3700, which requires every employer to be insured against liability for workers' compensation or to undertake self-insurance, and that you will comply with these provisions before commencing the Work.

#### **5-4.2.4 Contractors Pollution Liability Insurance.**

1. You shall procure and maintain at your expense or require your Subcontractor, as described below, to procure and maintain Contractors Pollution Liability Insurance applicable to the Work being performed, with a limit no less than \$2,000,000 per claim or occurrence and \$4,000,000 aggregate per policy period of one year.
2. All costs of defense shall be outside the limits of the policy.
3. You shall obtain written approval from the City for any insurance provided by your Subcontractor instead of you.
4. 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 unless the City has provided prior, written approval.
5. Occurrence based policies shall be procured before the Work commences. 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.

**5-4.2.5 Contractors Hazardous Transporters Pollution Liability Insurance.**

1. You shall procure and maintain at your expense or require your Subcontractor, as described below, to procure and maintain 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 no less than \$2,000,000 limit per occurrence and \$4,000,000 aggregate per policy period of one year.
2. All costs of defense shall be outside the limits of the policy.
3. You shall obtain written approval from the City from any insurance provided by a Subcontractor instead of you.
4. To obtain City approval of a Subcontractor's insurance coverage in lieu of the Contractor's insurance, the Contractor shall certify that all activities under the Contractor's Hazardous Transporters Pollution Liability Insurance will be performed exclusively by the Subcontractor providing the insurance. The deductible shall not exceed \$25,000 per claim without prior approval of the City
5. Occurrence based policies shall be procured before the Work commences. 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.

**5-4.2.6 Contractors Builders Risk Property Insurance.**

1. You shall provide at your expense, and maintain until Final Acceptance of the Work, a Special Form Builders Risk Policy or Policies. This insurance shall be in an amount equal to the replacement cost of the completed Work (without deduction for depreciation) including the cost of excavations, grading, and filling. The policy or policies limits shall be 100 percent of the value of the Work under this Contract, plus 15 percent to cover administrative costs, design costs, and the costs of inspections and construction management.
2. Insured property shall include material or portions of the Work located away from the Site but intended for use at the Site and shall cover material or portions of the Work in transit. The policy or policies shall include as insured property scaffolding, falsework, and temporary buildings located at the Site. The policy or policies shall cover the cost of removing debris, including demolition.

3. The policy or policies shall provide that all proceeds shall be payable to the City as Trustee for the insured, and shall name the City, the Contractor, Subcontractors, and Suppliers of all tiers as named insured. The City, as Trustee, will collect, adjust, and receive all monies that become due and payable under the policy or policies, may compromise any and all claims, and will apply the proceeds of this insurance to the repair, reconstruction, or replacement of the Work.
4. Any deductible applicable to the insurance shall be identified in the policy or policies documents. The responsibility for paying the part of any loss not covered because of the deductibles shall be apportioned among the parties, except for the City, as follows: if there is more than one claimant for a single occurrence, then each claimant shall pay a pro-rata share of the per occurrence deductible based upon the percentage of their paid claim to the total paid for insured. The City shall be entitled to 100 percent of its loss. You shall pay the City any portion of the loss not covered because of a deductible; at the same time the proceeds of the insurance are paid to the City as Trustee.
5. Any insured, other than the City, making claim to which a deductible applies shall be responsible for 100 percent of the loss not insured because of the deductible.

**5-4.2.7 Railroad Protective Liability Insurance.** Exclusions relating to performance of operations within the vicinity of any railroad, bridge, trestle, roadbed, tunnel, underpass, or cross shall be deleted from all policies to which they may apply. Alternatively, you may provide separate Railroad Protective Liability insurance providing coverage, including endorsements, equivalent to that required for the CGL described herein.

**5-4.2.8 Architects and Engineers Professional Insurance (Errors and Omissions Insurance).**

1. For Contracts with required engineering services, including Design-Build and preparation of engineered Traffic Control Plans (TCP) by you, you shall keep or require all of your employees and Subcontractors, who provide professional engineering services under Contract, to provide to the City proof of Professional Liability coverage with a limit of no less than **\$1,000,000** per claim and **\$2,000,000** aggregate per policy period of one year.
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 three years after completion of the Project or termination of the 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 here.

**5-4.3 Rating Requirements.** Except for the State Compensation Insurance Fund, all insurance required by this Contract 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 of California, 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 of California 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 in this Contract.

**5-4.4 Evidence of Insurance.** You shall furnish the City with original Certificates of Insurance, including all required amendatory endorsements (or copies of the applicable policy language effecting coverage required by this clause), prior to your commencement of Work under this Contract. In addition, The City reserves the right to require complete, certified copies of all required insurance policies, including endorsements, required by these specifications, at any time.

**5-4.5 Policy Endorsements.**

**5-4.5.1 Commercial General Liability Insurance.**

**5-4.5.1.1 Additional Insured.** To the fullest extent permitted by law and consistent with the limiting provisions set forth at California Civil Code section 2782, California Insurance Code section 11580.04, and any applicable successor statutes limiting indemnification of public agencies that bind the City, the policy or policies shall be endorsed to include as an Additional Insured the City and its respective elected officials, officers, employees, agents, and representatives, with respect to liability arising out of:

- i. Ongoing operations performed by you or on your behalf,
- ii. your products,
- iii. your work, e.g., your completed operations performed by you or on your behalf, or
- iv. 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 Workers' Compensation Insurance and Employers Liability Insurance.**

**5-4.5.2.1 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.

**5-4.5.3 Contractors Pollution Liability Insurance Endorsements.**

**5-4.5.3.1 Additional Insured.** To the fullest extent permitted by law and consistent with the limiting provisions set forth at California Civil Code section 2782, California Insurance Code section 11580.04, and any applicable successor statutes limiting indemnification of public agencies that bind the City, the policy or policies shall be endorsed to include as an Additional 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.

**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.** To the fullest extent permitted by law and consistent with the limiting provisions set forth at California Civil Code section 2782, California Insurance Code section 11580.04, and any applicable successor statutes limiting indemnification of public agencies that bind the City, the policy or policies shall be endorsed to include as an Additional 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.

**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.

**5-4.5.5 Builders Risk Endorsements.**

**5-4.5.5.1 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 that arise from Work performed by the Named Insured for the City.

**5-4.5.5.2 Builders Risk - Partial Utilization.** If the City desires to occupy or use a portion or portions of the Work prior to Acceptance,, the City will notify you, and you shall immediately notify your Builder's Risk insurer and obtain an endorsement that the policy or policies shall not be cancelled or lapse on account of any use or occupancy. You shall obtain the endorsement prior to the City's occupation and use.



**5-4.6 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. The City may require you to purchase coverage with a lower retention or provide proof of ability to pay losses and related investigations, claim administration, and defense expenses within the retention. The policy language shall provide, or be endorsed to provide, that the self-insured retention may be satisfied by either the named insured or City.

**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, in writing, 30 days prior to any material change to the policies of insurance provided under this Contract. This written notice is in addition to the requirements of paragraph 8 of Section 5-4.1. Policies of insurance shall provide that the City is entitled to 30 days advance written notice of cancellation or non-renewal of the policy or 10 days advance written notice for cancellation due to non-payment of premium. Maintenance of specified insurance coverage is a material element of the Contract. Your failure to maintain or renew coverage and to provide evidence of renewal during the term of the Contract may be treated by the City as a material breach of the Contract.

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

**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:

**Montezuma PPL/Mid-City Pipeline Phase 2**

Brian Vitelle, Senior Engineer, [BVitelle@sandiego.gov](mailto:BVitelle@sandiego.gov)

Maryam Kargar, Project Engineer, [MKargar@sandiego.gov](mailto:MKargar@sandiego.gov)

Resident Engineer, TBA, [XXX@sandiego.gov](mailto:XXX@sandiego.gov)

**70<sup>th</sup> Alvarado to Saranac Sidewalk**

Louis Schultz, Senior Engineer, [LSchultz@sandiego.gov](mailto:LSchultz@sandiego.gov)

Heidi Leon, Project Manager, [HLeon@sandiego.gov](mailto:HLeon@sandiego.gov)

Resident Engineer, TBA, [XXX@sandiego.gov](mailto:XXX@sandiego.gov)

**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".

#### **SECTION 6 - PROSECUTION AND PROGRESS OF THE WORK**

**6-1.1 Construction Schedule.** To the "WHITEBOOK", ADD the following:

3. Refer to the Sample City Invoice materials in **Appendix D - Sample City Invoice with Cashflow Forecast** and use the format shown.
4. The **90 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".

**ADD:**

**6-2.2**

**Work Restrictions.** To the "WHITEBOOK", ADD the following:

The items below are in reference to the Montezuma PPL/Mid-City Pipeline Phase 2 Drawings **37333-D**:

1. Trenchless Tunnel Construction under 108" SDCWA Pipeline Crossing – at the end of the work shift, the site shall be cleared of all equipment. Traffic rated shaft plates, designed for H-20 loading, shall be placed over both the launch and receiving shafts, such that the road shall be opened to through traffic during the day.
2. Trenchless Tunnel Construction under Interstate 8 Crossing – at the end of the work shift, the site shall be cleared of all equipment. Traffic rated shaft plates, designed for H-20 loading, shall be placed over the receiving shaft on Lake Murray Blvd, such that the road can be opened to through traffic during the day.

**6-3.1**

**General.** To the "WHITEBOOK", item 3, subitem d, DELETE in its entirety and SUBSTITUTE with the following:

- d) 30 Calendar Days for full depth asphalt final mill and resurfacing work required per SDG-107, "Pavement Restoration for Asphalt Concrete Surfaced Streets - Major Excavation" as included in **Appendix R - Standard Drawings**.

**ADD:**

**6-6.1.1**

**Environmental Document.**

1. The City of San Diego has prepared a **Final Mitigated Negative Declaration (WBS No. S-11026.02.06)**, a **Notice of Determination (406277 / S-11026.02.06, State Clearinghouse No. 2015111024)** for **Montezuma Pipeline/Mid-City Pipeline Phase 2** and a **Notice of Exemption for 70<sup>th</sup> Alvarado to Saranac Sidewalk**, Project No. **B-17065.02.06**, as referenced in the Contract Appendix. You shall comply with all requirements of the **Final Mitigated Negative Declaration, Notice of Determination and Notice of Exemption** 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.

**6-6.2.2 Paleontological Monitoring Program.** To the "WHITEBOOK", ADD the following:

3. You shall retain a qualified paleontologist for this Contract. You shall coordinate your activities and Schedule with the activities and schedules of the paleontologist monitor. Notify the Engineer before noon of the Working Day before monitoring is required. See 3-5, "INSPECTION" for details.

**6-9 LIQUIDATED DAMAGES.** To the "WHITEBOOK":

Item 2, DELETE in its entirety and SUBSTITUTE the following:

2. The execution of the Contract shall constitute agreement between you and the City that the liquidated damage amount described in the table below is the value of the damage caused by your failure to complete the Work within the allotted time. Such sum shall not be construed as a penalty and may be deducted from your payments if such delay occurs.

<b>Contract Value</b>	<b>Liquidated Damages Daily Amount</b>
Less than \$200,001	\$1,000
\$200,000 to \$500,000	\$1,500
\$500,001 to \$1,000,000	\$2,000
\$1,000,001 to \$2,000,000	\$2,500
\$2,000,001 to \$5,000,000	\$3,000
\$5,000,001 to \$10,000,000	\$5,500
\$10,000,001 to \$20,000,000	\$6,500
Greater Than \$20,000,000	\$7,000

ADD the following:

- 3. The OWNER and CONTRACTOR recognize that time is of the essence of this agreement and that the owner will suffer financial loss if the WORK is not completed within the time specified. They also recognize the delays, expense, and difficulties in proving legal proceedings the actual loss suffered by the OWNER and the CONTRACTOR agree that as liquidated damages for delays (but not as a penalty) the CONTRACTOR shall pay the said amount for everyday that expires in excess of the time specified for each milestone completion of the WORK, as described in Attachment A – Scope of Work, section 3 CONTRACT TIME.

**SECTION 7 – MEASUREMENT AND PAYMENT**

**7-3.1 General.** To the “WHITEBOOK”, ADD the following:

- 4. The Allowance Bid item for “**Denny’s Security Guard**” shall include, but shall not be limited to, the Work as specified in the Plans, Contract Documents, and Technical Sections.
- 5. The Lump Sum Bid item for “**New City of La Mesa Gateway Sign**” shall include, and not be limited to, the construction of the new City of La Mesa Gateway Sign and associated lighting, as specified in the Plans and Contract Documents.
- 6. If a Bid item has not been provided for an item of the Work described or shown in the Contract Documents, the payment shall be included in the Contract Price.

**7-3.2.2.1 Progress Payment for Pipelines.** To the "WHITEBOOK", item 4, DELETE in its entirety and SUBSTITUTE with the following:

- 4. In asphalt-surfaced streets, the City shall pay 15% for hydrostatic and bacterial testing, Wayneball and Mandrelling (where necessary), for water and sewer utility constructions respectively, and operational testing for storm drains, including the trench cap and cleanup. The City shall pay the remaining 5% after completing the asphalt wearing surface, Trench Capping per SDG-107 “Pavement Restoration for Asphalt Concrete Surfaced Streets - Major Excavation”, and final cleanup.

**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**

<b>Contract Price</b>	<b>Maximum Field Order Work Amount</b>
Less than 1,000,001	\$10,000

<b>Contract Price</b>	<b>Maximum Field Order Work Amount</b>
1,000,001 to \$5,000,000	\$20,000
\$5,000,001 to \$10,000,000	\$25,000
\$10,000,001 to \$30,000,000	\$40,000
Greater than \$30,000,000	\$70,000

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.

**7-4.1 General.** To the "WHITEBOOK", ADD the following:

2. If a Bid item has not been provided for an item of the Work described or shown in the Contract Documents, the payment shall be included in the Contract Price.

## **SECTION 201 – CONCRETE, MORTAR AND RELATED MATERIALS**

**201-1.1.1 General.** To the "GREENBOOK", ADD the following:

1. When called for on the plans, 2 sack concrete slurry shall be 2,500 psi minimum.

**SECTION 209 – PRESSURE PIPE**

**209-1.1.1 General.** To the “GREENBOOK”, ADD the following:

1. 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.
2. Refer to AWWA C900-16 for all references to AWWA C905.

**209-1.1.2 Materials.** To the “WHITEBOOK”, ADD the following:

14. Bolts shall be hot-dipped galvanized tee heads made of high-strength low-alloy or ductile iron in accordance with AWWA C111. ASTM A307 Grade A bolts shall not be used.
15. Fittings shall be as shown on the plans. If fitting/joint type is not noted refer to item 1.

**209-2.1 General.** To the “GREENBOOK”, ADD the following:

Steel pipe and specials used for water transmission mains and casings shall be fabricated steel pipe conforming to the latest edition of AWWA C200. Pipe shall be as follows:

<b>Pipe &amp; Fitting Diameter</b>	<b>Pipe &amp; Fitting Thickness</b>	<b>Cement Lining Thickness</b>	<b>Cement Mortar Coating Thickness</b>	<b>Joint Type (unless noted otherwise on the plans)</b>
<b>66"</b>	1/2"	3/4"	1-1/4 "	See sheet C-14 in Plan set
<b>96" min. (Casing, tunneling) <sup>1</sup></b>	1" min.	NA	NA	See Section 02315 – Steel Casing Pipe

<sup>1</sup> Inside diameter of the steel casing pipe is assumed to be 96-inch but shall be finalized by the Contractor so as to provide the minimum clearance required all around the outside diameter of the final carrier pipe and fiber optic conduit(s), and to account for any installation misalignment during casing pipe advancement. The CONTRACTOR may select a greater pipe diameter or thickness for the method of work, loading characteristics, site conditions, or possible interferences; and shall be fully responsible for the sufficiency of the casing provided.

**209-2.2.1 Materials.** To the "GREENBOOK", Table 209-2.2.1, Pipe, Material, ADD the following:

Steel used in fabricated steel pipe shall comply with the physical and chemical requirements of ASTM A139, Grade C or ASTM 1018 modified to grade 42. Casing pipe shall be at a minimum ASTM A36 steel.

**ADD:**

**209-2.2.1.1 Cement Mortar Lining and Polyolefin Tape Coating.**

1. Steel pipe, fittings and specials shall be lined and coated as follows:
  - a) Cement mortar lining shall comply with the requirements of Table 209-2.2.1. Lining shall be trimmed as necessary to allow full operation of butterfly valves at connections to steel pipe. After trimming, any exposed portions of pipe interior shall be lined with liquid epoxy per AWWA C210.
  - b) External surfaces of steel pipe and specials shall be coated with a 3 part factory applied tape coating system in accordance with AWWA C214 for steel pipe and AWWA C209 for steel pipe specials, connections and fittings. Additional mechanical protection shall be provided by the application of a reinforced cement mortar armor coating applied in accordance with AWWA C205. Cement shall be ASTM C150, Type II/V and admixtures shall contain no chlorides. Lining shall be trimmed as necessary to allow full operation of butterfly valves at connections to steel pipe. Line exposed portions of pipe interior with liquid epoxy per AWWA C210.
  - c) All steel pipe joint exteriors shall have an 80 mil heat shrink polyolefin sleeve or field applied 3 layer tape installed after welding conforming to the requirements of AWWA C216 and approved by Engineer. Use Canusa or approved equal.
  - d) Circumferential steel fabric reinforcement shall be 12-gauge wire minimum per ASTM A185 or ASTM A497.
  - e) Allow linings and coating to cure at least 7 days at not less than 40 degrees prior to shipping to the site.
  - f) Hold back lining and coating from socket and spigot ends per Manufacturer's standard practices. Hold back coating from ends of butt-strap, mechanical coupling, and flanged joint pipe sufficient distance to permit field assembly of joints. Lining shall terminate at pipe ends, except where otherwise specified or where necessary to accommodate free motion of butterfly valve discs.
  - g) Cement-mortar lining and coating of pipe joints in field shall conform to AWWA C205 Section 4.7 and AWWA C602 Section 4-8.

**209-2.2.2**

**Submittals.** To the "GREENBOOK", ADD the following:

<b>SUBMITTAL</b>	<b>DESCRIPTION</b>
Shop Drawings	<p>Submit per piping shop drawing requirements.</p> <p>Include legible plan and profile diagram of pipe lay diagram , layout schedule, fabrication details and dimensional checks</p> <p>Layout schedule shall show order of installation, length and location of each pipe section and special, station and elevation of pipe invert at all changes in grade, and all data on curves and bends for both horizontal and vertical alignment.</p> <p>Do not manufacture pipe until shop drawings are approved.</p>
Catalog Data	Required for pipe, protective coating and welding rod for field welding.
Installation Instructions	Required per installation instruction requirements.
Certificate of Compliance	Submit coating system and application certification per certificate of compliance requirements.
	Manufacturer certifications.
Test Record Transcripts	Submit mill reports and plant test reports per test record transcript requirements.
	Submit mill report showing type of steel and physical and chemical properties for each heat number of steel used in fabricating pipe.
	Submit test reports showing physical properties of rubber used in gaskets
Welder Qualification Certificates	Required per standard qualification procedure of ASME Boiler and Pressure Vessel Code Section IX, Welding Qualifications



**209-2.2.4 Joints.** To the "GREENBOOK", ADD the following:

1. Unless noted otherwise on the plans, joint type for steel pipe and fittings shall be as shown in the Table in Section 209-2.1.
2. Flanges shall be Class D per AWWA C207 with a maximum working pressure of 150psi. All nuts, bolts and washers shall be class 316 stainless steel.
3. Sleeve couplings with restraint harness shall be steel and of a gasketed, sleeve type design with diameter to properly fit the pipe. Each coupling shall consist of one (1) steel middle ring, two (2) steel followers, two (2) rubber-compounded wedge section gaskets and sufficient track-head steel bolts to properly compress the gaskets. All nuts, bolts and washers shall be class 316 stainless steel. Restraint harness shall be per AWWA M11 design. Coupling shall conform to AWWA C200 Section 4.13. It shall be square cut or beveled with no burrs. Outside surfaces where coupling seats, shall be free of indentations, projections, or roll marks to ensure watertight seal. Pipe ends shall have tolerances within limits required by mechanical coupling Manufacturer.

**209-2.2.5 Special Sections.** To the "GREENBOOK", ADD the following:

1. Special pipe and fittings shall be furnished as follows:
  - a) Manufacturer shall furnish all fittings and special pieces required for closures, curves, bends, branches, manholes, outlets, connections for mainline valves, and other appurtenances required.
  - b) Fabricate special fittings of welded steel sheet or plate, lined and coated with cement-mortar of same type as adjoining pipe and applied as specified for lining and coating of specials in AWWA C205 and as modified herein. Butt welding shall be used, unless otherwise indicated.
  - c) Minimum centerline radius of elbow or bend shall be as follows. Maximum deflection at a mitered girth seam shall be 22½°.
  - d) Reinforce outlets at special fittings with collars, wrapper plates or crotch plates. If collar or wrapper reinforcement is used, outlet diameter shall not exceed 69% of fitting ID. Diameter of outlets reinforced with crotch plates may equal fitting diameter.

**SECTION 212 - WATER AND SEWER SYSTEM VALVES AND APPURTENANCES**

**212-5.2 Butterfly Valves.** To the "WHITEBOOK", ADD the following:

9. Butterfly valves shall be metal seated triple offset valves per Specification Section 15102.

**212-5.6** **Air Release, Air/Vacuum and Combination Air Valves.** To the "GREENBOOK, ADD the following:

**Combination Air Valves (AV/AR):** Combination air valves shall combine the characteristics of air/vacuum valves and air release valves by exhausting accumulated air in systems under pressure and releasing or re-admitting large quantities of air, while a system is being filled or drained, respectively. They shall be of the sizes indicated on the Drawings, with flanged or threaded ends to match adjacent piping. Bodies shall be of high-strength cast iron per ASTM A126, Class B. The float, washers, nuts bolts and all moving parts shall be constructed of Type 316 stainless steel. Seat shall be BUNA N. Air/vacuum valves shall be designed for minimum 250-psi (as applicable) water working pressure, unless otherwise indicated.

Manufacturers shall be APCO, Val-Matic, GA Industries or approved equal.

Air release, air/vacuum, and/or combination air valves shall be installed at high points in piping systems and where indicated on the Drawings.

All valves shall be installed in accordance with the manufacturer's printed recommendations.

Combination air and vacuum valves shall have piped outlets to the nearest acceptable drain, firmly supported, and installed in such a way as to avoid splashing and wetting of floors.

#### **SECTION 217 - BEDDING AND BACKFILL MATERIALS**

**217-1** **BEDDING MATERIAL.** To the "GREENBOOK", ADD the following:

Bedding material for steel pipe shall be ¾" crushed rock wrapped in filter fabric. Filter fabric shall comply with AASHTO M 288-15, Class 2 and shall be Mirafi 160N or approved equal.

#### **SECTION 303 – CONCRETE AND MASONRY CONSTRUCTION**

**ADD:**

**303-1.12** **Payment.** To the "GREENBOOK", Paragraph (1), DELETE in its entirety and SUBSTITUTE with the following:

The payment for Gravity Retaining Wall shall be paid per Square Foot as bid item labeled "**Gravity Retaining Wall**" that measured parallel to finish grade from top of wall to bottom of footing.

**303-6.1.2** **Measurement and Payment.** To the "WHITEBOOK", ADD the following:

The work for bid item "**Concrete Raised Median**" shall include demolition of existing medians, construction of new raised medians, colored stamped concrete, construction of medians' curb and gutter and other associated work.

## SECTION 306 – OPEN TRENCH CONDUIT CONSTRUCTION

**306-1 GENERAL.** To the “GREENBOOK”, ADD the following:

1. It is anticipated the onsite soils will be generally excavatable with conventional, heavy duty trench excavation equipment although areas of very dense to hard well-cemented soils will likely be encountered in the Lindavista Formation and Stadium Conglomerate. These well-cemented soils may require heavy ripping, jackhammering or rock breaking excavation methods.

The City does not represent that anticipated conditions will be encountered in performing the Work per section 3-9 of the “WHITEBOOK” of the specifications.

2. All Work under this section shall be subject to the applicable permanent resurfacing restoration requirements in accordance with the following City of San Diego Standard Drawings as included in **Appendix R – Standard Drawings**.
  - a) SDG-105, “Pavement Restoration General Notes”
  - b) SDG-107, “Pavement Restoration for Asphalt Concrete Surfaced Streets – Major Excavation”
  - c) SDG-108, “Pavement Restoration for Concrete Surfaced Streets and Alleys – Major Excavation”
  - d) SDG-117, “Pavement Restoration for Asphalt Concrete Surface Streets – Minor Excavation”
  - e) SDG-118, “Pavement Restoration for Concrete Surface Streets and Alleys – Minor Excavation”

**306-3.3.4 Payment.** To the “WHITEBOOK”, ADD the following:

12. The payment for pavement restoration including influence area shall be included in the Bid items for the associated abandonment Work.

**306-3.7 Imported Backfill.** To the “WHITEBOOK”, ADD the following:

4. Imported backfill shall be granular, have an expansion index less than 20 (per ASTM D4829) and no particles greater than 3” in maximum dimension.

**306-4 SHORING AND BRACING.** To the “WHITEBOOK”, ADD the following:

4. Shoring is the responsibility of the Contractor and shall be designed by a structural engineer licensed in the State of California. Excavated and/or backfill soils should not be stockpiled at the top of temporary excavations (or trenches) or in close proximity (within the area defined by a 45 degree angle from the bottom of the temporary excavation or trench).

**306-8.3.2 Installation.** To the “GREENBOOK”, ADD the following:

Pothole per Section 402 and make field measurements needed before submitting shop drawings or ordering pipe, fittings or specials. Make minor changes in dimensions and alignments as needed to avoid utilities or structural conflicts.

Steel pipe shall be laid so the bell end of pipe faces in direction of laying. Pipe on slopes steeper than 20% shall be laid in uphill direction. Prior to laying pipe, grade trench bottom and prepare to provide uniform bearing throughout entire length of each pipe joint. Excavate suitable bell holes at each joint and scoop out a shallow lateral depression half a pipe length from last pipe laid to allow for easy removal of belt pipe sling and thus avoid any movement of pipe after it is placed on proper line and grade.

The following installation standards shall be followed:

1. Manufacturer’s installation and warranty requirements
2. Applicable OSHA and Cal OSHA regulations
3. Applicable building, fire, plumbing and mechanical code requirements
4. AWWA C604 Installation of Steel Water Pipe 4 in and Larger
5. AWWA M11 Steel Water Pipe: A Guide for Design and Installation

**306-8.3.2.2 Welded Joints.** To the “GREENBOOK”, ADD the following:

Install extruded butyl rubber pipe joint sealant. Apply sealant per Manufacturer’s instructions.

**ADD:**

**306-8.3.4 Steel Pipe Field Quality Control.**

Field testing shall include:

ITEM	TEST FOR	TEST STANDARD (ASTM OR OTHER TEST STANDARD)	FREQUENCY	FIRST TEST PAID FOR BY	RETESTS PAID FOR BY
Steel Pipe Fillet Welds and Lap Welds	Field Welding of Joints on Pipe Interior (Magnetic Particle Test)	AWWA C206 Section 5.2 and AWS D1.1 Upon test completion remove and flush all non NSF61- Compliant Materials from Pipe Interior	All interior steel pipe single- welded joints	Contractor	Contractor
	Field Inspection of Interior Welds	Visual Inspection per AWWA C206 Section 5.1 and Video-Camera Record of Pipe	All interior steel pipe single-	Contractor	Contractor

ITEM	TEST FOR	TEST STANDARD (ASTM OR OTHER TEST STANDARD)	FREQUENCY	FIRST TEST PAID FOR BY	RETESTS PAID FOR BY
		Interior Welding by Independent City-Accepted Inspection Agency. Verify absence of sharp edges, weld spatters, and burrs	welded joints		
Steel Pipe Butt Welds	Radiograph Inspection of Butt Welds	AWS D1.1	All stainless steel pipe butt welds in pipe 20" or larger	Contractor	Contractor
	Magnetic Particle Test	AWWA C206 Section 5.2 and AWS D1.1  Upon test completion remove and flush all non NSF61- Compliant Materials from Pipe Interior	All steel pipe butt-welded joints not x- ray tested	Contractor	Contractor
	Ultrasonic Test (Alternate to Magnetic Particle Test)	AWWA C206 Section 5.2 and AWS D1.1	All steel pipe butt-welded joints not x- ray tested	Contractor	Contractor
	Field Inspection	Visual Inspection of Pipe Interior Welds per AWWA C206 Section 5.1. Verify absence of sharp edges, weld spatters, and burrs	All steel pipe butt-welded joints	City	City
Installed Steel Pipe	Cement-Mortar Lining of Joints	AWWA C602 Section 5.3 CCTV inspection of interior of finished installation	1 inspection of all steel pipe joints	Contractor	Contractor
	Hydrostatic Test	Section 306-1.4.5	All steel pipe	Contractor	Contractor
	Disinfection	Section 306-1.4.7 and AWWA C651.	All steel potable water pipe	Contractor	Contractor

ITEM	TEST FOR	TEST STANDARD (ASTM OR OTHER TEST STANDARD)	FREQUENCY	FIRST TEST PAID FOR BY	RETESTS PAID FOR BY
	Anchorage and Support of Exposed Pipe	Visual inspection of finished installation. Support per UPC Table 3-1 and 3-2	1 inspection	City	City
	Installation & Leakage	Visual inspection of exterior of finished installation. No visible leaks	1 inspection	City	City
	11-month Warranty Inspection	Demonstrate compliance to Contract Documents and Manufacturer's printed literature	1 test	City	Contractor

**ADD:**

**306-8.3.5**

**Pipe Protection.** At all times when pipe laying is not in progress, close open end of pipe with tight-fitting cap or plug to prevent entrance of foreign matter. These provisions shall apply during off hours as well as overnight. In no event shall pipeline be used as a drain for removing water which has infiltrated into trench. Contractor shall maintain inside of pipe free from foreign materials and in a clean and sanitary condition until acceptance by CITY'S Representative.

**ADD:**

**306-8.3.6**

**Corrosion Protection.** A cathodic protection system shall be provided as shown on the plans and in accordance with Technicals Section 16640 Cathodic Protection System.

**306-8.9.1**

**General.** To the "GREENBOOK", ADD the following:

Welded steel pipe shall have a test pressure of 225 psi.

**306-12.1**

**Backfill.** To the "GREENBOOK", ADD the following:

Backfill shall be placed in uniform lifts not exceeding 8 inches in loose thickness.

**306-15**

**PAYMENT.** To the "GREENBOOK", ADD the following:

1. Permanent pavement overlay resurfacing (trench width plus influence areas) is excluded from the pipeline and pipeline appurtenances bid items. Pipe bedding, trench subgrade, trench asphalt base and asphalt concrete shall be included in the pipeline and pipeline appurtenances bid items.

**306-15.1 General.** To the "WHITEBOOK", Item 1, subitem n, DELETE in its entirety and SUBSTITUTE with the following:

- n) Permanent resurfacing. See **306-1 General** for permanent pavement restoration requirements.

ADD the following:

- 2. The payment for "**Water Main (66 Inch, Welded Steel) (Excludes Material Cost of Pipe) (Excluding Trenchless Crossings) STA 09+20 to STA 30+40**" does not include the pipe material since the material has already been purchased.
- 3. The payment for "**Freight for 66 Inch Welded Steel Pipe**" shall include the delivery of 2,120 linear feet of 66 inch welded steel pipe from Thompson Pipe Group Pressure Grand Prairie yard in Texas to San Diego. This pipe is required for the first phase of work and shall be delivered within the first 42 workings days from NTP. The contractor shall coordinate the delivery of pre-manufactured pipe, and contact Thompson Pipe Group Pressure at least 6 weeks before the desired arrival date to coordinate inspection of the pipe, fittings and accessories at Thompson's Grand Prairie Yard. Prior to shipping, the contractor shall coordinate the joint inspection with 3rd Party inspector, Thompson Pipe representatives and City representatives, along with contractor's representatives. Pipe coating and lining shall be visually inspected or by other means for damage. Pipe shall be inspected for completeness, coating, weathering, incidental damage, mortar liner condition and joint roundness. All accessories and related material shall be inspected for completeness, serviceability, corrosion, and damage. Field repairs or replacement items will be coordinated at Thompson's facility before shipment and shall be the responsibility of Thompson Pipe Group. Contractor shall accept full responsibility for the proper care and condition of the pipe departing from Thompson's yard. Thompson Pipe Group is responsible for loading the pipe.
- 4. Work related to removal and disposal of interfering abandoned SDG&E steel gas mains (6-inch and 2-inch) and old Brine pipelines shall be included in the bid items for Water Main (66-inch, Welded Steel)

**306-15.5 Valves.** To the "WHITEBOOK", ADD with the following:

- 1. The bid item for **Butterfly Valves** does not include the 2 valve vaults on either side of the Interstate 8 trenchless crossing.
- 2. The bid item for "**Butterfly Valve (66 Inch, Class 200, Triple Offset)**" exclude the Material Cost of valves since the material has already been purchased and is stored at Alvarado Water Treatment Plant (AWTP). The contractor is responsible for delivery of the valves from AWTP to the installation location. The manufacturer for these valves is EMERSON, Vanessa Series 30,000. The product data will be provided after the award.

3. The valve vaults on either side of the Interstate 8 trenchless crossing shall be paid for under the bid item **"Butterfly Valve Vault"** and shall include the concrete vaults with access manways, all steel hardware including the landing, ladders, grating and other miscellaneous metals, sump.
4. The bid item for gate valves does not include the valves associated with the main line valve bypasses or fire hydrant connections.
5. Bid item **"Butterfly Valve (72 Inch, Class 200, Triple Offset)"** shall include the cost of furnishing and delivery.

**306-15.6 Hydrants.** To the "WHITEBOOK", ADD the following:

5. Payment for Gate Valves (6 Inch) shall be included in the Bid item for **"Fire Hydrant Assembly and Marker"**
6. Payment for pavement restoration, including influence area, shall be included in the associated Bid items pertinent to the Work.
7. See **306-1 General** for permanent resurfacing requirements.

**306-15.7 Buried Structures.** To the "WHITEBOOK", DELETE in its entirety and SUBSTITUTE with the following:

**306-15.7 Buried Structures.** To the "GREENBOOK", sentence (3), DELETE in its entirety and SUBSTITUTE with the following:

The Contract Unit Price shall include excavation, backfill, disposal of all excess excavation, constructing inverts, furnishing and installing castings, restoration of the street surface (See **306-1 General** for permanent resurfacing requirements) and improvements including but not limited to sidewalk panel, and all other Work, excluding temporary resurfacing, necessary to construct the buried structure, complete in-place.

**306-15.8 Pipeline Appurtenances.** To the "WHITEBOOK", ADD the following:

10. For payment of the bid item **"Insertion Flow Meters"**, refer to section 13414 of the Technicals.

**306-16.6 Payment.** To the "WHITEBOOK", ADD the following:

6. The payment for access manways shall be included in the Bid item for **"Access Manway"** and shall include all the concrete cradle base and structure walls, crushed rock base, access manhole frame and cover, and non-shrink grout fill.

**306-17.2 Payment.** To the "WHITEBOOK", ADD the following:

12. See **301-1 General** for permanent resurfacing requirements.



## SECTION 307 – JACKING AND TUNNELING

**307-2**

**TUNNELING OPERATIONS.** To the “GREENBOOK”, ADD the following:

1. Refer to the following attached Technical Specification Sections.
  - a) Section 02160 Shaft Excavation and Support
  - b) Section 02443 Microtunneling
  - c) Section 02445 Installation of Carrier Pipe in Steel Casing Pipe
  - d) Section 02496 Geotechnical Instrumentation
  - e) Section 03360 Contact Grouting
2. The trenchless pipeline construction shall be constructed per the following:
  - a) Define the location, depth and configuration of the launching and receiving shafts at the crossings; and the traffic management plans for the proposed construction. Provide details of the proposed design(s), and submit the work plans and design calculations to the City for approval.
  - b) Existing boring information suggested man made fill and/or soils of the Lindavista formation overlying the Stadium Conglomerate within the tunnel horizon. The Contractor shall assume a mixed face tunneling condition with Stadium Conglomerate found at the tunnel springline or below; and possibly a perched groundwater table at the interface.
  - c) Advance at least one geotechnical exploratory (supplemental) boring adjacent to each of the proposed launching and receiving shafts at each crossing to 10-ft below proposed invert or 3-ft into top of the Stadium Conglomerate. The supplemental borings shall be completed within 30 days of NTP.
  - d) Prepare and log the borings per requirements in Section 02496 of the specification. When groundwater is encountered in these borings, convert the boring into an observation well for monitoring of the groundwater table with a 5-ft long intake screen located halfway at the overburden soil/conglomerate interface. The Contractor shall assume at least one observation well will be installed at each crossing. These observation wells shall be protected and remain in service during the tunnel construction.
  - e) Confirm the existing ground and groundwater conditions. Inform the City immediately if there are significant differences that may affect the proposed construction.
  - f) Excavate and install the steel casing for the horizontal pipeline in accordance with the proposed line and grade and within the acceptable construction tolerances. Size the steel casing pipe per clearance envelope as indicated.

- g) The excavation and the installation of the steel casing may be performed by:
  - i. Microtunnel – Per Specification Section 02443 requirements (See the attached Technical Specification Sections.)
  - ii. Pipe Jacking with appropriate mechanical excavation tools or by hand with man access inside the pipe jacking pipe – Per section 307-2.1 of SSPWC.
  - iii. Additional alternative(s) for the 108-inch SDCWA pipeline crossing shall be “Hand mining with underpinning support of the 108-inch pipeline”.
- 3. Submit proposed work plan, construction sequence, schedule, design calculations and details of the work to the Engineer for approval.
- 4. For hand mining work only:
  - a) Advance a minimum of two (2) 4-inch diameter probe holes (located near the crown and invert of the proposed excavation) at least 10-ft ahead of the front of the tunnel excavation to demonstrate adequacy of the ground treatment in controlling face stability and groundwater inflow. Perform additional grouting and/or install drain pipes with vacuum pump if necessary.
  - b) Perform continuous mining at a 24/7 schedule unless the front of the excavated face is covered with a 3-inch thick fiber reinforced shotcrete (per Section 02160 requirements) at end of each work shift or work stoppage.
- 5. Install the final carrier pipe per Section 02445 Installation of Carrier Pipe in Steel Casing (See the attached Technical Specification Sections.).
- 6. All submittals described herein for the two crossings shall be prepared and stamped by a professional engineer registered in the State of California.
- 7. Perform the shaft and tunneling work per Cal-OSHA requirements and permit conditions of the tunnel classification.

**307-2.10 Payment.** To the “GREENBOOK”, paragraph (1), DELETE in its entirety and SUBSTITUTE with the following:

- 1. **TUNNEL: 108” SDCWA Pipeline Crossing, Sta. 45+42 to 45+69** (Lump Sum) – This lump sum price shall compensate the Contractor for the planning, site investigation, design, and construction of a trenchless excavation and installation of the permanent carrier pipe from the Stationing shown on the plans. The price bid shall include full compensation for permeation grouting or ground pre-treatment, dewatering, furnishing and installing all labor, equipment and materials, including carrier pipe and casing pipe, casing spacers, end seals, and doing whatever else is appurtenant to tunnel construction. The basis for site and subsurface conditions, and performance of the required work are described in Section 307, 308.

2. **JACKING PIT: 108" SDCWA Pipeline Crossing** (Lump Sum) – This lump sum price shall compensate the Contractor for the construction of the jacking pit necessary to accomplish the tunnel installation of the carrier pipe. The price bid shall include full compensation for dewatering, furnishing all labor, equipment and materials, excavating, engineered shoring, maintaining, backfilling and resurfacing of the jacking pit. Assumptions for site and subsurface conditions, and performance of the required work are described in Section 307, 308.
3. **RECEIVING PIT: 108" SDCWA Pipeline Crossing** (Lump Sum) – This lump sum price shall compensate the Contractor for the construction of the receiving pit necessary to accomplish the tunnel installation of the carrier pipe. The price bid shall include full compensation for dewatering, furnishing all labor, equipment, and materials excavating, engineered shoring, maintaining, backfilling and resurfacing of the receiving pit. The basis for site and subsurface conditions, and performance of the required work are described in Section 307, 308.
4. **TUNNEL: Interstate 8 Pipeline Crossing** (Lump Sum) – This lump sum price shall compensate the Contractor for the planning, site investigation, design, and construction of a two-pass trenchless excavation and installation of the casing and permanent carrier pipe underneath Interstate 8 from the Stationing shown on the plans. The price bid shall include full compensation for geotechnical instrumentation, grouting, furnishing and installing all labor, equipment, and materials including casing, casing spacers, end seals and carrier pipes and doing whatever else is appurtenant to tunnel construction. Assumptions for site and subsurface conditions, and performance of the required work are described in Section 307, 308 and 02443.
5. **JACKING PIT: Interstate 8 Pipeline Crossing** (Lump Sum) – This lump sum price shall compensate the Contractor for the construction of the jacking pit necessary to accomplish the tunnel installation of the carrier pipe. The price bid shall include full compensation for furnishing all labor, equipment, and materials, excavating, engineered shoring, maintaining, backfilling and resurfacing of the jacking pit. Assumptions for site and subsurface conditions, and performance of the required work are described in Section 307, 308 and 02160.
6. **RECEIVING PIT: Interstate 8 Pipeline Crossing** (Lump Sum) – This lump sum price shall compensate the Contractor for the construction of the receiving pit necessary to accomplish the tunnel installation of the carrier pipe. The price bid shall include full compensation for furnishing all labor, equipment, and materials, excavating, engineered shoring, maintaining, backfilling and resurfacing of the receiving pit. Assumptions for site and subsurface conditions, and performance of the required work are described in Section 307, 308 and 02160.

## **SECTION 314 – TRAFFIC STRIPING, CURB AND PAVEMENT MARKINGS, AND PAVEMENT MARKERS**

**314-4.3.7 Payment.** To the "WHITEBOOK", item 2, DELETE in its entirety, and SUBSTITUTE with the following:

2. The payment for the new installations of traffic striping, pavement markings, pavement markers, and removal of the existing striping and markings shall be included in the Lump Sum Bid item for "**Painting Striping**".

### **SECTION 400 – PROTECTION AND RESTORATION**

**400-1 GENERAL.** To the "WHITEBOOK", ADD the following:

6. All Work under this section shall be subject to the applicable permanent resurfacing restoration requirements in accordance with the following City of San Diego Standard Drawings. Payment for pavement restoration, including influence area, shall be included in the associated Bid Items pertinent to the Work, as included in **Appendix R – Standard Drawings**.
  - a) SDG-105, "Pavement Restoration General Notes"
  - b) SDG-107, "Pavement Restoration for Asphalt Concrete Surfaced Streets - Major Excavation"
  - c) SDG-108, "Pavement Restoration for Concrete Surfaced Streets and Alleys - Major Excavation"
  - d) SDG-117, "Pavement Restoration for Asphalt Concrete Surface Streets - Minor Excavation"
  - e) SDG-118, "Pavement Restoration for Concrete Surface Streets and Alleys - Minor Excavation"

### **SECTION 401 – REMOVAL**

**401-3.1 Concrete Pavement.** To the "WHITEBOOK", ADD the following:

4. See Section **400 -1 GENERAL** for permanent resurfacing requirements.

**401-3.2 Concrete Curb, Walk, Gutters, Cross Gutters, Curb Ramps, Driveway, and Alley Intersections.** To the "WHITEBOOK", ADD the following:

7. See Section **400 -1 GENERAL** for permanent resurfacing requirements.

### **SECTION 402 – UTILITIES**

**402-1.1 General.**

To the "GREENBOOK", paragraph 5, DELETE in its entirety and SUBSTITUTE with the following:

5. The Contractor shall complete excavation, backfill, and placement of temporary resurfacing on the same Day. Backfill shall conform to 306-12 Temporary resurfacing shall conform to 306-13.1. Permanent resurfacing shall be placed within 10 Working Days unless otherwise specified in the Special Provisions or directed by the Engineer. See Section **400 -1 GENERAL** for permanent resurfacing requirements.

To the "WHITEBOOK", item 2, DELETE in its entirety and SUBSTITUTUTE with the following:

2. You shall fill all potholes on the same day of potholing if no trenching is to be performed within 10 Working Days of the excavation. Fully restore all potholes and any damaged surrounding areas to their original condition unless otherwise specified by the Engineer. Permanent resurfacing shall conform to SDG-123, "36-Inch and Smaller Pothole and Exploratory Excavation" as included in **Appendix R - Standard Drawings**.

**402-2 PROTECTION.** To the "WHITEBOOK", item 2, ADD the following:

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

**402-6 COOPERATION.** To the "WHITEBOOK", 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).

#### **SECTION 404 – COLD MILLING**

**404-1 GENERAL.** To the "WHITEBOOK", item 1, DELETE in its entirety and SUBSTITUTE with the following:

1. Excessive asphalt concrete pavement adjacent to Type "G" and "H" curb and gutter lines and concrete cross gutters shall be milled in accordance with the City of San Diego Standard Drawing SDG-107, "Pavement Restoration for Asphalt Concrete Surfaced Streets - Major Excavation" or as shown on the Plans as included in **Appendix R - Standard Drawings**.

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

**601-2.1.2 Engineered Traffic Control Plans (TCP).** To the "WHITEBOOK", ADD the following:

5. Engineered Traffic Control Plans have been included in the Contract for the majority of the project. The Contractor shall provide and maintain the Traffic Control devices to construct the work. Changes to the Traffic Control Plans requested by the Contractor and Traffic Control for Resurfacing and Slurry Sealing shall conform to Section 601-2 Traffic Control Plan (TCP).

#### **SECTION 700 – MATERIALS**

**700-1.5 Fiber Optic Subsystems.** To the "WHITEBOOK", ADD the following:

Fiber optic conduit within all open trench sections shall be PVC pipe, Schedule 40, with push-on, gasketed joints rated for electrical use. Fiber optic conduit installed within the casings at the trenchless crossings shall be Schedule 40, Hot-dipped, galvanized steel with threaded ends. Conduit and fittings shall be manufactured in accordance with UL and ANSI standards and shall bear the UL label as applicable. Sweeps shall contain a minimum bend radius of 36". Warning tape shall be installed per Section 700-1.5.1.1. Concrete trench encasement shall be per Section 700-1.5.1.3. Pull boxes

shall be precast concrete, rated for H-20 loads and spaced no further than four ¼ bends (360° total bends) or 1,000' apart whichever is less. Cover shall be flush mounted, galvanized, steel checker plate, skid resistant, bolt down, lockable, with the words "Fiber Optic" cast on it. Pullboxes shall be Christy, Brooks or approved equal.

## SECTION 701 - CONSTRUCTION

### 701-2 PAYMENT. To the "WHITEBOOK":

Item 3, DELETE in its entirety and SUBSTITUTE with the following:

3. Permanent pavement overlay resurfacing (trench width plus influence areas) is excluded from the associated work. Pipe bedding, trench subgrade, trench asphalt base and asphalt concrete shall be included in the associated work.

Item 5, subsection (h), ADD the following:

- iv. **"Remove and Reinstall Existing Pull Box"**

To the "WHITEBOOK", item 5, subsection (l), ADD the following:

- i. **"Remove Existing Pedestrian Push Button"**

To the "WHITEBOOK", item 5, subsection (n), ADD the following:

- viii. **"Bidirectional Pedestrian Push Button"**

To the "WHITEBOOK", ADD the following:

6. Payment for **"Traffic Signal Modifications"** shall be on a lump sum basis for both intersections and shall include full compensation for: procurement and installation of signal poles/mast arms; vehicle and pedestrian indicators; hardware; Opticom system; video detection cameras; illuminated and nonilluminated signs; traffic monitoring station; communication conduit, or combinations thereof; labor, equipment and materials for modifying or removing such systems; temporary systems; and shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals, and for doing all the work involved in furnishing and installing, modifying, or removing the systems, combinations or units thereof, as shown on the Plans, specified in the Specifications and these Special Provisions, and as directed by the Engineer. Said work shall also include any necessary pull boxes; excavation and backfill; concrete foundations (except when shown as a separate contract item); signs and posts, restoring sidewalk, pavement and appurtenances damaged or destroyed during construction; salvaging existing materials; and making all required tests. Full compensation for all additional material and labor, not shown on the Plans or specified, which are necessary to complete the installation of the various signal systems, shall be considered as included in the prices paid for the systems, or units thereof, and no additional compensation will be allowed therefor.
7. The payment for all electrical work will be included in the lump sum bid item **"Electrical Work"** unless otherwise noted and will include all work shown on the electrical plans and in the Technicals.

8. The payment for fiber optic conduit will be included in the lump sum bid item **"Fiber Optic Conduit"** and will include all fiber optic conduit, pull boxes and other work necessary for a complete installation.
9. The payment for protective railing Work per SDG-140, as called out as **"Curb Ramp Barricade"** in the plans, shall be included in the bid item **"Curb Ramp"**.
10. The payment for all work associated with removing and relocating the existing pedestrian barricade will be included in the bid item **"Pedestrian Barricade"**.

## **SECTION 800 – MATERIALS**

### **800-1 LANDSCAPING MATERIALS.**

#### **800-1.1 Topsoil.**

**800-1.1.1 General.** To the "WHITEBOOK", DELETE in its entirety and SUBSTITUTE with the following:

Topsoil shall be designated as Class C (unclassified). The Engineer will determine the suitability of topsoil prior to use. The Engineer may make such inspections and perform such tests as deemed necessary to determine that the material meets the requirements. Topsoil shall be transported from the source to its final position unless stockpiling is specified in the Special Provisions.

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

**802-2.1 Project Biologist.** To the "WHITEBOOK", ADD the following:

6. You shall 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 901 – UTILITIES**

**901-1.1.2.3 High-lining Removed by the Contractor.** To the "WHITEBOOK", item 2, DELETE in its entirety and SUBSTITUTE with the following

1. After removing all high-lining construction material and debris, you shall restore streets, curbs, gutters, sidewalks, fire hydrants, and other disturbed facilities in accordance with PART 4 - EXISTING IMPROVEMENTS. Street resurfacing shall be restored in accordance with the SDG-107, "Pavement Restoration for Asphalt Concrete Surfaced Streets - Major Excavation", SDG-108, "Pavement Restoration for Concrete Surfaced Streets and Alleys - Major Excavation" as included in **Appendix R - Standard Drawings**.

**901-2.4 Pavement Restoration.** To the "WHITEBOOK", item 2, DELETE in its entirety and SUBSTITUTE with the following:

2. After the final connection is completed, you shall remove all temporary resurfacing, compact sub-grade and restore affected area with permanent resurfacing in accordance with the following City of San Diego Standard Drawings. Payment for pavement restoration, including influence area, shall be included in the associated Bid Items pertinent to the Work as included in **Appendix R - Standard Drawings.**
  - a) SDG-105, "Pavement Restoration General Notes"
  - b) SDG-107, "Pavement Restoration for Asphalt Concrete Surfaced Streets - Major Excavation"
  - c) SDG-108, "Pavement Restoration for Concrete Surfaced Streets and Alleys - Major Excavation"
  - d) SDG-117, "Pavement Restoration for Asphalt Concrete Surface Streets - Minor Excavation"
  - e) SDG-118, "Pavement Restoration for Concrete Surface Streets and Alleys - Minor Excavation"

**901-2.5 Payment.** To the "WHITEBOOK", ADD the following:

4. All work associated with the connection at the Alvarado Treatment Plant, including connection to the existing Vault No. 3 from 72" x 66" Reducer to Station 57+95 and the access hatch modifications shall be paid under the bid item for "**Connection to Existing Vault No. 3**".

#### **SECTION 1001 - CONSTRUCTION BEST MANAGEMENT PRACTICES (BMPs)**

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

8. Based on a preliminary assessment by the City, this Contract is subject to **SWPPP Risk Level 1** and **WPCP**.

**1001-2.10 BMP Inspection, Maintenance, and Repair.** To the "WHITEBOOK", ADD the following:

5. Maintenance activities shall be documented by the QSP or QSD in the Construction BMP Maintenance Log for projects subject to SWPPP requirements. See **Appendix F - SWPPP Construction BMP Maintenance Log.**



## TECHNICALS

## **Table of Contents**

### **DIVISION 01 – GENERAL REQUIREMENTS**

01300 Contractor Submittals

### **DIVISION 02 – SITEWORK**

02160 Shaft Excavation and Support

02315 Steel Casing Pipe

02341 Permeation Grouting

02443 Microtunneling

02445 Installation of Carrier Pipe in Steel Casing Pipe

02496 Geotechnical Instrumentation

### **DIVISION 03 - CONCRETE**

03355 Backfill Grout

03360 Contact Grouting

03481 Precast Concrete Utility Structures

03610 Ground Pre-Treatment

### **DIVISION 13 – SPECIAL CONSTRUCTION**

13300 Instrumentation and Control

13374 Control Panel Instrumentation

13414 Insertion Magnetic Flowmeter

### **DIVISION 15 – MECHANICAL**

15102 Triple Offset Metal Seated Butterfly Valve

### **DIVISION 16 – ELECTRICAL**

16010 Basic Electrical Requirements

16110 Raceways

16120 Wires and Cables

16190 Supporting Devices

16195 Electrical Identification

16421 Utility Service Entrance

16450 Grounding

16640 Cathodic Protection System

16950 Electrical Tests

## SECTION 01300

### CONTRACTOR SUBMITTALS

#### PART 1 – GENERAL

##### 1.1 GENERAL

- A. Wherever submittals are required hereunder, all such submittals by the CONTRACTOR shall be submitted to the CONSTRUCTION MANAGER.
- B. The CONTRACTOR shall submit an Experience Record demonstrating the required experience as stated in these specifications for the proposed construction including, but not limited to, tunnel shaft excavation (Section 02160), tunnel shoring systems (Section 02160), casing pipe installation (Section 02315), microtunneling (Section 02443) and installation of geotechnical instrumentation (Section 02496). See indicated sections for specific experience requirements. Each experience record shall include the following information for each instance of project experience:
  1. Name of the project
  2. Owner of the project
  3. Names of contacts including all contact information
  4. Construction type or method, if applicable
  5. Construction material, pipe diameter, lay lengths, etc, if applicable
- C. Within seven (7) calendar days after the date of commencement as stated in the Notice to Proceed (NTP), the CONTRACTOR shall submit the following items to the CONSTRUCTION MANAGER for review:
  1. A preliminary schedule of Shop Drawings, Samples, and submittals listed in the Bid.
  2. A list of all permits and licenses the CONTRACTOR shall obtain indicating the agency required to grant the permit and the expected date of submittal for the permit and required date for receipt of the permit.
- D. At the preconstruction conference, the CONTRACTOR shall submit the following items to the CONSTRUCTION MANAGER for review:
  1. A 60-day plan of operation in accordance with Greenbook/Whitebook.
  2. A project overview bar chart in accordance with Greenbook/Whitebook.
  3. A preliminary schedule of values in accordance with Greenbook/Whitebook.

## 1.2 SHOP DRAWINGS

- A. Wherever called for in the Contract Documents, or where required by the CONSTRUCTION MANAGER, the CONTRACTOR shall furnish to the CONSTRUCTION MANAGER for review, 6 copies, plus the number the CONTRACTOR wants returned, not to exceed 12 copies, plus one reproducible copy, of each shop drawing submittal. The term "Shop Drawings" as used herein shall be understood to include detail design calculations, shop drawings, fabrication, and installation drawings, erection drawings, lists, graphs, catalog sheets, data sheets, and similar items.
- B. All shop drawing submittals shall be accompanied by the CONSTRUCTION MANAGER's standard submittal transmittal form. The form may be obtained from the CONSTRUCTION MANAGER. Any submittal not accompanied by such a form, or where all applicable items on the form are not completed, will be returned for resubmittal.
- C. Normally, a separate transmittal form shall be used for each specific item or class of material or equipment for which a submittal is required. Transmittal of a submittal of various items using a single transmittal form will be permitted only when the items taken together constitute a manufacturer's "package" or are so functionally related that expediency indicates review of the group or package as a whole. A multiple-page submittal shall be collated into sets, and each set shall be stapled or bound, as appropriate, prior to transmittal to the CONSTRUCTION MANAGER.
- D. Except as may otherwise be indicated herein, the CONSTRUCTION MANAGER will return prints of each submittal to the CONTRACTOR with its comments noted thereon, within 15 calendar days following their receipt by the CONSTRUCTION MANAGER. It is considered reasonable that the CONTRACTOR shall make a complete and acceptable submittal to the CONSTRUCTION MANAGER by the second submission of a submittal item. The OWNER reserves the right to withhold monies due the CONTRACTOR to cover additional costs of the CONSTRUCTION MANAGER's review beyond the second submittal. The CONSTRUCTION MANAGER'S maximum review period for each submittal, including all resubmittals, will be 15 days per submittal. In other words, for a submittal that requires two resubmittals before it is complete, the maximum review period for that submittal could be 45 days.
- E. If three (3) copies of a submittal are returned to the CONTRACTOR marked "NO EXCEPTIONS TAKEN," formal revision and resubmission of said submittal will not be required.
- F. If three (3) copies of a submittal are returned to the CONTRACTOR marked "MAKE CORRECTIONS NOTED," formal revision and resubmission of said submittal will not be required.
- G. If a submittal is returned to the CONTRACTOR marked "AMEND-RESUBMIT," the CONTRACTOR shall revise said submittal and shall resubmit the required number of copies of said revised submittal to the CONSTRUCTION MANAGER.

- H. If a submittal is returned to the CONTRACTOR marked "REJECTED-RESUBMIT," the CONTRACTOR shall revise said submittal and shall resubmit the required number of copies of said revised submittal to the CONSTRUCTION MANAGER.
- I. Fabrication of an item shall be commenced only after the CONSTRUCTION MANAGER has reviewed the pertinent submittals and returned copies to the CONTRACTOR marked either "NO EXCEPTIONS TAKEN" or "MAKE CORRECTIONS NOTED." Corrections indicated on submittals shall be considered as changes necessary to meet the requirements of the Contract Documents and shall not be taken as the basis for changes to the contract requirements.
- J. All CONTRACTOR shop drawing submittals shall be carefully reviewed by an authorized representative of the CONTRACTOR, prior to submission to the CONSTRUCTION MANAGER. Each submittal shall be dated, signed, and certified by the CONTRACTOR, as being correct and in strict conformance with the Contract Documents. In the case of shop drawings, each sheet shall be so dated, signed, and certified. No consideration for review by the CONSTRUCTION MANAGER of any CONTRACTOR submittals will be made for any items which have not been so certified by the CONTRACTOR. All non-certified submittals will be returned to the CONTRACTOR without action taken by the CONSTRUCTION MANAGER, and any delays caused thereby shall be the total responsibility of the CONTRACTOR.
- K. The CONSTRUCTION MANAGER's/ENGINEER's review of CONTRACTOR shop drawing submittals is for general conformance with the design concept and contract documents only and shall not relieve the CONTRACTOR of the entire responsibility for the correctness of details and dimensions. The CONTRACTOR shall assume all responsibility and risk for any misfits due to any errors in CONTRACTOR submittals. The CONTRACTOR shall be responsible for the dimensions and the design of adequate connections and details. Markings or comments shall not be construed as relieving the CONTRACTOR from compliance with the project plans and specifications or departures therefrom. The CONTRACTOR remains responsible for details and accuracy for confirming and correlating all quantities and dimensions, for selecting fabrication processes, the techniques of assembly, and for performing his work in a safe manner.

### 1.3 CONTRACTOR'S SCHEDULE

- A. The CONTRACTOR's construction schedules and reports shall be prepared and submitted to the CONSTRUCTION MANAGER.

### 1.4 SAMPLES

- A. Whenever in the Specifications samples are required, the CONTRACTOR shall submit not less than three (3) samples of each such item or material to the CONSTRUCTION MANAGER for acceptance at no additional cost to the OWNER.
- B. Samples, as required herein, shall be submitted for acceptance a minimum of 21 days prior to ordering such material for delivery to the jobsite, and shall be submitted in an orderly sequence so that dependent materials or equipment can be assembled and reviewed without causing delays in the WORK.

- C. All samples shall be individually and indelibly labeled or tagged, indicating thereon all specified physical characteristics and Manufacturer's name for identification and submitted to the CONSTRUCTION MANAGER for acceptance. Upon receiving acceptance of the CONSTRUCTION MANAGER, one set of the samples will be stamped and dated by the CONSTRUCTION MANAGER and returned to the CONTRACTOR, and one set of samples will be retained by the CONSTRUCTION MANAGER, and one set of samples shall remain at the job site until completion of the WORK.
- D. Unless indicated otherwise, all colors and textures of specified items presented in sample submittals shall be from the manufacturer's standard colors and standard materials, products, or equipment lines. If the samples represent non-standard colors, materials, products, or equipment lines and their selection will require an increase in contract time or price, the CONTRACTOR will clearly indicate same on the transmittal page of the submittal.

#### 1.5 OWNER'S MANUALS (OR OPERATION AND MAINTENANCE MANUALS)

- A. The CONTRACTOR shall submit technical operation and maintenance information for each item of mechanical, electrical and instrumentation equipment in an organized manner in the OWNER'S MANUALS (OR OPERATION AND MAINTENANCE MANUALS). The OWNER'S MANUALS (OR OPERATION AND MAINTENANCE MANUALS) shall be written so that it can be used and understood by the OWNER'S operation and maintenance staff. Each individual force main and the generator shall have its own independent and unique OWNER'S MANUAL (OR OPERATION AND MAINTENANCE MANUALS).
- B. Each OWNER'S MANUAL (OR OPERATION AND MAINTENANCE MANUALS) shall be subdivided first by specification section number; second, by equipment item; and last, by "part." "Parts" shall conform to the following (as applicable):
  - 1. Part 1 - Equipment Summary
    - a. Summary: A summary table shall indicate the equipment name, equipment number, and process area in which the equipment is installed.
    - b. Form: The CONSTRUCTION MANAGER will supply an Equipment Summary Form for each item of mechanical, electrical and instrumentation equipment in the WORK. The CONTRACTOR shall fill in the relevant information on the form and include it in Part 1.
  - 2. Part 2 - Operational Procedures
    - a. Procedures: Manufacturer-recommended procedures on the following shall be included in Part 2:
      - (1) Installation
      - (2) Adjustment
      - (3) Startup

- (4) Location of controls, special tools or other equipment required or related instrumentation needed for operation
- (5) Operation Procedures
- (6) Load Changes
- (7) Calibration
- (8) Shutdown
- (9) Troubleshooting
- (10) Disassembly
- (11) Reassembly
- (12) Realignment
- (13) Testing to determine performance efficiency
- (14) Tabulation of proper settings for all pressure relief valves, low and high pressure switches and other protection devices
- (15) List of all electrical relay settings including alarm and contact settings

### 3. Part 3 - Preventive Maintenance Procedures

- a. Procedures: Preventive maintenance procedures shall include all manufacturer-recommended procedures to be performed on a periodic basis, both by removing and replacing the equipment or component and by leaving the equipment in place.
- b. Schedules: Recommended frequency of preventive maintenance procedures shall be included. Lubrication schedules, including lubricant SAE grade and type, and temperature ranges shall be covered.

### 4. Part 4 - Parts List

- a. Parts List: A complete parts list shall be furnished, including a generic description and manufacturer's identification number for each part. Addresses and telephone numbers of the nearest supplier and parts warehouse shall be included.
- b. Drawings: Cross-sectional or exploded view drawings shall accompany the parts list.

### 5. Part 5 - Wiring Diagrams

- a. Diagrams: Part 5 shall include complete internal and connection wiring diagrams for electrical equipment items.

### 6. Part 6 - Shop Drawings

- a. Drawings: This part shall include approved shop or fabrication drawings, complete with dimensions.

## 7. Part 7 - Safety

- a. Procedures: This part describes the safety precautions to be taken when operating and maintaining the equipment or working near it.

## 8. Part 8 - Documentation

- a. All equipment warranties, affidavits, and certifications required by the Technical Specifications shall be placed in this part.

- C. The CONTRACTOR shall furnish to the CONSTRUCTION MANAGER seven (7) identical OWNER'S MANUALS (OR OPERATION AND MAINTENANCE MANUALS). Each set shall consist of one or more volumes, each of which shall be bound in a standard size, 3-ring, looseleaf, vinyl plastic hard cover binder suitable for bookshelf storage. Binder ring size shall not exceed 2.5 inches. A table of contents indicating all equipment in the manuals shall be prepared.
- D. OWNER'S MANUALS (OR OPERATION AND MAINTENANCE MANUALS) shall be submitted in final form to the CONSTRUCTION MANAGER not later than the 75 percent of construction completion date. All discrepancies found by the CONSTRUCTION MANAGER in the OWNER'S MANUALS (OR OPERATION AND MAINTENANCE MANUALS) shall be corrected by the CONTRACTOR within 15 calendar days from the date of written notification by the CONSTRUCTION MANAGER.
- E. Incomplete or unacceptable OWNER'S MANUALS (OR OPERATION AND MAINTENANCE MANUALS) at the 75 percent construction completion point shall constitute sufficient justification to withhold the amount stipulated in paragraph "OWNER'S MANUAL (OR OPERATION AND MAINTENANCE MANUALS) Submittals" of Section 01700, from any monies due the CONTRACTOR.

## 1.6 INSTRUCTION OF OWNER'S PERSONNEL

### A. **General:**

1. Training is not generally a part of the contract, unless it is specifically called out in the technical specifications. If the OWNER determines that certain training is desired on a particular component or a portion of the contract not required of the technical specifications, a field order or change order will be executed in order to facilitate such training for the wastewater collections staff.

## 1.7 ELECTRONIC DOCUMENT SUBMITTAL REQUIREMENTS

### A. **General**

1. All final submittals are required in both paper and electronic format. Four (4) copies of each final submittal shall be provided on compact disk media (CD-ROM).
2. Where preliminary submittals are required in electronic format, three (3) copies of the preliminary submittal shall be provided on CD-ROM for review.



3. CD-ROM disks shall be on high-quality CD-R media. CDs shall have printed paper labels with the project name, CIP Number, CONTRACTOR, and content. CD-RW (CD-rewritable) disks are not acceptable. CDs shall be provided with a case and a case insert label displaying the same information shown on the CD label.
4. The CD-ROM data format shall comply with ISO 9660 (2010) with Joliet extensions.
5. Deviation from this standard will be accepted only if advance approval is given by the CONSTRUCTION MANAGER.

B. **Documents:** Electronic submittals for the following types of documents are required as a minimum. Additional requirements are identified in the equipment specifications.

1. Design
  - a. Design Specifications
  - b. Design Drawings and record drawings
2. Operations and Maintenance
  - a. Facility design O&M manuals
    - (1) Volume I - process information
    - (2) Volume II - standard operating procedures (SOP)
    - (3) Volume III - all maintenance information for the facility.
    - (4) Manufacturer O&M manuals
    - (5) Facility Loop and Wiring Diagrams
3. Environmental Documents
4. Research & Development

C. **Format**

1. Construction drawings and record drawings developed under the Contract shall be in Bentley Microstation (DGN V8 version) format. All drawings shall conform to the CADD and Drafting standards set forth in the CWP Guidelines, latest edition.
2. Other than construction drawings and record drawings, documents shall be in Adobe Acrobat PDF format, using the Acrobat version as specified by the CONSTRUCTION MANAGER. Documents that are submitted in Acrobat Image Only format will not be accepted.
3. Electronic Conversion: Vendor and CONTRACTOR shop drawings developed under the Contract shall be in Bentley Microstation (DGN) format. Documents in electronic format (Microsoft Word, Excel, etc.) shall be converted to standard PDF format using the Acrobat printer driver or other direct conversion software. The Acrobat PDF sub-format for

electronically converted documents shall be the Acrobat Standard PDF file format which includes both image and text information.

4. Documents not available in electronic format shall be scanned at 300 dpi, bitonal (black and white) and converted into Adobe Acrobat (PDF). Image enhancement software shall be used during scanning. The Acrobat PDF sub-format for scanned documents shall be the Original Image with Hidden Text format.
5. All PDF documents shall be reviewed, and corrected if necessary, for orientation and legibility.
6. Individual document files shall not exceed 3 megabytes in size. Large documents shall be broken down by subsections to facilitate this requirement

**D. Document Organization and Indexing**

1. Electronic submittals shall be logically organized. File names shall be in UPPERCASE only, use a maximum of 64 characters, contain no spaces, and clearly indicate the file contents.
2. Supplier's submittals that include O&M documentation for more than one equipment type shall be divided into separate documents for each equipment type.
3. Each document's Table of Contents shall contain PDF bookmarks which actively link to the referenced sections within the document.
4. A master PDF index file shall be included, with a master Table of Contents, and active internal links to individual document files. The master PDF index file shall be clearly identifiable. External PDF link file names shall be in uppercase only.
5. A table shall be provided and submitted in spreadsheet format which includes the information about each document file. The contents of the table shall be submitted and approved by the CONSTRUCTION MANAGER. An example of information to be provided is as follows: (This is an example only.)

b. Document file name

- (1) Document title and description
- (2) Hard Copy Catalog No. (used by facility document coordinator)
- (3) Document Type: (see above)
- (4) Facility Name
- (5) Specification Number
- (6) Process Name
- (7) Unit Process Number
- (8) Manufacturer's Name (if applicable)
- (9) Supplier's Name (if applicable)
- (10) EMPAC asset number (if applicable)

(11) Asset Description (if applicable)

- (a) Keyword
- (b) Qualifier

1.8 SPARE PARTS LIST

- A. The CONTRACTOR shall furnish to the CONSTRUCTION MANAGER five (5) identical sets of spare parts information for all mechanical, electrical, and instrumentation equipment. The spare parts list shall include the current list price of each spare part. The spare parts list shall be limited to those spare parts which each manufacturer recommends be maintained by the OWNER in inventory at the plant site. Each manufacturer or supplier shall indicate the name, address, and telephone number of its nearest outlet of spare parts to facilitate the OWNER in ordering. The CONTRACTOR shall cross-reference all spare parts lists to the equipment numbers designated in the Contract Documents. The spare parts lists shall be bound in standard size, 3-ring, looseleaf, vinyl plastic hard cover binders suitable for bookshelf storage. Binder ring size shall not exceed 2.5 inches.

1.9 RECORD DRAWINGS (one component of the Project Master Record Documents as identified in specification)

- A. The CONTRACTOR shall keep and maintain, at the job site, one record set of Drawings. On these, it shall mark all project conditions, locations, configurations, and any other changes or deviations which may vary from the details represented on the original Contract Drawings, including buried or concealed construction and utility features which are revealed during the course of construction. Special attention shall be given to recording the horizontal and vertical location of all buried utilities that differ from the locations indicated, or which were not indicated on the Contract Drawings. Said record drawings shall be supplemented by any detailed sketches as necessary or directed to indicate, fully, the WORK as actually constructed. These master record drawings of the CONTRACTOR's representation of as-built conditions, including all revisions made necessary by addenda and change orders shall be maintained up-to-date during the progress of the WORK.
- B. Copies of the record drawings shall be submitted on the 20th working day of every month after the month in which the notice to proceed is given as well as on completion of WORK. Failure to submit complete record drawings on or before the 20th working day will enact the liquidated damages clause for interim record drawings submittals described in Article 3 of the Agreement.
- C. In the case of those drawings which depict the detail requirement for equipment to be assembled and wired in the factory, such as motor control centers and the like, the record drawings shall be updated by indicating those portions which are superseded by change order drawings or final shop drawings, and by including appropriate reference information describing the change orders by number and the shop drawings by manufacturer, drawing, and revision numbers.
- D. Record drawings shall be accessible to the CONSTRUCTION MANAGER at all times during the construction period.
- E. Final payment will not be acted upon until the CONTRACTOR-prepared record drawings have been delivered to the CONSTRUCTION MANAGER. Said up-to-date

record drawings shall be in the form of a set of prints with carefully plotted information overlaid in red.

- F. Upon substantial completion of the WORK and prior to final acceptance, the CONTRACTOR shall finalize and deliver a complete set of record drawings to the CONSTRUCTION MANAGER for transmittal to the OWNER, conforming to the construction records of the CONTRACTOR. This set of drawings shall consist of corrected drawings showing the reported location of the WORK. The information submitted by the CONTRACTOR in the Record Drawings will be assumed to be correct, and the CONTRACTOR shall be responsible for the accuracy of such information, and for any errors or omissions which may appear on the Record Drawings as a result.

**PART 2 – PRODUCTS** (Not Used)

**PART 3 – EXECUTION** (Not Used)

**\*\*END OF SECTION\***

## SECTION 02160

### SHAFT EXCAVATION AND SUPPORT

#### PART 1 – GENERAL

##### 1.1 SCOPE OF WORK

- A. Work specified in this Section includes the requirements for design and construction of shafts as located on the Contract Drawings for application of trenchless excavation methods to complete the construction of the proposed pipeline. Furnish all materials, equipment, labor, and services necessary to perform all operations to complete the Work.
- B. Location, dimensions, and layout of each shaft are shown on the Drawings for Contractor information only and can be modified by CONTRACTOR with ENGINEER'S acceptance
- C. Responsible for the design, performance, and safety of the excavation support system while meeting minimum design requirements

##### 1.2 RELATED SECTIONS

- A. Section 02443 Microtunneling
- B. Section 02445 Installation of Carrier Pipe in Steel Casing
- C. Section 02496 Geotechnical Instrumentation
- D. Section 03610 Ground Pre-Treatment

##### 1.3 REFERENCE CODES AND STANDARDS

- A. Unless otherwise indicated, the current editions at time of bid of the following specifications and standards apply to the Work of this Section
- B. American Society for Testing and Materials (ASTM):
  - 1. A615, Standard Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement
  - 2. A36, Standard Specifications for Carbon Structural Steel
  - 3. D1557, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort
- C. American National Standards Institute/American Welding Society (ANSI/AWS) D1.1: Structural Welding Code

- D. Caltrans Encroachment Permits, "Guidelines and Specifications for Trenchless Technology Projects"
- E. "Greenbook", Standard Specifications for Public Works Construction (SSPWC), and per latest revisions by City of San Diego White Book
- F. American Institute of Steel Construction (AISC): Steel Construction Manual
- G. American Association of State Highway and Transportation Officials (AASHTO): Standard Specifications for Highway Bridges
- H. Cal/OSHA: State of California Administrative Code, Title 8
- I. Occupational Safety and Health Administration (OSHA) Regulations: 29 CFR
- J. California Labor Code, Section 6705, Shoring and Bracing Drawings

#### 1.4 DEFINITIONS

- A. See Section 02443 Microtunneling

#### 1.5 MIIMUM DESIGN REQUIREMENTS

- A. Develop site specific design for each shaft as required to accomplish the Work
- B. Blasting is not permitted
- C. No excavation greater than 4.0 feet below existing grade and within 100 feet of the shafts and tunnel shall be excavated other than specified geotechnical instrumentation and potholing for locating existing utilities and as provided in writing from the ENGINEER
- D. Shafts shall include at least one sump pump to remove construction water and nuisance water
- E. Utilize excavation support systems:
  - 1. Compatible with the geological conditions indicated in the Geotechnical Report
  - 2. In-the-wet design and construction
  - 3. Watertight, as defined herein, design and construction
- F. The excavation support systems shall comply with, at time of bid:
  - 1. Caltrans Shoring manual
  - 2. AASHTO LRFD Bridge Design Specification
- G. Monitor and protect in-place surface and subsurface facilities as indicated or located within a 1V:1H (vertical to horizontal) influence line measured upward and outward from the invert excavated perimeter of the shaft until the shaft is backfilled in accordance with the accepted work plan
- H. Thrust block shall be normal (square) with the proposed pipe alignment and shall be designed to withstand the maximum anticipated jacking force with a factor of safety of at

least 3.0, without excessive deflection or displacement as defined by Contractor's PE and accepted by the Engineer

- I. Acceptable excavation support systems for shaft:
  1. Shoring shall be in intimate contact with the native ground using a systematic contact grouting in accordance with the design
  2. Shoring:
    - a. Ground inflow shall not exceed 0.5 cubic yards during shaft wall penetration as measured from modifying the shaft wall for penetration until 1.0 feet of the jacking pipe is through the seal
    - b. Ground inflow shall not exceed 0.3 cubic yards during tunneling
    - c. Shaft groundwater inflow shall not:
      - i. Contain fines
      - ii. Exceed 5.0 gallons per minute (gpm) from all sources upon completion of shaft construction
      - iii. Exceed 5.0 gpm during MTBM penetration for a total of 10 gpm during shaft wall penetration as defined herein
  3. Shaft invert shall include:
    - a. Minimum 12.0-inch-thick concrete slab supporting jacking frame
    - b. Overlying a minimum 12.0-inch-thick coarse drainage stone within a filter fabric to minimize fines migration
- J. Ground improvement methods at shaft break-in and break-out shall include at least one of the following:
  1. Permeation grouting per Section 02341 - minimum dimensions of the break-in and break-out are
    - a. Width & Height: Not less than 2.0 times the excavated diameter of the MTBM centered horizontally on the centerline and vertically on the springline of design line and grade
    - b. Length: Not less than 2.5 times excavated diameter of the MTBM as measured from the outside face of the shoring support system along the tunnel length
  2. Pre-excavation rock spiling forming an arch canopy
    - a. Width: Not less than 2.0 times the excavated diameter of the MTBM centered horizontally on the centerline and vertically above the crown of the MTBM set to design line and grade
    - b. Length: Not less than 2.5 times excavated diameter of the MTBM as measured from the outside face of the shoring support system along the tunnel length

- c. Proof test the installed spils per manufacturer's written recommendations
- 3. Grouted in place dowels forming an arch
  - a. Width: Not less than 2.0 times the excavated diameter of the MTBM centered horizontally on the centerline and vertically above the crown of the MTBM set to design line and grade
  - b. Length: Not less than 2.5 times excavated diameter of the MTBM as measured from the outside face of the shoring support system along the tunnel length
  - c. Proof test the installed dowels per manufacturer's written recommendations

K. Shaft water control:

- 1. Remove and maintain nuisance water below the top of the mud slab
- 2. Perform grouting to minimize ground and groundwater inflow as specified
- 3. Prevent surface water runoff from entering shaft excavation by diversion, grading, dikes, or other means
- 4. Nuisance water shall be collected, treated, and conveyed to the closest receiving facilities as indicated
  - a. Alignment of the discharge line shall be subject to field approval by the Engineer
  - b. Provide legal disposal

L. Minimum Shaft Tolerances

- 1. Horizontally: +/- 0.25 feet from the accepted location
- 2. Top and Invert Elevation of Shaft: +/- 0.2 feet from the planned elevation
- 3. Bracing and other elevations: +/- 0.5 feet

1.6 PERFORMANCE REQUIREMENTS

- A. Geotechnical instrumentation installation, monitoring, reporting, and restoration shall be as specified in Section 02496
- B. Vibration: Limit peak particle velocity (ppv) for any ground borne vibration at any existing facilities to no more than 2.0 inches per second

1.7 SUBMITTALS

A. Qualifying:

- 1. Shaft construction:
  - a. On-Site Responsible person
  - b. Experience record demonstrating similar experience for installing similar shoring support system with similar requirements in similar ground conditions



2. Contractor's Design Engineer(s) for shoring system
  - a. Responsible person
  - b. PE registration
  - c. Experience record demonstrating similar experience for designing similar shoring support system with similar requirements in similar ground conditions
3. Shaft equipment operator if specialized shaft excavation equipment is utilized
  - a. Person
  - b. Specialized equipment with automated controls
    - 1) Provide shoring installation forces and rate
    - 2) Provide fluid delivery volumetric rates
    - 3) Provide vertical volumetric excavation rates
    - 4) Provide volumetric excavation rates
  - c. Experience record demonstrating similar experience for constructing similar shoring support system with similar requirements in similar ground conditions
4. Surveyor
  - a. Responsible person
  - b. Registration
  - c. Survey method required
  - d. Experience record using same form of survey as required by the MTBM guidance system
5. Grouting Expert
  - a. Responsible person
  - b. Specialized equipment with automated controls
    - 1) Provide fluid delivery volumetric rates and pressure
    - 2) Provide vertical volumetric excavation rates
    - 3) Provide volumetric excavation rates
  - c. Experience record demonstrating similar experience for constructing the proposed type of shoring support system with similar requirements in similar ground conditions

6. Experience Record – Written document demonstrating experience for constructing the proposed type of shoring support system with similar requirements in similar ground conditions
  - a. Similar shaft is defined as 80 percent of each of the three principal dimensions depth, width, and length, and includes shaft invert construction, shaft wall penetration, and shape (i.e., square, rectangular, circular, elliptical)
  - b. Similar ground is defined as same type of classification (i.e., silty clay), N-values that are +/- 5 of encountered values, ground water depth and pressure that is at least 80 percent of the maximum anticipated on this project, and ground depth at least 80 percent of the maximum anticipated on this project
  - c. Similar design includes the proposed construction method and minimum shaft design requirements

B. Notices:

1. All notices shall be written, immediate verbal notice is to be provided to preserve site
2. All written notices shall be submitted no later than the same workday unless otherwise specified
3. If notice is for a differing site condition, no additional work shall be performed other than safety related. Provide timely documentation of claim.
4. Condition shall not be altered until after Engineer has investigated and provided written notice to resume work

C. Pre-Construction:

1. Construction sequence and schedule commencing with traffic control and including, and not limited to:
  - a. Survey
  - b. Geotechnical instrumentation installation
  - c. Baseline of geotechnical instrumentation, scheduled readings, and excavation
  - d. Signed and stamped shoring design including:
    - 1) Shoring narrative method statements
    - 2) Dimensioned and scaled Working Drawings for each shaft
    - 3) Connection details
    - 4) Site plan including access at each shaft demonstrating truck ingress and egress
    - 5) Document surcharge loads and restrictions on surcharge capacity and live loads

- 6) Monitoring program for shaft wall deflection
  - 7) Jacking shaft invert equipment layout and nuisance water control designs
  - 8) Proposed limits of disturbance with considerations of other site constraints
  - 9) Protection of existing facilities, utilities, and traffic management details
  - 10) Where permanent structures are specified or indicated, show excavation support systems relative to the permanent facilities
  - 11) Details for excavation support system including shoring, bracing, stabilization, installation tolerances, protection of the excavation, invert construction, special support requirements for thrust blocks and penetrations
  - 12) Design calculations demonstrating the capacity of the thrust block for all phases of the jacking operation, including dimensions, details, mix design, concrete cure data at 7- and 28-days, reinforcement design, and the soil reaction forces can adequately withstand the applied load with required factor of safety
2. Shaft modifications required for microtunneling:
    - a. Placement of entrance seal and removal of shoring at jacking shaft
    - b. Schedule for commencement of modification until the first pipe is placed on rails for jacking
    - c. Placement of exit seal and removal of shoring at receiving shaft
    - d. Schedule for commencement of modification until the first pipe has passed at least 2.0 feet through the seal
3. Detail contingency measures for:
    - a. Shaft wall instability during tunnel break-in or break-out
    - b. Unacceptable water inflows through the shaft wall during a tunnel break-in or break-out
    - c. Unacceptable water inflows through the shaft wall during tunneling
    - d. Wall deformations exceed the values specified herein during excavation of the material inside the shaft. Include remedial steps to be utilized to arrest movement, and reinforce or improve the wall, such that excavation may continue.
    - e. Ground movement outside shaft walls exceeds allowable limits

D. Construction:

1. Signed and completed field records demonstrating construction per work plan
2. RFI's, PCO, CO, and written notice records with resolution
3. Photographs of conditions and unusual conditions

4. Disposal records

E. As Built:

1. Compliance with design
2. Mark-ups of as-built drawings
3. Estimated quantity of infiltration into the excavation, method for measuring inflows, and sump discharge facilities

F. Materials handling and disposal:

1. Details of material handling, storage, stockpiling, hauling, and legal disposal
2. Methods and locations of disposal of excavation spoils and liquids. Provide sufficient details to the ENGINEER to evaluate compliance for legal disposal, including all related environmental permits, and all applicable laws, rules, and regulations
3. Indicate locations of truck cleaning stations and methods of ensuring that haul trucks are clean and that no spillage of dry or wet excavated material from haul trucks occurs on the streets
4. Details of treating and disposing of incidental and process water in accordance with the requirements of the dewatering section.

1.8 QUALITY ASSURANCE

- A. The CONTRACTOR installing the excavation support systems shall have a record of success with similar construction for minimum of three similar projects (i.e., shafts at least 50 ft deep with groundwater at least 20 ft above the shaft invert), and a demonstrated ability and capacity to perform the Work to the satisfaction of the ENGINEER.
- B. CONTRACTOR's Engineer: All design work to be performed under this specification shall be prepared, signed, and stamped by a Civil or Structural Engineer registered in the State of California who has experience in the design and construction of the same type of excavation support systems and groundwater controls proposed by the CONTRACTOR. The CONTRACTOR's engineer shall maintain involvement and responsibility from design through installation, performance, and abandonment or removal of excavation support and other relevant systems, and shall re-certify the design every 90 days after a site visit until the abandonment or removal of the excavation support systems.
- C. Certification letter from the specialized microtunneling contractor (refer to Section 02443) to confirm that they have reviewed and agreed to the design and construction details of the launching and receiving shafts and that any microtunneling related issues have been adequately addressed by the Contractor.
- D. All welding performed in the field shall be done by skilled welders, welding operators, and tackers who have had adequate experience in the method of materials to be used.

Welders shall be qualified under the provisions of ANSI/AWS D1.1 not more than 6 months prior to commencing work on the project. Machines and electrodes similar to those used in the WORK shall be used in qualification tests.

- E. Copies of all documentation, MSDS sheets, releases, and permits required herein and necessary to complete the Work.

#### 1.9 PROJECT CONDITIONS

- A. Project conditions and recommendations are as included in Southland Geotechnical Consultants "Geotechnical Investigation City of San Diego's Design of Mid-city Pipeline – Phase 2 Project, San Diego and La Mesa, California" dated June 18, 2015 prepared for PSOMAS
- B. Extreme difficulties were encountered during the exploratory boring program for advancing the drill holes in the Stadium Conglomerate. Refer to relevant information in the Geotechnical Report and plan the work accordingly.
- C. Top of competent bedrock at shaft location shall be assumed at the same depth as indicated in the adjacent borings, i.e., B-10 for launching and B-11 for receiving shaft. The actual depth shall assume to varying within five (5) vertical feet above or below.
- D. The City will collect samples from the Stadium Conglomerate in each shaft from within the tunnel envelop for additional analyses. When directed, the Contractor is required to collect and deliver one 55-gallon drum of representative sample of Conglomerate from each shaft to a designated facility (within a traveling distance no more than 30 miles) to be determined later. Sample taken shall consist of intact clasts. The use of impact equipment shall be kept to a minimum during the excavation and recovery of these samples.
- E. Work shall not be performed outside of the work site boundaries shown on the Contract Drawings without the approval of the ENGINEER. Prepare and submit revised traffic management plans for Engineer's approval.

#### 1.10 SAFETY

- A. The CITY has obtained from Cal/OSHA an underground classification for all work described in this Contract. Perform Work in conformance with the underground classification described elsewhere in the Contract Document.
- B. All underground lighting, ventilation, and equipment shall conform to the permit requirements.
- C. Pre-construction potholing for any field marked utilities and/or underground facilities located within 6.0-ft from the proposed boundary of any underground construction work such as shaft excavation, grouting operation, etc.

- D. In no case shall any excavation be made in such a manner as to endanger or damage adjacent facilities. Material to remain in place shall be adequately supported to prevent undermining of existing facilities adjacent to excavated areas.
- E. Provide adequate lighting in the shafts and as needed
- F. Provide temporary safety railing, concrete K-Rail barriers, and fencing around each shaft and shaft site

## PART 2 - PRODUCTS

### 2.1 MATERIALS

- A. General: Structural steel elements including steel H-piles, bracing, wales, steel ribs, ring beams, anchors and fasteners used for excavation support, whether new or used shall be sound and free from defects.
- B. Structural Steel: Structural steel shall conform to ASTM A36 or better.
- C. Steel liner plates used in circular shaft support shall be 16-inch or 24-inch wide four flange corrugated liner plates. Liner plate material shall conform to ASTM A569 and have yield strength of 28 ksi minimum. Every fourth plate shall have a threaded grout port and threaded cast-iron or steel plug for grouting.
- D. Liner plates shall be supplied with neoprene gaskets. Gaskets shall be 1-1/2 inches wide by 1/4 inch thick and shall conform to ASTM D1056 Grade RE45E1 and shall be shop affixed to the liner plate prior to delivery.
- E. Timber lagging shall conform to the following:
  - 1. Minimum 4-inch thick
  - 2. Moisture content shall not exceed 20%.
  - 3. Use sound, well seasoned or kiln-dried timber such as Douglas Fir, Grade No. 2 or better.
  - 4. Minimum fiber stress in bending perpendicular to the grain = 1,300 psi.
  - 5. Preservative and fire retardant treated wood shall comply with AWWA Standards.
- F. Reinforcing Steel: ASTM A615,  $F_y = 60$  ksi.
- G. Fiber Glass reinforcing bars (for used in starter wall) shall consist of Vinyl Ester Matrix GFRP Rebar with the following properties:
  - 1. Minimum fiber glass content – 70 percent per ASTM D2584
  - 2. Modulus of Elasticity –  $5.9 \times 10^6$  psi
  - 3. Barcol Hardness – 60 per ASTM D2583

4. Minimum Tensile Strength for .625" bar – 95,000 psi
5. Minimum Shear Strength for .625" bar – 22,000 psi

H. Rock Spiling

1. Rock spiling anchorage system shall consist of 2-inch diameter hollow core center groutable steel pipe lined with a pair of opposite 1/2 inch diameter perforations along the circumference of the steel pipe at every 2-ft spacing. Use double packer system for placement of grout to secure the rock spiling in place.

I. Rock Dowel:

1. Rock dowel anchorage system shall consist of 1-inch diameter threaded bar and resin cartridges or No. 8 steel reinforcement bar and cement grout.
2. Resin Cartridges: Non shrink polyester resin cartridge with a minimum compressive strength of 14,000 psi when tested in accordance with ASTM C39. Resin shall be unaffected by mild acids, mild alkalis or groundwater. They shall be supplied in cartridge forms, and have a casing constructed of a saturated polyester providing resistance to moisture but easily fractured to enable complete mixing during installation.
3. All cement grout shall conform to ASTM C1107, Grade B: Dry Package Hydraulic Cement Grout (non shrink), and the compressive strength of the grout shall be no less than 9,000 psi at 28 days.

J. Cement for concrete: Conforming to ASTM C150, Type II Portland cement.

K. Controlled Low Strength Material (CLSM) – Per Standard Specifications for Public Works Construction (SSPWC) 2009 Section 201-6.

L. Welded Wire Fabric shall conform to ASTM A185.

M. Weep Hole: 2-inch Schedule 40 PVC pipe with one end opened to the shaft excavation and the other end butted and attached against a filter fabric sheet rest against the excavated rock surface.

N. Drainage Rock: In accordance with requirements in SSPWC Table 200-1.4(B), No. 3.

O. Shotcrete: In accordance with requirements in SSPWC Section 303-2, with modifications described therein.

P. Slurry: In accordance with definition in Section 02443.

## PART 3 - EXECUTION

### 3.1 GENERAL

- A. Protect, relocate, abandon existing structures, utilities, vegetation, and facilities per Contract requirements before commencing shaft construction.
- B. Protect pavements, sidewalks, adjacent structures, and other facilities from spillage of excavated material, spoils, slurry, wastewater, and concrete.
- C. Protect water quality and prevent or reduce the potential for pollution associated with stormwater runoff into adjacent properties or water drainage system. Develop and implement a water pollution control program per requirements in City Supplement (White Book) Section 701.
- D. Do not start shaft excavation until installation of geotechnical instrumentation for monitoring movement of the shaft excavation is complete and baseline readings have been obtained.
- E. Do not begin shaft excavation and construction until all submittals have been reviewed and accepted by the ENGINEER.
- F. Install excavation support systems in accordance with accepted Working Drawings.
  - 1. If settlement or deflections of supports, excessive groundwater leakage or shaft bottom instability indicates the support system requires modifications, the CONTRACTOR shall immediately take necessary mitigation measures to avoid damaging adjacent facilities or creating an unsafe condition. After the situation is stabilized, the CONTRACTOR shall change the shoring as necessary to prevent further non-compliance performance.
  - 2. Re-design and resubmit revised working drawings and design calculations for ENGINEER's approval. Any changes made to correct the unacceptable conditions shall be paid for by the CONTRACTOR.
- G. Fireproof materials shall be utilized in all construction of above ground structure within 100-ft of the shaft. The use of flammable materials or wood shoring would require that adequate fire protection be provided.
- H. Minimize overexcavation in overburden soils and in Conglomerate. Over-excavation and backfill beyond the dimensions of the neat line as indicated at each of the shaft shall be included in the bid price.

### 3.2 CONSTRUCTION METHODS

- A. Soldier Piles
  - 1. Soldier piles shall be installed in large diameter pre-drilled holes advanced using a combination of conventional drilling equipment, augering, chiseling, coring,



percussion drilling, down the hole (DTH) single and cluster impact hammer methods.

2. Equipment used shall be capable of removing soil and penetrating into the rock formation of the Stadium Conglomerate to the proposed depths without disturbing adjacent or overlying structures. Insert a steel casing together with the advancement of the drilled hole for support against overburden soils and/or unstable layers in the Conglomerate. Maintain any ground vibration to the acceptable criteria as specified.
3. Pre-drilled holes shall be extended the entire length of the soldier piles with a bore hole diameter at least 4 inches larger than the maximum diagonal dimension of the pile sections. A maximum of 1% out of plumb will be allowed provided that minimum excavated neat line is maintained. Correct misaligned or non-vertical piles at no additional cost to the City.
4. Pre-drilled hole shall not be left unsupported anytime during the excavation.
  - a. Add temporary steel casing support; and
  - b. Add slurry or drilling fluid into the holes to enhance stability when excavating below the groundwater table. Maintain the top of slurry a minimum 5 feet above the groundwater level.
5. Lower the steel soldier pile into the pre-drilled hole. Attach to the soldier pile the geotechnical instrument as specified in Section 02496.
6. Backfill pre-drilled hole and encase the soldier pile with Class 2500 concrete up to lowest point of shaft excavation. Fill remainder of hole with 1 sack slurry concrete, completely encasing the soldier pile to the top.
7. Prevent construction water or slurry runoff onto streets, storm drains and adjacent properties. Apply cold tar to seal off gaps and openings in the barrier system.
8. Erect splash guard at top of drilled pile to prevent excavated muck, waste and air borne mist escaping outside the work site boundaries.
9. Dispose of slurry in a safe and environmental acceptable manner and in accordance with permit requirements.

#### B. Steel Liner Plate Support

1. Liner plates shall be installed in a true circle for circular shaft application in Stadium Conglomerate only, and to be erected just inside the overburden support system. Overburden soils may be supported using soldier pile and lagging system described herein with the bottom of soldier piles to be embedded at least 3-ft into competent Conglomerate formation.

2. Liner plate shall be installed in a manner that will not damage or overstress the lining. Flanges shall be clean and free from material that could interface with proper bearing. Liner plates shall be erected with tight joints. Joints in adjacent rings shall be staggered by one half segment.
3. The liner plate joints shall be bolted together, and attached to steel ribs so that imposed loads will not dislodge them. Maintain the liner plate in true circle by tie rods or other restraints.
4. Carefully perform excavation for installation of liner plate support to minimize formation of voids behind the lagged surface. Overbreak beyond the neat line behind the liner plate shall be backfilled with pea gravel or lean concrete or sand slurry.
5. Stiffener angles welded to liner plate may be required to protect the liner from buckling or damage. The additional reinforcement of the liner plate, if required, shall be provided at no additional cost to the City.
6. Schedule the excavation closely with placement of liner plate support. Do not allow maximum height of unlagged face of excavation to exceed 3-ft in the Stadium Conglomerate. Shorten the vertical height of the unsupported face to no more than 24 inches when unstable ground is encountered. Take suitable measures to stabilize the face and prevent ground displacement. Do not leave any unsupported face overnight.
7. Erect ring beam or rib support on a regular vertical intervals per accepted Contractor's design.

### 3.3 SHAFT EXCAVATION

- A. Remove the 1 sack concrete backfill from soldier pile bore as excavation progresses to place internal bracing and lagging.
- B. Internal Bracing
  1. Use walers and struts at regular vertical and horizontal spacing per accepted Contractor's design to provide internal support of excavation faces retained by soldier piles.
  2. Obtain tight bearing between walers and the wall to provide ample bearing area for load transfer and to carry maximum design loads without distortion or buckling.
  3. Include web stiffeners, plates or angles as needed to prevent rotation, crippling or buckling of connections and points of bearing between structural steel members. Allow for eccentricities caused by field fabrication and assembly.
  4. Excavate below point of support as indicated. Install bracing, and preload immediately after installation and before continuing excavation.

5. Before removing struts, backfill up to three feet below the strut level to be removed.
- C. Install and maintain all bracing support members in intimate contact with other support members and with the ground to allow proper load transfer from the jacking of the microtunneling equipment against the shaft support.
  - D. When design calculations indicate that lateral ground movement will exceed the maximum trigger limits for Action Level listed in Part 1.6, the Contractor shall preload bracing members by jacking struts to 50 percent of the design load if necessary to control shoring movement. Perform the work in accordance with methods, procedures, and sequence as described on the Working Drawings.
  - E. Maintain bottom of the shaft excavation level within 5 feet across the shaft.
  - F. Excavation to the depths proposed on this Project will require implementation of methods to control groundwater at each stage of construction. Prevent groundwater from accumulating and ponding in excavation. Implement measures to control groundwater inflows, in accordance with requirements of the Contract Documents, and to such levels that construction can safely proceed.

### 3.4 LAGGING

- A. Schedule the excavation closely with placement of lagging. When excavating in overburden soils, lagging placed between soldier piles shall be pushed or driven to the bottom of the excavation to prevent soil from sloughing into the opening. Do not allow maximum height of unlagged face of excavation to exceed 2-ft in the overburden soils and 3-ft in the Stadium Conglomerate. Shorten the vertical height of the unsupported face to no more than 15 inches when unstable ground is encountered. Take suitable measures to stabilize the face and prevent ground displacement.
- B. Do not leave any unlagged face to the left overnight.
- C. Use lagging secured in place to soldier pile. Install lagging behind the steel flanges as indicated. Provide a minimum 3 inches timber bearing length against the flange. Drive wedges between the lagging and the flanges of the soldier piles creating positive contact between lagging and the soil.
- D. Place prefabricated drainage mat to cover groundwater leakage area, if necessary. Extend the drainage mat connecting to the drainage stones beneath the mud slab at invert.
- E. Carefully perform excavation for installation of lagging to minimize formation of voids behind the lagged surface. Fill the presence of voids with pea gravel or lean concrete.
- F. Maintain a sufficient quantity of material on hand for lagging, bracing and other operation for protection of the work and for use in case of an emergency.

- G. Install alternate shotcrete lagging support in lieu of liner plate system when in Conglomerate. The Work shall be performed per requirements in SSPWC Part 303-2, and the following modifications
1. Use Method B only. Method A is not acceptable for this application.
  2. Minimum thickness of the plain shotcrete lining shall be 8 inches or as indicated. If uniformly distributed deformed steel fibers or welded wire fabric as additional reinforcement is used, minimum thickness of the reinforced shotcrete shall be 6 inches.
  3. In unstable ground conditions, apply immediately after excavation a 2-inch thick flash coating of shotcrete (flashcrete), following with the 6-inch required reinforced lining by the end of the work shift
  4. Install weep holes at the regular pattern as indicated on the excavated rock surface or flashcrete lining of the shaft wall.
  5. Minimum compressive strength shall be
    - a. At 8 hours 800 psi
    - b. At 72 hours 3,000 psi
    - c. At 28 days 5,000 psi
  6. Fiber Reinforcement – 70 lbs per cubic yard steel fiber (Maccaferri FF3 or equivalent).
  7. Proceed with the next round of the shaft excavation only after the 800 psi compressive strength has been achieved. Verify the compressive strength using Schmidt hammer.

### 3.4 THRUST BLOCK

- A. Place thrust block squarely and perpendicularly to the drive direction of the microtunneling equipment.
- B. Lagging behind the thrust block shall tightly press against the virgin ground. Place contact grout per Section 03360 requirements in bearing area behind the lagging after construction of the thrust block filling the presence of any voids prior to any tunneling operation.

### 3.5 BREAK-INS AND BREAK-OUTS

- A. Construct concrete starter wall against the face of the shoring system and mount the seal eye against the face of the concrete where the microtunneling equipment will be launched or received. Use fiberglass reinforcement when applicable.

- B. Install pre-excavation support at entrance to break-in and break-out including permeation grout zone and a roof canopy using rock spiling/dowels. Typical distance between spiling/dowels shall be no more than 18 inches. Add spot spiling or dowels as needed to anchor the starter wall firmly in position, especially for the wall in the receiving shaft.
- C. Do not remove the break-in or break-out portions of the shaft until all necessary support is in place.
- D. Before commencing with a shaft break-in or break-out, verify that the surrounding ground outside the shaft wall is stabilized, and the permeability of the ground in the break-in or break-out is reduced such that water inflows into the shaft through the break-in or break-out are within specified tolerances.
  - 1. Advance two (2) small diameter horizontal probe holes ahead from the starter wall to evaluate stability of the face and to confirm that the ground has been stabilized and the groundwater leakage is acceptable. Refer to Section 02443 Part 1.6.A and Part 3.10 of this specification.
  - 2. Perform strength/leakage/permeability tests as specified in Section 02341 for permeation grouted zone.
- E. Include provisions in the design and construction of the break in and break out so that mitigation measures can be exercised if raveling or running conditions are presented or when leakage exceeds the allowable quantities.
- F. Implement excavation of break-in and break-out in accordance with the requirements of specified herein and Section 02443.

### 3.6 STOCKPILING EXCAVATED MATERIAL

- A. No stockpiling of excavated material onsite. All excavated muck shall be hauled off site after screening for potential contaminations.
- B. Do not stockpile excavated material adjacent to trenches and other excavations, unless excavation side slopes and excavation support systems are designed, constructed, and maintained for stockpile loads.
- C. Do not stockpile excavated materials near or over existing facilities, adjacent property, or completed Work, if weight of stockpiled material could induce excessive settlement.

### 3.7 BACKFILL

- A. Install final carrier pipes, risers, closure joints, maintenance hole and other permanent structures as indicated. Perform testing of each pipe joint as required and/or hydrostatic testing of the pipeline. Finish backfilling of the annular gap per Section 02445 requirements.

- B. Upon completion of the work inside shaft but prior to backfilling operation in the shaft, advance at least six 6-inch diameter relief holes through the concrete slab at shaft bottom.
- C. During the backfilling operation, place grout behind any timber or steel lining plate lagging left in-place
- D. Accepted backfill materials inside shaft excavation are:
  - 1. Backfilling around permanent structures or below 8.0 feet of the final grade:
    - a. Concrete Class 480-C-2000 per Table 201-1.1.2(A) of the SSPWC
    - b. 1 sack slurry mix with minimum 28-day unconfined compressive strength (UCS) of 300 psi
    - c. Controlled Low Strength Material (CLSM) per SSPWC Section 201.6
  - 2. For backfilling portion shaft between final grade and 8.0 feet of the final grade:
    - a. Use uncontaminated borrow or on-site material conform to the Structure Backfill criteria per the requirements of SSPWC Section 300-3.5.1
      - 1) Within influence area beneath structures, vaults, slabs, pavement, curbs, piping, culverts, duct banks, and other facilities, compact to minimum of 95 percent of maximum dry density at optimum moisture content as determined by ASTM D 1557. Influence area is area within planes sloped downward and outward at 60-degree angle from horizontal measured from 1 foot outside outermost edge at base of foundation or slabs, 1 foot outside outermost edge at surface of roadways or shoulder, or 0.5 foot outside exterior at spring line of pipes or culverts. Backfill placement by jetting is not permitted without approval from the ENGINEER.
      - 2) For the pavement subgrade, compact to a minimum of 95 percent of maximum dry density at optimum moisture content as determined by ASTM D 1557.
      - 3) For other areas, compact to 90 percent of maximum dry density at optimum moisture content as determined by ASTM D 1557.
    - b. Alternatively, use Controlled Low Strength Material (CLSM) per SSPWC 201.6 or cellular concrete at minimum 300 psi UCS. Maximum height of each vertical lift of cellular grout backfill shall be no more than 5.0 feet.
    - c. Allow for thickness of pavement or other surface layer(s)
- D. Restore pavement within streets or parking lot in accordance with the following minimum requirements:

1. Prepare subgrade per requirements in SSPWC Section 301.
2. Streets – Same as shown on plans for trench resurfacing and street overlay.
3. Parking Lots – Use 3-inch asphalt on top of 7-inch Crushed Miscellaneous Base (CMB) per SSPWC Section 200-2.4

### 3.8 QUALITY CONTROL, TESTS, AND INSPECTIONS

- A. Provide quality control, testing, and inspection as required in the accepted shaft design submittals.
- B. If ground movement reaches trigger levels as specified herein and in Section 02443:
  1. Immediately notify the ENGINEER. Develop action plan to correct the deficiencies.
  2. Immediately take steps to control ground movement by revising procedures, providing supplemental bracing or other measures, such as working extended hours or temporarily terminating work.
  3. Install and monitor additional instruments and/or perform additional monitoring as directed by the ENGINEER.
  4. Perform a field investigation program such as SPT drilling to determine the extent of the movement and/or ground loss.
  5. Perform compaction grouting to fill in loss ground area.
- C. Excavate and recompact any ground impacted and repair any facility damage by ground movement triggered in the Contract Documents.

### 3.9 UNAUTHORIZED OVER-EXCAVATION

- A. Restore any unauthorized excavation to prior condition. Compaction shall be as specified for structural backfill.

### 3.10 REMOVAL OF EXCAVATION SUPPORT SYSTEM

- A. Remove excavation support in safe manner that does not leave voids in the backfill and does not result in settlement that exceeds response levels.
- B. Remove steel or steel reinforced support systems to a minimum of 8.0 feet below final grade and maintain support as excavation is backfilled.
- C. Legally dispose, re-use, or recycle all waste materials. Provide tickets.
- D. Remove and replace any property damaged in performance of the Work

**END OF SECTION**

**SECTION 02315**  
**STEEL CASING PIPE**

**PART 1 - GENERAL**

**1.1 REQUIREMENTS**

- A. This section provides specifications for steel casing pipe for tunneling.
- B. Furnish all designs, tools, equipment, materials, and supplies and perform all labor required to complete the Work as indicated on the Contract Drawings and specified herein.

**1.2 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS**

- A. Comply with the applicable reference Specifications:
  - 1. Section 01300, Contractors Submittals
  - 2. Section 02443 Microtunneling
  - 3. Section 02445, Carrier Pipe Installation into Casing
- B. Comply with the following industry standards effective at time of bid.
  - 1. Standard Specifications for Public Works Construction (SSPWC), Sections 207-24 and 306-2.
  - 2. ASTM A515 - Standard Specification for Pressure Vessel Plates, Carbon Steel, for Intermediate- and Higher-Temperature Service.
  - 3. ASTM A53 - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded, and Seamless.

**1.3 CONTRACTOR SUBMITTALS**

- A. Submittals shall be made in accordance with Section 01300 and as specified herein.
- B. Submittals shall be coordinated with all relevant submittals, assembled, and submitted as a single complete and comprehensive submittal.
- C. Where calculations are required to be submitted, they shall be signed and sealed by a Professional Civil Engineer registered in the State of California. Calculations shall clearly identify all parameters used, state all assumptions made in the calculation, and identify all sources of information.
- D. All shop drawings shall be legible with dimensions accurately shown and clearly marked in English.
- E. Pre-Construction Submittals:
  - 1. Calculations demonstrating:

SECTION 02315



- a. Casing pipe is designed to support the maximum anticipated construction and operational loads
  - b. Increase casing thickness to withstand the anticipated stresses and required corrosion protection
  - c. Use of minimum factor of safety
  - d. MTBM Manufacturer's method of measuring and calculating earth pressure for earth pressure balancing
2. Submit manufacturer's mill specification sheet listing diameter, thickness, and class of steel used in making the casing, and the mill certification.
  3. Submit shop drawing of casing showing:
    - a. Grout and lubrication ports
    - b. Grout plug material
    - c. Grout plug welding materials
    - d. Lay length
    - e. Joint detail
    - f. Weld design including number, type of passes, and welding material
  4. Submit manufacturer's pipe handling instructions.
  5. If different casing diameter is used than that indicated on the Contract Drawings, submit written justification, including availability of equipment for the alternate diameter.
  6. Welder qualifications and welding certifications

#### 1.4 DESIGN REQUIREMENTS

- A. Minimum factor of safety of 2.0 for steel unless otherwise determined by the Contractor's PE.
- B. Casing wall thickness of shall not be less than 1.00 inches.
  1. Trailing edge shall be square for maximum jacking surface
  2. Leading edge shall be beveled for welding
  3. Shall be rolled plate. No spiral welded pipe.

#### 1.5 QUALITY ASSURANCE

- A. Requirements outlined below shall be met at the time of bid and remain in force through completion of the project. Subcontracted work does not qualify as experience.
  1. Contractor's Engineer shall be a Professional Engineer registered in the State of California (CA PE) with experience in underground construction. Experience shall include:
    - a. Two (2) tunnel projects

SECTION 02315

- b. Calculated predictive jacking forces
    - 1) Force required for cutters to cut cobbles, boulders, and rock
    - 2) Earth pressure balance
    - 3) Review of MTBM calculation for face pressure measurement and earth pressure balancing
    - 4) Skin Friction
- 2. The ENGINEER will be the sole judge in determining if the prospective engineer meet the required work and project experience requirements.
- 3. Casing Welds:
  - a. Welded joint shall restore the sidewall strength as calculated for jacking strength and hoop strength to original design before jacking resumes.
  - b. Weld as-built shall be marked next to joint number, including welder, and documented in photographs.

## PART 2 - PRODUCTS

### 2.1 STEEL CASING

- A. Provide casing with outside diameter as shown on the Contract Drawings, unless the CONTRACTOR elects to adjust the excavated diameter to fit their means and methods, subject to acceptance by the ENGINEER.
- B. Provide casing that is specifically manufactured for tunneling with a smooth outer wall and is manufactured to the following dimensional criteria:
  - 1. Circumference < 0.5%
  - 2. Exterior Roundness < 0.5%
  - 3. End Squareness +/- 1.5 mm
  - 4. Straightness < 3 mm
  - 5. Pipe Length +/- 6 mm
- C. Comply with ASTM A515, Grade 60 or approved equal.
  - 1. All casing segments shall be joined by continuous, full circumference, full penetration butt weld.
  - 2. Mechanically joined pipe is not acceptable.
- D. Lubrication/Grout ports
  - 1. Provide at least one (1) Lubrication/Grout port per 10 feet of casing pipe
  - 2. Provide first grout port at 5.0 feet behind leading edge of casing

3. Lubrication/Grout ports to be rotated at least 120 degrees from previous port or from the top dead center of pipe or as accepted by the ENGINEER in writing.

## 2.2 LUBTRITION/GROUT PORT MATERIALS

- A. Lubrication/Grout ports, grout plugs, and welding materials are to be compatible with casing materials.
- B. Lubrication/Grout ports and plugs shall be 2.0-inch NPT.

## 2.3 WELDING MATERIALS

- A. Welding materials are to be compatible with the steel casing, Lubrication/Grout port, and Lubrication/Grout plug materials

## PART 3 - EXECUTION – NOT USED

**END OF SECTION**

## SECTION 02341

### PERMEATION GROUTING

#### PART 1 - GENERAL

##### 1.1 DESCRIPTION

- A. This section specifies minimum requirements for designing, performing, and testing the adequacy of permeation grouting to be performed for
1. Break-in and breakout of the microtunneling operation at the bottom of the shaft excavation;
  2. Formation of a curtain grout wall enclosing the shaft excavation at I-8 crossing; and
  3. Other underground crossings where controls of ground stability and groundwater inflow are deemed necessary.
- B. The Work shall be performed to:
1. Minimize groundwater seepage or leakage;
  2. Improve the ground stability of in-situ materials;
  3. Control ground settlement; and
  4. Prevent inadvertent returns of drilling fluid from microtunneling operation.
- C. Perform grouting from grout holes installed horizontally, inclined or vertically to obtain the specified minimum grout coverage as specified and as indicated.

##### 1.2 DEFINITION

- A. Chemical Grout: A combination of ingredients comprising matrix-forming base materials, reactants, and accelerators or retarders.
- B. Grout Curtain Wall: Installation of a series of intersecting and overlapping grout treatment zones to form a continuous impermeable wall or curtain against the movement of groundwater.
- C. Permeation Grouting: A method of ground treatment to reduce permeability and improve strength and stability of permeable, cohesionless layers within the overburden soils and/or Stadium Conglomerate using chemical grout to fill soil pore spaces without causing fracturing or excessive movement of the ground.
- D. Syneresis: Loss of liquid component caused by shrinkage or rearrangement of the structure.

### 1.3 RELATED WORK SPECIFIED ELSEWHERE

- A. Section 02160. Pit/ Shaft Excavation and Support
- B. Section 02443, Microtunneling
- C. Section 02496, Geotechnical Instrumentation

### 1.4 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS

- A. American Society For Testing and Materials (ASTM):
  - 1. ASTM C494, Specification for Chemical Admixtures for Concrete.
  - 2. ASTM D4219, Unconfined Compressive Strength Index of Chemically Grouted Soils.
  - 3. ASTM D4320, Laboratory Preparation of Chemically Grouted Soil Specimens for Obtaining Design Strength Parameters.

### 1.5 SUBMITTALS

- A. General: Make in accordance with Section 01330.
- B. Product Data:
  - 1. Materials specified in Part 2 herein.
  - 2. Manufacturer's mixing and handling requirements, personal safety equipment, first aid measures, and methods for proper storage and disposal of waste materials, include containers.
  - 3. Material Safety Data Sheets.
- C. Working Drawings and Methods Statements:
  - 1. Grout zone dimensions and locations, if different from what indicated or specified elsewhere in the Contract.
  - 2. Means and methods for grout pipe installation and performing permeation grouting in each application. Identify work and staging areas, patterns, orientations, sequences, depths, utility interference and types of grouting, grout pipes, packers, and methods for performing grouting.
  - 3. Calculations with clearly stated design parameters and assumptions identifying basis of grout design including computations of grout quantities with respect to porosity, strength of the grouted mass, target volumes, reduction in permeability, and refusal and closure criteria for the ground conditions defined in the Geotechnical Report.

SECTION 02341

4. Proposed time schedule and work hours for performing permeation grouting.
  5. Traffic control plans, including sequencing and duration of detours and lane closures, as specified elsewhere in these specifications.
- D. Grout Mix Designs for the subsurface and groundwater conditions anticipated to be encountered.
- E. Refusal and closure criteria proposed by the Contractor.
- F. Quality Control:
1. Qualifications:
    - a. Grouting subcontractor and supervision
    - b. Design Engineer.
  2. Certifications:
    - a. Certified laboratory test results on three sets of three grouted samples at least 30 days before starting grouting operations documenting that the proposed grout mix meets specified requirements.
    - b. Manufacturer's certificate of compliance with Part 2, material requirements of this specification section.
    - c. Manufacturer's certificate of origin for sodium silicate.
  3. Quality Control Plans:
    - a. Methods for assuring that the targeted area has been fully grouted and that the strength and/or permeability requirements have been achieved.
    - b. Ability to identify the depth to the top of the Stadium Conglomerate within 1-foot accuracy.
    - c. Methods for assuring that permeation grouting do not damage utilities or installed geotechnical instrumentation.
    - d. Detailed drawings to illustrate preventive measures to protect the utilities and structures from damage.
    - e. Methods for determining in-situ testing or sampling for compressive strength.

- f. Spill control plans describing procedures and mitigation measures to prevent and to minimize grout spillage onto ground surface or into the shaft excavation.

4. Records:

- a. Logs of exploratory borings drilled at each grouting location. Results of any field or laboratory testing performed by the Contractor.
- b. Fully dimensioned as-built locations, depths, lengths and orientations of drilled holes and casings.
- c. Daily records of drilling and grouting operations including injection rate, time, location, grout mix, gel time, pressure, rate, volume and packer locations.
- d. Results of the in-situ or laboratory testing of compressive strengths of the grouted materials before and after permeation grouting operation.

5. Notifications:

- a. With 10 days advance notice of performing permeation grouting within public rights-of-way.
- b. Immediately of leakage or damage to structures or facilities during grouting operations.
- c. If Contractor's confirmation soil borings suggested a change condition from contract document.
- d. If any of the contract required grout area is deemed ungroutable.

1.6 QUALITY ASSURANCE

A. Qualifications:

- 1. Design Engineer: California Registered Geotechnical or Civil Engineer.
- 2. Grouting Subcontractor: No less than three projects completed within the last five years comprising the planning and execution of a permeation grouting program of the scope and type required for this project.

1.7 DESIGN CRITERIA

- A. The work required herein relies substantially on CONTRACTOR-responsible means and methods for performing permeation grouting. Augment and enhance the minimum design criteria specified herein as required to meet the design and performance requirements specified elsewhere in these specifications.

- B. Confirm subsurface conditions where permeation grouting is indicated or specified by advancing and logging at least one confirmation borehole at each location. Groundwater, when encountered, is reported under an artesian conditions to within a few feet below surface grade. Confirmation boring is not required when an existing or proposed logged, boring are located within 10 feet from the permeation grout zone.
- C. Contract Required Pre-excavation Permeation Grouting
  - 1. Break-in and break-out locations at microtunnel pits and shafts where indicated. The minimum dimensions of the grout zone shall be as shown or as specified; and
  - 2. Continuous grout curtain wall enclosing the launching and receiving shafts to minimize the groundwater inflow at the interface between the overlying soils and the Stadium Conglomerate. The dimensions of the grout curtain wall shall be as indicated.
  - 3. Along the entire length of other underground crossings when groundwater is found at the soils and Stadium Conglomerate interface and within the excavation profile.
- D. Seepage of water through shaft break-in and break-out location for launching and receiving of microtunnel boring machine (MTBM) - As specified in Section 02443.
- E. Perform permeation grouting in areas specified in Part 1.1.A to the following criteria:
  - 1. Hole spacing: 5-ft (maximum; horizontal or vertical spacing)
  - 2. Maximum injection pressure: 100 percent of the minimum vertical or horizontal in-situ stresses;
  - 3. Minimum design criteria based on injection into standard medium-dense Ottawa sand (Ottawa 20-30):
    - a. Unconfined compressive strength: 50 to 100 psi
    - b. Maximum permeability:  $1 \times 10^{-5}$  cm/sec
    - c. Gel time: Between 20 minutes and 50 minutes.

## 1.8 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Store chemical grouts and other materials to be used for ground treatment according to manufacturer's recommendations and used in order received. Do not use materials beyond expiration date.
- B. Deliver sodium silicate in sealed containers or a certified tank truck, and accompanied by the supplier's certificate of origin. Deliver reactant materials in sealed containers accompanied by the supplier's certificate of origin.



- C. Store chemicals in metal tanks, suitably protected from accidental discharge.

## **PART 2 - PRODUCTS**

### **2.1 MATERIALS**

- A. General: Materials shall be non-toxic, non-corrosive, and non-flammable.
- B. Chemical Grout:
  - 1. Design mix comprising a liquid base, reactant, water, accelerator, and other approved admixtures as required.
  - 2. Liquid Base: Sodium silicate with a specific gravity between 1.4 and 1.5, and a silicate-to-soda ratio between 3.20 and 3.35.
  - 3. Reactant: Organic base type which, when properly mixed with other grout components, provides a permanent, irreversible gel with controllable gel times. The resulting gels shall exhibit less than 15 percent syneresis in 30 days when mixed with appropriate amounts of sodium silicate, water and accelerator, and not exhibit objectionable odors such as ammonia. Sodium bicarbonate, sodium aluminates and other reactants that produce a temporary grout are prohibited.
  - 4. Water: Potable and free of impurities affecting grout gelling characteristics and strength development of the grouted soil.
  - 5. Accelerator: Technical grade, water-soluble calcium chloride or other metal salt, containing a minimum amount of insoluble materials.
  - 6. Grout – Nontoxic and nonflammable during and after grouting.
- C. Grout Pipe
  - 1. Provide re-groutable sleeve-port type PVC grout pipes with grout ports at maximum 2 feet centers covered by expandable rubber sleeves
- D. Backfill Grout
  - 1. Use bentonite cement grout for backfilling all exploratory holes and PVC grout pipes left in place. The 28-day compressive strength shall be 50 to 100 psi.

### **2.2 EQUIPMENT**

- A. Chemical Grouting Equipment:
  - 1. General: Continuous mixing type, capable of supplying, proportioning, mixing and pumping the grout of the type specified. Do not use batch-type systems.

2. Meters:
    - a. Equip plant with automatic, real-time display, positive displacement meters that accurately measure and record the volume of each component pumped. Locate meters at the injection point and in each material line ahead of mixer.
    - b. Meter accuracy shall be within 0.25 gpm, independent of fluid viscosity.
  3. Storage tanks:
    - a. Of such capacity as to supply sufficient grouting materials to maintain production for at least 1 day so as to not interrupt the work if chemical delivery delays occur.
    - b. Provide preventive measures against accidental spillage of the grout products into the environment.
  4. Mixers and Pumps:
    - a. Capable of developing at least 300 psi at pumping rates not to exceed 15 gpm.
    - b. Capable of varying the pumping rate while maintaining constant component ratios.
    - c. Equip with piping or hoses of adequate capacity to carry the base grout and reactant solutions separately to the point of mixing. Combine base grout and reactant solutions using a 'Y' fitting equipped with a check valve and a baffling chamber. Provide a readily accessible sampling valve after the baffling chamber. Equip lines with a water flushing connection or valve placed behind the 'Y' to facilitate flushing the grout from the mixing line and baffle between grouting sessions.
    - d. Equip with an automatic pressure shutoff device to protect against overpressuring in the formation and in the equipment.
- B. Quality Control Equipment: Provide all equipment and materials required to perform quality control sampling and testing as specified herein.

## **PART 3 - EXECUTION**

### **3.1 GENERAL**

- A. Abandon grout holes that are lost or damaged due to mechanical failure of the equipment, inadequacy of grout supply, or improper injection procedure. Backfill such holes using approved methods and replace.

### 3.2 PREPARATION

#### A. Exploratory Soil Borings:

1. Perform in accordance with Section 02496 Part 3.01.
2. Locate a minimum 5 feet and a maximum of 10 feet outside the excavated width of the MTBM alignment.
3. Backfill all exploratory borings prior to permeation grouting operation.

### 3.3 DRILLING

- A. Adopt drilling techniques and of sufficient size and capacity to advance the grout pipe installation to the required depth and reach in the Conglomerate. For horizontal grout pipe installation, the borehole shall be cased during installation to prevent cave in.
- B. Orient grout pipes as required to obtain the specified grout coverage between adjacent grout pipes and to avoid obstructions.
- C. After installing grout pipe, encase the sleeve-port grout pipes in a continuous brittle mortar sheath. Use an internal double packer to inject grout at the required sleeve-port for both rock and soil grouting.

### 3.4 GROUTING

#### A. Chemical Grouting:

1. Conduct surface pressure test of Sleeve Port Grout Tube (SPGT) from manifold to injection point to determine system pressure loss. The pressure measured shall be used to estimate appropriate grouting pressures for production grouting.
2. Using double packers, inject chemical grout into the selected zones through alternate ports in the sleeve pipes. Temporary high injection pressures not exceeding one minute in duration will be permitted to crack open sleeve-ports.
3. Continue to inject grout until the specified refusal criteria have been met.
4. Repeat steps 2 and 3 for the remaining grout ports in the sleeve pipes.

#### B. Monitoring:

1. Closely monitor the rate of grout take during grout injection. Ascertain the cause of sudden drops in grout injection pressures following initial start-up pressure adjustments. Continuously monitor adjacent paved and unpaved areas, storm drains and other utilities for grout leakage. In the event that grout leaks are observed, temporarily terminate injection and plug leaks before resuming grouting.

2. If excessive grout take is experienced that is not attributable to leakage, change injection pressure, pumping rates, gel or setting times, or grout composition, subject to the acceptance of the ENGINEER, to reduce grout use to acceptable levels.

### 3.5 CLEANUP AND SITE RESTORATION

- A. Backfill grout holes immediately upon acceptable completion of grouting at that hole.
- B. Remove grout pipe to a depth of 2 feet below finished grade or surface. Grout pipe below 2 feet threshold shall be backfilled with grout. Restore utilities to the existing conditions.
- C. Horizontal grout pipe can be left in place or to be removed by the MTBM excavation.
- D. Restore street pavement and sidewalks in accordance with SSPWC.

### 3.6 FIELD QUALITY CONTROL

- A. The CONTRACTOR shall design a field quality control program to demonstrate acceptable improvements in the ground characteristics before and after grouting to determine its effectiveness. The program shall include field or laboratory testing to be performed to verify the presence, strengths and permeability of the grouted soil masses. The Contractor shall perform additional grouting if any of the tested parameters are not in compliance with the performance criteria described herein.
- B. As a minimum, the program shall include the following items:
  1. Equipment: Check plant meter(s) accuracy at least twice daily.
  2. Laboratory tests:
    - a. Prepare 3 Ottawa sand samples for each 5,000 gallons of chemical grout pumped and sample in accordance with ASTM D4219.
    - b. Obtain samples of grout used for chemical grouting for gel time checks at the rate of one sample for every half-hour of pumping or for every 500 gallons of grout, whichever is more frequent. Label gel samples and store until the completion of the project.
  3. Field Tests:
    - a. For break-in or breakout - Advance one (1) demonstration boring within the grout zone from each pit or shaft location. Type of tests to be performed

SECTION 02341

- (1) Visual: Verify the presence of grout by chemical method. Apply Phenophalin to soil samples recovered by in-situ method at different locations of the grout zone.
  - (2) Strength: Perform continuous SPT (Standard Penetration Test) sampling and testing in the grouted zone. SPT less than 10 bpf shall indicate an insufficient grouting operation.
  - (3) Permeability: Perform a rising or falling head tests in a minimum 3-inch diameter bore hole extended two-third the full thickness of the ground zone to determine the in-situ permeability. For horizontal grout hole, estimate the field permeability by monitoring the groundwater leakage through the borehole opening.
- b. For grout curtain wall – Advance two (2) demonstration borings inside the grout curtain wall at each shaft location and test for tightness of the enclosure.
- (1) Leakage Test: Perform a rising head test in a minimum 3-inch diameter cased bore hole advanced 1-ft into the Stadium Conglomerate inside the grout curtain ring and test for rate of groundwater re-charge. Estimated field permeability shall be less than  $10^{-4}$  cm/sec.
- c. Exact locations of these borings are to be determined by the Engineer in the field.

**END OF SECTION**

## SECTION 02443 - MICROTUNNELING

### PART 1 - GENERAL

#### 1.1 SCOPE OF WORK

- A. This Section specifies minimum design and performance requirements for the construction of the Mid City pipeline at the I-8 crossing by two-pass microtunneling method, where a steel casing pipe is installed, and the final carrier pipe inserted later. This section covers the requirements for microtunneling; additional requirements for the installation of the carrier pipe and other requirements are specified elsewhere.
- B. Locations, excavation, and support requirements for the launching and receiving shafts are specified in Section 02160.
- C. This section of the specification is also applicable if the use of microtunneling method is selected for any other underground crossings
- D. Delete SSWPC Part 306-8

#### 1.2 RELATED NON-SSPWC SECTIONS

- A. Section 03360 Contact Grouting
- B. Section 02445 Installation of Carrier Pipe in Steel Casing
- C. Section 02496 Geotechnical Instrumentation

#### 1.3 REFERENCE CODES AND STANDARDS

- A. Unless otherwise indicated, the current editions at time of bid of the following specifications and standards apply to the Work of this Section.
- B. American Society for Testing and Materials (ASTM):
  - 1. A139, Standard Specification for Electric-Fusion (Arc)-Welded Steel Pipe (NPS 4 and over)
  - 2. D2487, Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System)
  - 3. D6910, Standard Test Method for Marsh Funnel Viscosity of Clay Construction Slurries
- C. American Petroleum Institute (API): 2B, Specification for the Fabrication of Structural Steel Pipe
- D. NSF/American National Standards Institute (ANSI) Standard 60, Drinking Water Treatment Chemicals
- E. Occupational Safety and Health Administration (OSHA) Regulations and Standards for Underground Construction: 29 CFR Part 1926

- F. Cal/OSHA: State of California Administrative Code, Title 8
- G. "Greenbook", Standard Specifications for Public Works Construction (SSPWC), and per latest revisions by City of San Diego' White Book
- H. Caltrans Encroachment Permits, "Guidelines and Specifications for Trenchless Technology Projects"
- I. American Society of Civil Engineers ASCE/CI 36-15 – Standard Design and Construction Guidelines for Microtunneling
- J. 46 CFR Chapter I, 54.01-17 - Pressure Vessel Human Occupancy (PVHO)
- K. 29 CFR Chapter XVII, 1926.803 - Compressed Air
- L. American Society of Mechanical Engineer, PVHO-1, Safety Standard for Pressure Vessels for Human Occupancy
- M. American Society of Mechanical Engineer, PVHO-2, Safety Standard for Pressure Vessels for Human Occupancy: In-Service Guidelines for PVHO Acrylic Windows

#### 1.4 DEFINITIONS

##### A. General:

1. See Section 02496 Geotechnical Instrumentation
2. Annular Space: The gap calculated by the radial distance between the outside radius of the jacking pipe and the excavated radius of the outermost gauge cutter
3. Break-ins and breakouts: Tunnel and pipeline penetrations for connections into and out of shafts
4. Carrier Pipe: For this project, the potable water pipe and fiber optic conduit(s)
5. Casing Pipe: A jacking pipe used to support a tunnel and within which the carrier pipe is later constructed. The casing pipe provides initial ground support and transfers the forward thrust of the jacks through the pipe string to the face. For this project, the casing pipe is welded steel pipe.
6. Contact Grouting: Grouting outside of the jacking pipe or shaft support system to fill voids and assure that intimate contact for load transfer between the jacking pipe or shaft support system and the native ground has been achieved
7. Controls: Part of the microtunneling control system that synchronizes excavation, pressure balance, removal of excavated material, and jacking of pipe to balance forward movement with the removal of excavated materials so that ground settlement or heave is minimized or eliminated
8. Cutterhead: Any rotating tool or system of tools that excavates materials
9. Dewatering: Any system of wells and pumps designed and used to lower the groundwater below a required elevation

10. Earth Pressure Balance Machine: Type of tunneling machine in which the excavated material at the face is controlled to provide the counter balancing earth pressure to minimize or eliminate heave and subsidence. The counter balancing force is typically maintained between the active and passive earth pressures.
11. Emergency Recovery Shaft: A vertical excavation required for the removal of an obstruction or for removal or repair of the trenchless construction equipment. The location of an emergency shaft is determined by construction necessity and will not have permanent civil structures constructed in the shaft.
12. Face: The location where excavation is taking place
13. Hook up – Connection to a single lubricant or grout port along the jacking pipe
14. Hyperbaric Intervention – Hyperbaric intervention is a personnel-entry into a breathable and pressurized atmosphere within the MTBM excavation chamber using compressed air for ground support and personnel-entry.
15. Inadvertent Return: The loss of drilling fluid, including slurry and lubrication, from the slurry or lubrication system. An inadvertent return occurs with fluids reaching the ground surface, a body of water, or a utility. A common form of inadvertent return, where the fluid reaches the surface or waterway, is commonly called a “Frac-out.”
16. Intermediate Jacking Station(s) (IJS): A fabricated steel cylinder fitted with hydraulic jacks, which is incorporated into a pipeline between two jacked pipe segments. Its function is to provide additional thrust to overcome resistive skin friction of the MTBM and pipeline and to distribute the jacking forces over the pipe string on long drives.
17. Jacking Frame: A structural component, fitted with hydraulic cylinders used to push the MTBM and casing pipe into the ground. The jacking frame distributes the thrust load to the casing pipe and the reaction load to the shaft wall or thrust block.
18. Jacking Pipe: A specialty pipe that is engineered and manufactured with a smooth outer wall and watertight joints. The pipe is specifically designed to be jacked through the ground. The jacking pipe can be either a casing pipe or a carrier pipe designed for jacking.
19. Jacking/Launching/Entrance Shaft: A vertical excavation from which trenchless technology equipment and pipe are launched and driven
20. Jacking Shield: A fabricated steel cylinder from within which tunnel excavation is performed
21. Laser: A device commonly incorporated into the navigation system used to maintain alignment and grade during tunnel construction
22. Lubricant (Lubrication): A fluid, normally bentonite and/or polymers suitable for the site-specific ground conditions, used on the exterior of the jacking pipe to fill the annular space to reduce skin friction
23. Lubrication Port: A port located in a jacking pipe, fitted with a one-way valve, for injection of lubrication into the annular space. After microtunneling installation of the jacking pipe, lubrication ports are also used for contact grouting where required.

SECTION 02443



24. Maximum Allowable Jacking Force: The largest jacking load that the jacking pipe can accept allowing for an appropriate factor of safety
25. Maximum Anticipated Jacking Force: The largest theoretical jacking force required to advance the pipe string and MTBM from one location to another
26. Microtunneling: A remote controlled and guided pipe-jacking process that uses an MTBM for excavation. The pipe string provides continuous support to tunnel.
27. Microtunnel Boring Machine (MTBM): A remote controlled, guided, steerable, tunnel boring machine consisting of an articulated boring machine shield and a rotating cutter head. The MTBM monitors, controls, and maintains earth counterbalancing force between active and passive earth pressure and counterbalancing hydrostatic pressure with a slurry. Excavated muck is removed by slurry. Personnel entry into the MTBM is not required for the routine operation of the MTBM.
28. "N" Value: As defined in each soils report
29. Navigation System: System that locates and records the actual, real-time position of the MTBM relative to the design location. The navigation system shall be capable to maintain the tunnel within line and grade tolerances as specified.
30. Obstruction: Obstruction is an object not expected to be encountered and located fully or partially in the direct path of the MTBM that meets all requirements specified in this Section, thereby preventing the forward movement of the MTBM along its intended path and after all diligent efforts to advance the MTBM have failed due to:
  - a. Cobble or boulder with an unconfined compressive strength (UCS) greater than 80,000 psi
  - b. Timber or wood debris in the excavated muck that blocks the MTBM slurry removal system from operating effectively
31. Overcut: The radial distance between the excavated perimeter of the outermost gauge cutter and the outside radius of the MTBM
32. Pipe Jacking: Construction of a pipeline by pushing a pipe string of jacking pipe through the ground behind a shield
33. Pipe String: The succession of joined individual pipes being used to advance the excavation equipment and support the tunnel
34. Pit: A vertical opening without an engineering design where the depth of the excavation is less than the long dimensions of the excavation
35. Principal Dimension: The largest of an object's three mutually orthogonal measurements
36. Production Tunneling: Commences with the addition of the first jacking pipe segment and ends when the jacking stops approximately 2 feet from receiving shaft and Contractor commences with shaft modification to mount exit ring and locate MTBM face
37. Receiving/Exit Shaft: A vertical excavation from which trenchless technology equipment is received and removed

38. Rock: Solid rock, hard ledge rock, clasts, and conglomerate, that can only be removed by pneumatic or equivalent tools shall be classified as rock in this contract
39. Separation: (1) slurry separation: Equipment and processes use to remove solids from liquid fraction for reuse as an engineered slurry, (2) separation as distance: The minimum perpendicular distance as between two different objects i.e., water pipeline and sewer pipeline, measured at their closest approach i.e., pipe sidewall or bell
40. Shaft: A shored vertical opening, with an engineering design, where the depth of the excavation is more than the long dimensions of the excavation
41. Slurry: A water-based bentonite fluid used for the transportation of excavated materials, counterbalance the naturally occurring hydrostatic pressure during microtunneling, remove the excavated spoils, and reduce wear and tear on the tooling. Slurry is an engineered fluid with specific engineering properties which typically include pH, density, viscosity, and gel strength.
42. Slurry Chamber: An area/chamber located behind the cutter head of a slurry microtunneling machine where excavated material is mixed with slurry in the chamber and transported to the surface by pumping
43. Slurry Line: A series of hoses or pipes that transports spoils and slurry from the face of a slurry Microtunneling machine to the surface
44. Slurry Pressure Balance: An operational mode of the microtunneling system which uses a slurry to counterbalance existing hydrostatic pressure measured at the face and improve face stability
45. Specials: The pipe sections immediately ahead of and behind an IJS that have been specifically manufactured to physically accommodate the IJS
46. Spoil(s): Excavated material
47. Sump Pump: A pump placed in a shallow well used to collect and remove water incidental to the construction process, shaft leakage, and to prevent the excavation equipment from flooding
48. Thrust Block: An engineered structure located between the jacking frame and the shaft wall which distributes the jacking force developed by the hydraulic jacking frame over a large surface area
49. Thrust Ring: A fabricated ring that is mounted on the face of the jacking frame. It is intended to transfer the jacking load from the jacking frame to the thrust bearing area of the jacking pipe
50. Trenchless Technology Equipment: Equipment used to install the pipe from the point of origin to the destination without the use of an open trench cut
51. Trigger Level: Action level or maximum allowable level for movement
52. Water Jetting: Cleansing mechanism of the cutterhead where high-pressure water is sprayed from nozzles in the cutterhead to help remove soils classified as clays per ASTM D2487

## 1.5 DESIGN REQUIREMENTS

### A. Cal-OSHA Classification

1. The City has obtained from Cal/OSHA underground classification as “Potential Gassy” for the underground work to be performed under this section:
  - a. Shafts
  - b. Trenchless excavations with an excavated diameter 30.0 inches and larger
  - c. All work within shaft sites
2. Refer to Cal-OSHA permit conditions.

### B. Jacking Systems:

1. The installed jacking system capacity, including the use of IJS as applicable, shall be designed and capable of withstanding the maximum anticipated jacking force with a minimum factor of safety of 2.0
  - a. Stroke distance = 12 inches minimum
  - b. IJS shall be collapsed at the end of the jacking operation to allow closure of the casing pipe specials forming a watertight joint
2. Provide at least two (2) fully assembled IJS and two pipe specials on site prior to commencing the drive
3. Provide additional IJS and pipe specials as required to complete the drive
4. Install an IJS when:
  - a. One IJS, without specials, may be installed directly behind the MTBM
  - b. Maximum anticipated jacking force exceeds 80 percent of the maximum allowable jacking force of the jacking pipe as measured between MTBM and main jacking station or last installed IJS and main jacking station

### C. Slurry:

1. Slurry shall include use of bentonite, soda ash, and additives to provide a minimum viscosity of 85 seconds per quart per ASTM D6910 at commencement of launch in cement improved ground otherwise 120 seconds
2. Modify, after consultation with Contractor’s expert and the ENGINEER, the slurry to primarily facilitate stabilizing the face to minimize settlement. Additional concerns include the flow of excavated earthen materials from the face to the separation system, reducing cutter torque, and reducing wear and tear of the equipment
3. Design the slurry using bentonite and additives that are applicable for the ground and groundwater conditions

### D. Inadvertent Return Shutdown: MTBM operations including slurry and lubrication shall be shut down immediately upon discovery

1. Inadvertent return shall be contained, cleaned, and restored to previous condition

2. Microtunnel shall not resume until a minimum of 4.0 hours have elapsed and site is restored
- E. Lubrication Systems: Lubrication shall be injected continuously and automatically at the tail of the MTBM and at regular spacing along the entire pipe string during the tunneling operation to ensure a complete distribution of lubricant coating the jacking pipe
1. Lubrication ports installed at a maximum spacing of 10 feet with the first port being 5 feet behind leading edge
  2. Alternate positioning 12 o'clock, 4 o'clock, 12 o'clock, and 8 o'clock along the entire length of the pipe string
  3. Injection pressure and quantity of material to be discharged through each of the lubrication ports shall be independently controlled and monitored by the MTBM operator
  4. Lubrication and contact grout ports and plugs shall be designed for:
    - a. Maximum injection pressures during construction
    - b. Maximum groundwater pressure summarized herein
- F. Entrance and Exit Seals
1. Perform ground treatment at break in and break out zones as indicated and as specified herein to minimize ground and groundwater inflow
  2. Seals shall be designed to resist the maximum external hydrostatic pressure with a factor of safety of at least 2.0
  3. Use entrance and exit seals that are specially made for the excavated dimensions of the MTBM
  4. Provide adequate adjustments for machine misalignment
  5. Mount exit seal in the receiving shaft only after the Contractor can verify by field measurement the actual position of the incoming MTBM equipment at approximately 2 feet from shaft wall
  6. Upon completion of jacking and closing IJSs, perform contact grouting
    - a. Use ports within casing
    - b. Use ports mounted in the seals

#### 1.6 PROJECT BASELINE CONDITIONS

- A. Tunnel under the I-8 freeway is to encounter the Stadium Conglomerate along its entire length
- B. Cobbles and boulders with maximum UCS of 80,000 psi
- C. Groundwater elevation as specified herein

## 1.7 PERFORMANCE REQUIREMENTS

### A. Launching and receiving of MTBM:

1. Stabilize ground so that no more than 3.0 cubic feet of ground enters the shaft at the break-in or break-out location
2. Groundwater entering the shaft break-in and break-out locations shall not exceed 5.0 gallons per minute (gpm)
3. Prevent MTBM deviating from acceptable line and grade during launching

### B. MTBM Operation

1. Maintain positive hydrostatic pressure when slurry is open to the face
2. Maintain positive face pressure on the MTBM cutter wheel
3. Restrain MTBM, prevent MTBM and pipe string from exiting ground when MTBM is not restrained by jacking system

### C. Line and grade:

1. The construction tolerances of the MTBM and the directly jacked casing pipes shall be:
  - a. Horizontal Alignment – within 0.025 percent of the total drive distance and not more than 2.50 inches
  - b. Vertical Alignment – within 0.015 percent of the total drive distance and not more than 1.50 inches
  - c. No ponding of water or reversed grade shall be permitted between shafts
  - d. When the excavation is offline or grade, return to the design line and grade over the remaining portion of the drive and at a rate of not more than 1.0 inch per 25.0 feet
2. Casing pipe shall be constructed to permit carrier pipe installation in conformance with Section 02445

### D. Perform microtunneling within performance limits as specified in Section 02443

### E. Groundwater Leakage in casing pipe:

1. Less than 10.0 gpm total inflow between launching and receiving shafts
2. Less than 1.0 gpm at any isolated or joint locations

### F. Surveying:

1. Establish control points sufficiently far from any tunneling and construction operation not to be affected by ground movement or damaged

2. The accuracy of the horizontal coordinates and elevation for each survey point shall be 0.01 foot
- G. Tunnel Navigation System: Use a remotely controlled navigation system designed for an operational distance greater than the drive in which the proposed system will be used with sufficient accuracy to maintain the MTBM drive within the tolerances specified herein
  - H. Slurry System: Design the slurry system and slurry separation plant to stabilize the excavated face by forming “filter cake” and produce clean slurry using a slurry viscosity of 120 seconds
  - I. Lubrication:
    1. Monitor and record the lubricant mix proportion and engineering properties
    2. Automatically record the injection pressure and quantities for each hookup
    3. Fill the annular space
    4. Prevent an inadvertent return
  - J. Access to MTBM cutterhead
    1. Access is not required.
    2. Contractor shall request and have valid CalOSHA authorization in writing, including waivers, for any Intervention. This will require a submittal

## 1.8 QUALITY ASSURANCE

### A. Qualifications

1. Experience shall be self-performed. Subcontracted work does not qualify as experience.
2. All requirements to remain in force through completion of tunneling
3. No listed person shall be replaced without ENGINEER’s acceptable review
4. Microtunneling Contractor: Microtunneling experience record shall include:
  - a. Valid California Contractor’s Class “A” license
  - b. Five tunnels with at least two microtunnels under Caltrans ROW including settlement monitoring
  - c. Two microtunnels that encountered full face rock
  - d. Two microtunnels of at least 800 LF of installed pipe
  - e. Two microtunnels with an excavated diameter greater than 72.0 inches OD
5. Superintendent: Microtunneling experience record shall include:

- a. Managed at least two microtunneling projects
  - b. Three tunnels under Caltrans ROW including settlement monitoring
  - c. Two microtunnels that encountered full face rock
  - d. Two microtunnels of at least 800 LF of installed pipe
  - e. Two microtunnels with an excavated diameter greater than 72.0 inches
  - f. Two microtunnels in similar ground conditions
  - g. Two microtunnels with similar equipment
6. Operator: Microtunneling experience record shall include:
- a. Five microtunnels under Caltrans ROW including settlement monitoring
  - b. Two microtunnels that encountered full face rock
  - c. Two microtunnels of at least 800 LF of installed pipe
  - d. Two microtunnels with an excavated diameter greater than 72 inches
  - e. Two microtunnels in similar ground conditions
  - f. Two microtunnels with similar equipment
7. Slurry Separation Plant operator
- a. Five microtunnels
  - b. Two microtunnels of at least 800 LF of installed pipe
  - c. Two microtunnels with an excavated diameter greater than 72 inches
  - d. Two microtunnels in similar ground conditions
  - e. Two microtunnels with similar separation equipment
8. Driller's Mud and Lubrication Specialist
- a. Five microtunnels under Caltrans ROW requiring settlement monitoring
  - b. Two microtunnels of at least 800 LF of installed pipe
  - c. Two microtunnels with an excavated diameter greater than 72 inches
  - d. Two microtunnels in similar ground conditions
  - e. Two microtunnels with similar equipment
9. CONTRACTOR's ENGINEER: Microtunneling and tunneling experience record shall include:

- a. Professional Civil or Structural Engineer licensed in the State of California
  - b. Three microtunnels under Caltrans ROW including settlement monitoring
  - c. Two microtunnels that encountered full face rock
  - d. Two microtunnels of at least 800 LF of installed pipe
  - e. Two microtunnels with an excavated diameter greater than 72 inches
  - f. Two microtunnels in similar ground conditions
10. Contractor's Geotechnical instrumentation specialist
- a. Professional Civil or Geotechnical licensed in the State of California
  - b. Three microtunnels under Caltrans ROW including settlement monitoring
  - c. Two microtunnels of at least 800 LF of installed pipe
  - d. Two microtunnels with an excavated diameter greater than 72 inches
  - e. Two microtunnels in similar ground conditions
11. CONTRACTOR's Surveyor: Microtunneling experience record shall include:
- a. Licensed Land Surveyor in the State of California
  - b. Three microtunnels under Caltrans ROW including settlement monitoring
  - c. Five tunnels in shafts of at least 40 feet deep
  - d. As-built surveys of two tunnels of at least 800 LF with intermediate points every 20 feet
  - e. Two tunnels with an excavated diameter greater than 72 inches
12. Intervention Team if proposed for any reason – company/subcontractor providing intervention support shall have at least:
- a. 3 tunnel interventions under hyperbaric conditions
  - b. Supervisory personnel
    - 1) 3 tunnel interventions with at least two being under hyperbaric conditions
  - c. Intervention team members:
    - 1) 3 tunnel interventions with at least two being under hyperbaric conditions
13. Experience Records shall demonstrate experience. Each listed project shall include:
- a. Project name, location, description of shaft and tunnel, ground type, groundwater, purpose of tunnel



- b. Contractor if work was performed as a subcontractor including contact information
  - c. Project owner including contact information
  - d. Details of settlement monitoring under Caltrans ROW
  - e. Sufficient detail to demonstrate qualifying experience and completion of design requirements
14. Similar ground shall be:
- a. Same ground classification per ASTM D2487
  - b. Lowest N-values per foot within the tunnel envelope as follows:
    - 1) N-values between 0 and 5 inclusive must be within 0 and 5 inclusive
    - 2) N-values between 6 and 50 inclusive must be  $\pm 5$
    - 3) N-values of refusal must be greater than 40
  - c. Cobbles with an UCS of at least 80 percent of that specified herein
  - d. Groundwater at 80 percent of that specified herein
15. Similar equipment shall be:
- a. MTBM of the same manufacturer with a manufactured OD at least 72-inches OD
  - b. MTBM with the same type of guidance system

B. Jacking pipe information

1. Jacking pipe capacity calculations shall be stamped and signed by the CONTRACTOR's ENGINEER. Calculations shall indicate the maximum theoretical and allowable capacities.
2. Working drawing showing dimensions of the proposed jacking pipe and IJS specials to calculate jacking capacity and specifically identify the factor of safety
3. Working drawing showing detail design of the watertight joint of the jacking pipe and the IJS system
4. Working drawings showing detail designs and layout of the lubrication and contact grout ports, and plugs
5. CONTRACTOR's ENGINEER shall prepare jacking force calculations. Work sheet shall specifically identify source of equation, normal effective stress, sources of friction factor, adhesion factor, use of lubrication, and the factor of safety. Equation and factors shall be from a widely accepted industry source acceptable to the ENGINEER.
6. CONTRACTOR's ENGINEER shall determine the maximum anticipated construction loads, including jacking forces and handling stresses, proposed IJS locations, and

ensure that the anticipated loads are implemented in the manufacturer's design of the jacking pipe, subject to the ENGINEER's review.

7. Manufacturer's written recommendations for repair of joint and side wall failures of the casing pipe to comply with the structural and leakage requirements
- C. Progress reports: Prepare daily for each work shift and for the microtunneling drive. Each jacking report shall include:
1. Project Name
  2. Date
  3. Printed name of operator and signature
  4. Number of each pipe installed and length of pipe
  5. Pipe Stationing
  6. Start and end time for each pipe joint
  7. Positions of IJS in the installed pipeline
  8. Start and finish times for each crew each day
  9. Field testing results of slurry and lubricant
  10. Recorded MTBM data as required herein
  11. CONTRACTOR's interpretation of the recorded data
  12. Lubrication log as required herein
  13. Loss of slurry and volume of addition fresh slurry into the system
  14. Obstructions, when encountered
  15. Any unusual observations made in the field
  16. Daily output or printout from the tunnel navigation system and auto data recording (Item E) systems including machine locations, operational parameters monitored, measured, and recorded to demonstrate progress.
  17. Muck volume per jacking pipe and daily total muck quantity
  18. Jacking report (Item E) – weekly
- D. Use automated data recording system for the microtunneling system supplied. It shall be operated for the duration of the project and the records provided to the ENGINEER in a format acceptable to the ENGINEER. All required parameters capable of being recorded by the microtunneling system shall be operational and recorded at a maximum interval of 6.0 inches of MTBM advancement or every 3.0 minutes during tunneling, whichever comes first. During a stoppage, face or earth pressure and hydrostatic pressure shall be recorded at least daily unless otherwise accepted by the ENGINEER.

- E. Provide a separate jacking report prepared by hand to supplement information on the automated data recording system. Jacking report shall, unless otherwise specified, include three recording points of measurements for each pipe segment up to and including 10.0 feet long. The first recording point shall be within one foot of the start, second recording point shall be near the midpoint, and third recording point shall be within one foot of the end. For pipe segments longer than 10.0 feet add one recording point at the midpoint between the first and second recording points and add one recording point at the midpoint between the second and third recording points for a total of five recording points. For each of the recording points, record the following measurements and provide unit of measure:
1. Position and deviation of the MTBM in relation to design line and grade
  2. Pitch, roll, yaw and drift of the MTBM
  3. Maximum jacking force and strokes exerted by each of the main jacks and each IJS
  4. Position, pressure and jacking forces of each of steering jacks
  5. Cutterhead torque and rpm of the cutter wheel
  6. Earth pressure measured closest to the face of the MTBM at start and end of each segment
  7. Hydrostatic pressure at start and end of each segment
  8. Inlet and outlet slurry quantities and pressures
  9. Velocity and volume of slurry per time unit, including percentage of slurry volume bypassed through the system
  10. Jacking rate in millimeters or inches per minute and total distance jacked in millimeters/meters or inches/feet
  11. Water jetting operating parameters including position of valves, maximum pressure, volume, and operating duration
- F. Lubrication log shall include date, shift, number of batches mixed, and operator. For each batch include a measurement of the density, viscosity, and volume injected. For every hook up location, indicate pipe number, design mix, injected volume, duration, and injection pressure.
- G. Contingency plans:
1. Spoils separation plan shall include changes to the separation plant and/or slurry additives when testing performed in accordance with the accepted submittals or operating parameters indicate the slurry is not performing as intended. Describe methods and procedures for making changes to the separation plant and/or slurry additives.
  2. MTBM operational plan shall include observational and operational characteristics being monitored that indicate the MTBM is not advancing, experiencing excessive ground movement, excessive deviation from contract line and grade, excessive "spikes" in cutterhead torque and jacking thrusts, in low blow count material, presence of elevated hazardous gas levels, excessive groundwater leakage, and other non-compliance performances. The plan shall include an explanation of the probable causes. The plan shall also include replacing operators, advance rates, changes in the slurry mixes, pressures and other modifications to be made on the MTBM equipment and work procedure implemented

3. Obstruction removal plan shall include observational and operational characteristics that indicate the MTBM is not advancing due to an obstruction. The plan shall include the confirmation of the obstruction and methods to remove the obstruction considering face access, groundwater control, ground support methods, type of obstruction, location of stoppage, and impact to traffic and adjacent facilities. The plan shall also include procedures to abandon the tunnel should it become necessary and shall include machine and pipe retrieval/pull back when appropriate and backfilling of the abandoned opening with grout during the machine retrieval process.
4. Intervention plan, if proposed, shall include the decision process to determine when and where intervention is necessary at proposed maximum pressure. The plan shall include supervision, equipment, personnel, work procedures, training, implementing and monitoring that will be required for successful completion of the activities. Medical support team and facilities shall also be identified in the plan to provide emergency service when necessary and placed on notice before intervention.
5. Tunnel navigation plan shall include operational parameters observed, measured, and recorded to determine if the equipment has moved or distortion is affecting the guidance. If any reach of the installed jacking pipe is offline or grade, the plan shall include a return to the design line and grade as specified herein.
6. Jacking plan shall include operational parameters observed, measured, and recorded to determine if jacking force is increasing at a rate that would exceed jacking capacity or jacking force increase at a rate causing reasonable concern for completing the drive. Include actions and procedures to address situations when jacking force is increasing at a rate that would exceed jacking capacity or causes a concern.
7. Inadvertent return plan shall include cleanup methods, emergency telephone numbers, sources of equipment and materials needed for containment and clean-up, and corrective actions for reducing operating pressures and modifying the slurry or lubricant. The plan shall include replacement of personnel when necessary and acceptable to the ENGINEER. Slurry and lubrication inadvertent return plan shall include operating parameters that are controlled with the intent of preventing an inadvertent return. Inadvertent return plan shall include a minimum shutdown period. The restart of mining will be permitted only after the satisfactorily execution and completion of the procedures described in the accepted contingency plan, and approvals from all agencies having jurisdiction have been obtained.
8. Jacking pipe failure plan shall include inspection, repair, and removal plan. Repair methods and removal plan shall be per manufacturer's written recommendation and acceptable to the ENGINEER.
9. Groundwater leakage remediation plan when water is observed inside the casing pipe and flow exceeds allowable limits

## 1.9 SUBMITTALS

### A. Qualifications

1. Microtunneling Contractor
2. Project Superintendent
3. MTBM operators
4. Slurry Separation Plant Operator

5. Driller's Mud and Lubrication Specialist
  6. Contractor's PE
  7. Contractor's Geotechnical instrumentation specialist
  8. Contractor's Surveyor
  9. Intervention Team if proposed
- B. Notices shall be written and unless otherwise specified, shall be submitted before end of shift.
- C. Pre-Construction
- D. Construction
- E. As built
- F. Qualifications and experience records
- G. Microtunneling Machine
1. Shop drawings of microtunnel machine, including dimensions, design and configuration of cutter head, tooling, overcut, provisions for face access to the cutter and other machine features to comply with the requirements described in this Section. Indicate the unconfined compressive strength and the diameter of the largest spherical object that can pass through the cutter wheel and be crushed by the MTBM.
  2. Preprinted machine specifications or a letter from the microtunneling machine manufacturer(s), in English, demonstrating that the selected machine(s) satisfies all aspects of the requirements in this specification and is capable of progressing through the anticipated soil/rock conditions as indicated in the Geotechnical Report for the proposed jacking diameter and distance, and to support all aspects of the proposed contingency plans.
- H. Demonstrate that the proposed construction means, and methods meet specified requirements:
1. A general description and schedule of the microtunneling procedure, including shaft construction pertaining to microtunneling operation, equipment set-up, break-in/breakout treatment, MTBM excavation, work sequencing and schedule, method, spoil removal, spoil disposal, methods of protection and maintenance of project site, and groundwater control methods.
  2. Microtunneling narrative including and not limited to:
    - a. Installation of equipment
    - b. Launch sequence through placing first jacking pipe on rails
    - c. Jacking cycle including addition of pipe segments to the pipe string
    - d. Addition of Intermediate Jacking Stations (IJS) to the pipe string
    - e. Receiving sequence commencing with starting shaft modifications with MTBM at approximately 2 feet away from shaft wall
    - f. Removal of equipment at receiving shaft

- g. Construction of features within shaft location
  - h. Incremental restoration of shafts
  - i. Shoring removal sequence
  - j. Completion of survey requirements
  - k. Records documenting groundwater leakage and ground movements
3. Material handling, storage, MSDS, mixing, and installation
  4. Sample field records demonstrating material compliance and legal disposal
  5. If an intervention is proposed provide written recommendations with the proper operational procedures for performing a safe intervention.
- I. Working Drawings/Work Plan:
1. Layout, access and dimensions of work site, depth and dimensions of launching and receiving shafts; including jacking equipment within the shaft and aboveground equipment at each location. Provide a separate drawing superimposing permanent civil works within the shaft.
  2. Design and schedule of installation of electrical system, lighting system, onsite power generation or electrical hookup
  3. Grade and alignment controls, and design of the navigation system including operating parameters, monitoring recording and QA/QC requirements. Manufacturer's specifications, manuals, and any drawings of the navigation system.
  4. Methods for launch and retrieval of the MTBM including any modifications to the shaft. Additionally, describe procedures that will be used to confirm entry and exit portals are stable, prior to launch and retrieval of the MTBM.
  5. Estimated daily volume of muck generated and means and methods for field measurement and verification.
  6. MTBM retrieval or pull back system for a distance up to 300 feet from the launching shaft, including recovery of all installed pipe. Allow backfill grout/slurry to be discharged through MTBM cutterhead to fill in the abandoned tunnel during the pullback of the MTBM equipment.
- J. Contingency plans - described in Part 1.7.
- K. Slurry System:
1. Slurry system of the microtunneling machine, including a line diagram illustrating the operation, monitoring and controlling of the slurry system in applying hydrostatic counterbalancing pressure to the face.
  2. Slurry management plan to avoid inadvertent return and spillage onto street surface.

3. Details of slurry system and soil separation methods. Include calculations of the system capacity, flow rates to handle sizes and quantity of the material anticipated. Demonstrate that the slurry system has sufficient pressure, velocity and volume to adequately transport and remove the excavated mucks as intended. Include pressure gauge and volumetric gauge locations.
  4. Design mixes, additives, to be used for slurry to perform its intended functions in the subsurface conditions described in the Geotechnical Report. Include a targeted range of properties for each soil type, testing methods and requirements to ensure that the slurry is within the proposed targeted properties and performing as intended. Targeted properties of slurry shall include measurements of the pH, unit weight, solid contents (percent of particles larger than No. 200 sieve) and viscosity.
  5. Design of the slurry separation system including various components, and selection of screen sizes, scalper shaker, hydro cyclones and centrifuge for water-based slurry with and without additives.
- L. Jacking system details, and numbers of IJSs required and their proposed spacing, method of operation, thrust capacity, and sleeve details, plus method of control to prevent the maximum allowable jacking force from being exceeded.
- M. Auto Lubrication System: Description of lubrication mix equipment, control system and procedure for lubricating the pipe during jacking operations, including estimated injection volume at each port for the anticipated soils. Submit materials to be used for lubrication, with consideration of the groundwater conditions anticipated to be encountered along the alignment.
1. Location and pattern of lubrication ports along the MTBM and the jacking pipes.
  2. Mix designs including grout mix, proportions, density, slump, strength, viscosity, and pH
  3. Demonstrate that the lubrication delivery system, including design calculations, shall have sufficient capacity, pressure and volume for lubrication to perform as intended
  4. Estimated quantity of lubrication needed to fill in the annular gap for the soil conditions at each port
  5. Injection and monitoring systems to allow independent control of the grout flow rate, volume and pressure at each port, including pressure gauge and volumetric gauge locations
  6. Sample lubrication log sheet acceptable to ENGINEER
- N. Jacking pipe information as required herein. Including manufacturer's certificate of compliance that the jacking pipe complies with project specifications.
- O. Power generation plant and slurry plant sound rating data. Sound level rating data shall be based on actual tests of an identical unit or a similarly packaged unit of equal capacity with calculated corrections submitted for review. Manufacturer's test procedure, equipment, and reporting shall conform to SAEJ1074, Engine Sound Level Measurement Procedure or ANSI/ASME PTC36, measurement of industrial sound.
- P. Intervention:

- a. Provide experience record demonstrating experience
  - b. Provide qualifications/certifications for each person on-site for intervention
  - c. Submit intervention plan with details regarding all specialty equipment, include schedule based upon replacing 4 cutters and 16 cutters including center cutter
- Q. Provide a sample copy of all reports to be filed under this work including information available from automated data recording of the performance of the lubrication system, sampling frequency, and available formats for the ENGINEER to select.
- R. Notification:
- a. Provide minimum five (5) workdays advance written notification of meeting date and time for any preconstruction meeting
  - b. Notification requirements during construction as specified herein
- S. Survey plans including the following:
- 1. Records of the line and grade alignment information during the MTBM operation summarized using the Tunnel navigation system in a format acceptable to the Engineer. Submit the as recorded alignment information on a weekly basis.
  - 2. As-built drawings of the jacking pipe showing the horizontal coordinates and elevations, and deviations from the design line and grade of all pipe joints. Clearly indicate any out-of-tolerance locations on the as-built drawings. Submit cross sectional drawings also to highlight the clearance envelope between the casing pipe and the permanent product pipe.
- T. Job Hazards Analyses: Submit Injury and Illness Prevention Program for information only to demonstrate compliance with the law. The plan shall identify the potential hazards including chemical hazards to the work crew, the environment, and the surrounding communities. Include all the mitigation measures necessary to address these hazards. The plan shall also address all the safety issues that may be required for the work described in the contingency plans.
- U. Disposal Plan – Include disposal plan(s) for excavated spoils and wastewater generated during the microtunneling operation. Provide letter of acceptance from disposal facility noting legal disposal of waste materials.

## **PART 2 - PRODUCTS**

### **2.1 MATERIALS**

- A. Steel Casing pipe:
- 1. See sections 207-10 and 207-24 of the special provisions.
- B. Slurry and lubrication shall consist of high yielding sodium montmorillonite bentonite and polymers, additives, and water.
- 1. Water - potable water



2. Specially designed for the groundwater qualities described in the Geotechnical report
3. All water shall be tested for pH and treated with soda ash, or accepted equal, to adjust the pH of the water as required in the accepted mix design(s)
4. Bentonite, polymers, and admixtures, other than soda ash and saltwater additives, shall be NSF/ANSI Standard 60 Certified not based upon removal.

C. Cement:

1. Conform to the requirements of ASTM C 150
2. Type II or V
3. Water shall be furnished by the CONTRACTOR from a potable water source

## 2.2 EQUIPMENT

A. MTBMs and components

1. General:

- a. The microtunneling system shall be specifically designed for tunneling in geotechnical conditions stated herein, and allows the tunnel to be constructed without delay to the schedule of this project

2. MTBMs: Accepted MTBMs shall also satisfy the following requirements:

- a. Equip with sufficient power and ability to cut, fracture or crush earthen material
- b. Measure and provide hydrostatic pressure balancing support by the application of counterbalanced slurry pressure at the excavated face
- c. Variable cutterhead rotational speed tailored to variable ground conditions
- d. Rugged and well armored cutterhead to resist abrasion
- e. Equip with recessed, protected and backloaded disc cutters
- f. Equip with sufficient torque in the cutterhead to excavate and remove spoils
- g. Include the use of a rock crusher for breaking clast into a size for slurry removal
- h. Provide access under both free air and under elevated atmospheric pressure to the cutterhead slurry chamber for maintenance, inspection, replacement of cutting tools and removal of obstructions
- i. Articulation to allow steering and line and grade corrections
- j. Incorporate water-tight seals between the MTBM, trailing cans, and pipe
- k. Protect electric and hydraulic motors and operating controls against water damage

- l. Use bi-directional drive on the cutter head wheel, and/or adjustable fins or other means, to control roll
  - m. Minimum annular space shall not exceed 1.0 inch, unless indicated by the CONTRACTOR in the submittals and accepted by Caltrans and the ENGINEER
  - n. Capable of tunneling through ground improvement zones specified in the Contract Documents and at the break-in and break-out locations
  - o. Cutting Tools shall include disc cutters designed for use in excavating cobbles, boulders, and rock as specified herein
3. Slurry System: MTBM shall include an automated spoil transportation slurry system that balances the naturally occurring hydrostatic pressures by the use of a slurry pressure balance system. System shall be capable of adjustment required to maintain face stability. Slurry system shall:
- a. Balance, manage and control the pressure at the face by use of the slurry pumps, pressure control gauges, valves, and flow meters
  - b. Include a slurry bypass unit in the system to allow the direction of flow to be changed and isolated, as necessary
  - c. Provide an upstream pressure gauge as close to the face as possible to provide real time reading and monitoring of the face pressure during operation and shut down
  - d. Generate sufficient flow capacity, pressure, and velocity in the slurry system to properly transport the slurry to the ground surface treatment facilities
- B. Slurry Separation Equipment shall:
- 1. Adequately separate the spoil from slurry so that slurry within the operating parameters can be returned to the cutting face for reuse. Use separation plant, including scalping screens, shaker screens, de-sanding and de-silting cones, and centrifuge as necessary for the conditions indicated in the Geotechnical report.
  - 2. Use the type of separation process suited to the size and rate of excavation, the soil type and sizes being excavated, anticipated solid and fine contents in the slurry mix, and the workspace available at each launching shaft.
  - 3. Monitor the composition of the slurry to maintain the pH, slurry weight and viscosity limits defined by the operating parameters
  - 4. Protect against any slurry spillage and contain separated spoils in covered containers for removal from the site
- C. Pipe Jacking Equipment shall
- 1. Jacking capacity to push the MTBM and the pipe string between the shaft locations identified on the Working Drawings
  - 2. Impose sufficient thrust loads onto the cutting tools to fracture, crush and break up the cobbles and boulders encountered

3. Hydraulic cylinder extension rates synchronized with the excavation rate of the MTBM
  4. Uniform distribution of jacking forces on the bearing end of the jacking pipe
- D. Remote Control System shall:
1. Allow for operation of the MTBM without the routine needs for personnel to enter the tunnel
  2. Display available to the operator, showing the position of the shield in relation to a design reference together with roll, pitch, complete navigation system, valve positions, thrust force, cutter head torque, rate of advance, installed length and slurry operating parameters
  3. Integrates the system of excavation and removal of spoil and its simultaneous replacement by pipe. As each pipe section is jacked forward, the control system synchronizes all of the operational functions of the system.
- E. Alignment Control shall:
1. Control line and grade per allowable tolerances.
  2. The system shall have the capability to provide real time navigation data including location check and record electronically the actual position of the machine for QA/QC confirmation by the City
  3. Provide steering information when applicable
- F. Lubrication System: System shall include pressure gauge, volumetric gauge, and shut-off valve on the pump or at the point of injection; and control and monitoring systems for the use of the operator. Lubrication system shall automatically control volume and pressure of lubricant injected. Operator shall select locations along the tunnel with consultation from MTBM operator. Volume and pressure shall be automatically recorded.
- G. Launch and exit seal – Include single or double rubber donut gaskets mounted to the shaft wall, with slide plates to prevent inversion

## PART 3 - EXECUTION

### 3.1 GENERAL

- A. The MTBM shall not be launched until the receiving shaft is completed and ready to receive the MTBM equipment
- B. Complete the ground improvement at the MTBM break-in and break-out as indicated per requirements of the Contract Documents. Allow sufficient set time for grout to set prior to excavation work.

### 3.2 WORK AREA PREPARATION AND MAINTENANCE

- A. Organize of microtunneling surface equipment for the drive in such a manner as to enable proper operation at all times, to minimize impacts to property owners, to minimize inadvertent return and spillage, and to maintain traffic control patterns as specified
- B. Any equipment operating with fuel, hydraulic, or lubrication oils shall be provided with suitable containment basins made of plastic lining and sandbags to ensure no loss of fluid to drains or water courses or to contaminate the ground.
- C. All equipment shall be maintained and kept in working order. All oil, hydraulic, or fuel leaks shall be repaired upon discovery. Any leaking equipment shall not be used until repaired.
- D. All lubricant, slurry, or materials leaked or spilled shall be contained, cleaned up, and disposed of properly
- E. Remove excavated muck from work site during each working day to allow an accurate count of daily muck volume

### 3.3 INSTALLATION

#### A. General

- 1. Correct or re-install the tunnel if allowable tolerances are exceeded or if the MTBM equipment fails to complete the drive, excluding an obstructions or changed conditions. If redesign is required, the CONTRACTOR shall obtain the services of a qualified Professional Engineer registered in the State of California.
- 2. Adjust the quality of the slurry by adding additives or by additional cleaning to satisfy the intended functions for stabilizing the face, transporting and removing spoils
- 3. Inject lubricant continuously and at regular hookup interval to minimize the jacking forces. Provide and/or weld permanent pressure plug sealing lubricant port when no longer in use.
- 4. Measure the total groundwater inflow during the MTBM operation. Provide written notice within four hours and before end of shift on day of discovery, include repair method. Repair leakage within one day of submitting notice and acceptance of repair method

#### B. Alignment Establishment:

- 1. CONTRACTOR's SURVEYOR shall check baseline and benchmarks provided by the CITY before commencing excavation and immediately report any errors or discrepancies to the ENGINEER.
- 2. Use the baseline and benchmarks provided by the ENGINEER to furnish and maintain additional reference control points, lines and grades for the pipeline construction.
- 3. Check the primary control for the microtunneling system against an undisturbed above ground reference at least once each week

#### C. Obstructions during Microtunneling:

1. Obstruction removal shall be performed by:
    - a. MTBM retrieval with means to complete tunnel
    - b. Back tunneling from the receiving shaft
  2. Obstructions as defined herein will be made in accordance with the Contract only if the following requirements are met by the CONTRACTOR:
    - a. Notify the ENGINEER in writing immediately upon encountering a suspected obstruction that stops forward progress. Perform an inspection at the heading and document the findings.
    - b. Upon written authorization by the ENGINEER, proceed with removal of the suspected obstruction by means of accepted removal procedure
    - c. When appropriate, collect representative samples of the obstruction for additional analyses to be performed at the direction of the ENGINEER
  3. The proposal of alternative methods for removing, clearing or otherwise making it possible for the microtunneling equipment to progress past a suspected obstruction that does not allow for the direct observation, documentation, measurement of the object or recovery of samples for grain size distribution, compressive strength testing shall not be considered for additional payment.
  4. There shall be no compensation when obstructions are not present.
- D. CONTRACTOR shall not employ water jetting without a written request and the ENGINEER's written approval. Water jetting will only be authorized in soils classified as clay per ASTM D2487.

### 3.4 INTERVENTION

- A. When intervention is proposed, submit the request for City approval with all CalOSHA authorizations and waivers. Include in-situ ground and groundwater conditions, MTBM operational and performance data to justify the intervention, and proposed maximum air pressure.
- B. Intervention shall commence within 5 working days once accepted by the City
- C. Use only fully trained personnel for the intervention and support team

### 3.5 CONTACT GROUTING

- A. Perform contact grouting immediately upon completion of the drive-in accordance with Section 02441 and before completing the as-built survey

### 3.6 FIELD QUALITY CONTROL:

- A. Ensure that geotechnical instrumentation has been installed, is functional for its intended purposes, and monitored as specified in Section 02496.
- B. Immediately notify the ENGINEER in writing and provide written description of the incident and proper course of corrective actions when any of the following occurs:

1. The MTBM encounters any one of the conditions described in the contingency plans
  2. Any reach of the installed pipes is offline and grade by more than 50 percent of the maximum allowed
  3. Submit written notice, within 4.0 hours of event and before end of shift, when ground movement attains each level of required action including likely cause of the ground movement and proposed actions to limit further movement
- C. Immediately stop tunneling and provide written notice. Submit an as-built survey of the installed jacking pipes, current daily reports, document the incident both in written text and photographs, and provide operational changes and anticipated results when any of the following occurs:
1. The CONTRACTOR's accepted contingency plan fails to address the non-compliance issue
  2. Immediately upon recording MTBM is offline and grade by more than 80 percent of the maximum allowed
  3. Inadvertent return is indicated, observed, or detected
- D. Excessive leakage into the inside of the pipe string.
- E. The cost of actions required to comply with the trigger levels specified herein and to repair any damage to adjacent facilities shall be borne by the CONTRACTOR with no cost to the CITY.
- F. As-built survey: Perform as-built survey after completion of each microtunnel reach from shaft to shaft after removal of the MTBM in accordance with the following:
1. Perform as-built survey of each casing pipe joint for two-pass installation or carrier pipe joint for single pass installation using a transit or total station. Each surveyed location shall be at the pipe invert and within a horizontal distance of 0.25 foot from the pipe joint. Submit to the ENGINEER as-built drawings of the jacking pipe showing the horizontal coordinates and elevation, and deviations from the design line and grade of all pipe joints. Clearly indicate any out-of-tolerance locations on the as-built drawings.
  2. Record and submit to the ENGINEER quantities of water leakage at each pipe joint and the total for the entire length of the microtunnel reach.

### 3.7 FIELD TESTING:

1. Sample and perform the necessary test to evaluate the properties of the slurry including solid content, unit density and viscosity. Recover slurry samples at least twice a day from both the influent and effluent sides of the slurry separation unit.

## SECTION 02445

### INSTALLATION OF CARRIER PIPE IN STEEL CASING

#### PART 1 - GENERAL

##### 1.1 SCOPE OF WORK

- A. This section specifies requirements for the installation of the final carrier pipe and fiber optic conduit(s) for I-8 crossing only inside a jacked steel casing pipe; including requirements for the design of casing spacers, bulkheads, Cellular Backfill Grout mixes, and placement of Cellular Backfill Grout.
- B. Product carrier pipes are to be installed either by pipe transport equipment using casing spacers or a rail support system.
- C. Section 02443 Microtunneling
- D. Section 02315 Steel Carrier Pipe(s)
- E. Section 03355 Cellular Backfill Grout

##### 1.2 RELATED NON-SSPWC SECTIONS:

- A. Section 02443 Microtunneling
- B. Section 02315 Steel Carrier Pipe
- C. Section 03355 Cellular Backfill Grout

##### 1.3 REFERENCE CODES AND STANDARDS

- A. Unless otherwise indicated, the editions current at time of bid
- B. American Concrete Institute (ACI):
  - 1. 304, Placing Concrete by Pumping Methods
  - 2. 523, Guide for Cast-in-Place Low Density Cellular Concrete
- C. American Society for Testing and Materials (ASTM):
  - 1. C31, Standard Practice for Making and Curing Concrete Test Specimens in the Field
  - 2. C39, Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens
  - 3. C109, Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or [50-mm] Cube Specimens)
  - 4. C138, Standard Test Method for Density (Unit Weight), Yield, and Air Content (Gravimetric) of Concrete
  - 5. C150, Standard Specification for Portland Cement

6. C191, Standard Test Methods for Time of Setting of Hydraulic Cement by Vicat Needle
  7. C266, Standard Test Method for Time of Setting of Hydraulic-Cement Paste by Gillmore Needles
  8. C495, Standard Test Method for Compressive Strength of Lightweight Insulating Concrete
  9. C567, Standard Test Method for Determining Density of Structural Lightweight Concrete
  10. C796, Standard Test Method for Foaming Agents for Use in Producing Cellular concrete with Preformed Foam
  11. C869, Standard Specification for Foaming Agents Used in Making Preformed Foam for Cellular Concrete
  12. C939, Standard Test Method for Flow of Grout for Preplaced Aggregate Concrete (Flow Cone Method)
  13. D6103, Standard Test Method for Flow Consistency of Controlled Low Strength Material (CLSM)
- D. AWWA Manual of Water Supply Practices – M9. “Concrete Pressure Pipe”
- E. "Greenbook", Standard Specifications for Public Works Construction (SSPWC), and per the latest revisions by City of San Diego White Book

#### 1.4 DEFINITIONS

- A. See Section 02443 Microtunneling and Section 03355 Cellular Backfill Grout
- B. Bulkhead: Structure placed with the casing pipe that allows the carrier pipe(s) to pass though uninterrupted to design line and grade and as required cellular backfill grout line(s) for cellular backfill grout to pass though. The bulkheads are strategically placed to allow the cellular backfill grout to fill the void between the carrier pipe(s) and casing.
- C. Casing Spacers: Structural pipeline supports that fit around the carrier pipe(s), support the carrier pipe(s) including ballast water, prevent flotation, provide cathodic isolation of the carrier pipe(s), minimum separation of carrier pipe(s) and the casing pipe ID, and provide a low friction method to insert the pipe string(s). Other methods where accepted may include rails, cast invert, wood skids, and blocking.
- D. Cast Invert: Concrete tunnel invert screeded to grade with a depression allowing the carrier pipe to set to line or set on concrete saddles. Can only be used with appropriately coated steel carrier pipe.
- E. Cellular Backfill Grout: A lightweight cementitious material that contains stable air or gas cells as a preformed foam uniformly distributed throughout the mixture, designed to fill the void space between the carrier pipe and the initial ground support made of steel casing pipe



- F. Concrete Saddles: Precast concrete blocks with a circular depression. The blocks are set perpendicular to the pipeline with the depressions set to allow the pipe to be set to design line and grade. Can only be used with appropriately coated steel carrier pipe.
- G. End Seal: Flexible material, i.e., rubber or neoprene, that spans from the outside of casing pipe to the outside of the carrier pipe and provides cathodic isolation. End seals may be fixed at either end with a stainless-steel hose clamp assembly. If used with any form of grout, the end seal must be able to withstand the heat of hydration without any detrimental performance.
- H. Rails (for casing spacers): Parallel steel rails at a predetermined gauge (separation) set to grade to support the carrier pipe. Can only be used with appropriately coated steel carrier pipe.
- I. Slurry Concrete: A type of backfill concrete as specified herein

## 1.5 DESIGN REQUIREMENTS

- A. Carrier pipe for I-8 crossing shall be made specifically for the underground installation method specified herein
- B. Carrier pipe and pipe specials shall be installed within the casing pipe with a minimum separation:
  - 1. Between steel casing pipe and carrier pipe = 4.0 inches
  - 2. Between steel casing pipe and outside of fiber optics product pipe = 3.0 inches

The CONTRACTOR shall include additional allowances for pipe transporting equipment, carrier pipe support, and the casing pipe is installed out of the line-and-grade tolerances specified in Section 02443

- C. The length of each section of the carrier pipe shall be as determined by the CONTRACTOR and shall not exceed the separation between shaft excavation support members measured parallel to the tunnel
- D. Installation tolerances of the carrier pipe, as measured from the design alignment shown on the Drawings - Refer to construction tolerances provided in Section 02443
- E. Backfill Cellular Grout
  - 1. Design Cellular Backfill Grout mixes and provide:
    - a. Wet density
    - b. Dry density
    - c. Maximum depth before air bubble failure
    - d. UCS at 1, 7, and 28 days
    - e. Heat of hydration
  - 2. Completely fill the annular space between the carrier pipe and the casing.

3. Minimum compressive strength tested at 28-day shall be as follows:
  - a. During the submittal phase - 300 psi for any trial design mix(es) to be accepted by the City
  - b. Minimum dry density 50-55 pounds per cubic foot
  - c. During construction phase –Errant GROUTING
  - d. As soon as the following events occur, suspend grouting operations and notify the INSPECTOR immediately:
    - 1) A service connection becomes loose;
    - 2) A joint or bulkhead fails;
    - 3) Grout flow, injection pressures deviate from accepted submittals; and
    - 4) Leakage at pipe joint and at bulkhead; and
    - 5) Pipe floatation
4. The Contractor shall meet with the Engineer as soon as practical after each grout placement and before the placement of the next reach of annular grout to discuss corrective measures or improvements in design or procedures.
5. Field contact grout and cellular backfill grout testing shall be performed in a certified concrete laboratory acceptable to the City

#### 1.6 SUBMITTALS

- A. Submittals shall include contractor qualifications, pre-construction procurement submittals, construction data and notices, test results and record drawing data.
- B. Qualifications and experience records for the following:
  1. CONTRACTOR's design engineer
  2. Superintendent in charge of carrier pipe installation
  3. Cellular Backfill Grout installer
  4. Testing Laboratory
- C. Preconstruction:
  1. Provide minimum five workdays advance notification of meeting date and time for any preconstruction meeting
  2. Working Drawings: Cross sections and profile drawings indicating relative arrangement of and dimensioned clearances between the as surveyed locations of the casing pipe, carrier pipe, fiber optics product pipes, casing spacers/supports, Cellular Backfill Grout pipes, grout ports, termination and intermediate bulkheads, and other equipment and materials used in the performance of the work.
  3. Carrier/Product Pipe Shop Drawings and Methods Statements:

- a. Manufacturer's written recommendations for shipping, handling, installing the carrier pipe
  - b. Carrier pipe for underground application, including any design modifications made and details
  - c. Methods and procedures for installing carrier/product pipe and fiber optic conduits inside the casing pipe:
    - 1) Design line and grade
    - 2) Fit-up for welding
    - 3) Minimum Separation
    - 4) Without damaging: casing joints, carrier pipe joints, carrier pipe(s), protective wrapping or coating(s), Liner(s)
  - d. Certification from carrier/product pipe manufacturer stating that the carrier pipe is designed to withstand loads from installation and backfill grouting, without damage. Define maximum allowable injection grouting pressure.
  - e. Methods for cleaning and clearing casing pipe of all obstructions, foreign material, and water leakage before and during carrier pipe installation
  - f. Casing spacers designed to prevent carrier pipes from rotating during installation and floating within the casing pipe during Cellular Backfill Grouting
4. Pipe Spacers/Support Shop Drawings, Calculations, and Method Statement:
- a. Manufacturer's technical literature and written assembly instructions
  - b. Calculations stamped and signed by the casing spacer manufacturer or CONTRACTOR's design engineer demonstrating the spacers are designed to withstand thrust force and frictional forces during carrier/product pipe installation, buoyancy, Cellular Backfill Grouting pressure, heat of hydration, and construction loads, and have no adverse effect on the pipe.
  - c. Calculations stamped and signed by the designer of the carrier/product pipe manufacturer that the pipe and joint are designed to withstand the maximum thrust force and construction misalignment during carrier pipe installation
  - d. Shop drawings showing pipe spacer/support spacing, dimensions, configurations, joints, appurtenances, and details
5. Cellular Backfill Grout Working Drawings and Methods Statement:
- a. Design details for termination and intermediate bulkheads, means and methods for end seal installation and construction, including means to prevent air and water becoming trapped in the annular space. This will require backfilling from lowside to highside in lifts. Grout shall overflow from vent, minimum of 1.0 cubic yard.
  - b. Patterns and details for staging, sequencing, performing, and monitoring the Cellular Backfill Grouting operation. For each stage of placement operation, include the means and methods for advancing grout pipes, placement of injection

holes, grout ports, collecting and disposing of excess and waste material, collecting and disposing of water resulting from operations.

c. Layout and description of equipment and facilities including:

- 1) Supply equipment
- 2) Agitators or holding tanks
- 3) Mixers
- 4) Pumps
- 5) Delivery piping and manifolds
- 6) Hookup details including valves, packers, and gauges

d. Means and methods for:

- 1) Proportioning and mixing in the field
- 2) Measuring injection pressure, quantity, and injection rate
- 3) Maintaining injection pressure below specified limits
- 4) Sequencing, staging of the work and establishing basis and threshold values for modifying mixes
- 5) Cellular Backfill Grout placement setup, staging and procedures to ensure no voids are left behind
- 6) Furnishing, preparing, and plugging or patching injection holes
- 7) Single or Multiple stages/lifts
- 8) Estimated volume of material to be placed each lift/stage and verification in the field
- 9) Corrective actions when voids or leakage are found in the Cellular Backfill Grout

e. Product Data:

- f. Proposed mix, wet density, dry density, and viscosity. Maximum allowable depth of pour before air bubbles collapse.
- g. Certified test results including unit weight, total air content, unconfined compressive strength at various elapsed times of the proposed mix from an independent certified cement testing laboratory
- h. Initial set time of the grout and the working time before a 15 percent change in density or viscosity occurs
- i. Ability to be pumped for long distance
- j. Mixing and pressure control valves

- k. Additional information required for Cellular Backfill Grout:
- l. Type, brand, source, and amounts of cement, fly ash, admixtures, foaming agent, and other additives
- m. Cellular concrete foam generator, mixing plant, pump, control valve and pressure gauge assembly at the point of injection
  - 1) Method for transporting and placing Cellular Backfill Grout minimizing potential variations in the grout properties
  - 2) Permeability of finished product

D. Construction

- 1. Daily production records submitted no later than the beginning of the following workday:
  - a. Contact grout installation shall include maximum injection pressure, volume injected, start and end time, duration, and any modifications required due to batching and injection conditions
  - b. Measures to resolve problems caused by out-of-tolerance casing pipe
  - c. Carrier/product pipe installation records shall list footage of carrier/product pipes installed, joint testing results, line and grade, and maximum installation load
  - d. Records of Cellular Backfill Grout placement including volume placed, grout pipe installation schedule, stationing of placement, injection locations, maximum injection pressure, time of placement, concrete test results as required herein, and designation of cylinder samples prepared that day
  - e. RFI's, Field Notices, and other construction related issues: Provide written notice within 4 hours of event and before end of workday unless otherwise specified
  - f. Field testing of contact grout: Provide test results within one workday following testing
  - g. Field testing of cellular backfill grout: Provide test results within one workday following testing
  - h. Survey data for casing and carrier pipe installation: Provide data and notice within one workday following survey

E. Post Construction

- 1. Final and complete copies of all installation and testing records dated and signed by person performing work and Superintendent
- 2. Final and complete copies of all surveys dated and signed by licensed surveyor and Superintendent

1.7 QUALITY ASSURANCE

A. Qualifications:

1. Cellular Backfill Grout installer specializing in the supply and placement of Cellular Backfill Grout shall be capable of developing a mix design, batching, mixing, handling and placing Cellular Backfill Grout in underground conditions
  2. CONTRACTOR's design engineer shall be a Civil or Structural Engineer registered in California with experience performing calculations required herein. All work submitted under this section shall be prepared, signed, and stamped by Contractor's design engineer. For use of cellular grout, the design engineer shall confirm that number of lifts, pumping pressure, and rate of injection will not collapse the foam.
  3. Superintendent in charge of pipe installation shall be in responsible charge of similar work on a minimum of two projects of equivalent size and complexity.
- B. Carrier pipe(s):
1. Install pipes while maintaining separation tolerance
  2. Pipes shall be in a straight line with a maximum deviation of not more than the 25 percent of the Manufacturer's maximum allowed deflection or gap.
- C. Backfill Cellular Grout:
1. Shall be designed in accordance with the requirements of this Section and ACI 523.1 and shall comply with ASTM C869
  2. Proposed testing for each mix shall be as follows:
    - a. Prepare and test samples for 7-day, and 28-day unconfined compressive strength tests according to ASTM C31 for cylinders or ASTM C109 for cubes
    - b. Two sets of three samples each shall be made from each proposed cellular concrete mix. One set shall be tested at an age of 7 days, and another set shall be tested at an age of 28 days. Cellular Backfill Grout test specimens shall be made, cured, stored, and tested in accordance with ASTM C495
    - c. Determination of total air content of each proposed Cellular Backfill Grout mix in accordance with ASTM C796. Wet density tests shall be made prior to the addition of the foaming agent and at the point of placement.
    - d. Determination of unit weight of each proposed Cellular Backfill Grout mix in accordance with ASTM C567
    - e. Determine the viscosity of the proposed Cellular Backfill Grout mix in accordance with:
      - 1) If fine aggregate is included in the mix – ASTM D6103
      - 2) If no aggregate is included in the mix – ASTM C939

## 1.8 PRECONSTRUCTION MEETING

- A. Hold a preconstruction meeting at least five workdays but not more than 20 workdays prior to commencing each of the following:
1. Transport and installation of the carrier pipe

2. Construction stages
  3. Placement of Cellular Backfill Grout
  4. Carrier/product pipe and joint testing requirements
- B. Review and discuss the following items at the meetings:
1. Results of the as-built survey of the steel casing, and necessary modifications have to be made for line and grade adjustments
  2. CONTRACTOR's proposed carrier/product pipe support, cathodic protection, pressure test set up and procedure for pipes to be installed inside the steel casing
  3. Construction methods, constraints, and issues overview
  4. Equipment operating parameters
  5. Review safety procedures as described in the CONTRACTOR's health and safety plan
  6. Quality control procedures and quality assurance requirements
  7. Field Testing and reporting requirements

## 2.1 MATERIALS

- A. Water: Potable, and free from deleterious amounts of alkali, acid, organic materials, or other impurities that would adversely affect the setting time, strength, durability, or other quality of the Cellular Backfill Grout. For Cellular Backfill Grout, if water is used to pre-form the foam, it shall not exceed 80 degrees Fahrenheit (°F).
- B. Cement: Type II and conform to ASTM C150
- C. Slurry concrete – Per SSPWC 450-C-2000 design mix per Table 201-1.1.2 (A)
- D. Cellular Backfill Grout shall be lightweight hardened cementitious material made from the combination of concrete and a foaming agent with an oven-dried minimum unconfined compressive strength listed in Part 1.5.D
  1. Shall be designed in accordance with the requirements of this section and ACI 523.1
  2. Cement: Conform to the requirements of ASTM C150
  3. Fly Ash:
    - a. Class "C" or "F" fly ash, if used, shall conform to 201 -1.2.5 of SSPWC
    - b. Use of fly ash limited to 20 percent by weight of the total cementitious material in the mix design
  4. Sand: Gradation shall comply with SSPWC 200-1.5.3 or per manufacturer's written recommendations
  5. Admixtures: Admixtures, may only be used when specifically approved by the foaming agent supplier in writing

6. Foaming Agent:
  - a. Foam shall be generated by combining controlled quantities of air, water, and foaming agent under pressure
  - b. Foam shall retain its stability until the cement sets to form a self-supporting matrix
  - c. Foaming agent shall comply with ASTM C 869 when tested in accordance with ASTM C 796.
  
- E. Casing spacers:
  1. Longitudinal separation between spacers, when installed on the assembled carrier pipe, shall not exceed the lesser of 8 feet on center or carrier pipe manufacturer's recommendation, and shall be placed within 2 feet on each side of the coupling or joint. Provide a minimum of 3 casing spacers per pipe length.
  2. Design with a minimum factor of safety of 2.0 against all construction loads
  3. Casing spacers shall be designed without a riser at crown (12 o'clock) and a leg at invert (6 o'clock), and shall be symmetrical about the vertical axis
  4. Runner (legs) shall be made with low sliding friction material such as Ultra High Molecular Weight (UHMW) to allow long distance installation
  5. Casing spacers shall provide cathodic isolation of the carrier pipe from the steel casing pipe
  6. Casing spacers shall be non-conductive and sized for the carrier pipe to be installed within the specified line and grade tolerances
  7. Casing spacers shall be designed and installed to facilitate installation of Cellular Backfill Grout placement pipes and to ensure Cellular Backfill Grout fills the void space between the casing pipe and the carrier pipe
  8. Casing spacers shall incorporate the routing of the fiber optic conduits
  9. Casing spacers shall not deform or become damaged from the heat of hydration of the Cellular Backfill Grout
  10. Casing spacers shall not damage the carrier pipe
  11. Casing spacers shall not be made of wood or wood skits
  12. Casing spacers shall be adjustable in height to allow for grade correction
  
- F. Pipe end seals or end penetration seals for carrier pipe shall:
  1. Provide cathodic isolation
  2. Completely span the annular gap opening from top to bottom
  3. Resist Cellular Backfill Grout pressure
  4. Resist heat of hydration



## 2.2 EQUIPMENT

- A. Pipe Transport Equipment - Designed to carry manufactured 66-inch carrier pipe segments inside the minimum 82-inch ID casing pipe
- B. Cellular Backfill Grout Foam Generator System:
  - 1. The batch system shall consist of a tank in which the foam liquid concentrate and water are first mixed. This dilute solution shall be discharged from either a pressurized tank or by means of a mechanical pump through a foam-making nozzle in which this solution is blended with compressed air in fixed proportions.
  - 2. The continuous generating system shall consist of a container, which continuously draws the concentrate directly from its shipping container, automatically blends it with water and compressed air in fixed proportions, and forms the stable micro-bubbled foam.
- C. Foam refining column or nozzle shall be calibrated for foam quality and discharge rate. The foam nozzle shall be timer-controlled to repetitively discharge any pre-selected quantity or to discharge continuously at a fixed rate.
- D. Mixers and Pumps: The rates of mixing and pumping shall be properly adjusted, and a continuous flow of Cellular Backfill Grout shall be obtained at the point of placement.

## 3.1 GENERAL

- A. Perform all work in accordance with accepted work plans
- B. Upon completion of contact grouting and subsequent cleaning, perform survey documenting the ends of each pipe segment for line and grade.
  - 1. Confirm that the steel casing pipe installation will allow the installation of the carrier pipe to design requirements including tolerances
  - 2. For each out of tolerance location, obtain the ENGINEER's acceptance before carrier pipe installation.
  - 3. Implement accepted measures to resolve problems caused by out-of-tolerance pipe as required by the ENGINEER.
- C. Repair, stop and seal any water leakage of the casing pipe that does not meet the criteria specified in Section 02443

## 3.2 CARRIER/PRODUCT PIPE INSTALLATION

- A. Immediately prior to moving a carrier pipe section into the casing pipe:
  - 1. Verify that sections can be installed at their project line and grade within the required tolerance and clearance, and without interference or damage
  - 2. Clean casing pipe and carrier pipe
  - 3. Remove all potential obstructions inside the casing pipe including grout port assemblies and thrust rings for intermediate jacking stations

- B. Acceptable methods of pipe installation: Install and position of each carrier pipe section to correct for any misalignment and to satisfy the minimum clearance requirements
  - 1. Carry each pipe separately into the heading by a "pipe carrier" and mate it with the section of pipe already installed
  - 2. Adjust casing spacers and push the carrier pipe into the casing pipe with a steady, non-jerking motion. The maximum installation force shall not exceed the manufacturer's recommendations or the allowable thrust load on the carrier pipe barrel and/or joints
  - 3. Install the fiber optics product pipe simultaneously with the carrier pipe. Fiber optics conduits shall be installed in a straight line within the tunnel.
- C. Fit-up and weld carrier pipe. Fully document each weld by pass including welder, materials and build-up, grinding and inspection.

### 3.3 PLACING CELLULAR BACKFILL GROUT

- A. Fill the carrier pipe and fiber optic conduit with water if counter measures against buoyant from Cellular Backfill Grout is not addressed
- B. Cellular Backfill Grouting shall be performed through multiple horizontal grout/slickline pipes inserted into the void space between the carrier pipe and casing pipe. Terminate end of the grout pipes regularly along the length of the grout zone to allow an evenly distribution of the Cellular Backfill Grout. If there were "high" points along the casing alignment, terminate additional grout pipes to the high points to minimize air pockets that may trap behind.
- C. Alternatively, perform Cellular Backfill Grout placement through grout ports embedded along the carrier pipe
- D. Prior to placing Cellular Backfill Grout, build bulkheads at intermediate locations and install casing pipe end seals at the pit/shaft locations
- E. Prior to backfilling ensure carrier pipe(s) is filled with water as ballast to prevent floatation during backfilling
- F. Prior to backfilling ensure carrier pipe(s) is filled with water and if required include refrigeration and circulation to minimize opportunity for heat of hydration to melt and fail pipe(s)
- G. Discharge end of the grout or slickline pipes shall always be embedded inside freshly discharged Cellular Backfill Grout
- H. Cellular Backfill Grouting shall progress from the low end to the high end of the casing pipe filling the void
- I. Apply safe grouting pressure per manufacturer's recommendations and per work plan accepted by the City
- J. Sloping joint for Cellular Backfill Grout placement in multiple lifts is acceptable if the advancing edge of Cellular Backfill Grout is terminated at the end seal or an intermediate bulkhead

- K. Install an exhaust vent in the crown on the high end of the casing pipe to at least 3.0 feet above crown elevation
- L. Install an injection pipe with shutoff valve near the tunnel invert on the low end of casing pipe.
- M. Placement of Cellular Backfill Grout shall be completed in multiple lifts/stages and in a short duration to prevent an excessive increase in density, unit weight, consistency, and separation
- N. Maximum vertical height of any Cellular Backfill Grout lift shall not exceed 80% of manufacturer's written recommendations
- O. Employ the necessary means to ensure equal quantity of grout is placed on either side of the carrier pipe to avoid unbalanced loading.
- P. Placement of the Cellular Backfill Grout in lifts, one per workday, until Cellular Backfill Grout overflows from the vent at the high end of the casing pipe and all the following conditions are satisfied:
  - 1. At least 100% of the theoretical calculated Cellular Backfill Grout volume has been placed
  - 2. A minimum of 1.0 cubic yard of Cellular Backfill Grout overflows at vent
  - 3. Air bubbles or burps stop flowing out from the vent
  - 4. When all the required numbers of tested samples are taken
  - 5. Exhausted grout at each vent is not less than 85 percent of the wet density of freshly injected grout when tested per ASTM C138
  - 6. Exhausted grout at each vent is not less than 85 percent of the original viscosity of the freshly injected grout when tested per ASTM C939.
- Q. Close injection valve for at least 1 day to allow cure

### 3.4 FIELD QUALITY CONTROL

- A. Completion of Cellular Backfill Grouting
  - 1. Field control tests of the Cellular Backfill Grout shall be performed by the CONTRACTOR and the results submitted to the ENGINEER. The CONTRACTOR shall provide all equipment and personal and facilities necessary to perform these tests.
  - 2. The following testing shall be performed for Cellular Backfill Grouting:
    - a. Unit Weight: Cellular Backfill Grout shall be tested for wet unit weight at the nearest location to the point of injection in accordance with ASTM C138 from each batch of Cellular Backfill Grout from which compression test cylinders are made. Unit weight of Cellular Backfill Grout shall be within 5.0 percent of the unit weight of the accepted mix design.

- b. Viscosity: Cellular Backfill Grout shall be tested for viscosity at the nearest location to the point of injection in accordance with ASTM C939 from each batch of Cellular Backfill Grout from which compression test cylinders are made. Viscosity shall be within 5.0 percent of the accepted mix design.
  - c. Compression Test Cylinders: Compression test cylinders shall be cast from each load, after every change in mix design, and at a frequency of not less than once per 20 cubic yard material placed or every 50-ft of grout placement. Each test cylinder shall be 6-inch by 12-inch. Test cylinders shall be sampled and made in the field, cured and stored in accordance with ASTM C31.
    - 1) Sampling Locations:
      - a) Taken from the concrete delivery truck – collect a set of three test cylinders
      - b) Taken from a system of valves in the line transporting the Cellular Backfill Grout, which will allow for collection of test specimens at the nearest location to the point of injection without disconnecting the line from the outlet - collect a set of five test cylinders at each location.
      - c) Specimens shall also be taken from the overflow upon completion of the pour – collect a set of five test cylinders at each location.
    - 2) Care shall be taken to ensure that cylinder samples are not jostled or moved prior to the initial set. Each set of test cylinders shall be marked or tagged with the date and time of day the cylinders were made and the location in the work where they were sampled.
  - d. Compression Testing: Two samples collected per Part 3.4.A.2.c.(1).(a) shall be tested at an age of 28 days. The third sample taken at the truck shall be a spare. Two samples each taken per Part 3.4.A.2.c.(1).(b) and (c) shall be tested at 7 days and 28 days. The fifth sample shall be a spare. A strength test result shall be the average of the compressive strengths of the two cylinders made from the same concrete sample and tested at the same age. Testing of the spare sample will be required when there are obvious defects in the other samples collected.
  - e. Cellular Backfill Grout shall be tested for unconfined compressive strength in accordance with ASTM C39, and shall comply with the following criteria:
    - 1) Minimum average 28-day compressive strengths for any 5 consecutive samples taken per Part 3.4.A.2.c.(1).(a) shall be 450 psi; and
    - 2) No samples taken per Part 3.4.A.2.c.(1).(b) and (c) shall be less than 300 psi.
3. The following testing shall be performed for Cellular Backfill Grout:
- a. Unit Weight: Cellular Backfill Grout shall be tested for wet unit weight at the nearest location from point of injection (placement) in accordance with ASTM C567 from each batch of Cellular Backfill Grout from which compression test cylinders are made. Unit weight of Cellular Backfill Grout shall be within 5.0 percent of the unit weight of the accepted mix design.
  - b. Viscosity: Cellular Backfill Grout shall be tested for viscosity at the nearest location from point of injection (placement) in accordance with ASTM C939/ASTM D6103

from each batch of Cellular Backfill Grout from which compression test cylinders are made. Viscosity shall be within 5.0 percent of the accepted mix design.

- c. Air Content: An air content test shall be made from each batch of Cellular Backfill Grout from which concrete compression test cylinders are made. Air content shall be determined in accordance with ASTM C796.
- d. Compression Test Cylinders: Compression test cylinders shall be cast from each load, after every change in mix design, at a frequency of not less than once per hour. Each test cylinders shall be 3-inch by 6-inch. Test cylinders shall be sampled and made in the field, cured and stored in accordance with ASTM C495.
  - 1) Sampling Locations:
    - a) Taken from the concrete delivery truck – collect a set of three test cylinders
    - b) Taken from a system of valves in the line transporting the Cellular Backfill Grout, which will allow for collection of test specimens at the nearest location to the point of injection without disconnecting the line from the outlet - collect a set of five test cylinders at each location.
    - c) Specimens shall also be taken from the overflow upon completion of the pour – collect a set of five test cylinders at each location.
  - 2) Care shall be taken to ensure that cylinder samples are not jostled or moved prior to the initial set. Each set of test cylinders shall be marked or tagged with the date and time of day the cylinders were made and the location in the work where they were sampled.
- e. Compression Testing: Two samples collected as specified herein shall be tested at an age of 28 days. The third sample taken at the truck shall be a spare. Two samples each taken at the injection point specified herein shall be tested at 7 days and 28 days. The fifth sample shall be a spare. A strength test result shall be the average of the compressive strengths of the two cylinders made from the same concrete sample and tested at the same age. Testing of the spare sample will be required when there are obvious defects in the other samples collected.
- f. Cellular concrete shall be tested for unconfined compressive strength in accordance with ASTM C495, except that test specimens shall not be oven cured, and shall comply with the following criteria:
  - 1) Minimum average 28-day compressive strengths for any 5 consecutive samples taken as specified herein shall be 450 psi; and
  - 2) No samples taken per as specified herein shall be less than 300 psi.

**END OF SECTION**

## SECTION 02496

### GEOTECHNICAL INSTRUMENTATION

#### PART 1 - GENERAL

##### 1.1 DESCRIPTION

- A. This Section specifies requirements for designing, furnishing, installing, monitoring, reading, recording, interpreting, maintaining, protecting, and removing or abandoning geotechnical instrumentation. Requirements for the restoration of facilities affected by instrumentation removal or abandonment and maximum allowable or threshold values for geotechnical instrumentation are specified elsewhere.
- B. Protected City installed instrumentation at locations as indicated
- C. Definitions:
  - 1. Geotechnical instrumentation: Devices for measuring ground, groundwater changes, or infrastructure as a function of movement, force, or pressure
  - 2. Inclinator: Probe lowered within a special grouted borehole casing to monitor horizontal displacements occurring during construction relative to a fixed reference point
  - 3. Instrumentation: A general term applying to devices to collect, record, and monitor data
  - 4. Interpretation: Written data analysis including screening of data, identifying data trends, anomalies, comparing instrument data, relating data to construction activities, and determining if potential problems are developing
  - 5. Piezometer: Instrument to monitor groundwater level or pressure
  - 6. Prism: An optical target fixed to a surface for surveying vertical and horizontal position
  - 7. Surface Monitoring Point (SMP): Established point monitored by optical survey methods to determine any vertical or lateral displacements occurring during construction
  - 8. Trigger Levels: Action level or maximum allowable ground movement before additional work is required
  - 9. Utility Monitoring Point (UMP) Established point fixed to a subsurface utility monitored by optical survey methods to determine any vertical or lateral displacements occurring during construction

##### 1.2 RELATED WORK SPECIFIED ELSEWHERE

- A. Section 02168 Shaft Excavation and Support
- B. Section 02443 Microtunneling

### 1.3 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS

- A. Current at time of bid
- B. American Society for Testing and Materials (ASTM):
  - 1. ASTM A36 Standard Specification for Carbon Structural Steel.
  - 2. ASTM C778 Specification for Standard Sand.
  - 3. ASTM D1586 Test Method for Penetration Test and Split-Barrel Sampling of Soils.
  - 4. ASTM D1785 Poly (Vinyl Chloride) (PVC) Plastic Pipe, Sch 40, 80, and 120.
  - 5. ASTM D2487 Classification of Soils for Engineering Purposes.
  - 6. ASTM D2488 Standard Practice for Description and Identification of Soil (Visual – Manual Procedure).
  - 7. ASTM D5434 Standard Guide for Field Logging of Subsurface Explorations of Soil and Rock.
- C. Standard Specifications for Public Works Construction (SSPWC)

### 1.4 SUBMITTALS

- A. General: In accordance with Section 01330
- B. Qualifications
  - 1. Contractor's Geotechnical Specialist
  - 2. Licensed Land Surveyor
  - 3. Instrument borehole logger
  - 4. Instrument manufacturer
- C. Written Notices unless otherwise specified:
  - 1. Immediate written notices - Provide verbal notice upon discovery and immediate written notices within 4 hours and before the end of current shift
  - 2. Written notices - Provide verbal notice upon discovery and written notice no later than the following working shift
- D. Pre-Construction
  - 1. Instrument manufacturer's brochure and technical data
  - 2. Instrument manufacturer's written shipping, handling, installation, reading, and maintenance instructions
  - 3. Instrument calibration certification including serial number and date of manufacture

4. Indicate instrumentation work plan for each instrument to be installed including:
  - a. Instrument type, location, layout
  - b. Existing surface and subsurface utilities
  - c. Provide identification number, surface elevation, tip elevation, stations, and offsets
  - d. Include previously installed instrumentation
5. Instrumentation components and methods for their installation, maintenance, monitoring, removal, and restoration or abandonment
6. Instrument installations include:
  - a. Instrument identification number, bore log, installation detail, date installed, photographic record, and installer
  - b. Provide in tabular format: Instrument type, identification number, locations, surface elevation, tip elevation, stations, offsets, and coordinates
  - c. Provide destruction record by instrument identification number, approval for destruction, date of destruction, and photographic evidence
7. Describe protection of instrumentation to prevent damage
8. Methods for gathering data and monitoring schedule for instrumentation to be monitored by the CONTRACTOR
9. Baseline record with results of three separate readings with one reading taken on each of three consecutive workdays requiring separate equipment set-ups
  - a. Take additional readings, one per workday, until readings are statistically valid
  - b. Readings shall be statistically valid
  - c. Anomalies shall be documented, addressed by specialist, and reviewed by ENGINEER before removal from sample
  - d. Reported Baseline is average of at least three readings
10. Scheduled of anticipated readings
11. Product Data:
  - a. One complete readable and bookmarked PDF file of the accepted submittal containing for each instrument by manufacturer:
    - 1) Manufacturer's catalog
    - 2) Instrument calibration certification including technician calibrating, serial number, and date of manufacture



- 3) Photograph documenting instrument type and serial number
- 4) Manufacturing specification, data tolerance, and product warranty
- 5) Manufacturer's written installation, operating, and maintenance instructions
- 6) Manufacturer's data acquisition and management system if used
- 7) Surveyor's data including coordinates, ground surface elevation, tip elevation for reading
- 8) Installed location photograph

B. Construction

1. Collect data required
2. Provide written notice of any anomaly on the same workday as data collected
3. Provide written notice of any required stop on the same workday as data collected
4. Provide written notice of any schedule changes
5. Provide written notice of any required change to survey frequency due to threshold values
6. Provide written notice of each threshold value crossed with continued notice if value remains outside of threshold value
7. Provide data within one workday following collection
8. Provide interpretation within two workdays of collection

C. As Built

1. Data collection ends with acceptance of "No recorded movement"
2. Caltrans submits written request stating "No additional data collection required"
3. One complete readable and bookmarked PDF file containing all readings for each instrument by manufacturer including destruction record, photographic evidence of destruction, and site restoration

D. Mix Designs: Grout mix designs for grouted instrumentation by Manufacturer and instrument type

E. Quality Control:

1. Qualifications:
  - a. Manufacturer
  - b. Drillhole logger

- c. Independent test laboratory
  - d. Company installing instrumentation and designated supervisory employee
2. Certifications:
- a. Calibration certificates for each sensor, probe, readout device, and data logger by manufacturer or independent test laboratory
  - b. By manufacturer for materials specified in Part 2 herein.
  - c. Accuracy of the drill hole logs
  - d. Satisfactory installation of the said instrumentation
  - e. All initial readings of instrumentation taken by the CONTRACTOR.
3. Quality Control Plans:
- a. Proposed methods for identifying instrumentation, including alphanumeric identification, as specified.
  - b. Proposed format for presenting raw data readings. Include the date, time, and name of personnel taking measurements or performing monitoring.
  - c. Methods for assuring the quality of data readings.
  - d. Methods for protecting instrumentation and assuring timely repair or replacement of damaged installations and affected utilities.
4. Records/Reporting:
- a. Drill logs for instrumentation within 2 workdays of their completion.
  - b. Initial readings of instrumentation within 1workday of their installation.
  - c. Hourly and daily monitoring records within 24 hours of initial reading. Submit weekly plot of measured value versus time, including a time history of construction activities likely to influence such readings.
  - d. Daily groundwater elevations within one week of their readings.
  - e. Daily taken automatically within 24 hours of their readings.
5. Notifications:
- a. Allow 5 workdays for the ENGINEER to provide locations of CITY-installed instrumentation.
  - b. Provide immediate written notice if there are any utility interference with the proposed instrumentation.
  - c. Provide written notice damaged or malfunctioning instrumentation within 8 hours of discovery.

- d. Provide immediate written notice any measurements indicating excessive movements/changes in the CONTRACTOR's or ENGINEER's installed instrumentation.
- e. Give written notice to the ENGINEER not less than 2 workdays before installing geotechnical instrumentation.

## 1.5 QUALITY ASSURANCE

### A. Qualifications:

- 1. Manufacturer: Company with experience specializing in the fabrication of instrumentation of the type specified.
- 2. Drillhole logger: Geotechnical Engineer or Certified Engineering Geologist certifying accuracy of the boring logs.
- 3. Instrument Installer: Company with experience specializing in the installation of instrumentation of the type specified.
- 4. Supervising Employee/ Instrumentation Specialist: Registered California Geotechnical Engineer or Certified Engineering Geologist with experience reading, monitoring, and interpreting instrumentation of the type specified.

### B. Preconstruction Meeting: Before the first submittal is made meet with the ENGINEER to discuss the CONTRACTOR's geotechnical instrumentation program to ensure compliance with the Contract requirements.

### C. Legible drawings at a scale no less than 1:40 and acceptable to ENGINEER

## 1.6 DESIGN CRITERIA

### A. Install instrumentation at the locations and depths as:

- 1. Specified herein
- 2. As indicated in the project plans
- 3. Field located by ENGINEER

### B. Installations shall be compatible with the subsurface conditions as described in the Geotechnical Report

### C. Tolerances:

- 1. Install instrumentation within a 3.0-foot radius of the proposed location where necessary to avoid obstacles or utilities, or as accepted by the ENGINEER
- 2. Survey Control: Provided by the CONTRACTOR surveyor for taking instrumentation readings. Achieve a level circuit closure with closure error no greater than  $e =$

$0.61(N)^{1/2}$  where "N" is the number of readings and e is the error expressed in millimeters

3. Piezometer Casing Installation:
  - a. Piezometer is to be installed upstream of groundwater flow and approximately 5.0 feet to 10.0 feet from the outside edge of the shaft, and the operational tip elevation is to be at least 5.0 feet below the tip of shoring
  - b. No other instrument shall be installed within 20 feet of the piezometer
  - c. Twist and vertical misalignment: Less than 1.0 degree per 10-foot length of casing
  - d. Vertical misalignment: Less than 3.0 degrees over the length of the entire casing
4. Inclinator Casing Installation:
  - a. Inclinator is to be installed along the length of the shaft, on the side most sensitive to surface features, at the midpoint of the longest open span of shoring, approximately 5.0 feet to 10.0 feet from the outside edge of the shaft, and the operational tip elevation is to be at least 5.0 feet below the tip of shoring
  - b. Twist and vertical misalignment: Less than 1.0 degree per 10-foot length of casing
  - c. Vertical misalignment: Less than 3.0 degrees over the length of the entire casing
5. Settlement Monitoring Points:
  - a. Within 2.0 degrees of vertical throughout its length
  - b. Locate anchors within 3.0 inches of design depth
  - c. While maintaining the greater of 6.0 feet or one excavated tunnel diameter between the tip of instrument and excavated tunnel diameter
6. Utility Monitoring Point: Install in accordance with indicated requirements at locations per direction of the ENGINEER
7. Initial Readings:
  - a. Reference point elevation:  $\pm 1/10$  inch
  - b. Reference point position:  $\pm 1/4$  inch

## 1.7 WORKSITE CONDITIONS

- A. See Section 02443 Microtunneling
- B. Verify the locations of utilities prior to installing instrumentation

1. Perform potholing to identify and expose utilities
  2. Protect utilities encountered
- C. Develop traffic management plan for work to be performed outside the designated work area within the public right of way. Obtain all necessary permits and right of entry for installation.

## 1.8 SEQUENCING AND SCHEDULING

- A. Ensure that the specified instrumentation is installed, calibrated, the initial set of readings taken, and the instrumentation ready for monitoring construction
1. Instrumentation – Complete installation and obtain baseline readings at least 10 workdays prior to commencing shaft excavation

## PART 2 - PRODUCTS

### 2.1 MATERIALS

- A. Bentonite: NSF 060 Clean Water approval based upon being left in-place without additives
- B. Water: Potable
- C. Bentonite additives: NSF 060 Clean Water approval based upon being left in-place
- D. Soda Ash: intended for mixing with bentonite and not NSF 060 accepted
- E. Grout Mixes:
1. Cement – Type II or V
  2. Provide a cement-bentonite or cement grout/seal mixture to conform to soil characteristics and shall be consistent with the physical properties described in the Geotechnical Report or per Manufacturer's written recommendations and requirements
    - a. Strength - 50 to 100 psi unconfined compressive strength (UCS) at 28 days
    - b. Seal for stand-alone piezometer –  $10^{-6}$  cm/sec
  3. Lean Grout – sand cement mixture consists of a minimum of 1 sack of cement per ton of dry mixture
- F. Sand: Conforming to SSPWC Section 200 for Portland Cement concrete, except that 100 percent shall pass the No. 8 sieve

### 2.2 EQUIPMENT

- A. Data Management System
1. Provide an integrated system that automatically collects data from the geotechnical instrumentation and place it into a secure database using a data management

system. The system shall also include all data from all manually read instruments and optical surveys.

2. The data management system shall be able to display current readings in engineering units for any sensor and the entire history of readings for that sensor.

B. Piezometers

1. Provide complete system per single source manufacturer:
  - a. Data reader
  - b. Tubing
  - c. Piezometer
  - d. Additional hardware required for functioning system
  - e. Provide sufficient tubing for required minimum depth and functionality
  - f. Provide one complete spare instrument set-up
2. Protect instrument installation

C. Inclinometers

1. Provide complete system per single source manufacturer:
  - a. Data reader
  - b. Inclinometer Casings
  - c. Provide one complete spare instrument set-up
2. Protect instrument installation

D. Optical Prism system

1. Provide complete system per single source manufacturer:
  - a. Survey Instrument
  - b. Optical Prism(s)
  - c. Data acquisition system
2. Protect instrument installation

E. Surface Monitoring Points (SMP)

1. #8 rebar of sufficient length to maintain minimum separation
2. May attach prisms to obtain readings using survey instrument for Optical Prism system

3. 4-6 inch PVC pipe to allow movement of rebar
  4. Chain to prevent rebar from falling into MTBM should over excavation occur
  5. Protect instrument installation
- F. Utility Monitoring Point (UMP)
1. #8 rebar of sufficient length to attain near surface measurements
  2. May attach prisms to obtain readings using survey instrument for Optical Prism system
  3. 4-6 inch PVC pipe to allow movement of rebar
  4. Saddle to prevent rebar from being pushed into utility pipe
  5. Protect instrument installation
- G. Provide ENGINEER with software and unrestricted access to data

## PART 3 - EXECUTION

### 3.1 GENERAL

- A. Install monitoring instrumentation at locations as specified herein or as indicated
- B. Provide unrestricted and safe access to geotechnical instrument locations, allowing the ENGINEER to take measurements, inspect instruments, and to install Reference Survey Points
- C. Provide CITY with access to all collected data
- D. Provide the CITY with two (2) sets of labeled keys to each locked item
- E. Before commencing with drilling:
  1. Mark the boring locations on the ground surface prior to actual drilling
  2. Arrange for existing utilities to be located and provide a minimum of 3 workdays advance notice to DigAlert and the ENGINEER
  3. With the ENGINEER present and with ENGINEER's acceptance, adjust instrumentation locations where necessary to avoid subsurface utilities
  4. If the boring location is within 3.0 feet of a marked utility, expose that facility by hand excavation or potholing prior to drilling
- F. Use drilling equipment of sufficient capacity to advance the instrumentation borehole to the required depth and diameter
- G. All installation borings shall be logged by a qualified person

- H. Log all instrumentation borings using the Unified Soil Classification System (USCS) in accordance with ASTM D2487, D2488, and D5434
- I. Perform sampling in overburden soils at 5-ft interval, and to confirm top of Stadium Conglomerate within 1-ft of the actual depth
- J. Inform the City immediately if top of Stadium Conglomerate is found more than 5 feet difference in elevation from the anticipated depth described in the Geotechnical Report
- K. Place a portion of each soil sample in a plastic bag and test the headspace of each soil sample recovered using a photoionization detector (PID) field instrument for qualitatively measurement of volatile organic compounds (VOCs)
- L. Preserve and store collected samples for the duration of the Contract
- G. Provide unrestricted and safe access to geotechnical instrument locations, allowing the ENGINEER to take measurements as necessary

### 3.2 INSTALLATION

#### A. General

1. Install all instruments according to the accepted work plans and as adjusted by the ENGINEER for field conditions
2. Prior to the installation of each instrument, verify that borehole inclinations are within specified limits
3. Provide reference point for measurement of ground (pavement) surface elevation at each instrumentation location
4. Each installation shall be performed under the direct supervision of the Instrumentation Installer
5. Confirm operation of each instrument immediately upon completion of instrumentation
6. Protect each installation
7. Maintain each instrument in proper operating order through contract duration

### 3.3 INSTRUMENTATION MONITORING, ACTION LEVEL, AND REPORTING

#### A. Monitoring by instrument type:

1. Establish baseline for each instrument with Engineer at least 10 workdays prior to excavation
2. Provide all raw data in writing and provide written notices as specified herein directly to the ENGINEER
3. All raw data by instrument will be a cumulative report
4. Implement Action Level based upon raw data on the same day data is taken



5. Review all raw data by instrument with ENGINEER weekly, on the same workday each week unless accepted or alternate workday is accepted in writing
  6. Provide accepted data by instrument within 1 workday after completing weekly review
  7. All accepted data by instrument will be a cumulative report
  8. Provide interpretation of accepted data by instrument within 3 workdays after completing weekly review
- B. Monitoring frequency by instrument type and location if manually sampled and every two hours if automated:
1. Piezometer: Twice daily once at start of shift and once at end of shift
  2. Inclinator: Twice daily once at start of shift and once at end of shift
  3. SMP and UMP: within active zone or 50 feet in front of tunnel face and 100 feet behind tunnel face and within "Written Notice" Record data at start of shift and every four hours during tunneling shift
  4. SMP and UMP: within active zone or 50 feet in front of tunnel face and 100 feet behind tunnel face and within "Written Preliminary Action Notice" Record data at start of shift and every four hours during tunneling shift
  5. SMP and UMP: within active zone or 50 feet in front of tunnel face and 100 feet behind tunnel face and within "Written Action Notice" Record data at start of shift and every two hours during tunneling shift
  6. SMP and UMP: within active zone or 50 feet in front of tunnel face and 100 feet behind tunnel face and exceeds "Written Action Notice" Record data at start of shift and every two hours during tunneling shift
  7. SMP and UMP: outside active zone and exceeds "Written Action Notice" Record data at start of tunneling shift and every two hours during tunneling shift
  8. Tell-Tale Crack Monitors: within active zone or 50 feet in front of tunnel face and 100 feet behind tunnel face and within "Written Notice" Record data at start of shift and every four hours during tunneling shift
  9. Tell-Tale Crack Monitors: within active zone or 50 feet in front of tunnel face and 100 feet behind tunnel face and within "Written Preliminary Action Notice" Record data at start of shift and every four hours during tunneling shift
  10. Tell-Tale Crack Monitors: within active zone or 50 feet in front of tunnel face and 100 feet behind tunnel face and within "Written Action Notice" Record data at start of shift and every two hours during tunneling shift
  11. Tell-Tale Crack Monitors: within active zone or 50 feet in front of tunnel face and 100 feet behind tunnel face and exceeds "Written Action Notice" Record data at start of shift and every two hours during tunneling shift

12. Tell-Tale Crack Monitors: outside active zone and exceeds "Written Action Notice"  
Record data at start of shift and every four hours during tunneling shift

C. Action Levels by instrument type based upon raw data:

1. Piezometer: Report changes in elevation (+ gain in elevation and – loss in elevation)
  - a. Immediate Written Notice: Vertical movement greater than 1.0 foot in 24-hour period
  - b. Written Preliminary Action Notice: When groundwater level reduces the as design factor of safety by 50 percent (i.e.  $FOS=1.5-(1.5-1.0)*0.5$  or 1.25)
  - c. Written Action Notice: When groundwater level reduces the design factor of safety by 80 percent (i.e.  $FOS=1.5-(1.5-1.0)*0.8$  or 1.10)
  - d. Immediate Written Stop Notice: When groundwater level reduces the design factor of safety by 90 percent (i.e.  $FOS=1.5-(1.5-1.0)*0.9$  or 1.05)
2. Inclinator: Report lateral movement (- movement towards shaft)
  - a. Written Notice: Horizontal movement towards shaft greater than 10 percent of allowable as provided by CONTRACTOR'S Design Engineer in 24-hour period
  - b. Written Preliminary Action Notice: Horizontal movement towards shaft greater than 50 percent of allowable as provided by CONTRACTOR'S Design Engineer
  - c. Written Action Notice: Horizontal movement towards shaft greater than 80 percent of allowable as provided by CONTRACTOR'S Design Engineer
  - d. Immediate Written Stop Notice : Horizontal movement towards shaft greater than 90 percent of allowable as provided by CONTRACTOR'S Design Engineer
3. SMP and UMP: Report vertical movement (+ gain in elevation or heave and – loss in elevation or settlement)
  - a. Written Notice: Vertical movement greater than 10 percent of allowable in 24-hour period
  - b. Written Preliminary Action Notice: Vertical movement greater than 50 percent of allowable
  - c. Written Action Notice: Vertical movement greater than 80 percent of allowable
  - d. Immediate Written Stop Notice : Vertical movement greater than 90 percent of allowable
4. Tell-Tale Crack Monitors: Report 3-dimensional movement (Note -x, -y, -z) Pictures required immediately after mounting and immediately before removal
  - a. Written Notice: Vertical movement greater than 10 percent of allowable in 24-hour period

- b. Written Preliminary Action Notice: Vertical movement greater than 50 percent of allowable
- c. Written Action Notice: Vertical movement greater than 80 percent of allowable
- d. Immediate Written Stop Notice : Vertical movement greater than 90 percent of allowable

Table 1 – Trigger Levels by Instrument

Instrument Type	Maximum Allowable Level (+/- inch)
Inclinometer	0.25
SMP Caltrans	0.25
UMP	0.25
Tell-Tale Crack Monitors	0.50

### 3.4 MAINTENACE, REPAIR, AND PROTECTION

- A. Protect instrumentation in accordance with manufacturer’s recommendations
- B. Maintain, repair, or replace instrumentation in accordance with manufacturer’s written recommendations. Repair or replace as necessary to restore function within 48 hours of loss
- C. Check powered equipment daily making sure no loss in data collection and transmission

### 3.5 FIELD QUALITY CONTROL

- A. Perform baseline readings and report any anomaly in writing to ENGINEER within one workday
- B. Maintain all reported raw data
- C. Provide Written Notice of all anomalies to ENGINEER and review within one workday before creating final data
- D. Provide finalized data as accepted by ENGINEER within one workday

### 3.6 REMOVAL AND RESTORATION

- A. Upon completion of Work:
  - 1. Demolish each instrument in accordance with the permit
  - 2. If permit is silent on demolition, remove each instrument, remove all manmade materials, and backfill in accordance with local water well abandonment requirements

- B. Fill remaining holes drilled in masonry or concrete surfaces for the instruments with Portland cement mortar
- C. Backfill excavations made over and around utilities as specified elsewhere
- D. Legally dispose all materials
- E. Repair damage to surface facilities in accordance with SSPWC Section 306, Sections 02200, and 02550 requirements for permanent resurfacing

**END OF SECTION**

## **SECTION 03355**

### **BACKFILL GROUT**

#### **PART 1 - GENERAL**

##### **1.1 REQUIREMENTS**

- A. This section specifies minimum requirements for the cellular grout used to backfill grout the annular space between a carrier pipe and a casing pipe.
- B. Furnish all designs, tools, equipment, materials, and supplies and perform all labor required to complete the Work as indicated on the Contract Drawings and specified herein.

##### **1.2 DEFINITIONS AND ABBREVIATIONS**

- A. For additional definitions refer to Section 02715.
- B. Pounds per cubic foot – pcf
- C. Pounds per square inch - psi

##### **1.3 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS**

- A. Comply with the applicable reference Specifications:
  - 1. Section 01300, Contractors Submittals
  - 2. Section 02443, Microtunneling
  - 3. Section 02445, Carrier Pipe Installation into Casing
- B. Comply with the following industry standards effective at time of bid.
  - 1. ACI 523.1R Guide for Cast-in-Place Low-Density Cellular Concrete
  - 2. ACI 523.3R Guide for Cellular Concretes Above 50 pcf, and for Aggregate Concretes Above 50 pcf with Compressive Strengths Less Than 2500 psi.
  - 3. ASTM C 150 Specifications for Portland Cement
  - 4. ASTM C 494 Standard Specification for Chemical Admixtures for Concrete
  - 5. ASTM C 495 Standard Test Method for Compressive Strength of Lightweight Insulating Concrete
  - 6. ASTM C 567 Standard Test Method for Unit Weight of Structural Lightweight Concrete
  - 7. ASTM C 796 Standard Method of Testing Foaming Agents for Use in Producing Cellular Concrete Using Preformed Foam

8. ASTM C 869 Standard Specification for Foaming Agents Used in Making Preformed Foam for Cellular Concrete
9. Standard Specifications for Public Works Construction (SSPWC), Section 201-1.

#### 1.4 DESIGN REQUIREMENTS

- A. Cellular grout mix shall be designed in accordance with the requirements of ACI 523.1R, ACI 523.3R, and as specified herein. If the event of conflict between the requirements of the listed documents and those specified herein, the requirements of this Section shall prevail.
- B. Mixes shall be adjusted in the field as necessary to meet the requirements of these specifications.

#### 1.5 PERFORMANCE REQUIREMENTS

- A. 7- and 28-day compressive strength range per ASTM C 495 of the cellular grout shall be:
  1. 7 days: 100 psi minimum;
  2. 28 days: 300 psi minimum;
  3. 56 days: 300 psi minimum, as acceptance criteria only.
- B. Dry density shall be between 50.0 and 55.0 pcf unless a higher density is required to achieve minimum strength requirements.
- C. Preformed foam shall be generated by combining controlled quantities of air, water, and foaming agent under pressure. Foam shall retain its stability until the cement sets to form a self-supporting matrix. The concentration of foam agent shall be in accordance with the foaming agent material manufacturer's recommendations.

#### 1.6 QUALITY ASSURANCE

- A. Each proposed mix shall be tested in accordance with ASTM C 796.
- B. Test specimens shall be made, cured, stored, and tested in conformity with ASTM C 495.
- C. Sample testing shall be performed by a certified laboratory.
- D. Sample testing of each proposed mix design shall include the following:
- E. Provide three (3) sets of compression test cylinders (3.0 inches by 6.0 inches), three (3) cylinders per set. One set of three (3) cylinders shall be tested at an age of 7 days, another other set shall be tested at an age of 28 days, and the last set shall be tested at an age of 56 days.
- F. Determine the total air content in accordance with ASTM C 796.
- G. Determine the unit weight in accordance with ASTM C 567.

- H. Sample testing of each specimen collected on the field shall include:
  - I. Provide one (1) set of four (4) test samples for each shift when backfill grout is placed. One (1) additional set of four (4) test samples shall be made from each additional 200 cubic yards, or major fraction thereof, placed in any one shift. Two (2) samples from each set shall be tested at an age of 28 days. The other two (2) samples shall be tested at an age of 56 days.
  - J. Provide one (1) set of four (4) test samples from the overflow after excess water and approximately one (1) cubic yard of cellular grout has been wasted. Testing shall be the same as above.
  - K. Measure as-cast unit weight (wet density) at point of injection.
  - L. Measure as-cast unit weight (wet density) at point of overflow after excess water and approximately one (1) cubic yard of cellular grout has been wasted.
  - M. Compressive strength of cellular grout shall be considered satisfactory if conditions 1 and 2 are both met or condition 3 is met:
    - 1. Average of all 28-day compressive strength tests within a single reach equal or exceed the specified unconfined compressive strength of 300 psi.
    - 2. No individual 28-day unconfined compressive strength test is less than 280 psi.
    - 3. All 56-day unconfined compressive strengths within a single reach average greater than 280 psi.
  - N. Foaming agent manufacturer shall have experience manufacturing for similar types of installations.
  - O. The foaming agent manufacturer's field services representative shall approve all changes to the proposed mix designs in the field.
  - P. Maximum allowable injection pressure shall not use a factor of safety less than the greater of 1.5 or that recommended by the carrier pipe manufacturer.

#### 1.7 CONTRACTOR SUBMITTALS

- A. Submittals shall be made in accordance with Section 01300 and as specified herein.
- B. Submittals shall be coordinated with all relevant submittals, assembled, and submitted as a single complete and comprehensive submittal.
- C. Where calculations are required to be submitted, they shall be signed and sealed by a Professional Civil Engineer registered in the State of California. Calculations shall clearly identify all parameters used, state all assumptions made in the calculation, and identify all sources of information.
- D. Pre-Construction Submittals:

1. Mix designs for each cellular grout mix proposed for use. Each mix design shall include the following:
    - a. Type, brand, source, and amounts of cement, pozzolans, admixtures, and other additives.
    - b. Amount of water.
    - c. Combined grading of aggregates.
    - d. Specific gravity of all materials.
    - e. Compressive strength test results.
  2. Provide material specifications and manufacturer's mixing instructions for each design mix ingredient.
  3. Provide results of all pre-construction tests specified herein.
- E. Construction Submittals:
1. Calculate estimated volume of backfill grout by lift and reach.
  2. Calculate maximum allowable injection pressure by lift and reach.
  3. Provide field testing results as specified herein.
  4. Provide records documenting cement content.
  5. Provide records of injected volume and maximum injection pressure at point of injection by lift and reach.

## PART 2 - PRODUCTS

### 2.1 MATERIALS

- A. Provide Portland Cement conforming ASTM C 150, Type V.
- B. Provide potable water free from deleterious amounts of alkali, acid, and organic materials which would adversely affect the setting time or strength of the cellular grout. Conform to SSPWC 201-1 with pH not less than 6.7.
- C. Concrete Admixtures:
  1. Shall not contain chlorides that promote corrosion.
  2. Retarder/Water Reducer: Conforming to ASTM C 494, Type D.
  3. Plasticizer/Water Reducer: Conforming to ASTM C 494, Type A.
  4. Admixtures shall only be used with foaming agent when specifically approved in writing by foam agent manufacturer.



D. Foaming Agent:

1. Shall comply with ASTM C 869 when tested in accordance with ASTM C 796.

PART 3 - EXECUTION

3.1 GENERAL

- A. Perform work in accordance to accepted submittals.
- B. Cellular grout shall be mechanically mixed to produce a uniform distribution of materials.
- C. Follow the manufacturer's recommendations concerning the order of charging the mixer with the various ingredients.
- D. The admixture content, batching method, and time of introduction to the mix shall be in accordance with the manufacturer's written recommendations for minimum shrinkage and for compliance with these specifications.
- E. Compare field test results to submitted test results and modify mix design as necessary to meet requirements specified herein.
- F. Obtain field measurements as specified herein.

3.2 FIELD TESTING

- A. Each set of compression test cylinders shall be marked or tagged with the date and time the samples were made, stationing of placement, batch number, and the unit weight using wet density measured at the point of placement, unless otherwise specified herein.
- B. Specimens shall be collected at the point of injection, unless otherwise specified herein.
- C. Each specimen shall be weighed before testing.

**END OF SECTION**

**SECTION 03360**  
**CONTACT GROUTING**

**PART 1 - GENERAL**

**1.1 REQUIREMENT**

- A. This section specifies minimum requirements for contact grouting of the annular space of casing pipe installed by tunneling in accordance with Section 02443.

**1.2 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS**

- A. Comply with the applicable reference Specifications:
  - 1. Section 01300, Contractor Submittals
  - 2. Section 02445, Installation of Carrier Pipe in steel casing
  - 3. Section 02443, Microtunneling
- B. Comply with the following industry standards effective at time of bid:
  - 1. ASTM C31 - Standard Practice for Making and curing Concrete Test Specimens in the Field ASTM C39 - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens
  - 2. ASTM C109 - Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-inch Cube Specimens)
  - 3. ASTM C144 - Standard Specification for Aggregate for Masonry Mortar
  - 4. ASTM C150 - Standard Specification for Portland Cement
  - 5. ASTM C937 - Standard Specification for Grout Fluidifier for Preplaced-Aggregate Concrete
  - 6. NSF/ANSI Standard 060 - Drinking Water Treatment Chemicals – Health Effects

**1.3 DEFINITIONS**

- A. For definitions refer to Sections 02443 and 03610.

**1.4 DESIGN REQUIREMENTS**

- A. Connect to each port and attempt to inject contact grout if the annular space is greater than 0.50 inches or ground movement exceeds that specified in Section 02496.
- B. Grout mix (water-cement) ratios shall be expressed in cubic feet of water per cubic foot of cement (94-pound bag). The water-cement ratio by volume shall be varied as needed to

fill the voids outside the jacking pipe. The range of water-cement ratios shall be between 1:1 and 2:1 by volume.

- C. Grout shall consist of Portland cement, not more than 2 percent bentonite by weight of cement, fluidizer as necessary, and water in the proportions specified herein or acceptable to the ENGINEER. Sand is an allowed additive to the grout mix in instances of very high grout takes, more than 1 cubic yard, as accepted by the ENGINEER, but in no case shall the grout mix contain less than six sacks of cement per cubic yard of grout. The addition of water or fluidizer is permitted when sand is added to the grout mix.
- D. Provide grout with a minimum unconfined compressive strength (UCS) of 100 psi in 24 hours, 500 psi in 7 days, and 1,000 psi in 28 days.
- E. Dispose of grout not injected after 90 minutes of mixing.

### 1.5 QUALITY ASSURANCE

- A. Engineer shall be a professional engineer licensed by the State of California. With experience on projects performing similar grout pressure and hydrofracture calculations.
- B. Work Plan includes:
  - 1. Contact grouting methods and details of equipment, grouting procedure, work sequence, monitoring and recording equipment, methods of controlling grout pressure, and provisions to protect pipe lining or shaft supports.
  - 2. Schedule for all grouting operations and associated works by reach. Schedule shall be coordinated with overall schedule for the Contract.
  - 3. Procedure for disposing of unused grout and flushing lines.
- C. Grout Strength Tests:
  - 1. Prepare and test samples for 24-hour, 7-day, and 28-day compressive strength tests according to ASTM C39 for cylinders or ASTM C109 for cubes, except as otherwise specified herein.
  - 2. Take grout for the cylinders or cubes from the nozzle of the grout injection line. Provide at least one set of four (4) samples for each 100 cubic feet of grout injected, but not less than one set for each batch in accordance with ASTM C31.
- D. Grouting Logs: Grouting locations, pressures, volumes, and grout mix pumped, time of pumping, mixer person and person at grout port. Note any problems or unusual observations on logs and provide written notice.

### 1.6 CONTRACTOR SUBMITTALS

- A. Submittals shall be made in accordance with Section 01300 and as specified herein.
- B. Submittals shall be coordinated with all relevant submittals, assembled, and submitted as a single complete and comprehensive submittal.

- C. Where calculations are required to be submitted, they shall be signed and sealed by a Professional Civil Engineer registered in the State of California. Calculations shall clearly identify all parameters used, state all assumptions made in the calculation, and identify all sources of information.
- D. All shop drawings shall be legible with dimensions accurately shown and clearly marked in English.
- E. Qualifying Submittals:
  - 1. Qualifications of CONTRACTOR's Engineer
  - 2. Work Plan.
  - 3. Product Data:
    - a. Materials specified in Part 2.
    - b. Material Safety Data Sheets.
  - 4. Certificate, dated with six months of use, from an independent laboratory that the calibration gauge is accurate to 1 psi.
- F. Pre-Construction Submittals:
  - 1. Details of grout mix proportions, admixtures, including manufacturer's literature, and laboratory test data verifying the strength and set time of the proposed grout mix.
  - 2. Calculations confirming planned injection pressures and maximum injection pressures at regular increments not to exceed 40 feet.
  - 3. Grout/lubrication one-way valves assemblies.
  - 4. Grout/lubrication piping diagram and shop drawing at point of injection.
  - 5. Results of Grout Strength Tests for proposed mixes.
- G. Construction Submittals:
  - 1. Daily Grouting Logs one work day after injection.
  - 2. Cumulative Test reports for each break within one work day after break.

## 1.7 PROJECT/SITE CONDITIONS

- A. For Subsurface Ground Information see Section 02622.

## PART 2 - PRODUCTS

### 2.1 MATERIALS

- A. Cement: Cement shall be Type II or Type V Portland cement conforming to ASTM C150. Type II cement shall meet Table 4 false set requirements of ASTM C150.
- B. Bentonite: Bentonite shall be a commercially processed powdered bentonite, Wyoming 2type; NSF/ANSI Standard 060 compliant.
- C. Water: Potable.
- D. Sand: Conform to ASTM C144 except:
  - 1. Fineness modulus: Between 1.50 and 2.00 and
  - 2. Grading Requirements:

Sieve Sizes	Percentage Passing by Weight
No. 8	100
No. 16	95-100
No. 30	60-85
No. 50	20-50
No. 100	10-30
No. 200	0-5

- E. Fluidizer: Fluidizers, or fluidifiers, shall hold the solid constituents of the grout in colloidal suspension, be compatible with the cement and water used in the grouting work, and comply with the requirements of ASTM C937.
- F. Admixtures: Shall be accepted by the ENGINEER. If commercially available and acceptable to the product manufacturer all polymers, and additives, other than soda ash, shall be NSF/ANSI Standard 060 compliant and not based upon removal.

### 2.2 EQUIPMENT

- A. Equipment for mixing and injecting grout shall be adequate to satisfactorily mix and agitate the grout and pump it into the annular space at a constant pressure at variable delivery volumes.
- B. Provide a pressure gauge at the grout pump and a pressure gauge at the grout port. Periodically check the accuracy of the gauges with an accurately calibrated pressure gauge. Always provide at least two spare pressure gauges available on site.
- C. Provide a flow meter to determine the volume of grout injected. Calibrate the meter in cubic feet to the nearest one-tenth of a cubic foot.

- D. Provide grouting hoses with an inside diameter of not less than 1.5 inches or not more than 2.0 inches and capable of withstanding twice the maximum water and grout pressures to be used.
- E. Provide injection system with a grout recirculation hose.
- F. Provide one-way grout injection or lubrication valves.
- G. Maintain the grouting equipment in satisfactory operating condition throughout the course of the work to ensure continuous and efficient performance during grouting operations.

## PART 3 - EXECUTION

### 3.1 GENERAL REQUIREMENTS

- A. Perform all work in accordance with accepted submittals.
- B. Control the grout pressure to avoid damaging the jacking pipe, and to avoid movement of the surrounding ground or structures.
- C. Perform all grouting operations in the presence of the ENGINEER and provide OWNER with access to the grouting operations. Notify the ENGINEER at least one workday in advance of starting contact grouting operations.
- D. Maintain a copy of the Contract Documents at a location acceptable to the ENGINEER and accessible to the grout operator and ENGINEER.
- E. The CONTRACTOR shall take care to prevent the spill or escape of grout to the ground surface, into any water body, or into another underground facility. The CONTRACTOR shall closely monitor grouting operations to detect any spills or escape of grout to the surface, into any water body, or into another underground facility. Any such spill shall be immediately contained and cleaned-up.
- F. During grouting work, provide for adequate disposal of all waste and wastewater. Remove and properly dispose of all waste grout resulting from grouting operations. The contents of grout lines shall only be discharged into an appropriate container located on the surface.

### 3.2 MIXING AND INJECTION OF GROUT

- A. Provide materials free of lumps when added to the mixer.
- B. Agitate the grout mix continuously.
- C. Grout shall flow unimpeded and shall completely fill the annular space and voids.
- D. Make a hookup to every grout port.
- E. Dispose of unused grout and flush grout in accordance with established procedures.
- F. Re-circulate grout mixes when any new mix is batched or after adding water, fluidizer, or sand to the mix. Re-circulate the mix for at least 2 minutes prior to pumping grout into the grout ports.

- G. Progress with grouting sequentially in a constant up-gradient direction.
- H. Grouting in any single port shall be considered completed when less than 1.0 cubic foot of grout, of the accepted mix and consistency, is pumped in 5 minutes under the submitted maximum injection pressure or the grout flows through the next grout port, or shaft at the same rate as the rate of pumping.
- I. If steel casing is used, clean and weld grout port.

### 3.3 CLEANUP

- A. Place and weld each grout port plug to prevent any water seepage.
- B. Grind any material from inside casing that may impinge on carrier pipe insertion.
- C. Clean grout and any deleterious material from inside the jacking pipe.
- D. Remove and properly dispose of all waste materials.

**END OF SECTION**

**SECTION 03481**

**PRECAST CONCRETE UTILITY STRUCTURES**

**PART 1 - GENERAL**

**1.1 WORK INCLUDED**

- A. Materials, testing, and installation of precast concrete vaults.
- B. Precast concrete vaults will be furnished and installed as summarized below:
  - Butterfly Valve Vault at Alvarado Rd
  - Butterfly Valve vault at Lake Murray Blvd

**1.2 SYSTEM DESCRIPTION**

- A. Furnish and install complete precast concrete vaults including appurtenant structural, mechanical and/or electrical mountings or connections required for compliance with Manufacturer’s installation requirements and compliance with applicable building codes and standards.
- B. Precast concrete vault base slabs shall be cast-in-place reinforced concrete formed to include the required sumps and to accept the precast concrete vault wall bases. Joint between precast concrete vault walls and cast-in-place reinforced concrete base slab shall be water-tight.

**1.4 QUALITY ASSURANCE**

- A. Use adequate numbers of skilled workmen trained and experienced in necessary trades and crafts and completely familiar with specified requirements and methods for proper performance of Work of this section.
- B. Factory testing shall include:

<b>ITEM</b>	<b>TEST FOR</b>	<b>TEST STANDARD (ASTM OR OTHER TEST STANDARD)</b>	<b>FREQUENCY</b>	<b>FIRST TEST PAID FOR BY</b>	<b>RETESTS PAID FOR BY</b>
Concrete Vault	Concrete Strength	ASTM C31	Submit certified test record on request	Contractor	Contractor



1.5 REFERENCES

- A. ASCE 7 Building Code Requirements for Minimum Design Loads in Buildings and Other Structures
- B. ASTM A615 Deformed and Plain Billet-Steel Bars for Concrete Reinforcement
- C. ASTM C31 Making and Curing Concrete Test Specimens in the Field
- D. ASTM C150 Portland Cement
- E. ASTM C913 Precast Concrete Water and Wastewater Structures
- F. ASTM D1557 Laboratory Compaction Characteristics of Soil Using Modified Effort
- G. California Building Code (CBC)
- H. CRSI Manual of Standard Practice

1.6 SUBMITTALS

- A. Furnish the following submittals.

SUBMITTAL	DESCRIPTION
Shop Drawings	Required per structural shop drawing requirements
Catalog Data	Required per catalog data requirements.
Installation Instructions	Required per installation instruction requirements
Engineering Calculations	Required for vaults over 8' deep. Provide engineering calculations sealed by licensed California Civil Engineer.  Required to justify designs less than Class 700 specified.
	Required for cast-in-place reinforced concrete base slabs. Provide engineering calculations sealed by licensed California Civil Engineer.
	Required for concrete mix design per engineering calculations requirements; shall be sealed by licensed California Civil Engineer.
Test Record Transcripts	Submit for factory tests per test record transcript requirements
Warranty	Furnish one-year warranty from date of final acceptance

- B. Refer to Section 01300 for definition of requirements for shop drawings, catalog data, installation instructions, engineering calculations, and test record transcripts.

1.7 DELIVERY, STORAGE AND HANDLING

- A. Refer to contract documents for delivery, storage, and handling requirements.

- B. Manufacturer’s instruction and warranty requirements for delivery, storage and handling of precast concrete vaults shall be strictly followed.

1.8 PAYMENT

- A. Payment for Work in this section shall be included as part of the lump-sum for which such Work is appurtenant.

**PART 2 - PRODUCTS**

2.1 ACCEPTABLE MANUFACTURERS

- A. Acceptable Manufacturers include:

ITEM	MANUFACTURER	MANUFACTURER LOCATION
Electrical Pull Boxes	J &.R Concrete Products	Perris, CA
	Oldcastle Precast (formerly Utility Vault)	Fontana, CA (800) 626-3860
	Accepted Equal	
Meter Boxes - Concrete	Brooks Products	Ontario, CA
	Eisel Enterprises, Inc.	Placentia, CA
	Jensen Precast	Sparks, NV
	J &.R Concrete Products	Perris, CA
	Oldcastle Precast (formerly Utility Vault)	Fontana, CA (800) 626-3860
	Accepted Equal	
Meter Boxes - Composite	Armorcast 600 series	Ontario, CA
	J &.R Concrete Products PW4 or PW5	Perris, CA
	Applied Engineering Products	Chino, CA

ITEM	MANUFACTURER	MANUFACTURER LOCATION
	Accepted Equal	
Utility Vaults	Brooks Products	Ontario, CA
	Eisel Enterprises, Inc.	Placentia, CA
	Jensen Precast	Sparks, NV
	J & R Concrete Products	Perris, CA
	Olson Precast Company	Rialto, CA
	Oldcastle Precast (formerly Utility Vault)	Fontana, CA (800) 626-3860
	Accepted Equal	

## 2.2 MATERIALS

- A. Refer to Section 01610 for basic requirements for products and materials.
- B. Precast concrete vaults shall be constructed of the following materials:

ITEM	MATERIAL	SPECIFICATION
Vault	Portland Cement Concrete	Fly ash not permitted
Steel Reinforcing	Steel	
Hatches, Lids, Frames	Metals	See Section 08300
Joint Sealant (between stacked vault sections)	Grout	
	Mortar	
	Plastic Sealing Compound	<ul style="list-style-type: none"> <li>• ConSeal CS-102</li> <li>• Kent-Seal "Butyl Sealant"</li> <li>• Henry Company "Ram-Nek"</li> <li>• Or Approved Equal</li> </ul>

- C. The following product design criteria, options and accessories are required:

ITEM	DESCRIPTION	
Pre-Cast Concrete Vault Sections	Design Surcharge, Lateral Earth Pressure and Buoyancy	AASHTO H-20 Loading  For Buoyancy Calculations, assume groundwater level is within 5 feet of ground surface.
	Minimum 28-day Compressive Strength $f_c$	4000 psi
	Steel Reinforcing Yield Strength $f_y$	60 ksi
Cast-in-Place Concrete Base Slabs	Design Surcharge and Buoyancy	AASHTO H-20 Loading  For Buoyancy Calculations, assume groundwater level is within 2 feet of ground surface.
	Minimum 28-Day Compressive Strength	4000 psi
	Steel Reinforcing Yield Strength $f_y$	60 ksi
Rectangular Box Wall Design	Wall Design	Class 700, or submit sealed engineering calculations justifying a lesser design.
	Top Slab Design (See Note 1, 2 and 3 below)	Design for AASHTO H-20
	Dimensions	per ASTM C913 Table X1.1
	Reinforcement	per ASTM C913 Table X1.2

*Note 1: The top slab for each vault shall be designed to be removable by means of a mobile crane. Each top slab shall be designed with multiple lifting points (located on the vertical edge of the slab so that the point is not observable. Since the lifting points will be buried, they will require a cap or cover to protect the lifting point from corrosion or fouling by dirt/debris.*

*Note 2: The top slab for each vault shall be reinforced to allow it to withstand the bending and other forces associated with being removed and reinstalled by the City for future maintenance of the equipment that will be located within each vault.*

*Note 3: The joint between the removable top slab and the top of vault wall on which it will be supported, and between the base of the vault wall and base slab, shall be made watertight by Contractor around the entire circumference of that joint.*

- D. Exterior Waterproofing Membrane for Lake Murray Valve Vault: The Lake Murray Blvd vault shall have 150 Mils DFT minimum of Polyurethane Coating applied to the exterior, with the Polyurethane Coating application being void and pinhole free. Application of the Polyurethane Coating shall be per the manufactures instructions. The Polyurethane Coating "Applicator Contractor" shall be licensed and certified as an approved applicator by the Polyurethane Coating manufacturer. The Certified Applicator Contractor shall have certification and experience with the Polyurethane Coating. The Certified Applicator Contractor shall provide references for Polyurethane Coating applications for similar concrete structures and service duty.
- a. The Polyurethane Coating shall fully encapsulate the entire vault (including the underside of the vault floor slab.) The Polyurethane Coating shall be installed in a manner that allows removal of the top slab without damaging the Polyurethane Coating.
  - b. The Polyurethane Coating shall be the Utilithane 1600 Polyurethane Coating as manufactured by Prime Coatings Inc., Irvine, California, and shall meet the following specification's and minimum requirements:

The Polyurethane Coating shall be a two-component (2:1 mix by volume) chemically reactive product specially formulated 100 percent solids, aromatic, MDI, pure elastomeric polyurethane coating system, ASTM D16 type V, and NSF 61 potable water approved. The polyurethane shall be applied using a heated "plural component" proportioning equipment system designed for high pressure airless spray configured as specified by the Polyurethane Coating manufacturer to meet job conditions. The Polyurethane Coating material shall contain no extenders or fillers, shall not be a hybrid and shall exhibit the following physical properties:

- a. Tensile strength per ASTM D638 2800-3000 psi,
- b. Elongation per ASTM D638 40%-55%
- c. Abrasion resistance per ASTM D4060 < 50 mg loss,
- d. Impact resistance per ASTM G-14; 330 inch pounds with no failure in the coating
- e. Water Vapor permeability per ASTM D1653-91A 048grms/24 hours/ft<sup>2</sup>
- f. Maximum recoat window: 24 hours.
- g. ASTM D570 Water Absorption: less that 0.24%-long term test.

## Holiday Testing

- a. The completed application of the Polyurethane Coating shall be holiday tested for pinholes and voids. Typical holiday testing shall be at 100 volts per Mil thickness of the Polyurethane Coating specified thickness. Example would be 150 Mils of Polyurethane Coating would be holiday tested at 15,000 Volts. Holiday testing may begin when Polyurethane Coating has become Tack Free.
- E. Access Ladder with Safety Post: Each vault shall be furnished with an OSHA-compliant access ladder and safety post (to accommodate entry to, and departure from, the top of the ladder).
- Each ladder shall be of FRP construction, and shall be compliant with OSHA requirements. Type 316 SS adhesive anchor bolts shall be used for installation. Ladder layout shall be as indicated by the design drawings.
  - Each ladder shall have a retractable device mounted to ladder rungs, to improve safety for Workers using this ladder. This device shall be of Type 304 SS construction, and shall be Bilco Model LU-3, or approved equal.
- F. Floor Sump with FRP Grating & Frame: Each vault shall have a concrete sump constructed in the vault base slab. The FRP Grating and Support Frame/features shall conform to details provided in the Design Drawings.
- G. Wall Penetration Seals (Perpendicular Penetration): Pipes that penetrate vault walls at a perpendicular angle shall be sealed according to the plans.

## PART 3 - EXECUTION

### 3.1 PREPARATION

- A. Make field measurements needed to install precast concrete vaults before submitting shop drawings or ordering. Make minor changes in dimensions and alignments as
- B. needed to avoid utilities or structural conflicts.

### 3.2 INSTALLATION

- B. Furnish and install precast concrete vaults at locations shown on Plans and submittals.
- C. The following installation standards shall be followed:

1. Manufacturer's installation and warranty requirements
  2. Applicable OSHA and Cal OSHA regulations
  3. Applicable building code requirements
- D. Refer variances between above documents and Contract Documents to Owner's Representative.
- E. Install precast concrete vaults to tolerances recommended by Manufacturer. Unless otherwise shown, install precast concrete vaults true, plumb, and level using precision gauges and levels.

### 3.3 FIELD QUALITY CONTROL

A. Field testing shall include:

ITEM	TEST FOR	TEST STANDARD (ASTM OR OTHER TEST STANDARD)	FREQUENCY	FIRST TEST PAID FOR BY	RETESTS PAID FOR BY
Precast Concrete Vaults	Installation & Leakage	Visual inspection of finished installation	1 inspection	Owner	Owner
	Field Performance	Demonstrate compliance to Contract Documents and Manufacturer's printed Literature	1 test	Contractor	Contractor
	11-month Warranty Inspection	Demonstrate compliance to Contract Documents and Manufacturer's printed literature	1 test	Owner	Contractor

**END OF SECTION**

## SECTION 03610

### GROUND PRE-TREATMENT

#### PART 1 – GENERAL

##### 1.1 REQUIREMENT

- A. The Work specified in this Section consists of all operations necessary or incidental to providing ground pre-treatment for:
  - 1. Shaft construction as specified in Section 02610.
  - 2. The launch and reception of the tunneling shield.
  - 3. Stabilizing ground movement due to shaft and tunnel excavation following completion of the work.
  - 4. Altering mixed face conditions.
  - 5. Used to prevent the inflow of groundwater or ground into the shaft
  - 6. Stabilize shaft from thrust or jacking loads.
  - 7. Any other location the Contractor uses ground improvement.
- B. Select one or a combination of the following methods to meet the design and performance criteria for ground pre-treatment specified in these specifications:
  - 1. Cement Permeation Grouting
  - 2. Solution Permeation Grouting
  - 3. Jet Grouting and other soil mixing and replacement methods
- C. All these works are included, and no separate payment will be made for Ground Pre-Treatment.
- D. The Work specified in this Section consists of the requirement to mitigate adverse behaviors including raveling, running and flowing ground and where groundwater is anticipated.

##### 1.2 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS

- A. Comply with the applicable reference Specifications:
  - 1. Section 01300, Submittals
  - 2. Section 02160, Shaft Excavation and Support
  - 3. Section 02443, Microtunneling
  - 4. Section 02496, Geotechnical Instrumentation
- B. Comply with the following industry standards effective at time of bid:
  - 1. ASTM C39, Test Method for Compressive Strength of Cylindrical Concrete Specimens.
  - 2. ASTM C109 Compressive Strength of Hydraulic Cement Mortars (Using 2- in. or [50-mm] Cube Specimens)
  - 3. ASTM C150, Specification for Portland Cement

SECTION 03610



4. ASTM C618, Specification for Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture for Portland Cement Concrete.
5. ASTM D4219, Unconfined Compressive Strength Index of Chemically Grouted Soils.
6. ASTM E329, Standard Specification for Agencies Engaged in Construction Inspection, Testing, or Special Inspection.
7. NSF/ANSI Standard 060, Drinking Water Treatment Chemicals – Health Effects
8. Standard Specifications for Public Works Construction (SSPWC), Section 201-1.
9. State Regulatory Codes: to be current at all times:
10. California Code of Regulations (CCR), Title 8, Tunnel Safety Orders
  - i. CCR, Title 8, Construction Safety Orders, Section 1509 “Injury and Illness Prevention Program
  - ii. Caltrans (CT) Manual for Encroachment Permits on California State Highways.
  - iii. CT Trenching and Shoring Manual

### 1.3 DEFINITIONS

- A. Additives (admixtures): Any natural or chemical product added to the grout mix in order to reduce bleed water, modify viscosity and cohesion, and enhance the properties of rheology to permeate in situ.
- B. Chemical Grout: Chemical grouts are injected into voids as a solution. Chemical grouts react after a predetermined time to form a solid, semisolid, or gel.
- C. Grout Header: The manifold located at the point of injection, consisting of valves, gauges, pipes and hoses required to regulate the rate of flow, pressure and volume, of grout being injected into each hole.
- D. Grout Mix: Grout materials consisting of either a cement slurry or an ultrafine cement slurry to which additives such as fly ash, blast furnace slag, viscosity modifying agents, and superplasticizers may be incorporated, resulting in a stable grout; and chemical grout consisting of urethane, acrylic, or sodium silica grout mortar.
- E. Jet Grouting: The process of creating “soilcrete” in place with a stabilizing grout mix delivered at pressure through nozzle(s) at the end of a monitor inserted in a borehole. The soilcrete is created by rotating and lifting the monitor defined below at slow, smooth, constant speeds, cutting the soil with water and air while tremie feeding an engineered grout slurry through the base of the monitor to achieve more thorough mixing and a consistent continuous geometry and quality.
- F. Monitor: A double or triple-phase fluid drill pipe designed to convey the three elements of the jet grouting process: air, water, and grout.
- G. Permeation Grouting: Permeation grouting consists of filling the voids in a matrix material with grout slurry, displacing any water present in the void space. To prevent unwanted fracturing of the matrix, the grout is injected at a pressure less than the ground overburden pressure.
- H. Soilcrete: An situ mixture of native ground mixed or injected with materials designed to alter the existing ground behavior and/or engineering property.

SECTION 03610

- J. Take: The volumetric measurement of grout being injected at design pressure over a period of time.
  - i. Instantaneous take is used to measure maximum pumping rate in seconds; i.e. gallons per second (GPS).
  - ii. Sustained or average take is over the time the grout is injected or attempted in minutes; i.e. gallons per minute (GPM).
  - iii. High take is where the volume of grout is injected at a high instantaneous rate at a pressure much lower than the maximum design for no take; i.e. 20 GPM at 5 pounds per square inch (psi) as when compared to the following no take.
  - iv. No take is less than a predetermined amount over a set time at maximum design pressure; i.e. 0.1 gallons at 15 psi over 5 minutes.
- K. Water-Cement Ratio (Cement Slurries): The volumetric proportion in the grout mix of the water and loose cement plus any additive to be included. As weight batching shall generally be used, water-cement ratios shall be reported both as volume ratios and weight ratios.

#### 1.4 DESIGN REQUIREMENTS

- A. The work required herein relies substantially on Contractor-responsible means and methods for performing ground pre-treatment.
- B. The unconfined compressive strength (UCS) of the ground-grout mix shall be acceptable to the Contractor performing the tunnel work.
- C. All treatment zones that will be tunneled shall be sized for the shield with minimum rectangular dimensions of 3 times the outside diameter of the shield for height, width, and length as shown in the accepted submittal.
- D. Treatment block shall be formed perpendicular to the travel of the shield and centered along the tunnel.

#### 1.5 PERFORMANCE REQUIREMENTS

- A. Provide complete coverage at shafts and tunnels to satisfy the following requirements:
  - 1. Stabilize ground at the entrance and exit seals and to the extent that no more than 0.25 cubic yard of ground enters the shaft, groundwater inflows, and ground settlement directly above the tunnel does not exceed that specified in Section 02445.
  - 2. Limit water from entering the shaft during shaft wall penetration of the shield to a rate no greater than 2.0 GPM for a total of 4.0 GPM from all sources inside the shaft.

#### 1.6 QUALITY ASSURANCE

Requirements outlined below shall be met at the time of bid and remain in force through completion of the Project. Subcontracted work does not qualify as experience.

- 1. Grouting Contractor shall demonstrate relevant experience in successfully completing projects similar in scope and purpose to the Work specified herein.
- 2. Grouting Superintendent. Contractor's field staff to include minimum one ground improvement superintendent for each shift during which grouting

operations are taking place. The Grouting Superintendent shall demonstrate relevant experience in successfully completing projects similar in scope and purpose to the Work specified herein.

- a. A grouting Superintendent shall be present on-site full time during grouting.
3. Grouting Engineer: Contractor's full-time field staff to include minimum one ground improvement engineer with relevant experience in successfully completing projects similar in scope and purpose to the Work specified herein
    - a. The Grouting Engineer shall have a valid license as a Civil Engineer or Geotechnical Engineer in the State of California.
    - b. If performing grouting on more than one shift per day, the Grouting Engineer must be on-site for the first 5 (five) shifts for each crew performing grouting operations, daily during grouting operations, and be on-call for other daily grouting shifts.

A. Ground Pre-Treatment Program and Procedures: Provide work plan including:

1. Means and methods for performing ground pre-treatment at each area requiring pre-treatment. Identify staging areas, patterns, orientations, sequences, and depths. Identify types of grout pipes and packers for cement and solution permeation grouting. Identify depth and width of grout columns for jet grouting operations.
2. Description of planned mix proportions.
3. Calculations including computations of grout quantities with respect to porosity, strength of the grouted mass, target volumes, reduction in permeability, and refusal criteria. The shaft designer must accept the design and construction of the added loads during the ground pre-treatment operations.
4. Define "No Take" and "High Take" criteria for each grouting method and product used at each location.
5. Description of and specifications for proposed drilling, grout mixing, and grout injection equipment including layout and sizes of grout lines.
6. Manufacturer cut sheets for valves and gages to be used including documentation that gages have been calibrated for this Project.
7. Certification of calibrated pressure gauges and meters.
8. Proposed time schedule, work hours, and crew size for performing ground pre-treatment.
9. Traffic control plans if needed, including sequencing and duration of detours and lane closures, as specified elsewhere in these specifications.

B. Survey Control: Provide qualified survey personnel in accordance with Section 02445.

C. Quality Control Plan including:

1. Method for assuring that each grout location has been fully grouted and that the strength and permeability requirements have been achieved. Confirmatory

methods shall include evidence of past satisfactory use under similar circumstances.

2. Method for assuring that ground improvement does not damage other subsurface features and installed geotechnical instrumentation.
3. Testing performed by an independent testing agency, which can certify compliance with the requirements of ASTM E329, or as accepted by the District Engineer. The laboratory shall be able to demonstrate experience performing the laboratory tests required herein.
4. Sample Grouting Daily Shift Report: Date, start and finish times, shift and foreman's name, hole location, hole length, measured water inflow, mix type (including ratios of cement, water, and additives), gel time, grout flow rates, grout pressures, grout quantities injected both instantaneous and cumulative, refusal criteria and acceptance, and observations for each injection point.
5. Contingency plan for abandoned holes
6. Control plan ensuring vertical nature of hole
7. Contingency plan for holes out of vertical tolerance
8. Plan to inspect and test columns to ensure structural interconnectivity and perform as specified herein.
9. Contingency plan for high grout take.
10. Contingency plan to address failure of columns to interconnect and perform as specified herein.
11. Plan to protect all existing features within 100 feet of grouting operations.
12. Contingency plan to clean-up and remove fugitive grout and restore existing features.

## 1.7 CONTRACTOR SUBMITTALS

- A. Submittals shall be made in accordance with Section 01300 and as specified herein.
- B. Submittals shall be coordinated with all relevant submittals, assembled and submitted as a single, complete, and comprehensive submittal.
- C. Where calculations are required to be submitted, they shall be signed and sealed by a Professional Civil Engineer registered in the State of California. Calculations shall clearly identify all parameters used, state all assumptions made in the calculation, and identify all sources of information.
- D. All shop drawings shall be legible with dimensions accurately shown and clearly marked in English.
- E. Qualifying submittals:
  1. Qualifications of Contractor's Grouting Contractor, Grouting Superintendent, and Grouting Engineer.

SECTION 03610

## 2. Product Data

- a. Materials specified in Part 2.
- b. Material Safety Data Sheets.
- c. Manufacturer's mixing and handling requirements, personal safety equipment, first aid measures, and methods for proper storage and disposal of waste materials, including containers.

## 3. Certifications

- a. Certified laboratory test results at least 30 days before starting ground improvement operations documenting that the proposed grout mix meets specified requirements of three sets of three grouted laboratory samples.
- b. Products described herein including Certificates of Compliance from the manufacturer.
- c. Manufacturer's certificate of origin for sodium silicate.
- d. Personnel trained in handling, mixing, injection, and disposal of materials.
- e. Gauge or meter certification dated within the last 6 (six) months. Resubmit certification when certification is more than 6 months since last inspection.
- f. For all pressure gauges anticipated to detect operating pressure between 1 and 20 psi - gauges shall be marked in 1 psi increments and be accurate to  $\pm 0.5$  psi.
- g. For all pressure gauges anticipated to detect operating pressure between 20 and 100 psi - gauges shall be marked in 5 psi increments and be accurate to  $\pm 1\%$ .
- h. For all pressure gauges anticipated to detect operating pressure over 100 psi - gauges shall be marked in units noting 5% increments and be accurate to  $\pm 5\%$  of operating pressure.
- i. For all volumetric totalizing meters shall be in totalized in tenths of a gallon or other unit acceptable to the District Engineer. Totalizing meters are to be accurate to  $\pm 2\%$ .

## 4. Quality Control Plan.

### E. At least 20 work days before commencing with the grout work submit:

1. Proposed Ground Pre-Treatment Program
2. Procedures
3. Mix design(s).
4. Final working shop drawings showing hole layout and extent of grouting envelope.
5. Description of proposed stage grouting sequence, table of target injection volumes, injection pressures, grout materials, mix proportions, and procedure for altering mix proportions based on observed grout take.
6. Provide site specific details, including number and layout of grout holes, orientation of holes, types or depth of grout, graphical grout-take logs, injection pressures,

SECTION 03610

water pressure injection tests, and other relevant data depending on the application and the grout type.

F. Construction submittals:

1. At a minimum of 1 work day prior to any ground pre-treatment, provide location (station) and details of such application, including number and layout of grout holes, orientation of holes, types or depth of grout, graphical grout-take logs, injection pressures, water pressure injection tests, and other relevant data depending on the application and the grout type.
2. Within one work day following grouting submit daily grouting shift reports.
3. Written notifications:
  - a. 10 (ten) work days advance notice of performing ground improvement at any site.
  - b. Immediately of leakage during ground improvement operations.
4. Laboratory test results:
  - a. Results within 1 (one) work day following test.
  - b. Cumulative reports within 5 (five) work days following last test.
  - c. c. In a form and units acceptable to the District Engineer.

1.8 DELIVERY, STORAGE AND HANDLING

- A. Transport and store materials as prescribed by the manufacturers of these materials, as detailed in the data provided by the manufacturers. Protect material from mechanical damage and damage caused by environmental exposure. Do not use materials beyond expiration date.
- B. Deliver sodium silicate in sealed containers or a certified tank truck, and accompanied by the supplier's certificate of origin. Deliver reactant materials in sealed containers accompanied by the supplier's certificate of origin.
  1. Store chemicals in metal tanks, suitably protected from accidental discharge.
  2. Materials to be handled by trained personnel.

1.9 PROJECT SITE CONDITIONS

- A. For Subsurface Ground Information see the geotechnical report..

PART 2 – PRODUCTS

2.1 MATERIALS

A. Cement Grout

1. Cement – ASTM C150, Type II or III, or microfine cement.

SECTION 03610

2. Bentonite – High yield sodium bentonite; NSF/ANSI Standard 060 compliant.
3. Pozzolan – ASTM C618, Type F.
4. Water – Potable and source.
5. Admixtures – Shall be accepted by the District Engineer. If commercially available and acceptable to the product manufacturer all polymers, and additives, other than soda ash, shall be NSF/ANSI Standard 060 compliant.

B. Chemical Grout

1. Design mix comprising a liquid base, reactant, water, accelerator, and other accepted admixtures as required.
2. Liquid Base: Sodium silicate with a specific gravity between 1.4 and 1.5, and a silicate-to-soda ratio between 3.20 and 3.35. Colloidal silicate may be used as an alternative to sodium silicate as long as performance criteria can be met.
3. Reactant: Organic base type which, when properly mixed with other grout components, provides a permanent, irreversible gel with controllable gel times. The resulting gels shall exhibit less than 15 percent syneresis in 30 days when mixed with appropriate amounts of sodium silicate, water and accelerator, and not exhibit objectionable odors such as ammonia. Sodium bicarbonate, sodium aluminates and other reactants that produce a temporary grout are prohibited.
5. Water: Potable and source.
6. Accelerator: Technical grade, water-soluble calcium chloride or other metal salt, containing a minimum amount of insoluble materials.

2.2 EQUIPMENT AND ANCILLARY CONSTRUCTION MATERIALS

- A. Equipment and materials shall be as per the grout manufacturer's written recommendations and acceptable to the District Engineer.
  1. Equipment and materials shall be sized to exceed the Project requirements by at least 20% as measured by maximum proportioning quantities, maximum injection quantities, maximum pressure, and anticipated ground conditions.
  2. Materials left in the ground shall not damage or otherwise impede other construction as specified elsewhere.
  3. Keep spare parts and materials available onsite at all times.
- B. Cement and Solution Permeation Grouting Equipment
  1. Grout pipes - Sleeve-port type with centralizers as required to protect sleeves. After being placed in borehole encase the sleeve-port grout pipes in a continuous brittle mortar sheath. Use an internal double packer to inject grout at a specific sleeve port.
  2. Single Hole Packers
    - a. Packers shall be flow through type.
    - b. Pneumatic inflatable packers shall be used; leather packers will not be permitted.

3. Double Packers

- a. Pneumatic inflatable packers shall be used; leather packers will not be permitted.
- b. The packer system shall be tested at the maximum injection rate of 40 gal/min.
- c. The packer depths shall be verified to the nearest 0.1 foot throughout testing.

4. Valves and Gauges

- a. Valve pressure ratings shall be at least 150% of maximum pump pressures.
- b. Provide one pressure gauge at grout pump, one pressure gauge on manifold hookup at collar of hole being grouted, and one accurately calibrated master gauge.
- c. Provide one volumetric gauge at the grout pump. Provide one volumetric gauge at a point where the grout enters the ground and does not recirculate.

5. Drilling equipment - Capable of installing the sleeve port grout pipe given the site conditions and grouting requirements such as lost point drilling system with retractable casing; capable of installing drill casing to the accepted depths or horizontal penetration accurately in accordance with the reviewed and accepted Shop Drawings. Rotary drive and/or percussion drilling methods utilizing air, foam, or water flushing may be employed. Maintain grouting equipment in good operating condition at all times.

C. Cement Permeation Grouting Equipment:

1. General:

- a. Provide stop valve at collar of hole for use in maintaining pressure until grout has set.

2. System:

- a. Provide for continuous circulation of grout in the system and to permit accurate pressure control at the grout hole connection.
- c. Equip with means for periodic flushing system with water. Accomplish with grout intake valves closed, with water supply valve open, and with grout pump running at full speed.

3. Mixer: High speed colloidal-type of equal or greater capacity than pumping equipment.

4. Agitator tanks: Mechanical type with twice the capacity of the mixer.

5. Meters:

- a. At mixer for measuring amount of mixing water added to grout dry ingredients with accuracy to 0.25 gallons.

5. Pump:

- a. Capable of developing pressure at the grout hole connection in a continuous, uniform manner, up to the maximum pressure required.



- b. Equipped with bypass valve to prevent sudden or excessive pressure from developing at the grout hole connection.

D. Solution Permeation Grouting Equipment

- 1. General: Continuous mixing type.
- 2. Meters: Equipment plant with automatic, real-time display, positive displacement meters that measure and record the volume of each component pumped. Locate meters at the injection point and in each material line ahead of mixer. Meter accuracy shall be within 0.25 gpm and independent of fluid viscosity.

## PART 3 – EXECUTION

### 3.1 GENERAL REQUIREMENTS

- i. Perform all Work in accordance with accepted submittals.
- ii. Provide the owner with access to equipment, sampling, testing, and instrumentation.
- iii. The Contractor shall comply with all applicable permits.
- iv. Do not commence any grouting operation until all submittals, including submittals for all related work specified elsewhere, are reviewed and accepted by the District Engineer.
- v. Maintain a copy of the Contract Documents at a location acceptable to the District Engineer and accessible to the grout operator and District Engineer.
- vi. Provide the District Engineer and their representatives with access to the grouting operations at all times during grouting operations.
- vii. Survey pre-treatment locations in accordance with Section 02445.
- viii. Complete Daily grout shift report.

### 3.2 CEMENT PERMEATION GROUTING PROCEDURES

- A. Cement grout which is not injected into the hole within 1 hour after mixing or 30 minutes if the mix contains fluidizer with expanding agent shall be removed from the mixer, sump, and supply line and shall be wasted.
- B. If the water pressure testing indicates a relatively tight hole, grouting shall be started with a thin grout mixture. For an open hole condition, the water-cement ratio shall be reduced accordingly and, with the grout pump operating as nearly as practicable at constant speed at all times, the ratio shall be reduced further, if necessary, until the required pressure has been reached. If the pressure tends to rise too high, near the maximum specified pressure, the water-cement ratio shall be changed as directed.
- C. The water-cement ratio by volume will be varied to meet the characteristics of each hole as revealed by the pressure washing and testing operations and will normally range between 3.0:1.0 and 0.6:1.0.
- D. If it is found impossible to reach the required pressure after pumping a reasonable volume of grout at the minimum workable water-cement ratio, a sanded grout mix

SECTION 03610

shall be used, the pumping speed shall be reduced, or pumping stopped temporarily and intermittent grouting shall be performed, allowing sufficient time between grout injections for the grout to stiffen.

- E. If excessive grout takes are still observed, grouting in the hole shall be discontinued, if so directed. In such event, the hole shall be cleaned, the grout allowed to set, and additional drilling and grouting be done in this hole or in the adjacent area, as directed, until the desired resistance is built up.
- F. Under no conditions shall the pressure or rate of pumping be increased suddenly, because either may produce a water-hammer effect which may promote stoppage. After the grouting of any hole is completed, the pressure shall be maintained by means of a stopcock or other suitable device until the grout has set to the extent that it will be retained in the hole.

### 3.3 SOLUTION PERMEATION GROUTING PROCEDURES

- A. Mixing of chemical grout shall be performed by the continuous mixing method, with the proper amounts of sodium silicate base material, water, reactant and admixtures automatically proportioned and continuously supplied at proper flow rates and pressures. The batch system of mixing grout will not be permitted. Pass the base material and the water-accelerator-catalyst solution through parallel separate hoses to a baffling chamber near the top of the hole.
- B. Using double packers, inject chemical grout into the design zones through ports in the sleeve pipes. Temporary high injection pressures not exceeding one minute in duration will be permitted to crack open sleeve-ports. Continue to inject grout until the specified refusal criteria have been met.
- C. Do not exceed a rate of ten gallons per minute into any port.

### 3.4 JET GROUTING PROCEDURE

#### A. General:

1. Jet grout injection and jet monitor rotation and extraction rates shall be sufficient to produce grout columns meeting the diameter, depth, overlap, and material property requirements in accordance with the Contractor's accepted submittals.
2. Proportion and inject jet grout mix so that the grout column produced attains an unconfined compressive strength in accordance with the Contractor's accepted submittals.
3. Equipment for mixing, holding, and pumping grout shall be in a secure location and shall be operated to minimize spillage of material. No material will be allowed to enter storm drains or other drainage courses.

#### B. Test Program:

1. Construct a test section of the jet-grouted columns in a location near the proposed jet grouting area and accepted by the District Engineer, prior to starting jet grouting production work at the site.
2. The test section shall consist of a minimum of two grout columns installed to the same bottom elevation specified for the production jet grouting.

SECTION 03610

3. After the test section is completed, sample the grout columns for laboratory testing to determine whether the grout column material meets the design requirements. Conduct unconfined compressive strength tests in accordance with ASTM C39 or C109.
4. Alter the design mix and repeat the test program until acceptable results are achieved.

C. Installation of Jet-Grout Columns:

1. Core the slab and/or footings in locations where jet grouting monitors will be inserted into the ground, using coring or boring techniques accepted by the District Engineer.
2. Use the same equipment, materials, and procedures as those determined in the test program to give satisfactory results to perform production jet grouting.
3. Borehole drilling and jet grouting sequence shall be such that an adequate distance is left between freshly grouted columns prior to drilling and grouting an adjacent column. Allow sufficient time for grout to attain minimum design strength before constructing an intersecting column.
4. Minimum overlap of adjacent columns is 3 inches.
5. Columns shall be installed within 1% of vertical.

3.5 REPAIR/RESTORATION FOR CEMENT AND SOLUTION PERMEATION GROUTING

- A. Abandon grout holes as provided in the accepted submittals.
- B. Ensure grout pipes left in place do not impede all tunneling operations. If so, remove grout pipes to the extent necessary to not affect operations.
- C. Remove grout pipe installed on private property to a depth of 10 ft. unless otherwise specified in the Contractor's agreement with the property owner.

3.6 FIELD QUALITY CONTROL

- A. Provide at the site the necessary quality control testing devices required to conduct material acceptance tests, proportioning tests, and grout quality tests for proper quality control of the Work.
- B. Before the start shaft excavation operation, Contractor shall demonstrate to the District Engineer, through the accepted quality control plan, that the specified grout zone has been thoroughly impregnated and stabilized with grout.
- C. Permeation Grout shall have a gel time of five to 40 minutes, and not more than 40 minutes with 90 percent of the grout having gel times of ten to 30 minutes. Changes in gel time shall be accepted by the District Engineer prior to implementation. Samples obtained for gel time checks: at least one every half hour of pumping or for every 500 gallons of grout, whichever is more frequent.
- D. Gel samples shall be properly containerized, labeled and stored until completion of the Work.  
General: Check plant meter accuracy at least twice daily.
- F. Solution Permeation Grouting Proof tests: Prepare 1 chemically grouted soil sample with actual grout from the field from the in-situ samples taken prior to commencement

SECTION 03610

of the work for each 500 gallons of grout pumped and test in accordance with ASTM D4219

### 3.7 ADJUSTING

- A. Closely monitor the rate of grout take during grout injection. Ascertain the cause of sudden drops in grout injection pressures following initial start-up pressure adjustments. Continuously monitor adjacent paved and unpaved areas, adjacent gravity sewers, storm drains and other utilities for grout leakage. In the event that grout leaks are observed, temporarily terminate injection and plug leaks before resuming grouting.
- B. If excessive grout take is experienced that is not attributable to leakage, change injection pressure, pumping rates, gel or setting times, or grout composition, subject to the acceptance of the District Engineer, to reduce grout use to acceptable levels.

### 3.8 CLEAN UP

- A. Segregate chemical or cement grout contaminated groundwater, including the products of syneresis degrading of gelled grouts.
- B. Site restoration shall be completed in accordance with the Contract Documents.

**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 CITY for the implementation of the I&C and the integration of the I&C with other required instrumentation and control devices. Only those suppliers who can demonstrate that they possess the prerequisite capabilities and experience will be considered
    - a. Demonstrate the company's ability to successfully complete projects of similar size and nature. Provide references (including contact name and telephone number) for at least three projects where the following tasks were performed by personnel directly employed by your firm as a Instrumentation Subcontractor; system engineering and documentation including panel assembly, schematics, and wiring diagrams; software configuration and documentation; field testing, calibration, and start-up; and operating instructions and maintenance training.
    - b. Name the individual persons who will be responsible for office engineering and project management; software configuration; field testing, calibration and start-up; and operator instruction and maintenance training. References called for in the previous item shall include recent project of these individual persons.
    - c. Document that the company is actively in the business of furnishing integrated instrumentation, telemetry, control and electrical equipment for the water and waste water industries.
    - d. Have a qualified service facility with permanent employees located within 100 miles of the job site. Facility to include all tools, spare parts,

and test equipment to repair, calibrate, test and start-up the equipment to be provided on this contract.

e. For this project the prequalified system suppliers are as follows:

- |     |                                |                |
|-----|--------------------------------|----------------|
| (1) | ATSI, Temecula                 | (760) 738-6804 |
| (2) | Vertech, Irvine                | (949) 596-7986 |
| (3) | FREEDOM AUTOMATION, Oceanside  | (760) 639-4100 |
| (4) | TESCO CONTROLS, INC., Temecula | (951) 308-6450 |

1. 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.

2. As a minimum, the Instrumentation Subcontractor or vendor shall perform the following work:

a. 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.
- b. 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.

3. 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. No Later than five working days after Notice of Apparent Low Bidder, 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. Subcontractor shall have experience in instrumentation and control system projects 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, if 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, not referenced below, shall also apply to the extent required for proper performance of this Work.

1. Section 16010 Basic Electrical Materials and Methods
2. Division 13

## 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 Municipal code:

1. National Electrical Code (NEC)
2. Uniform Building Code (UBC)

- B. 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. Symology 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

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
    - j. Space for comments
    - k. Space for sign-off by Instrumentation Supplier and date
    - l. 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, Precommissioning, 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. One set of record drawings electronically formatted in INTERGRAPH MICROSTATION format and 2 hard copies shall be submitted after completion of all Precommissioning tasks but before Performance Testing. 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 mA dc 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 reported 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. 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.
- B. 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-200	Manhole for InSertion Meter	N/A	4

**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 precommissioning, prepare precommissioning validation sheets, and certify precommissioning
  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 City together with a clear and unequivocal statement that all instrumentation has been successfully calibrated, inspected, and tested.

### 3.5 PRECOMMISSIONING

- A. General: Precommissioning 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. Precommissioning 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. Precommissioning Procedures and Documentation: All precommissioning 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 precommissioning 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 precommissioning and test requirements have been satisfied.
- C. Operational Validation: Where feasible, system precommissioning 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. Precommissioning Validation Sheets: Precommissioning 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. Precommissioning Certification: Submit an instrumentation and control system precommissioning 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 precommissioning testing. Acceptance of the instrumentation and control system precommissioning testing must be provided in writing by the ENGINEER before the performance testing may begin.

### 3.4 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.

### 3.5 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.

### 3.6 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 precommissioning 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.

### 3.7 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 precommissioned.
  - 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\*\***



## 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

##### 1.3 CONTRACTOR SUBMITTALS

- A. 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. 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.

##### 1.5 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 CITY units (e.g. gpm, psi etc.) and annotate with the units where ever 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 CITY 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.

## **PART 2 - PRODUCTS**

### **2.1 GENERAL**

- A. Programming software: PLC Program should be written in current version of Unity Pro by Schneider Electric; no equals.

### **2.2 PROGRAMMABLE LOGIC CONTROLLERS**

- A. The microcontroller system and subsystem components shall be Modicon Momentum Unity M1 Series, No equals.
- 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 13414

### INSERTION MAGNETIC FLOWMETER

#### PART 1 -- GENERAL

##### 1.1 SUMMARY

- A. This section describes the requirements of four-wire type insertion magnetic flowmeter.
- B. Related sections include:
  - 1. Section 13300 –Instrumentation and Control.

##### 1.2 SUBMITTALS

- A. Provide catalog data/shop drawings 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: +/-0.2 percent of flow rate.
  - 2. Pipe Sizes: 8 to 320 inches nominal bore.
  - 3. Conductivity: Greater than 50 $\mu$ S/cm.
  - 4. Temperature Range: 32 to 140 degrees F.
  - 5. Maximum Pressure: 295 psi

#### PART 2 -- PRODUCTS

##### 2.1 INSERTION MAGNETIC FLOWMETER

- A. Insertion Magnetic Flowmeters are acceptable provided that the manufacturer's recommendations are met for the installation.
  - 1. Submittal must include manufacturer's straight pipe length recommendations.
- B. Acceptable manufacturers:
  - 1. ABB AquaProbe FEA100 with WaterMaster converter.
  - 2. McCrometer FPI395L with M-Series converter.

3. Or approved equal.

C. Materials:

- 1. Stainless Steel body.
- 2. All wetted materials compatible with potable water.

D. Design:

- 1. Operating pressure: 2-80 psi.
- 2. Operating temperature: 10-70 Deg F.
- 3. All components on the flow pipe must be submersible, including cable connections.
- 4. Flowmeter assembly shall incorporate dielectric union above ball valve.
- 5. Provide cable between magnetic flow meter and transmitter/converter. Cable shall be of sufficient length to meet field requirements without splices.
- 6. Adjustable low flow cutoff.
- 7. Empty pipe alarm.

E. Signal Converter:

- 1. Provides excitation to sensor, Pulsed DC magnetic field excitation.
- 2. Configure to display flow volume in engineering units: CFS and tenths.
- 3. Powered by 24 VDC.
- 4. 4-20mA signal output.

F. Provide grounding recommended by the manufacturer.

Tag No.	Service	Pipe Size	Range	Drawing
FIT-200	Vault No. 3	66 inches	TBD	E-2

**PART 3 -- EXECUTION**

3.1 INSTALLATION

- A. Install products in accordance with manufacturer's instructions.
- B. Keep foreign matter out of the system.

C. Instrument Mounting:

1. Mount all instruments where they will be accessible from fixed ladders, platforms, or grade.
2. Mount all local indicating instruments with face forward toward the normal operating area, within reading distance, and in the line of sight.
3. Mount instruments level, plumb, and support rigidly.

D. Flowmeter shall be calibrated and tested per manufacturers recommendations.

**PART 4 -- PAYMENT**

The bid price for "Insertion Flow Meters" shall include full compensation for doing all work involved installing, calibrating and testing the insertion magnetic flowmeter and all work shown on the electrical drawings and in the related specification sections.

**\*\*END OF SECTION\*\***

## SECTION 15102

### TRIPLE OFFSET METAL SEATED BUTTERFLY VALVE

#### PART 1 - GENERAL

##### 1.1 DESCRIPTION

- A. This section includes materials, manufacturing, coating, testing, and shipping of metal-seated triple-offset butterfly valve and manual actuator in conformance with AWWA standard C504, as modified herein.

##### 1.2 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS AND ABBREVIATIONS

- A. The applicable portions of the following standards shall apply to the valve. The latest standard shall apply unless otherwise noted.

ANSI B16.34 Valves – Flanged, Threaded, and Welding End ANSI B16.47 Large Diameter Steel Flanges

ANSI 6D Specification for Pipeline Valves (Seat Leakage) ANSI B1.20.1 Pipe Threads, General Purpose (inch) ANSI B16.1 Cast Iron Pipe Flanges and Flanged Fittings ANSI B46.1 Surface Texture

API 598 Valve Inspection and Testing

AP 609 Butterfly Valves: Double-Flanged, Lug- and Wafer-Type

ASME B16.5 Pipe Flanges and Flanged Fittings: See also ASME B16.47 Series A (MSS-SP-44) or Series B (API 605)

ASME B16.10 Face-to-Face Dimensions

ASME B16.34 Valves – Flanged and Buttwelded End ASME B16.47 Large Diameter Steel Flanges

ASME B31.1 Power Piping ASME B31.3 Process Piping

ASME Standards Materials of Construction ASTM A182 Stainless Steel Forgings

ASTM A216 Carbon Steel Castings

AWWA C207 Standard for Steel Pipe Flanges for Waterworks Service



AWWA C213 Fusion-Bonded Epoxy Coating for the Interior and Exterior of Steel Water Pipelines

ISO 5211/1 Part-Turn Valve Actuator Attachment Part 1: Flange Dimension  
Part 2: Flange and Coupling Performance Characteristics

ISO 5752 Face-to-Face Dimensions Series 13 (Class 150) Series 14 (Class 300/600)

MSS-SP-6 Standard Finishes for Contact Faces of Pipe Flanges and Connecting-End Flanges of Valves and Fittings

MSS-SP-25 Standard Marking System for Valves, Fitting, Flanges, and Unions

MSS-SP-55 Quality Standard for Steel Castings for Valves, Flanges, and Fittings, and Other Piping Components

NSF-61 National Sanitation Foundation Standard 61–Drinking Water System Components – Health Effects (revised 10/88)

OSHA Occupational Safety and Health Act of 1970, as amended SAE Society of Automotive Engineers

UL Underwriters Laboratories, Inc.

### 1.3 SUBMITTALS

- A. Submit six copies of shop drawings. Indicate on each shop drawing submittal the name of the project, the name of the Vendor, and the names of any manufacturers and subcontractors. Provide on each shop drawing submittal the following Certification Statement, signed by the Vendor:

"Certification Statement: By this submittal, I hereby represent that I have determined and verified all materials, dimensions, catalog numbers and similar data and I have checked and coordinated each item with other applicable submittals and other requirements of the contract documents."

- B. The shop drawings shall include manufacturer's catalog data, calculations and detail construction sheets showing all valve parts and describing each part by material of construction, specification (such as ANSI, ASTM, SAE, or CDA) and manufacturer's part number. Identify each valve by tag number to which the catalog data and detail sheets pertain.
- C. Show valve dimensions including laying lengths. Show port sizes. Show dimensions and orientation of valve actuator, as installed on the valve. Show location of internal stops for gear actuators.
- D. Show valve linings and coatings.

- E. Submit manufacturer's catalog data and descriptive literature.
- F. Submit a report verifying that valve has passed shell and seat tests and that the valve interior linings have passed the test for holidays and lining thickness. Describe test results and repair procedures for the valve. Do not ship valve until the reports have been approved by the City.
- G. Submit the valve warranty certification per paragraph 3.5.

#### 1.4 MANUFACTURERS

- A. The metal-seated triple offset butterfly valve must be Adams, Vanessa or approved equal.

#### 1.5 QUALITY ASSURANCE

- A. Valve Testing: Shop-test each valve body under a test pressure equal to twice its design water-working pressure. The hydrostatic seat test shall be made free of any lubricant. There shall be no visible leakage under all seat tests including API 598. Perform torque tests on actuators to ensure compliance with this specification. The manufacturer shall test the valves. Vendor will be responsible for all above described costs for subsequent valve testing should the initial test fail.
- B. Certification: Prior to shipment, Vendor shall submit for valve and actuator, certified copies of all torque and hydrostatic factory tests, showing compliance with this specification and the applicable standards of AWWA, ANSI, ASTM, etc.
- C. Manufacturer shall have experience in the USA waterworks industry. The manufacturer shall be experienced in the manufacture of metal seated triple-offset butterfly valves of comparable size, capacity, and complexity as specified in this specification. The manufacturer's metal seated triple-offset butterfly valves of comparable size, capacity and complexity, as specified, shall have been successfully used in water service facilities.

### **PART 2 - MATERIALS**

#### 2.1 GENERAL

- A. Supply valve complete with gear actuators, operating nuts, and wrenches required for operation.
- B. Valve shall have the name of the manufacturer and size of the valve cast or molded onto the valve body or bonnet shown on a permanently attached plate.
- C. Direction of flow shall be cast or stamped on the valve body.

#### 2.2 Butterfly Valve

- A. Butterfly valve shall be of high performance design and shall be rated for water working

pressures of up to the maximum design pressure or 150 pounds force per square inch gauge (psig), whichever is greater. The valve shall incorporate a triple-offset shaft design with an inclined conical seat and seal geometry which shall create a torque seating operation which shall provide bi-directional zero leakage shut-off and be designed in accordance with ASME B16.34 and B31.1 with the predetermined torque applied to the valve. Valve shall be of the metal seat design which shall be capable of bi-directional seating against pressures up to 150 psig applied to one side of the disc, with zero pressure applied to the other side of the disc in the CLOSED position, with zero leakage, and without damage or permanent deformation to any part of the valve body, seat, disc, shaft, bearings, or actuator.

1. Valve body shall be cast from carbon steel per ASTM A216 Grade WCB. Valve discs shall be cast from stainless steel per CF8M 316 Stainless Steel. Fabricated bodies and discs shall not be permitted. The valve seating edge shall be located within the valve body fully protected from the flow stream. Valve shafts shall be one-piece 17-4PH or 431 stainless steel construction and shall be designed in accordance with the requirements of API 609. The shaft diameter shall be reduced at the actuator connections so as to put the weakest point outside the valve above the packing. Allowable stresses shall be limited to 33-percent of Ultimate Tensile Strength and 67-percent of Yield Strength in accordance with ASME, Sec. III, Case N62.6. Disc attachment to the shaft shall be by means of Type 316 stainless steel, or Monel parallel keys. Pins of any kind shall not be used for torque transmission.
2. Valve seating surface for the seal ring shall be integral to the valve body or on the disc edge and shall be overlaid with stellite a minimum of 2.5 millimeters in the finished condition WITHOUT EXCEPTION. Valve without the stellite seating surface is not acceptable.
3. Valve shall have a field replaceable "laminated" seal ring retained in the body or on the disc. The seal ring shall be constructed of laminates of stainless steel and graphite. No elastomers shall be used in the sealing system. Seal ring design shall also include the following parameters:
  - a. The seal ring shall be accessible, e.g. replaceable, by positioning the disc in a proper orientation and removing an adjacent pipe spool piece without removing or disassembling the valve.
  - b. The seal ring shall be machined in an inclined conical shape to match the companion surface in the body or on the disc, as appropriate. The overall geometry of the seal ring shall be formed into an elliptical shape to provide resilient seating.
  - c. Each seal ring shall be identical and interchangeable for valves of the same size.
  - d. The seal ring shall be held securely in place by a stainless steel retaining ring bolted in place.
  - e. A spiral wound gasket shall be provided to prevent leakage around the seal ring. Flat static gaskets shall not be used.
  - f. The seal ring shall be indexed and keyed to ensure exact and proper installation or

reinstallation without shims.

- g. No special tools shall be required to install the seal ring.
- 4. Packing shall be graphite and shall be provided by a minimum of four studs for precision adjustment and compression of the packing. A minimum of five packing rings shall be provided.
- 5. Valve bearings shall be No-Resist or Type 316 stainless steel baked PTFE. Bearings shall be sealed from the ingress of particulates. Wetted bronze parts shall be in conformance with ASTM B62, containing not more than: 5-percent zinc, 2-percent aluminum, 8-percent lead, and 83-percent copper plus nickel, plus silicon.
- 6. Valve body shall be double flanged, flat faced, which shall be able to withstand induced pipe loads without distortion and effect on the movement of the valve disc and seating operation. Flange thickness shall be designed in accordance with ASME Section VII flange design requirements and shall be suitable for mating to connecting pipe flanges conforming to AWWA Class D flange dimensions. Face to face dimensions of the valve shall conform to ISO 5752, Series 13 for Class 150.
- 7. Operator mounting bracket will be centered with machined register and a minimum of two (2) dowel pins will be used in addition to bracket bolting the absorb torsional load from operator.
- 8. Valve shaft shall rotate clockwise to close.

### 2.3 Valve Actuator

- A. Manual actuator shall be provided for the valve and shall be sized in accordance with AWWA C504 and C540, and meet the following requirements:
  - 1. Provide gear actuators designed for buried service or for exposed service in a vault, as indicated by the design drawings. Actuators shall be of the worm and gear type. Worm gear actuators shall be Limitorque Model HBC, EIM Type WO, Auma GS 160.3 – GS 250.3 Series, or approved equal.
  - 2. Design gear actuators assuming the differential pressure across the disc is equal to the pressure rating of the valve or 150 psig, whichever is greater.
  - 3. Gear actuators shall be enclosed, lubricated with oil or grease, and provided with seals on shafts to prevent entry of dirt and water into the actuator. Gears shall be watertight, designed for buried service in groundwater. Actuators shall contain a dial indicating the position of the valve disc.
  - 4. Worm and gear actuators shall be of the totally enclosed design so proportioned as to permit operation of the valve under full differential pressure rating, or a differential pressure of 150 psig, whichever is greater, with a maximum pull of 80 pounds and a maximum input of 150 feet-pounds on the operating nut. Provide stop limiting devices in the actuators in the OPEN and CLOSED positions. Actuators shall be of the self-locking type to prevent the disc from creeping. Design actuator components between

the input and the stop-limiting devices to withstand without damage a pull of 200-pounds for handwheel and an input torque of 300-pounds for operating nuts when operating against the stops.

5. Self-locking worm gear shall be a one-piece design of gear bronze material (ASTM B427), accurately machine cut. The worm shall be hardened alloy steel (ASTM A322, Grade G41500; or ASTM A148, Grade 105-85), with thread ground and polished. Helix angle of worm gear shall be designed and cut at 3.5 degrees or less to prevent creep, unless other means to prevent creep are employed and are approved by the City. The actuator shall prevent creeping of the valve under all flow conditions. Provide reduction gearing to meet maximum torque and pull design requirements. The reduction gearings shall run in a proper lubricant.
6. Actuators shall open valve by turning counterclockwise.

## 2.4 RUBBER PARTS

- A. Rubber parts exposed to water shall be made of a rubber compound that is resistant to free chlorine and monochloramine concentrations up to 10 mg/l in the fluid conveyed.

## 2.5 MATERIALS

- A. Valve body shall be cast only and shall be equal to or better than ASTM A216 gr. WCB material with wall thickness to exceed 37.5 mm. Comply with applicable ASME B16.34 specifications.
- B. Valve disc shall be cast from stainless steel per CF8M 316 Stainless Steel as a minimum.
- C. Valve shaft material shall be high strength stainless steel, such as ASTM 182 gr. F6a material, and shall meet the requirements of ASTM A564 Type 630, H1150M (17-4 PH).
- D. Valve seal ring shall be laminate type of duplex stainless steel and graphite. Stainless steel meeting ASTM UNS S31803 SS (22-percent chrome ferritic-austenitic) may be used.
- E. Valve packing shall be a combination of graphite die-formed rings and braided graphite rope anti-extrusion rings.
- F. Packing gland and end-cap shall be stainless steel.
- G. Valve bottom flange bolting must be in compliance with ASME B31.1 and B31.3, and shall use at least four (4) retaining bolts. Material of bolting to be ISO 3506 A2 gr. 304 SS.

## PART 3 - EXECUTION

### 3.1 PAINTING AND COATING

- A. Coat metal valves and accessories with 12 mil minimum fusion bonded epoxy or approved equal. Apply the specified prime coat at the place of manufacture. Line the interior metal parts of metal valves 4-inches and larger, excluding seating areas and bronze and stainless steel pieces, with 12 mil minimum fusion bonded epoxy or approved equal. Lining and coating of valves shall be in accordance with AWWA C-550.

### 3.2 MOUNTING GEAR ACTUATORS

- A. The manufacturer shall select and mount the gear actuator and accessories on each valve and stroke the valve from fully open to fully closed prior to shipment.

### 3.3 VALVE TESTING

- A. Test the valve interior linings at the place of application with a low-voltage (22.5 to 80 volts, with approximately 80,000-ohm resistance) holiday detector, using a sponge saturated with a 0.5-percent sodium chloride solution. The lining shall be holiday free.
- B. Measure coating thickness with a calibrated magnetic- type or electronic dry-film thickness gauge. Provide dry-film thickness gauge as manufactured by Mikrotest or Elcometer. Check each for the correct dry-film thickness. Do not measure within eight hours after application of the coating.
- C. Pressure test the valve body and the valve seat according to the pressures and procedures described in this specification or in the AWWA Standard. Valve shall show zero leakage.
- D. Operate manual valve through 10 full cycles of opening and closing. Valve shall operate from full open to full close without sticking or binding. If valve sticks or binds, repair or replace the valve and repeat the tests.
- E. Actuators shall operate valve from full open to full close through 10 cycles without binding or sticking. The pull required to operate a hand wheel under full design pressure shall not exceed 80 pounds. The torque required to operate the valve having 2-inch AWWA nuts under full design pressure shall not exceed 150 foot-pounds. If actuators stick or bind or if pulling forces and torques exceed the values stated previously, repair or replace the actuators and repeat the tests. Fully lubricate actuators in accordance with the manufacturer's recommendations prior to operating.
- F. Actuator stops shall withstand a pull of 200 pounds for handwheel or chainwheel actuators, and an input torque of 300 foot pounds for 2-inch AWWA nuts, without damage to any component. Repair or replace any damaged component and repeat the test until the actuator passes the test without damage.

### 3.4 SHIPPING

- A. Package the equipment adequately to prevent damage during shipping. Before shipping flanged valve, clean flanges by wire brushing and coat unpainted machined surfaces of the flange with strippable, rust-preventative compound. Fasten full-face flange protectors of waterproof plywood or weather-resistant pressboard, of a diameter at least that of the outside of the flange, to each flange to protect both the flange and the interior of the valve. Small valves may be fully packaged at the manufacturer's option. Bolt or otherwise fasten valves to skids or other supports so as to preclude damage in subsequent handling.

### 3.5 VALVE WARRANTY

- A. The manufacturer shall warrant the valve and valve actuator to be free from defects in materials, workmanship, and performance for five years from the date of acceptance of the

valve by the City. Contractor shall provide the City a copy of the warranty per Scontrolection 6-8.3, Warranty.

**\*\*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.

##### 1.2 DESCRIPTION OF WORK

- A. 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.
- B. The Contractor shall install, wire, and connect all equipment and items furnished by CITY 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.
- C. 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.
- D. 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 interference's 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 Standard Specifications for Public Works Construction (SSPWC) Subsection 209-1, together with the latest adopted editions of the Regional and 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  
  
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 Standard for	Grounding and Bonding Equipment, Safety
ASTM B3	Soft or Annealed Copper Wire
ASTM B8	Specification for Concentric-Lay-Stranded 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	Cross-Linked, Thermosetting, Polyethylene Wire and Cable
ICEA S-68-516, NEMA WC8	Ethylene Propylene Rubber Insulated Wire and Cable
NEMA 250 maximum	Enclosures for Electrical Equipment (1,000 volts)
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 CITY's equipment, unless otherwise approved by the CITY.
- 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 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 3-foot length of rigid conduit shall be used to connect the nonmetallic conduit to the fitting.

## 2.3 MISCELLANEOUS SPECIALTY 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 or approved equal.
- 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 Crouse-Hinds, 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 Metallic 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 nonshrink 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. All conductors, including ground conductors, shall be copper. Insulation shall bear UL label and the manufacturer's trademark, type, voltage, and temperature rating, and conductor size. Wire and cable shall be the products of American, Rome Cable, Okonite, Houston Wire and Cable, or equal.
- B. Provide lightning and transient surge protection on each end of the radio coax 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. Coat 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, antennas, conduit, and cables.
- B. 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, and wind loading requirements for antenna masts.

1.2 SUBMITTALS

- A. Include the following information for each site in the submittal for this section:
  - 1. Shop drawings of parts and assembly.
  - 2. Descriptive data sheets, literature, bulletins, and related data annotated as necessary to describe the antenna tower or pole and related equipment to be furnished.
  - 3. Wind Zone information.
  - 4. Specific arrangement, dimension drawings, erection and assembly drawings for the antenna tower or pole supplied. This shall include all engineering drawings and calculations for the antenna tower or pole, pier foundation, anchor bolts, etc., as prepared by a registered Professional Engineer.

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 REMOTE CONTROL PANEL AND ANTENNA MAST

- A. The Contractor shall be responsible for the following installation work:
  1. Mounting of Transmitter Panel and Flow Transmitter Panel.
  2. At the base, connect to a 3/4 inch diameter, 10 foot, copper ground rod.
- 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: 208 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, 208 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.

### 3.5 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 16640  
CATHODIC PROTECTION SYSTEM**

**PART 1 - GENERAL**

**1.1 THIS SECTION INCLUDES**

- A. The WORK of this Section includes providing a complete cathodic protection system for the following structure as outlined in this Section and on the Drawings:
  - 1. Approximately 5,700 linear feet of 66-inch mortar-lined and tape coated steel pipeline. The exterior of the pipeline shall have a concrete armor coat over the tape, field applied mortar over the tape coated joints and field applied mortar over any pipeline fittings or appurtenances that are not encapsulated in petrolatum wax tape.
- B. Electrical isolation of the structure from adjacent metallic structures, steel reinforced concrete structures, structures of dissimilar metal or dissimilar coatings, conduits and all other metallic components that may impact the operation of the cathodic protection system.
- C. Installation of an impressed current rectifier, deep anode well, flush mounted test stations and all other work described herein and on the Drawings.
- D. Bonding of all non-welded, non-insulating pipe joints with stranded copper cables.
- E. Provision of electrical power for rectifiers including any permits, trenching, conduits, services meters, and other items required. Not all required items are shown on the Drawings.
- F. Testing of system during installation including electrical continuity of the pipeline.
- G. Cleanup and restoration of work site.
- H. Testing the system after installation and backfill (Final System Checkout).

**1.2 REQUIREMENTS**

- A. If the products installed as part of this Section are found to be defective or damaged or if the WORK of this Section is not in conformance with these Specifications then the products and WORK shall be corrected at the CONTRACTOR's expense.
- B. Any retesting required due to inadequate installation or defective materials shall be paid for by the CONTRACTOR.
- C. The WORK also requires that one Supplier or Subcontractor accept responsibility for the WORK as indicated, but without altering or modifying the CONTRACTOR's responsibilities under the Contract Documents.
- D. The WORK also requires coordination of assembly, installation and testing between the pipeline contractor and any cathodic protection material supplier or subcontractor.

**1.3 RELATED SECTIONS**

- A. The WORK of the following Sections applies to the WORK of this Section. Other Sections of the Specifications, not referenced below, shall also apply to the extent required for proper performance of this WORK.
  - 1. Site Safety and Regulatory Requirements
  - 2. Excavation, Trenching, Backfilling, and Compacting
  - 3. Piping
  - 4. Cast-In-Place Concrete
  - 5. Protective Coatings

**1.4 REFERENCED SPECIFICATIONS, CODES AND STANDARDS**

- A. The WORK of this Section shall comply with the current editions of the following codes and standards:

1. AWWA American Water Works Association
  - a. C217 Microcrystalline Wax and Petrolatum Tape Coating Systems for Steel Water Pipe and Fittings
2. ASTM ASTM International
  - a. A518 Standard Specification for Corrosion-Resistant High-Silicon Iron Castings
  - b. D1248 Standard Specification for Polyethylene Plastics Extrusion Materials for Wire and Cable
  - c. D1785 Standard Specification for Polyvinyl Chloride (PVC) Plastic Pipe; Schedules 40, 80, and 120.
  - d. C94 Standard Specification for Ready-Mixed Concrete
  - e. B3 Standard Specification for Soft or Annealed Copper Wire
  - f. B8 Standard Specification for Concentric-Lay-Stranded Copper Conductors, Hard, Medium-Hard, or Soft
3. AASHTO American Association of State Highway and Transportation Officials
  - a. H20 Specification for Highway Bridges
4. NACE NACE International
  - a. SP0169 Standard Practice, Control of External Corrosion on Underground or Submerged Metallic Piping Systems
  - b. SP0200 Steel-Cased Pipeline Practices
  - c. SP0286 Electrical Insulation of Cathodically Protected Pipelines
  - d. TM0497 Measurement Techniques Related to Criteria for Cathodic Protection on Underground or Submerged Metallic Piping Systems
  - e. SP0572 Design, Installation, Operation and Maintenance of Impressed Current Deep Groundbeds
5. NFPA National Fire Protection Association
  - a. NFPA 70 National Electric Code (NEC)
6. DWR Department of Water Resources
  - a. CSB No. 74 California State Bulletin Number 74
7. SDG&E Electric & Gas Service Requirements (Greenbook)
8. NEMA National Electrical Manufacturers Association
  - a. 250 Enclosures for Electrical Equipment (1,000 Volts Maximum)
  - b. TC2 Electrical Polyvinyl Chloride (PVC) Tubing and Conduit
  - c. TC3 PVC Fittings for Use with Rigid PVC Conduit and Tubing
9. UL Underwriters Laboratories

Rigid Metal Conduits

- a. 514B Fittings for Cable and Conduit

B. Whenever the Drawings or these Specifications require a higher degree of workmanship or better quality of material than indicated in the above codes and standards, these Drawings and Specifications shall prevail.

1.5 PERMITS AND JOB ACCESS

- A. Prior to the start of construction, the CONTRACTOR shall apply to the required authorities for permits required for installation of the cathodic protection system.
- B. The CONTRACTOR shall contact Underground Service Alert prior to commencing

construction to locate existing utilities in the area of construction. Existing utilities include, but are not limited to, water lines, gas lines, telephone, street lights, sewer and storm drains and overhead and underground electric utilities.

- C. The CONTRACTOR shall be responsible for reviewing the rectifier locations to determine if there are any conflicts with obtaining power from the indicated locations. The CONTRACTOR shall report any conflicts to the ENGINEER prior to proceeding with the Work.
- D. The CONTRACTOR shall submit an application to the local power company for AC power to the new rectifier. CONTRACTOR shall be responsible for all fees and expenses associated with providing power to the rectifiers.
- E. Traffic control shall satisfy the requirements of the governing locality.

#### 1.6 QUALITY ASSURANCE

- A. Installation of the cathodic protection equipment shall be performed by individuals having experience in the installation of the cathodic protection equipment described herein.
- B. All deep well installations shall be installed in accordance with CSB No. 74 well standards and the applicable sections on wells from local regulations.
- C. All testing required to be performed by a “qualified corrosion technician” shall be performed by a NACE Level 2 CP Technician under the supervision of a Corrosion Engineer. A Corrosion Engineer is a Registered Professional Corrosion Engineer or a NACE Level 4 Cathodic Protection Specialist.

#### 1.7 SUBMITTALS

- A. The following shall be submitted to the ENGINEER prior to any equipment installation.
  - 1. Catalog cuts, bulletins, brochures, or data sheets for all materials specified herein.
  - 2. Certification that the proposed equipment and materials meet the Specifications and the intent of the Specifications.
  - 3. Written certification of experience required.
  - 4. Schedule including the expected start date and planned completion date.
  - 5. Copy of well drilling permits.
- B. The following shall be submitted to the ENGINEER after completion of the WORK.
  - 1. Wire connection testing.
  - 2. Insulating joint testing, before and after backfill.
  - 3. Casing insulator testing, before and after backfill.
  - 4. Electrical Continuity Testing
  - 5. Well completion report.
  - 6. Electrical log with anode-to-earth resistances.
  - 7. System check-out report.
  - 8. Record Drawings shall be submitted to and approved by the ENGINEER before the WORK is considered complete.
- C. The following shall be included in the rectifier’s Owner’s Manual:
  - 1. Operations and maintenance instructions.
  - 2. List of spare parts recommended for 2 years of successful operation.

#### 1.8 INTERFERENCE AND EXACT LOCATIONS

- A. The locations of cathodic protection equipment, test stations, devices, outlets and appurtenances as indicated are approximate only. Exact locations shall be determined by the CONTRACTOR in the field subject to the approval of the ENGINEER.

- B. The CONTRACTOR shall field verify all data and final locations of work done under other Sections of the Specifications required for placing of the electrical work.
- C. In case of interference with other work or erroneous locations with respect to equipment or structures, the CONTRACTOR shall furnish all labor and materials necessary to complete the WORK in an acceptable manner.

## **PART 2 - PRODUCTS**

### **2.1 GENERAL**

- A. All materials installed must be new. All equipment and materials supplied shall be similar to that which has been in satisfactory service for at least 5 years.

### **2.2 RECTIFIERS**

- A. Rectifier shall be a Model ES-II rectifier featuring an air cooled single phase AC input and 12 Volts, 5 Amperes DC output as manufactured by Universal Rectifiers, Inc., Corppower Rectifiers, Inc., or approved equivalent.
- B. Rectifier shall be designed to operate continuously at an ambient temperature of 50°C without damage to the rectifier components.
- C. Transformer:
  - 1. Two-winding, insulating type, meeting requirements of NEMA and UL.
  - 2. Rectifier shall be capable of operating continuously at the rated output current at any voltage from zero to 100% without damaging any rectifier components. Full rated DC output voltage shall be adjustable by not less than 18 equal steps from approximately 5% of rated voltage to full rated output voltage. This adjustment shall be accomplished with silver plated or stainless steel connectors and adjustment link bars.
- D. Rectifying element shall be a full-wave bridge, silicon diode stack with efficiency filter, metal oxide thyristors, and current-limiting devices for overvoltage and overcurrent protection of stack. Silicon stacks shall be equipped with silicon diodes rated at a minimum of 800 peak inverse Volts.
- E. All rectifiers shall have overload and lightning protection for both AC and DC circuits.
- F. Both a panel voltmeter and a panel ammeter shall be provided. Voltmeter and ammeter shall be calibrated and adjusted at the factory.
- G. Rectifier shall be installed with a GPS300 synchronized interrupter manufactured by MicroMax instruments, or approved equivalent.
- H. Electrical tests shall be performed by the manufacturer and recorded as listed below:
  - 1. AC Volts Input
  - 2. AC Amperes Input
  - 3. Apparent Watts Input
  - 4. True Watts Input
  - 5. Power Factor
  - 6. DC Volts Output
  - 7. DC Amperes Output
  - 8. DC Watts Output
  - 9. Conversion Efficiency
  - 10. Dielectric Strength
  - 11. Transformer Primary to Ground
  - 12. Transformer Secondary to Ground
  - 13. Transformer Primary to Secondary
  - 14. Stack AC to Ground
  - 15. Stack DC to Ground
  - 16. Ripple Voltage at Full Output

- I. The following shall be provided for the rectifier. Each item shall be provided in a waterproof bag or container.
  1. Operations and Maintenance Manual
  2. Circuit Diagram
  3. Electrical Test Report

2.3 ELECTRICAL ENCLOSURE

- A. Electrical enclosure shall be a Myers MSX cabinet enclosure conforming to NEMA 250 and shall be sized as required. Enclosure shall be keyed to use existing City of San Diego rectifier cabinet locks.
- B. Electrical enclosure shall be made of 10-gauge steel and shall be coated with a baked enamel finish.
- C. Enclosure shall have a single door with a full length hinge and a 3-point lockable latch.
- D. Enclosures shall be equipped with permanent identification tags affixed to the outside front door. The identification tag shall have white engraving for identification of the rectifier. Minimum height of lettering shall be 3/4-inch. The tags shall have the following legend:

City of San Diego  
Midcity Pipeline  
Cathodic Protection Rectifier

2.4 HIGH SILICON CAST IRON ANODES

- A. Cast iron anodes shall be Type 2684 Z Corrosion Resistant High Silicon Iron Castings manufactured by Anotec Industries, or approved equal, and in accordance with ASTM A518, Grade 3.
- B. High silicon cast iron anodes shall be tubular type anodes with a length of 84-inches, a nominal diameter of 2.7-inches, a minimum surface area of 4.9-square feet, a minimum weight of 70 pounds, and shall be furnished with the wire attached to the interior of the anode and sealed using manufacturer's standard connection.
- C. The wire attached to the anodes shall be stranded copper wire and insulated for 600 Volts. Wire size shall be AWG No. 6. Wire insulation shall be a dual extrusion type. The outer insulation jacket shall be HMWPE and the inner insulation shall be fluorinated polymer. The wire shall be Halar cathodic protection wire or equivalent and shall conform to the requirements of ASTM D1248 Type 1, Class C, Grade 5. Anode wire connection shall have a pulling strength exceeding the wire's tensile strength. Any damage to the wire insulation or anode shall require complete replacement of the wire and anode.
- D. The resistance of each anode wire connection shall not exceed 0.004 Ohms. Each anode wire connection should be tested for conformance with these Specifications. A record of tests shall be submitted to the ENGINEER. The records shall include a minimum of three copies of the following information:
  1. Anode numbering system to identify anode under test
  2. Anode wire length
  3. Resistance value as indicated by test
  4. Test equipment
  5. Test method
- E. Anodes shall be individually labeled with the length of lead wire and anode number. Anodes shall be consecutively numbered with the deepest anode being Number 1.
- F. Anode wires shall be of one continuous length without splices from the anode connection to the junction box. Anode wires with the attached anodes shall be shipped to the job site with the wire wound on a reel. The minimum core diameter of the reel shall be 5-1/2 inches. The anode wire insulation shall be free of surface

damage such as nicks, abrasions, scratches, etc., in all respects throughout the entire length of the wire. Precaution shall be taken during fabrication, transportation and installation of the anodes to ensure that the wire is not kinked or sharply bent. Bends sharper than 2-1/2 inches in radius are not permissible.

#### 2.5 CALCINED COKE BREEZE

- A. Backfill material for impressed current anodes shall be calcined petroleum coke breeze with a resistivity of 25 Ohm-cm or less when tested with an applied pressure of 2 psi.
- B. The calcined coke breeze backfill shall have the following chemical properties:
  - 1. Fixed carbon 98.0% minimum
  - 2. Ash 0.5% maximum
  - 3. Sulfur 2.0% maximum
  - 4. Volatile matter 1.0% maximum
  - 5. Moisture 1.0% maximum
- C. Coke breeze backfill shall be Loresco SC-2, Loresco SC-3, Asbury 251, Asbury 218-R or approved equivalent

#### 2.6 ANODE VENT PIPING

- A. Plastic conduit for the impressed current anode vent piping shall be 2-inch diameter PVC, Schedule 80, conforming to ASTM D1785, Type 1 Grade 1, NEMA TC2 for conduit and TC3 for fittings.
- B. Plastic conduit in the coke breeze column shall be a slotted vent pipe featuring a slot width of 0.100 inches and 4 slots per inch.

#### 2.7 ANODE CENTRALIZERS

- A. Anode centering devices shall be Item No. Cen-52 as manufactured by Mesa Products, Model CENTRA2 as manufactured by Farwest Corrosion, or approved equivalent. Anode centralizers shall be submitted to the ENGINEER for acceptance prior to use.

#### 2.8 ANODE TERMINAL BOARD

- A. Panel boards shall be made of 1/4-inch thick phenolic plastic sized as indicated on the Drawings.
- B. Connection hardware shall be brass or bronze. All connections shall be double nutted bolts with lock washers.
- C. Copper bus bar shall be 1/8-inch thick and sized to fit. The copper bus bar shall be per ASTM B187, 98% conductivity.

#### 2.9 SOLDERLESS LUG CONNECTORS

- A. Solderless lug connector shall be made of brass or copper with a brass screw. The lug shall be designed for direct burial and shall be appropriately sized for the connection wire. The lug shall be ILSCO Type XT-6DB or approved equivalent.

#### 2.10 SHUNTS FOR IMPRESSED CURRENT ANODES

- A. Shunts for impressed anodes for the impressed current anode systems shall be 0.01-Ohm and 8-Ampere capacity. Shunts shall be Type JB as manufactured by Holloway or equivalent.

#### 2.11 CONCRETE TRAFFIC VALVE BOXES

- A. Traffic valve boxes shall be rated to withstand AASHTO H20 traffic loading. The traffic valve boxes shall be G5 Utility Boxes as manufactured by Christy Concrete Products, Inc., No. 3RT Utility Box as manufactured by Brooks Products or approved equivalent. Traffic box covers for test stations shall be cast iron with welded bead legend and labeled "Corrosion" as required. Concrete Traffic Valve Boxes and traffic box lids shall conform to SDW-128 and City of San Diego standards.

#### 2.12 READY-MIXED CONCRETE

- A. Ready-mixed concrete shall be in accordance with ASTM C94.

- B. Concrete used for anode well concrete cap shall have a minimum compressive strength of 4000 PSI.
- 2.13 CONDUIT AND FITTINGS
- A. The minimum conduit size shall be 1 inch unless otherwise indicated. Refer to NFPA 70 (NEC) for additional conduit size requirements.
  - B. Conduit and fittings placed below grade shall be PVC, Schedule 80.
  - C. Conduit and fittings placed above grade shall be rigid steel. Rigid steel conduit shall be galvanized conforming to UL 6.
  - D. Conduit straps shall be a 2-hole galvanized steel conduit strap.
  - E. Fittings for use with rigid steel conduit shall be galvanized cast ferrous metal, with gasketed covers, Crouse Hinds Condulets, Appleton Unilets, or equivalent. Rigid metallic conduit fittings shall be galvanized conforming to NEMA FB 1, UL 514B listed.
  - F. Union couplings for conduits shall be the Erickson or Appleton type EC or 0-Z Gedney 3-piece Series 4, or equivalent.
- 2.14 UTILITY WARNING AND IDENTIFICATION TAPE
- A. The warning and identification tape shall be an inert plastic film designed for prolonged underground use. The tape shall be a minimum of 6 inches wide and a minimum of 4 mils thick. The tape shall be continuously printed over the entire length with the wording "CAUTION: CATHODIC PROTECTION CABLE BURIED BELOW". The wording shall be printed using bold black letters. The color of the tape shall be red.
- 2.15 WIRES
- A. Conductors shall consist of stranded copper of the gauge indicated. Wire sizes shall be based on American Wire Gauge (AWG). Copper wire shall be in conformance with ASTM Designations B3 and B8.
  - B. All wires terminating on the anode terminal board or in a test station shall have a wire identifier attached within 4 inches from the end of wire at the terminal board, prior to backfill, as specified under "Wire Identification".
  - C. High molecular weight polyethylene (HMWPE) insulating jackets shall conform to ASTM D1248.
  - D. Test Station: Single-conductor, No. 6 AWG stranded copper with HMWPE insulation. Multi-stranded test leads or wire splicing is not allowed.
  - E. Insulation Colors: As shown on Drawings.
- 2.16 WIRE IDENTIFIERS
- A. Wire identification tags shall be in accordance with the City of San Diego standard drawing SDW-131.
- 2.17 EXOTHERMIC WELDS
- A. Exothermic welds shall be in accordance with the manufacturer's recommendations. Exothermic welds shall be Cadweld, as manufactured by Erico Products, Inc. or Thermoweld as manufactured by Continental Industries, Inc., or approved equivalent. Duxseal packing as manufactured by Johns-Manville or approved equivalent shall be used where necessary to prevent leakage of molten weld metal.
  - B. The shape and charge of the exothermic weld shall be chosen based on the following parameters:
    1. Pipe material
    2. Pipe size
    3. Wire material/size and requirement for sleeves
    4. Number of strands to be welded
    5. Orientation of weld (vertical or horizontal)

- 2.18 CABLE-TO-PIPE COATING MATERIAL
- A. Coating material for exothermic weld connections to the tape wrapped/mortar overcoated steel pipelines shall be two-part epoxy resin such as Scotchcast Electrical Insulating Resin 4 manufactured by the 3M Company, or approved equivalent.
  - B. Coating material for exothermic weld connections to the mortar coated steel pipelines shall be two part epoxy resin such as Scotchcast Electrical Resin 8 manufactured by the 3M Company, or approved equivalent.
  - C. Coating material for exothermic weld connection to the steel casings shall be two-part epoxy putty such as ProPoxy 20 as manufactured by Hercules Chemical Company, or approved equivalent. The epoxy putty shall be non-conductive and have compression strength of 18,000 psi when cured.
- 2.19 DIELECTRIC INSULATING FLANGE KITS
- A. Insulating flange gaskets shall include full faced gaskets, insulating sleeves and washers and steel bolts, nuts and washers. The complete assembly shall have a pressure rating equal to or greater than the flanges between which it is installed. Sleeves, gaskets and insulating washers shall be G-10 composite materials and have a dielectric constant of 300 Volts per mil, minimum. Steel washers shall fit well within the bolt facing on the flange. Insulating washers shall fit within the bolt facing the flange over the outside diameter of the sleeve.
- 2.20 PETROLATUM TAPE
- A. Petrolatum tape system shall be Trenton Primer and #1 Wax-tape, as manufactured by Trenton Corp., or Denso Paste and Densyl Tape by Denso North America, Inc., or approved equivalent.
- 2.21 NEOPRENE MAT
- A. A 1/4-inch thick neoprene mat shall be installed between the project pipeline and the foreign pipeline at each joint pipeline test station. Each mat shall be sized so that the edge of the mat extends a minimum of 24 inches from both sides of the foreign pipeline.

### **PART 3 - EXECUTION**

- 3.1 STORAGE OF MATERIALS
- A. All materials and equipment to be used in construction shall be stored in such a manner to be protected from detrimental effects from the elements. If warehouse storage cannot be provided, materials and equipment shall be stacked well above ground level and protected from the elements with plastic sheeting or other method as appropriate.
- 3.2 EXCAVATION AND BACKFILL
- A. Buried wires shall be placed in conduit and have a minimum cover of 36-inches.
  - B. Caution tape shall be installed above buried wire. Caution tape shall be installed a minimum of 6 inches above underground wires and conduits.
  - C. Anode wire identification tags shall be placed on the wires prior to placing wire in conduit or backfilling.
- 3.3 RECTIFIER
- A. Approximate locations of rectifier and electrical power are shown on the Drawings. Rectifier installation includes provision of AC power to the rectifier by the CONTRACTOR. CONTRACTOR shall furnish and install all required wiring, conduits, cables, meters, splice boxes, and equipment as necessary for operation of the rectifier and as required by the local power agency.
  - B. The CONTRACTOR may propose an alternative rectifier location to the CITY for review and approval. The reinforced concrete pad shall be constructed such that water will not collect against the rectifier cabinet. The concrete pad at the Cone Valve



location shall extend 2 inches above grade. The asphalt adjacent to the concrete pad shall slope away from the concrete pad for a distance of 1 foot. The vent pipe riser and conduits into the enclosure shall be cast into the concrete pad. After the concrete is set, the enclosure shall be securely anchored to the pad with expanding anchor bolts. Use leveling nuts below the cabinet flange to create space for the grout seal. Apply the non-shrink grout as shown on the enclosure detail.

### 3.4 IMPRESSED CURRENT ANODE INSTALLATION

- A. Impressed current anode beds shall be installed in accordance with NACE RP0572, CSB No. 74, San Diego County Well Standards, and these Specifications.
- B. Well Drilling
  - 1. The CONTRACTOR shall obtain and pay for all fees and permits required for well drilling.
  - 2. Drilling of the anode well shall be done in the presence of the ENGINEER. A minimum of 48 hours notice shall be given by the CONTRACTOR to the ENGINEER prior to drilling the well. Drilling of the well shall begin early enough in the day to ensure completion of the well during regular working hours.
  - 3. The CONTRACTOR shall protect the well bore from the intrusion of contaminants into the hole at all times. The CONTRACTOR is responsible for the cost of all cleanup associated with contamination of the well and/or job site resulting from the CONTRACTOR's WORK.
  - 4. Fresh water shall be circulated from the bottom of the hole to clear the well of drilling mud and cuttings after the well is drilled.
  - 5. Loading of anodes and other equipment in the well shall be done in the presence of the ENGINEER. A minimum of 48 hours notice shall be given by the CONTRACTOR to the ENGINEER prior to loading anodes. Loading of the anodes into the well shall begin early enough in the day to ensure completion of all loading, including backfilling, during regular working hours.
  - 6. The well shall be covered with a steel trench plate or other heavy device that blocks access and that cannot be removed by hand whenever the well is left unattended.
- C. Well Casing
  - 1. The CONTRACTOR may elect to install the well with or without a casing. In the event that the well collapses, for any reason, including the elimination of the casing, the well shall be relocated, redrilled and the original hole abandoned at the CONTRACTOR's expense. Only a metallic casing may be used in the coke breeze column.
- D. Vent Pipe
  - 1. The bottom of the vent pipe shall be securely capped.
  - 2. The top of the vent pipe shall be temporarily sealed during the coke breeze loading process. Any foreign material entering the vent pipe shall be removed.
- E. Anodes
  - 1. The ENGINEER shall visually inspect the insulation on the anode lead wire for abrasion or other damage to the insulation and wire as the anode is lowered into place. Anodes with damaged insulation or wire are not acceptable and shall not be installed. Splices are not allowed on the anode wire.
  - 2. Attach the centering devices to the anodes using the adjustable stainless steel bands. The terminal end of the anode cables shall be identified with permanent cable markers. Anode No. 1 shall be attached to the bottom section of the anode vent pipe with adjustable stainless steel bands and lowered into the hole. A digital soil resistance meter, furnished and operated by the ENGINEER, shall

be connected between the anode lead wire for Anode No. 1 and the drain cable. The drain cable must be installed and be accessible to the ENGINEER during time of testing. The CONTRACTOR shall stop lowering the anode at 10-foot intervals to tape the anode lead to the vent pipe and to allow the ENGINEER to measure the resistance profile of the anode well. This shall continue to the bottom of the hole and the vent pipe shall be secured in place.

3. Continuing with Anode No. 2, with centralizers attached, the anodes shall be lowered into the hole supported by the attached lead wires. The CONTRACTOR shall fabricate an apparatus that allows the anodes to be lowered by the lead wire but does not bend the wire into a radius less than 2.5 inches. All sharp edges on the centering device assembly shall be taped with vinyl electrical tape to preclude damaging any wires while lowering anodes into place. The vent pipe shall not be attached to Anode No. 2. The ENGINEER may adjust the depths of the individual anodes to avoid high resistance soil layers. When an anode has been placed at the final depth it shall be securely fixed in that position prior to coke breeze backfill. Anodes shall not be backfilled until the ENGINEER has inspected the placement of the anodes and given permission to backfill.

F. Coke Breeze Backfill.

1. Coke breeze shall be placed in the hole at a steady rate to ensure that the coke breeze does not bridge or block the hole. The hole shall be kept completely full of water during placement of backfill.
2. Settling of the backfill and coverage of the anodes will be determined by measuring the anode-to-earth resistance from the digital resistance meter. During coke breeze backfill, the ENGINEER will measure the resistance between the lowermost uncovered anode and the protected structure. Coverage of the anode will be indicated by a rapid decrease in resistance, normally by at least 50%. As soon as coverage of a lower anode is indicated, the circuit shall be attached to the next highest anode in the hole. Testing will continue until coverage of all anodes has been verified. The ENGINEER shall record the resistance of each backfilled anode. Coke breeze shall be added to a minimum of 20 feet above the top anode. The CONTRACTOR shall sound the anode hole with a weighted tape measure and determine the final height of the coke breeze column.
3. Coke shall be allowed 24 hours to settle. After 24 hours, the coke column shall be topped off as required to achieve the specified coke column length.
4. Incomplete coverage of each anode with coke breeze shall be cause for rejection of the anode well.
5. The CONTRACTOR shall record the total weight of coke breeze placed in each anode well.

G. Well Seal

1. Backfilling operations above the coke breeze column shall begin no sooner than 24 hours after installation of the coke breeze to allow for settling. Backfilling shall be done continuously, without interruption, until the hole is sealed.
2. Collapse of the hole prior to the introduction of the seal material shall be cause for abandonment of the well at the CONTRACTOR's expense.
3. Sealing materials shall not be allowed to drop from the top of the hole. All materials shall be pumped into the hole from the top of the coke breeze column to the top of the hole.
4. If well casing materials are used in the construction of the well, then the annular space between the well bore and the casing shall also be sealed with a

- conductive grout.
    - 5. Sealing material shall not enter the vent pipe.
    - 6. The CONTRACTOR shall record the volume of sealing material installed in the hole.
  - H. Storage and disposal of drilling fluids, cuttings and mud:
    - 1. During the drilling and loading process, drilling fluids, cuttings, and mud shall be stored onsite in uncontaminated, watertight, lockable debris boxes. Alternative storage methods may be utilized only with prior approval of the ENGINEER.
    - 2. Drilling mud and cuttings shall be disposed of by the CONTRACTOR at a suitable disposal site in accordance with all local, state, and federal regulations.
- 3.5 TEST STATIONS
- A. Test stations shall be installed at the approximate locations shown on the Drawings. Flush mounted test stations shall be located behind the curb and other areas not subject to vehicular traffic to allow for safe access by City monitoring personnel which will not require traffic control. Placement in the center median is not permitted. The CONTRACTOR shall field verify final location of the test stations. Wire identifiers shall be placed on all wire prior to backfill and installation of test stations.
  - B. Installation of test stations shall be done in the presence of the ENGINEER. A minimum of 48 hours notice shall be given by the CONTRACTOR to the ENGINEER prior to installation of a test station. Installation of test stations shall begin early enough in the day to ensure completion of the installation during regular working hours.
  - C. The CONTRACTOR shall notify the owner of foreign utility piping for which joint pipeline test stations are to be installed. Notification shall be provided at least 2 weeks in advance. Test leads to foreign pipelines shall be installed in the presence and to the satisfaction of a representative of the foreign pipeline owner.
  - D. The CONTRACTOR shall provide global positioning system (GPS) coordinates of each test station location with a minimum accuracy of 1 meter or 3 feet. The CONTRACTOR shall submit the GPS coordinates of the test stations to the ENGINEER after installation.
- 3.6 WIRES
- A. Buried wires shall be placed in conduit and laid straight without kinks. Each wire run shall be continuous in length and free of joints or splices, unless otherwise indicated. Care shall be taken during installation to avoid punctures, cuts or other damage to the wire insulation. Damage to insulation shall require replacement of the entire length of wire at the CONTRACTOR's expense.
  - B. 18 inches of slack (coiled) shall be left for each wire at each flush-to-grade test station. Wire slack shall be sufficient to allow removal of wire extension for testing. Wire shall not be bent into a radius of less than 2 inches.
  - C. The wire conduits must be of sufficient diameter to accommodate the wires. This shall be determined by the number and size of wires in accordance with the applicable electrical codes and standards.
- 3.7 WIRE IDENTIFIERS
- A. All wires shall be coded with wire identifiers.
  - B. Wire identifiers shall be placed on the wires prior to backfill.
- 3.8 EXOTHERMIC WELD CONNECTIONS
- A. Exothermic weld connections shall be installed in the manner and at the locations indicated. Coating materials shall be removed from the surface over an area of sufficient size to make the connection. The surface shall be cleaned to bare metal by grinding or filing prior to welding the conductor. The use of resin impregnated grinding

wheels will not be allowed. A copper sleeve shall be fitted over the conductor. Only enough insulation shall be removed such that the copper conductor can be placed in the welding mold.

- B. The CONTRACTOR shall be responsible for testing all test lead welds. The ENGINEER, at his or her discretion, shall witness these tests.
- C. After the weld has cooled, all slag shall be removed and the metallurgical bond shall be tested for adherence by the CONTRACTOR. A 22-ounce hammer shall be used for adherence testing by striking a blow to the weld. Care shall be taken to avoid hitting the wires. All defective welds shall be removed and replaced.
- D. After backfilling the pipe, all test lead pairs shall be tested for broken welds using a standard ohmmeter. The resistance shall not exceed 150% of the theoretical wire resistance as determined from published wire data.
- E. The CONTRACTOR shall inspect both the interior and exterior of the pipe to confirm that all coatings and linings removed or damaged as a result of the welding have been repaired. The CONTRACTOR shall furnish all materials, clean surfaces and repair protective coatings and linings damaged as a result of the welding. Repair of any coating or lining damaged during welding shall be performed in accordance with the coating or lining manufacturer's recommendations.
- F. All exposed surfaces of the copper and steel shall be covered with insulating materials as indicated.
- G. Mortar shall be applied to the project pipeline at all wire-to-pipe connections. The mortar shall match the exterior mortar. Coating repairs shall be performed in accordance with the coating Manufacturer's recommendations.

### 3.9 PETROLATUM TAPE SYSTEM APPLICATION

- A. Petrolatum tape system shall be applied on insulating joints and as indicated in the Drawings. Petrolatum tape system shall be applied in accordance with AWWA C217, and these Specifications. The materials shall be applied according to the Manufacturer's recommendations.
- B. All loose scale shall be removed from the surface to be coated with hand tools (wire brush, scraper, rags). Debris and moisture shall be wiped from surface with clean rag. Petrolatum tape shall be applied immediately after applying the primer, using a 1-inch overlap. A spiral wrap shall be used and a slight tension shall be applied to ensure that there are no air pockets or voids. After applying the tape, the applicator shall firmly press and smooth out all lap seams and crevice areas. The tape shall be in tight intimate contact with all surfaces.

### 3.10 WIRE CONNECTIONS

- A. After installation, all wire connections shall be tested at the test station locations, by the CONTRACTOR, to ensure that they meet the requirements and intent of the Contract Documents.

### 3.11 INSULATING JOINTS/DIELECTRIC UNIONS

- A. Insulating joints shall be installed to effectively isolate metallic piping from foreign metallic structures. Provide a minimum of five days advance notice to the Engineer before assembling insulated pipe flanges 60 inches or larger in diameter 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 standard 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.

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 torquing 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 & Anti-Seize compound, 3M Super 77 Spray Adhesive, and Triflow aerosol lubricant with Teflon additive.

- C. Test the electrical isolation effectiveness of each insulated pipe flange. This testing shall be performed by the Contractor's Cathodic Protection Engineer and witnessed by the 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, it shall be tested for electrical isolation by the Contractor before the wax tape coating is applied. 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.
1. 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.
  2. 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.
  3. 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.

4. 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 10-percent of the test current. The criterion for a dry pipe is a maximum "electrical leakage value" of 5-percent of the test current.
- D. 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.
- E. 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.
- F. 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.

PART 4 - Insulating joints shall be installed to effectively isolate metallic piping from foreign metallic structures. The CONTRACTOR shall test the performance of these insulating joints before and after backfill.

- A. Before backfill, the CONTRACTOR shall test the insulating joint using a Gas Electronics Model No. 601 Insulation Checker, or approved equivalent. If the testing results indicate less than 100% insulation, the insulating joints shall be repaired and retested at the CONTRACTOR's expense.
- B. After backfill, testing shall be performed by measurement of native pipe-to-soil potentials at both sides of the insulating joint. If the difference in native pipe-to-soil potentials on both sides of the insulating joint is within +/-50 milliVolts, then additional testing shall be performed as follows. Temporary cathodic protection current shall be circulated on the project pipeline side of the insulating joint. "On" and "Instant Off" pipe-to-soil potentials shall be measured on the other side of the insulating joint. If the "Instant Off" potential is more negative than the native potential, the insulating

joint shall be considered deficient and shall be repaired and retested at the CONTRACTOR's expense.

4.2 ELECTRICAL ISOLATION TESTING BETWEEN PIPE AND STEEL REINFORCEMENT CASING INSULATORS

- A. 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, concrete slab, or structural concrete pipe encasements. The embedded objects to be verified for metallic isolation from steel pipe include all of the following:
1. rebar
  2. rebar tie wire
  3. snap ties
  4. shebolts
  5. tie rods
  6. taper ties
  7. dowels
- B. 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. This metallic isolation testing shall be performed by the Contractor's Cathodic Protection Engineer or Technician and witnessed by the Engineer. 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 review the equipment and test procedure to be used and to witness the contractor actually performing the tests. 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 steel pipeline passes the electrical isolation test.
- C. 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.
- D. 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 unspliced 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.

- E. 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.
- F. Steel Polarization Isolation Test:
  - 1. 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.
  - 2. 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.
  - 3. Step 3: Remeasure 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.
  - 4. 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.
- G. If a Contractor wishes to use an alternate test procedure, prepare a written test procedure specifying the methods and equipment that will be used. Submit it to the Engineer for approval a minimum of 30 days before the first concrete placement. 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.



- H. 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 contractor 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.
- I. 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.

#### 4.3 CASING INSULATORS

- A. Need testing for electrical isolation between reinforcing steel and pipe where it ingresses/egresses concrete structures.
- B. Casing insulators shall be installed to effectively isolate the pipeline from the casing. The CONTRACTOR shall test the performance of the casing insulators before and after backfill.
- C. A Conduct visual and electrical testing at all locations where steel pipe is constructed inside steel casings to ensure nonmetallic casing spacers have been installed properly to prevent any metallic contact between the steel pipe and the casing. This testing must be performed as soon as possible after the steel pipe has been inserted into the casing so that the equipment used to move the pipe can be used to reposition the steel pipe if the electrical isolation testing shows metallic contact is occurring.
- D. Perform this testing the same day that each segment of pipe is installed inside the steel casing. Correct all direct contacts detected between sections of steel pipe and casing by repositioning or replacing components of the nonmetallic casing spacers.
- E. If a pipe to casing contact is detected after the pipe is in place inside a casing, reposition or remove the steel pipe to investigate where the metallic contact is occurring. This metallic isolation testing shall be performed by the Contractor's Cathodic Protection Engineer or Technician and witnessed by the Engineer. 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 is installed inside a steel casing in order to review the equipment and test procedure to be used and to witness the contractor actually performing the tests. The failure for a new steel pipeline to pass this electrical isolation test may require the steel pipe sections to be completely removed from the casing by the contractor at no cost to the City of San Diego in order to correct problems with the nonmetallic casing spacers so that the new steel pipeline passes the electrical isolation test.
- F. 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 steel pipe, using two different wires and two different connections, and then connecting the meter's P2 and C2 terminals to the steel casing, using two additional wires and connections. Use vise grips or temporary exothermic welds to make the wire connections to the pipe and casing.

- G. Casing Ground Cable Connections: Connect two unspliced lengths of minimum size #6 AWG copper stranded wire to the casing at any location. Each ground cable connection to the casing shall be made with a separate exothermic weld.
- H. 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 casing then measure the pipe to casing resistance. If the resistance is 10 Ohms or more, the pipe is sufficiently electrically isolated from the casing. If the test reading is less than 10 Ohms, proceed with the Steel Polarization Isolation Test described below.
- I. Steel Polarization Isolation Test:
  1. Step 1: Measure the baseline CP potentials of the buried pipeline and of the casing 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 one half of the length of the casing. If the difference between the readings of the pipe and casing 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.
  2. 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 casing 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.
  3. Step 3: Remeasure CP Potentials of the pipe and casing using the same reference electrode in the same location with the test current off. These are called polarized CP potentials.
  4. Step 4: Compare the polarized CP Potentials with the previously measured baseline CP Potentials. If the pipe is electrically isolated from the casing, the test current will polarize the buried pipeline's steel cathodically (i.e. a more negative CP Potential) and shift the casing anodically (i.e. a more positive CP Potential). If the difference between the polarized potentials of the pipeline and casing is less than 300 millivolts DC there are one or more metallic contacts between the buried pipeline and the casing. If the difference is 300 millivolts DC or greater the steel pipeline is sufficiently electrically isolated from the casing.
- J. If a Contractor wishes to use an alternate test procedure, prepare a written test procedure specifying the methods and equipment that will be used. Submit it to the Engineer for approval a minimum of 30 days before the first concrete placement. 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.
- K. Electrical isolation tests shall be conducted for each pipe running through a steel casing. The electrical isolation tests must be performed by the contractor the same day that the pipe is inserted into the casing. The Engineer will witness the electrical isolation test.
- L. After the pipeline passes the casing isolation test, direct bury the two bare copper

ground cables connected to the casing to a flush-to-grade concrete ground box near the end of the casing. 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.

- M. If the pipe is not isolated from the casing, correct retested at the CONTRACTOR's expense.

PART 5 - Casing insulators shall be installed as indicated in the Drawings to effectively isolate the pipeline from the casing. The CONTRACTOR shall test the performance of the casing insulators before and after backfill.

- A. After backfill, testing shall be performed by measurement of native pipe-to-soil potentials on the pipeline and the casing at both ends of the casing. If the difference in native pipe-to-soil potentials is greater than 50 milliVolts, the casing shall be considered isolated from the pipeline. If the difference in native pipe-to-soil potentials between pipe and casing is less than 50 milliVolts, then additional testing shall be performed as follows. Temporary cathodic protection current shall be applied to the pipeline. "On" and "Instant Off" pipe-to-soil potentials shall be measured on the pipeline and the casing at both ends of the casing. If the "Instant Off" potential of the casing is more negative than the native potential of the casing, the pipe is not isolated from the casing and shall be repaired and retested at the CONTRACTOR's expense.

## 5.2 CONTINUITY TESTING

- A. Continuity testing of all joints and pipe sections having in-line valves shall be performed by the CONTRACTOR's qualified corrosion technician as defined in this section after backfill. The electrical continuity test may additionally be performed before backfill at the CONTRACTOR's option.
- B. The pipe shall be tested for electrical continuity. Continuity shall be verified using the linear resistance method. The pipe shall be tested in spans that are no less than 250 feet and no more than 1,000 feet. Each test span shall have two test leads connected to the pipe at each end. Existing test stations may be used. A direct current shall be applied through the pipe using two of four test leads. The potential across the test span shall be measured using the other two test leads. The current applied and voltage drop shall be recorded for a minimum of three different current levels.
- C. The theoretical resistance of the pipe shall be calculated. It shall take into account the pipe material, segment length, wall thickness and number of joint bonds within the span.
- D. Acceptance of the test span: The average measured resistance shall be compared to the theoretical resistance of the pipe. If the measured resistance is greater than 120% of the theoretical resistance, then the welded joints shall be considered deficient and shall be repaired and retested at the CONTRACTOR's expense. If the measured resistance is less than 100% of the theoretical resistance then the test and/or calculated theoretical resistance shall be considered deficient and the test span shall be retested and/or recalculated at the CONTRACTOR's expense. If the piping forms a loop which allows current to flow both in and out of the test span, then consideration shall be made for current circulating through both the loop and the test span.

## 5.3 SYSTEM CHECKOUT

- A. Upon completion of the installation, the CONTRACTOR shall provide testing of the completed system by a qualified corrosion technician. The data shall be reviewed by a Corrosion Engineer to ensure conformance with the Contract Documents, NACE

SP0169, and NACE SP0286.

- B. The testing described herein shall be in addition to and not substitution for any required testing of individual items at the Manufacturer's plant and during installation.
- C. Testing shall be performed at all test leads of all test stations and at the locations of exposed pipe as soon as possible after installation of the cathodic protection system.
- D. Testing shall include the following and shall be conducted in accordance with NACE TM0497:
  - 1. Measure and record native pipe-to-soil and casing-to-soil potentials at all test locations.
  - 2. Verify electrical isolation at all insulating joints, insulating unions, and casing insulators per NACE SP0286.
  - 3. Confirm electrical continuity of the pipeline or cathodically protected structure in accordance with this Section.
  - 4. Measure and record the "On" and "Instant Off" potentials at each location.
  - 5. Measure and record the current output of the rectifier and each anode.
- E. Test results shall be analyzed to determine compliance with NACE SP0169.
- F. Test results shall be analyzed to determine if stray current interference is present. Stray current interference is defined as a +/-50 millivolt shift in a pipeline's pipe-to-soil potential that is caused by a foreign current source. Stray current interference shall be tested on the project pipeline and foreign pipelines that have a reasonable chance of being affected by stray currents.
- G. Provide GPS Locations for each test station with submeter accuracy for inclusion in the test report.
- H. The CONTRACTOR shall provide a written report (hard copy and electronic), prepared by the Corrosion Engineer, documenting the results of the testing and recommending corrective work, as required to comply with the Contract Documents. Any deficiencies of systems tested shall be repaired and re-tested by the CONTRACTOR at no additional cost to the OWNER.

**\*\* 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 Standards.
- 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**

**FINAL MITIGATED NEGATIVE DECLARATION, NOTICE OF DETERMINATION AND NOTICE  
OF EXEMPTION**





(619) 446-5460

**FINAL MITIGATED  
NEGATIVE DECLARATION**

PTS No. 406277

WBS No. S-11026.02.06

SCH. No.: 2015111024

**SUBJECT: MONTEZUMA PIPELINE/MID-CITY PIPELINE PHASE 2: A SITE DEVELOPMENT PERMIT** for the installation of approximately 1.16 miles of new water pipelines which consists of 5,680 linear feet (LF) of new 66" diameter Cement Lined and Coated Steel transmission main and 422 LF of 8-inch PVC distribution main. The 66-inch transmission main will run from the Alvarado Water Treatment Plant (AWTP), located at the intersection of Lake Murray Boulevard and Kiowa Drive, to the intersection of 68<sup>th</sup> Street and El Cajon Boulevard. The northern terminus of the pipeline will be connected to Existing Valve Vault No. 3 located where the Earl Thomas Reservoir Outlet Pipeline intersects the Clear Wells Interconnect Pipeline at the AWTP. The south terminus will be connected to the Mid-City Pipeline Phase 1 project water lines which start on El Cajon Boulevard between 68<sup>th</sup> and 69<sup>th</sup> Streets. The project also includes replacement of a remote control panel and antenna mast for the Murray 2<sup>nd</sup> Pipeline, as well as installation of insert flow meters for the Murray 2<sup>nd</sup> Pipeline and the Mid-City Pipeline. The majority of the project alignment will be constructed using open trenching. The pipeline will be tunneled and no trenching will be required at three locations: 1) crossing Interstate 8; 2) under the San Diego County Water Authority 108-inch main on Lake Murray Boulevard; and 3) under the San Diego County Water Authority 48-inch main on El Cajon Boulevard. For the I-8 crossing, the tunnel launching pit will be located in the Denny's parking lot at 6970 Alvarado Road on the south side of I-8, and the receiving pit will be on the north side of I-8 in the City of La Mesa within the Lake Murray Boulevard public right-of-way. Both tunneling pits will be sited in existing development areas that do not contain sensitive biological resources.

There will be excavations in unpaved areas at the connection with Valve Vault No. 3 at the AWTP and at the Murray 2<sup>nd</sup> Pipeline. Existing Valve Vault No. 3 is on City owned land adjacent to Lake Murray Boulevard. The excavation for the Murray 2<sup>nd</sup> Pipeline is partially within a Multiple Habitat Preservation Area. It is on City owned property near the Del Cerro Baptist Church at the intersection of Pennsylvania Lane and Delaware Avenue. Related work will include traffic control, best management practices for erosion control and storm drain inlet protection, ADA curb ramp installation, pipe abandonment, and resurfacing and restoration of disturbed areas to their original condition. Existing below grade water line will be abandoned along portions of Mohawk Street, 72<sup>nd</sup> Street, and a public alley north of Mohawk Street.

Applicant: City of San Diego Public Works Department – Engineering and Capital Projects, Architectural Engineering & Parks Division.

I. PROJECT DESCRIPTION: See attached Initial Study.

- II. ENVIRONMENTAL SETTING: See attached Initial Study.
- III. DETERMINATION: The City of San Diego conducted an Initial Study which determined that the proposed project could have a significant environmental affect in the following area(s): **Land Use (MSCP/MHPA Adjacency), Biological Resources, Archaeological Resources and Paleontological Resources.** Subsequent revisions in the project proposal create the specific mitigation identified in Section V of this Mitigated Negative Declaration (MND). The project, as revised, now avoids or mitigates the potentially significant environmental effects previously identified, and the preparation of an Environmental Impact Report will not be required.
- IV. DOCUMENTATION: The attached Initial Study documents the reasons to support the above Determination.
- V. MITIGATION, MONITORING AND REPORTING PROGRAM: To ensure that site development would avoid significant environmental impacts, a Mitigation, Monitoring, and Reporting Program (MMRP) is required. Compliance with the mitigation measures shall be the responsibility of the applicant. The mitigation measures are described below.
- A. GENERAL REQUIREMENTS – PART I**  
**Plan Check Phase (prior to permit issuance)**
1. Prior to the issuance of a Notice To Proceed (NTP) for a subdivision, or any construction permits, such as Demolition, Grading or Building, or beginning any construction related activity on-site, the Development Services Department (DSD) Director’s Environmental Designee (ED) shall review and approve all Construction Documents (CD), (plans, specification, details, etc.) to ensure the MMRP requirements are incorporated into the design.
  2. In addition, the ED shall verify that the MMRP Conditions/Notes that apply ONLY to the construction phases of this project are included VERBATIM, under the heading, **“ENVIRONMENTAL/MITIGATION REQUIREMENTS.”**
  3. These notes must be shown within the first three (3) sheets of the construction documents in the format specified for engineering construction document templates as shown on the City website:  
<http://www.sandiego.gov/development-services/industry/standtemp.shtml>
  4. The **TITLE INDEX SHEET** must also show on which pages the “Environmental/Mitigation Requirements” notes are provided.
  5. **SURETY AND COST RECOVERY** – The Development Services Director or City Manager may require appropriate surety instruments or bonds from private Permit Holders to ensure the long term performance or implementation of required mitigation measures or programs. The City is authorized to recover its cost to offset the salary, overhead, and expenses for City personnel and programs to monitor qualifying projects.

## **B. GENERAL REQUIREMENTS – PART II**

### **Post Plan Check (After permit issuance/Prior to start of construction)**

- 1. PRE CONSTRUCTION MEETING IS REQUIRED TEN (10) WORKING DAYS PRIOR TO BEGINNING ANY WORK ON THIS PROJECT.** The PERMIT HOLDER/OWNER is responsible to arrange and perform this meeting by contacting the CITY RESIDENT ENGINEER (RE) of the Field Engineering Division and City staff from MITIGATION MONITORING COORDINATION (MMC). Attendees must also include the Permit holder's Representative(s), Job Site Superintendent and the following consultants:

*Qualified Biologist*

*Qualified Paleontologist*

*Qualified Archaeologist*

*Qualified Native American Monitor, Viejas Band of Kumeyaay Indians*

**Note: Failure of all responsible Permit Holder's representatives and consultants to attend shall require an additional meeting with all parties present.**

#### CONTACT INFORMATION:

- a) The PRIMARY POINT OF CONTACT is the **RE** at the **Field Engineering Division – 858-627-3200**
  - b) For Clarification of ENVIRONMENTAL REQUIREMENTS, it is also required to call **RE and MMC at 858-627-3360**
- 2. MMRP COMPLIANCE:** This Project, Project Tracking System (PTS) 406277, shall conform to the mitigation requirements contained in the associated Environmental Document and implemented to the satisfaction of the DSD's Environmental Designee (MMC) and the City Engineer (RE). The requirements may not be reduced or changed but may be annotated (i.e. to explain when and how compliance is being met and location of verifying proof, etc.). Additional clarifying information may also be added to other relevant plan sheets and/or specifications as appropriate (i.e., specific locations, times of monitoring, methodology, etc)

**Note: Permit Holder's Representatives must alert RE and MMC if there are any discrepancies in the plans or notes, or any changes due to field conditions. All conflicts must be approved by RE and MMC BEFORE the work is performed.**

- 3. OTHER AGENCY REQUIREMENTS:** Evidence of compliance with all other agency requirements or permits shall be submitted to the RE and MMC for review and acceptance prior to the beginning of work or within one week of the Permit Holder obtaining documentation of those permits or requirements. Evidence shall include copies of permits, letters of resolution or other documentation issued by the responsible agency.

*City of La Mesa Encroachment Permits*

*Caltrans Encroachment Permits*

- 4. MONITORING EXHIBITS:** All consultants are required to submit, to RE and MMC, a monitoring exhibit on a 11x17 reduction of the appropriate construction plan, such as site plan,

grading, landscape, etc., marked to clearly show the specific areas including the **LIMIT OF WORK**, scope of that discipline’s work, and notes indicating when in the construction schedule that work will be performed. When necessary for clarification, a detailed methodology of how the work will be performed shall be included.

**NOTE: Surety and Cost Recovery – When deemed necessary by the Development Services Director or City Manager, additional surety instruments or bonds from the private Permit Holder may be required to ensure the long term performance or implementation of required mitigation measures or programs. The City is authorized to recover its cost to offset the salary, overhead, and expenses for City personnel and programs to monitor qualifying projects.**

**5. OTHER SUBMITTALS AND INSPECTIONS:** The Permit Holder/Owner’s representative shall submit all required documentation, verification letters, and requests for all associated inspections to the RE and MMC for approval per the following schedule:

**Document Submittal/Inspection Checklist**

<i>Issue Area</i>	<i>Document submittal</i>	<i>Assoc Inspection/Approvals/ Notes</i>
General	Consultant Qualification Letters	Prior to Pre-construction Meeting
General	Consultant Const. Monitoring Exhibits	Prior to or at the Pre-Construction Meeting
Biology	Biology Report	Prior to Construction – Limits of Work (Verification – Project Site)
Archaeology	Archaeology Reports	Archaeology Site Observation
Paleontology	Paleontology Reports	Paleontology Site Observation
Final MMRP		Final MMRP Inspections

**C. SPECIFIC MMRP ISSUE AREA CONDITIONS/REQUIREMENTS**

**BIOLOGICAL RESOURCES**

I. Prior to the issuance of a Notice to Proceed (NTP) or any construction permits, including but not limited to, the first Grading Permit, Demolition Plans/Permits and Building Plans/Permits the Development Services Department Deputy Director (DD) environmental designee Mitigation Monitoring Coordination (MMC) shall incorporate the following mitigation measures into the project design and include them verbatim on all appropriate construction documents.

**Letters of Qualification Have Been Submitted to DD**

1. The applicant shall submit, for approval, a letter verifying the qualifications of the biological professional to MMC. This letter shall identify the Principal Qualified Biologist (PQB) and Qualified Biological Monitor (QBM) and the names of all other persons involved in the implementation of the biological monitoring program, as they are defined in the City of San Diego Biological Review References. Resumes and the biology worksheet should be updated annually.
2. MMC will provide a letter to the applicant confirming the qualifications of the PQB /QBM and all City approved persons involved in the biological monitoring of the project.
3. Prior to the start of work, the applicant must obtain approval from MMC for any personnel changes associated with the biological monitoring of the project.

## II. Prior to Start of Construction

### A. PQB Shall Attend Preconstruction (Precon) Meetings

1. Prior to beginning any work that requires monitoring:
  - a. The owner/permittee or their authorized representative shall arrange and perform a Precon Meeting that shall include the PQB, Construction Manager (CM) and/or Grading Contractor (GC), Landscape Architect (LA), Revegetation Installation Contractor (RIC), Revegetation Maintenance Contractor (RMC), Resident Engineer (RE), Building Inspector (BI), if appropriate, and MMC.
  - b. The PQB shall also attend any other grading/excavation related Precon Meetings to make comments and/or suggestions concerning the biological monitoring program.
  - c. If the PQB is unable to attend the Precon Meeting, the owner shall schedule a focused Precon Meeting with MMC, PQB, CM, BI, LA, RIC, RMC, RE and/or BI, if appropriate, prior to the start of any work associated with the revegetation/ restoration phase of the project, including site grading preparation.
2. When Biological Monitoring Will Occur
  - a. Prior to the start of any work, the PQB shall also submit a monitoring procedures schedule to MMC and the RE indicating when and where biological monitoring and related activities will occur.
3. PQB Shall Contact MMC to Request Modification
  - a. The PQB 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 other sensitive species not listed by federal and/or state agencies and/or not covered by the MSCP and to which any impacts may be considered significant under CEQA) which may reduce or increase the potential for biological resources to be present.

## III. During Construction

### A. PQB or QBM Present During Construction/Grading/Planting

1. The PQB or QBM shall be present full-time during construction activities including but not limited to, site preparation, cleaning, grading, and excavation, in association with the construction of the project which could result in impacts to sensitive biological resources as identified in the LCD and on the RRME. **The QBM is responsible for notifying the PQB of changes to any approved construction plans, procedures, and/or activities. The PQB is responsible to notify MMC of the changes.**
2. The PQB or QBM shall document field activity via the Consultant Site Visit Record Forms (CSVSR). The CSVSR's shall be faxed by the CM the first day of monitoring, the last day of monitoring, monthly, and in the event that there is a deviation from conditions identified within the LCD and/or biological monitoring program. The RE shall forward copies to MMC.
3. The PQB or QBM shall be responsible for maintaining and submitting the CSVSR at the time that CM responsibilities end (i.e., upon the completion of construction activity other than that of associated with biology).
4. All construction activities (including staging areas) shall be restricted to the development areas. The PQB or QBM staff shall monitor construction activities as needed, with MMC concurrence on method and schedule. This is to ensure that construction activities do not encroach into biologically sensitive areas beyond the limits of disturbance.

5. The PQB or QBM shall supervise the placement of orange construction fencing or City approved equivalent, along the limits of potential disturbance adjacent to (or at the edge of) all sensitive habitats.
  6. The PBQ shall provide a letter to MMC that limits of potential disturbance has been surveyed, staked and that the construction fencing is installed properly
  7. The PQB or QBM shall oversee implementation of BMP's, such as gravel bags, straw logs, silt fences or equivalent erosion control measures, as needed to ensure prevention of any significant sediment transport. In addition, the PQB/QBM shall be responsible to verify the removal of all temporary construction BMP's upon completion of construction activities. Removal of temporary construction BMP's shall be verified in writing on the final construction phase CSV.
  8. PQB shall verify in writing on the CSV's that no trash stockpiling or oil dumping, fueling of equipment, storage of hazardous wastes or construction equipment/material, parking or other construction related activities shall occur adjacent to sensitive habitat. These activities shall occur only within the designated staging area located outside the area defined as biological sensitive area.
- B. Disturbance/Discovery Notification Process
1. If unauthorized disturbances occurs or sensitive biological resources are discovered that were not previously identified, the PQB or QBM shall direct the contractor to temporarily divert construction in the area of disturbance or discovery and immediately notify the RE or BI, as appropriate.
  2. The PQB shall also immediately notify MMC by telephone of the disturbance and report the nature and extent of the disturbance and recommend the method of additional protection, such as fencing and appropriate Best Management Practices (BMP's). After obtaining concurrence with MMC and the RE, PQB and CM shall install the approved protection and agreement on BMP's.
  3. The PQB shall also submit written documentation of the disturbance to MMC within 24 hours by fax or email with photos of the resource in context (e.g., show adjacent vegetation).
- C. Determination of Significance
1. The PQB shall evaluate the significance of disturbance and/or discovered biological resource and provide a detailed analysis and recommendation in a letter report with the appropriate photo documentation to MMC to obtain concurrence and formulate a plan of action which can include fines, fees, and supplemental mitigation costs.
  2. MMC shall review this letter report and provide the RE with MMC's recommendations and procedures.

#### IV. General Bird Mitigation

To avoid any direct impacts to raptors and/or any native/migratory birds, removal of habitat that supports active nests in the proposed area of disturbance should occur outside of the breeding season for these species (February 1 to September 15). If removal of habitat in the proposed area of disturbance must occur during the breeding season, the Qualified Biologist shall conduct a pre-construction survey to determine the presence or absence of nesting birds on the proposed area of disturbance. The pre-construction (precon) survey shall be conducted within 10 calendar days prior to the start of construction activities (including removal of vegetation). The applicant shall submit the results of the precon survey to City DSD for review and approval prior to initiating any construction activities. If nesting birds are detected, a letter report or mitigation plan in conformance with the City's Biology Guidelines and applicable State and Federal Law (i.e. appropriate follow up surveys, monitoring schedules, construction and noise barriers/buffers, etc.) shall be prepared and include

proposed measures to be implemented to ensure that take of birds or eggs or disturbance of breeding activities is avoided. The report or mitigation plan shall be submitted to the City DSD for review and approval and implemented to the satisfaction of the City. The City's MMC Section or RE, and Biologist shall verify and approve that all measures identified in the report or mitigation plan are in place prior to and/or during construction. If nesting birds are not detected during the precon survey, no further mitigation is required.

#### V. Cooper's Hawk

If work is conducted during the breeding season (February 1 – September 15), a pre-construction survey for Cooper's hawk nests shall be conducted to determine the exact location of a Cooper's hawk nesting site. If a Cooper's hawk nesting site is identified in proximity to the project site/impact area, a 300-foot avoidance area from the Cooper's hawk nest site shall be established and monitored by a qualified biologist to ensure normal Cooper's hawk nest chronology for the subject nest site throughout the project construction activity period. No work may occur within 300 feet of identified Cooper's hawk nests until the young have fledged and the nest is no longer active.

### MSCP SUBAREA PLAN -LAND USE ADJACENCY REQUIREMENTS

- I. 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. **Drainage** - All new and proposed parking lots and developed areas in and adjacent to the MHPA shall be designed so they do not drain directly into the MHPA. All developed and paved areas must prevent the release of toxins, chemicals, petroleum products, exotic plant materials prior to release by incorporating the use of filtration devices, planted swales and/or planted detention/desiltation basins, or other approved permanent methods that are designed to minimize negative impacts, such as excessive water and toxins into the ecosystems of the MHPA.
  - C. **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."*

- D. **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.
- E. **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.
- F. **Invasives** - No invasive non-native plant species shall be introduced into areas within or adjacent to the MHPA.
- G. **Brush Management** -New development adjacent to the MHPA shall be set back from the MHPA to provide required Brush Management Zone 1 area on the building pad outside of the MHPA. Zone 2 may be located within the MHPA provided the Zone 2 management will be the responsibility of an HOA or other private entity except here narrow wildlife corridors require it to be located outside of the MHPA. Brush management zones will not be greater in size than currently required by the City's regulations, the amount of woody vegetation clearing shall not exceed 50 percent of the vegetation existing when the initial clearing is done and vegetation clearing shall be prohibited within native coastal sage scrub and chaparral habitats from March 1-August 15 except where the City ADD/MMC has documented the thinning would be consist with the City's MSCP Subarea Plan. Existing and approved projects are subject to current requirements of Municipal Code Section 142.0412.
- H. **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). 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.

When applicable (i.e., habitat is occupied or if presence of the covered species is assumed), adequate noise reduction measures shall be incorporated as follows:

COASTAL CALIFORNIA GNATCATCHER (State Species of Special Concern/Federally Threatened)

Prior to the preconstruction meeting, the City Manager (or appointed designee) shall verify that the Multi-Habitat Planning Area (MHPA) boundaries and the following project requirements regarding the coastal California gnatcatcher are shown on the construction plans:



NO MECHANIZED CLEARING, GRUBBING, GRADING, OR OTHER CONSTRUCTION ACTIVITIES SHALL OCCUR BETWEEN MARCH 1 AND AUGUST 15, THE BREEDING SEASON OF THE COASTAL CALIFORNIA GNATCATCHER UNTIL THE FOLLOWING REQUIREMENTS HAVE BEEN MET TO THE SATISFACTION OF THE CITY MANAGER:

- A. A QUALIFIED BIOLOGIST (POSSESSING A VALID ENDANGERED SPECIES ACT SECTION 10(A)(1)(A) RECOVERY PERMIT) SHALL SURVEY THOSE HABITAT AREAS WITHIN THE MHPA THAT WOULD BE SUBJECT TO CONSTRUCTION NOISE LEVELS EXCEEDING 60 DECIBELS [DB(A)] HOURLY AVERAGE FOR THE PRESENCE OF THE COASTAL CALIFORNIA GNATCATCHER. SURVEYS FOR THE COASTAL CALIFORNIA GNATCATCHER SHALL BE CONDUCTED PURSUANT TO THE PROTOCOL SURVEY GUIDELINES ESTABLISHED BY THE U.S. FISH AND WILDLIFE SERVICE WITHIN THE BREEDING SEASON PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION. IF GNATCATCHERS ARE PRESENT, THEN THE FOLLOWING CONDITIONS MUST BE MET:
1. BETWEEN MARCH 1 AND AUGUST 15, NO CONSTRUCTION ACTIVITIES SHALL OCCUR WITHIN ANY PORTION OF THE SITE WHERE CONSTRUCTION ACTIVITIES WOULD RESULT IN NOISE LEVELS EXCEEDING 60 DB(A) HOURLY AVERAGE AT THE EDGE OF OCCUPIED GNATCATCHER HABITAT. AN ANALYSIS SHOWING THAT NOISE GENERATED BY CONSTRUCTION ACTIVITIES WOULD NOT EXCEED 60 DB(A) HOURLY AVERAGE AT THE EDGE OF OCCUPIED HABITAT MUST BE COMPLETED BY A QUALIFIED ACOUSTICIAN (POSSESSING CURRENT NOISE ENGINEER LICENSE OR REGISTRATION WITH MONITORING NOISE LEVEL EXPERIENCE WITH LISTED ANIMAL SPECIES) AND APPROVED BY THE CITY MANAGER AT LEAST TWO WEEKS PRIOR TO THE COMMENCEMENT OF CONSTRUCTION ACTIVITIES. PRIOR TO THE COMMENCEMENT OF CONSTRUCTION ACTIVITIES DURING THE BREEDING SEASON, AREAS RESTRICTED FROM SUCH ACTIVITIES SHALL BE STAKED OR FENCED UNDER THE SUPERVISION OF A QUALIFIED BIOLOGIST; OR
  2. AT LEAST TWO WEEKS PRIOR TO THE COMMENCEMENT OF CONSTRUCTION ACTIVITIES, UNDER THE DIRECTION OF A QUALIFIED ACOUSTICIAN, NOISE ATTENUATION MEASURES (E.G., BERMS, WALLS) SHALL BE IMPLEMENTED TO ENSURE THAT NOISE LEVELS RESULTING FROM CONSTRUCTION ACTIVITIES WILL NOT EXCEED 60 DB(A) HOURLY AVERAGE AT THE EDGE OF HABITAT OCCUPIED BY THE COASTAL CALIFORNIA GNATCATCHER. CONCURRENT WITH THE COMMENCEMENT OF CONSTRUCTION ACTIVITIES AND THE CONSTRUCTION OF NECESSARY NOISE ATTENUATION FACILITIES, NOISE MONITORING\* SHALL BE CONDUCTED AT THE EDGE OF THE OCCUPIED HABITAT AREA TO ENSURE THAT NOISE LEVELS DO NOT EXCEED 60 DB(A) HOURLY AVERAGE. IF THE NOISE ATTENUATION TECHNIQUES IMPLEMENTED ARE DETERMINED TO BE INADEQUATE BY THE QUALIFIED ACOUSTICIAN OR BIOLOGIST, THEN THE

ASSOCIATED CONSTRUCTION ACTIVITIES SHALL CEASE UNTIL SUCH TIME THAT ADEQUATE NOISE ATTENUATION IS ACHIEVED OR UNTIL THE END OF THE BREEDING SEASON (AUGUST 16).

\* Construction noise monitoring shall continue to be monitored at least twice weekly on varying days, or more frequently depending on the construction activity, to verify that noise levels at the edge of occupied habitat are maintained below 60 dB(A) hourly average or to the ambient noise level if it already exceeds 60 dB(A) hourly average. If not, other measures shall be implemented in consultation with the biologist and the City Manager, as necessary, to reduce noise levels to below 60 dB(A) hourly average or to the ambient noise level if it already exceeds 60 dB(A) hourly average. Such measures may include, but are not limited to, limitations on the placement of construction equipment and the simultaneous use of equipment.

- B. IF COASTAL CALIFORNIA GNATCATCHERS ARE NOT DETECTED DURING THE PROTOCOL SURVEY, THE QUALIFIED BIOLOGIST SHALL SUBMIT SUBSTANTIAL EVIDENCE TO THE CITY MANAGER AND APPLICABLE RESOURCE AGENCIES WHICH DEMONSTRATES WHETHER OR NOT MITIGATION MEASURES SUCH AS NOISE WALLS ARE NECESSARY BETWEEN MARCH 1 AND AUGUST 15 AS FOLLOWS:
1. IF THIS EVIDENCE INDICATES THE POTENTIAL IS HIGH FOR COASTAL CALIFORNIA GNATCATCHER TO BE PRESENT BASED ON HISTORICAL RECORDS OR SITE CONDITIONS, THEN THE REQUIREMENTS UNDER SECTION A SHALL BE ADHERED TO AS SPECIFIED ABOVE.
  2. IF THIS EVIDENCE CONCLUDES THAT NO IMPACTS TO THIS SPECIES ARE ANTICIPATED, NO FURTHER MITIGATION MEASURES ARE NECESSARY.

## **ARCHAEOLOGICAL RESOURCES**

### **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 cannot 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 CSVR 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.

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## **PALEONTOLOGICAL RESOURCES**

### **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 Paleontological Monitoring have been noted on the appropriate construction documents.
- 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 paleontological monitoring program, as defined in the City of San Diego Paleontology Guidelines.
  2. MMC will provide a letter to the applicant confirming the qualifications of the PI and all persons involved in the paleontological monitoring of the project.
  3. Prior to the start of work, the applicant shall obtain 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 has been completed. Verification includes, but is not limited to a copy of a confirmation letter from San Diego Natural History Museum, other institution 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.

### **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, Construction Manager (CM) and/or Grading Contractor, Resident Engineer (RE), Building Inspector (BI), if appropriate, and MMC. The qualified paleontologist shall attend any grading/excavation related Precon Meetings to make comments and/or suggestions concerning the Paleontological 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 paleontological monitoring program.
3. Identify Areas to be Monitored
  - a. Prior to the start of any work that requires monitoring, the PI shall submit a Paleontological Monitoring Exhibit (PME) based on the appropriate construction documents (reduced to 11x17) to MMC for approval identifying the areas to be monitored including the delineation of grading/excavation limits. Monitoring shall begin at depths below 10 feet from existing grade or as determined by the PI in consultation with MMC. The determination shall be based on site specific records search data which supports monitoring at depths less than ten feet.
  - b. The PME shall be based on the results of a site specific records search as well as information regarding existing known soil conditions (native or formation).
  - c. MMC shall notify the PI that the PME 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 depth of excavation and/or site graded to bedrock, presence or absence of fossil resources, etc., which may reduce or increase the potential for resources to be present.
5. Approval of PME and Construction Schedule  
After approval of the PME by MMC, the PI shall submit to MMC written authorization of the PME and Construction Schedule from the CM.

### III. During Construction

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

1. The monitor shall be present full-time during grading/excavation/trenching activities including, but not limited to mainline, laterals, jacking and receiving pits, services and all other appurtenances associated with underground utilities as identified on the PME that could result in impacts to formations with high and/or moderate resource sensitivity. **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 PME.**
2. The PI may submit a detailed letter to MMC during construction requesting a modification to the monitoring program when a field condition such as trenching activities that do not encounter formational soils as previously assumed, and/or when unique/unusual fossils are encountered, which may reduce or increase the potential for resources to be present.
3. The monitor shall document field activity via the Consultant Site Visit Record (CSVR). The CSVR'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 Paleontological Monitor shall direct the contractor to temporarily divert trenching activities in the area of discovery 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.

#### C. Determination of Significance

1. The PI shall evaluate the significance of the resource.
  - 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. The determination of significance for fossil discoveries shall be at the discretion of the PI.
  - b. If the resource is significant, the PI shall submit a Paleontological Recovery Program (PRP) and obtain written approval of the program from MMC, MC and/or RE. PRP 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.
    - (1). Note: For pipeline trenching projects only, the PI shall implement the Discovery Process for Pipeline Trenching projects identified below under "D."

- c. If resource is not significant (e.g., small pieces of broken common shell fragments or other scattered common fossils) the PI shall notify the RE, or BI as appropriate, that a non-significant discovery has been made. The Paleontologist shall continue to monitor the area without notification to MMC unless a significant resource is encountered.
  - d. The PI shall submit a letter to MMC indicating that fossil resources will be collected, curated, and documented in the Final Monitoring Report. The letter shall also indicate that no further work is required.
    - (1). Note: For Pipeline Trenching Projects Only. If the fossil discovery is limited in size, both in length and depth; the information value is limited and there are no unique fossil features associated with the discovery area, then the discovery should be considered not significant.
    - (2). Note, for Pipeline Trenching Projects Only: If significance cannot be determined, the Final Monitoring Report and Site Record shall identify the discovery as Potentially Significant.
- D. Discovery Process for Significant Resources - Pipeline Trenching Projects
- The following procedure constitutes adequate mitigation of a significant discovery encountered during pipeline trenching activities 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 fossil resources within the trench alignment and width shall be documented in-situ photographically, drawn in plan view (trench and profiles of side walls), recovered from the trench and photographed after cleaning, then analyzed and curated consistent with Society of Invertebrate Paleontology Standards. The remainder of the deposit within the limits of excavation (trench walls) shall be left intact and so documented.
    - 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 forms for the San Diego Natural History Museum) the resource(s) encountered during the Paleontological Monitoring Program in accordance with the City's Paleontological Guidelines. The forms shall be submitted to the San Diego Natural History Museum 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. 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 pre-con 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 CSVr and submit to MMC via the RE via fax by 8AM on the next business day.
    - b. Discoveries  
All discoveries shall be processed and documented using the existing procedures detailed in Sections III - During Construction.
    - c. Potentially Significant Discoveries

If the PI determines that a potentially significant discovery has been made, the procedures detailed under Section III - During Construction shall be followed.

- d. The PI shall immediately contact the RE and MMC, or by 8AM on 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.

## V. Post Construction

- A. Preparation and 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 Paleontological Guidelines which describes the results, analysis, and conclusions of all phases of the Paleontological Monitoring Program (with appropriate graphics) to MMC via the RE for review and approval within 90 days following the completion of monitoring,
    - a. For significant paleontological resources encountered during monitoring, the Paleontological Recovery Program or Pipeline Trenching Discovery Process shall be included in the Draft Monitoring Report.
    - b. Recording Sites with the San Diego Natural History Museum  
The PI shall be responsible for recording (on the appropriate forms) any significant or potentially significant fossil resources encountered during the Paleontological Monitoring Program in accordance with the City's Paleontological Guidelines, and submittal of such forms to the San Diego Natural History Museum 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 Fossil Remains
  1. The PI shall be responsible for ensuring that all fossil remains collected are cleaned and catalogued.
- C. Curation of artifacts: Deed of Gift and Acceptance Verification
  1. The PI shall be responsible for ensuring that all fossil remains associated with the monitoring for this project are permanently curated with an appropriate institution.
  2. The PI shall submit the Deed of Gift and catalogue record(s) to the RE or BI, as appropriate for donor signature with a copy submitted to MMC.
  3. The RE or BI, as appropriate shall obtain signature on the Deed of Gift and shall return to PI with copy submitted to MMC.
  4. 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 two copies of the Final Monitoring Report 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.

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## VI. PUBLIC REVIEW DISTRIBUTION:

Draft copies or notice of this Mitigated Negative Declaration were distributed to:

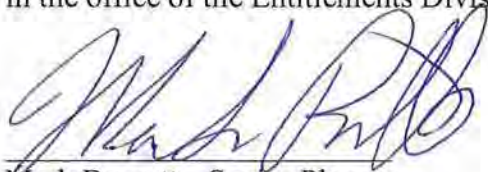
- US Government
  - US Fish & Wildlife Service
- State of California
  - California Dept. of Fish & Wildlife
- County of San Diego
  - Dept. of Environmental Health
- City of La Mesa
- City of San Diego
  - Councilmember Sherman - District 7
  - Councilmember Emerald – District 9
  - Mayor’s Office
  - City Attorney’s Office
    - Shannon Thomas
  - Facilities Financing
    - Tom Tomlinson
  - Water Review
    - Mehdi Rastakhiz
  - Development Services
    - Mark Brunette
    - Peter Kann
  - Engineering and Capital Projects
    - Alice Altes
    - James Arnhart
  - Library Dept. – Government Projects
    - San Carlos Branch Library
    - College – Rolando Branch Library
- Other Groups and Individuals
  - Navajo Community Planners Inc.
  - San Carlos Area Council
  - San Diego Natural History Museum
  - Historical Resources Board
  - South Coastal Information Center
  - San Diego History Center

San Diego Archaeological Center  
Save Our Heritage Organisation  
San Diego County Archaeological Society, Inc.  
Ron Christman  
Clint Linton  
Frank Brown – Inter-Tribal Cultural Resources Council  
Campo Band of Mission Indians  
Native American Heritage Commission  
Kumeyaay Cultural Heritage Preservation  
Kumeyaay Cultural Repatriation Committee  
Native American Distribution  
Sierra Club  
San Diego Audubon Society  
Mr. Jim Peugh  
California Native Plant Society  
Endangered Habitats League

VII. RESULTS OF PUBLIC REVIEW:

- ( ) No comments were received during the public input period.
- (X) Comments were received but did not address the draft Mitigated Negative Declaration finding or the accuracy/completeness of the Initial Study. No response is necessary. The letters are attached.
- ( ) Comments addressing the findings of the draft Negative Declaration and/or accuracy or completeness of the Initial Study were received during the public input period. The letters and responses follow.

Copies of the draft Mitigated Negative Declaration, and any Initial Study material are available in the office of the Entitlements Division for review, or for purchase at the cost of reproduction.



Mark Brunette, Senior Planner  
Development Services Department

November 6, 2015

Date of Draft Report

December 10, 2015

Date of Final Report

Analyst: Mark Brunette

Attachments:      Figures 1 & 2  
                              Location Map  
                              Initial Study Checklist

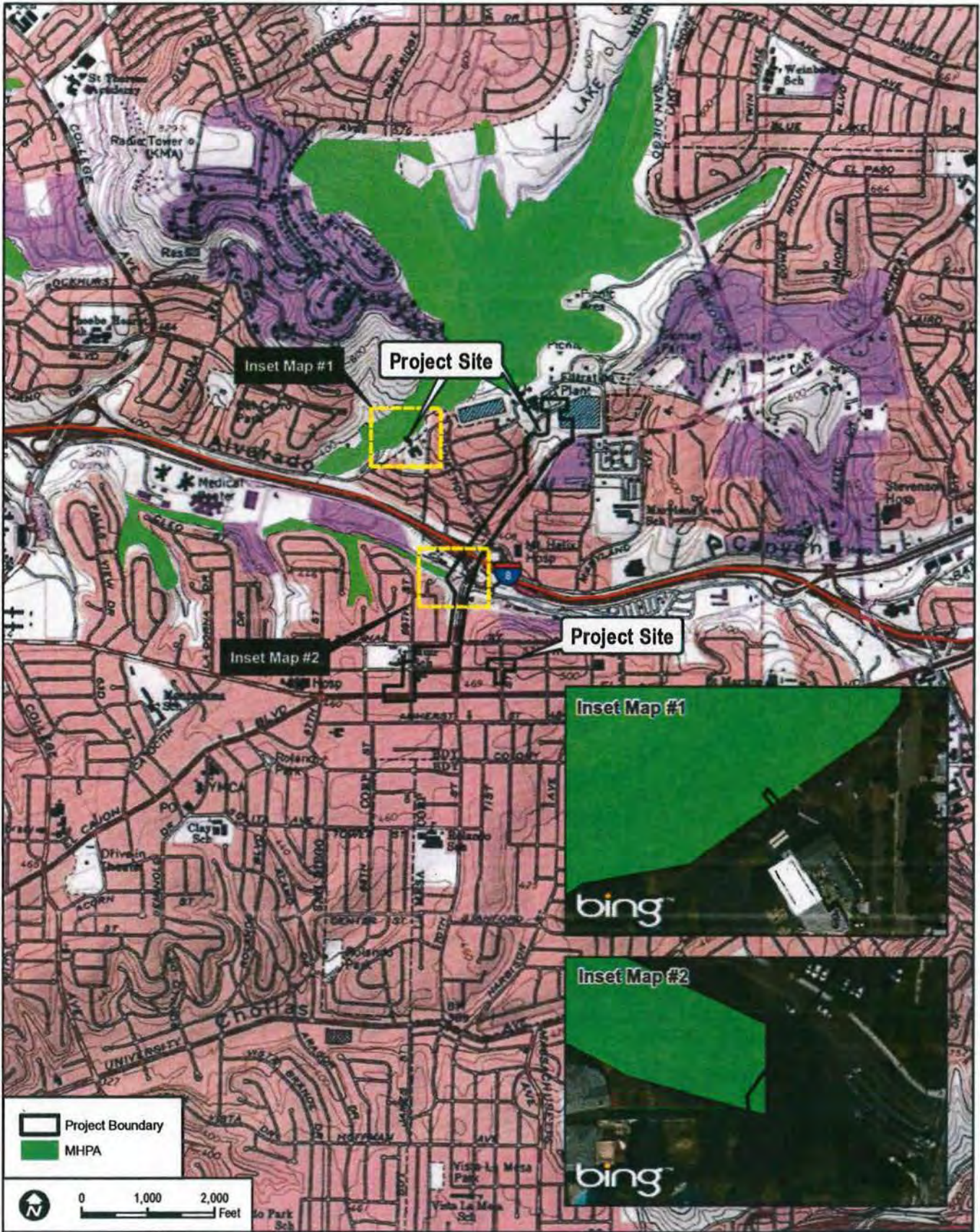


**DUDEK**

7643-06

MID-CITY PIPELINE PHASE II - BIOLOGICAL RESOURCES LETTER REPORT

**FIGURE 1**  
**Regional Map**



**DUDEK**  
7643-06

SOURCE: USGS 7.5-Minute Series La Mesa Quadrangle; SANGIS 2003

MID-CITY PIPELINE PHASE II - BIOLOGICAL RESOURCES LETTER REPORT

**FIGURE 2**  
**Vicinity Map**



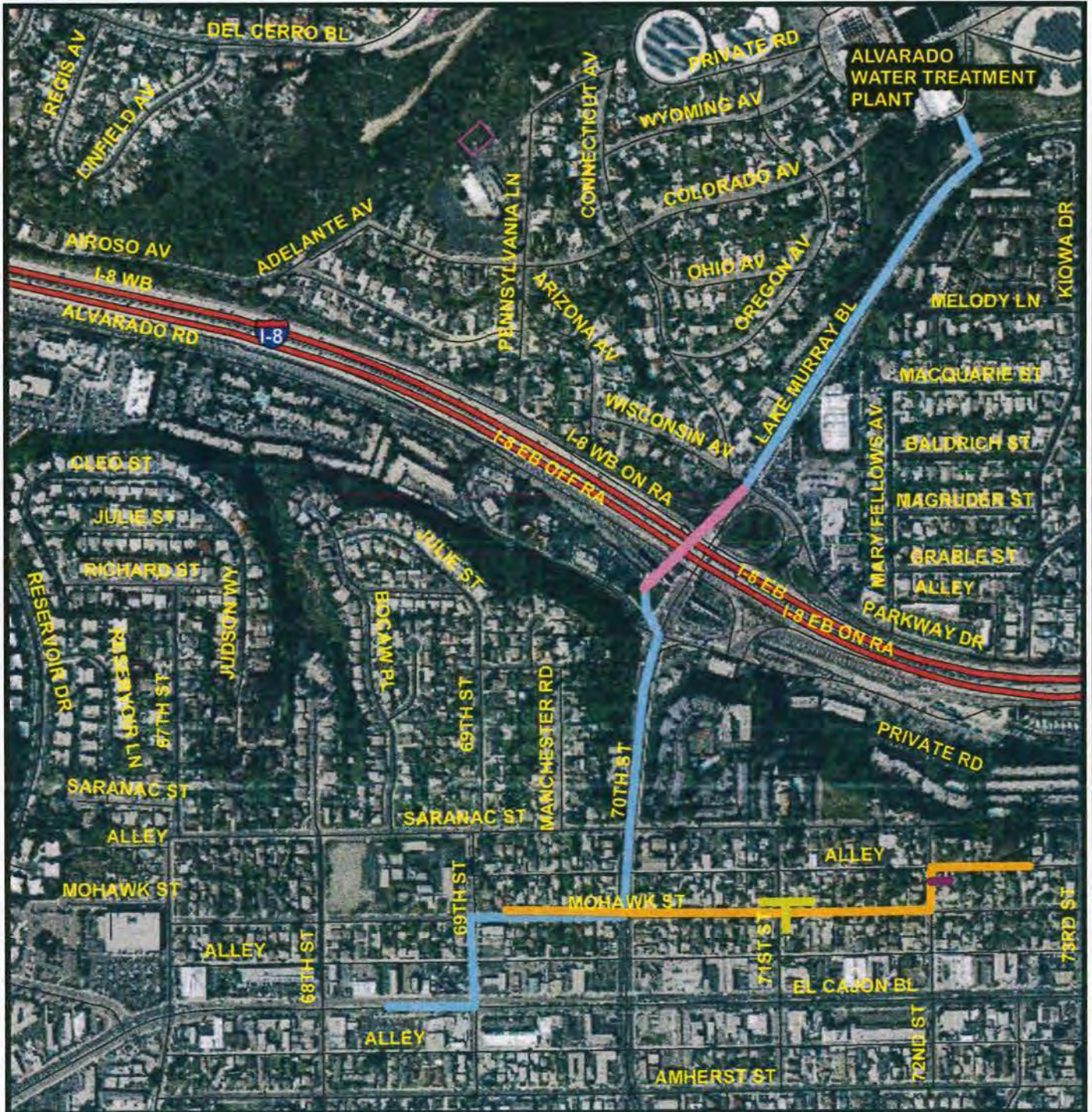
# MID-CITY PIPELINE PROJECT - PHASE II

SENIOR ENGINEER  
 IRAJ ASGHARZADEH, P.E.  
 619-533-5104

PROJECT MANAGER  
 ALICE ALTES, P.E.  
 619-533-4105

PROJECT ENGINEER  
 MICHELLE GARCIA-QUILICO  
 619-533-8635

CONSTRUCTION PROJECT  
 INFORMATION LINE  
 619-533-4207



### Legend

- Service Transfer
- 8 inch Main
- Tunnel Crossing
- Mid-City Pipeline Phase 2
- Abandonment



COMMUNITY NAME: COLLEGE AREA-NAVAJO

COUNCIL DISTRICT: 7 & 9

SAP ID: S11026

MGQuilico / Nov. 12, 2014

Montezuma/Mid-City Pipeline Phase 2 and 70th Alvarado to Saranac Sidewalk  
 K-24-1821-DBB-3-D-C



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## INITIAL STUDY CHECKLIST

1. Project Title/Project Number:

### **MONTEZUMA PIPELINE/MID-CITY PIPELINE PHASE 2**

2. Lead agency name and address:

City of San Diego  
Department of Development Services  
1222 First Avenue, MS 501  
San Diego, CA 92101

3. Contact person and phone number:

Mark Brunette/ (619) 446-5379

4. Project location:

The Project is located in eastern and mid-city San Diego (Figure 1) along Lake Murray Boulevard/70th Street and neighboring side streets in portions of the College Area and Navajo communities (Figure 2). Portions of the Project along Lake Murray Boulevard at Interstate 8 (I-8) lie within the municipal boundaries of the City of La Mesa. The Project's southern terminus is at El Cajon Boulevard and 68th Street in the City of San Diego, California; the northern terminus is within the grounds of the Alvarado Water Treatment Plant along Lake Murray Boulevard (Figure 2).

5. Project Applicant/Sponsor's name and address:

City of San Diego Public Works Department – Engineering and Capital Projects, Architectural Engineering & Parks Division, 600 B Street / MS 908, San Diego, CA 92101-4502

6. General Plan designation:

City of San Diego Public Right-of-Way (PROW) land is not a designated land use in the General Plan. However, right-of-way is categorized as Road/Freeways/ Transportation in the General Plan. The Pacific Beach Reservoir site is designated Residential in the General Plan and Single Family Residential in the Pacific Beach Community Plan.

7. Zoning:

The project would take place within various public rights-of-way and public easements within developed areas of the Pacific Beach, Mission Bay Park, Midway-Pacific Highway, Peninsula and Linda Vista Community Planning Areas in the City of San Diego. Adjacent zoning may include, but is not limited to, Open Space, Residential, Commercial, Institutional, and Industrial. The Pacific Beach Reservoir property is within the RS-1-4 (Single Family Residential) zone.

8. Description of project (Describe the whole action involved, including but not limited to, later phases of the project, and any secondary, support, or off-site features necessary for its implementation.):

The Montezuma/Mid-City Pipeline Phase II project is the second and final phase, of a larger project that provides a parallel and redundant water pipeline to the City of San Diego's existing 54" Trojan Water Transmission Pipeline. The Montezuma/Mid-City Pipeline is needed to enhance water service and reliability for the Mid-City areas, which include the communities of City Heights, College Area, Darnall, El Cerrito, Kensington, North Park, Normal Heights, Oak Park, Redwood Village, Rolando, Talmadge, and University Heights. The first phase of the project was completed in 2002 and is currently in service. Phase 1 included 4.5 miles of 48" diameter cement mortar lined and coated (CML&C) steel water transmission main, which generally runs along El Cajon Boulevard starting on Highland Drive and ending at the San Diego County Water Authority (SDCWA)/City of San Diego Flow Control Facility (FCF) 18/21. FCF 18/21 is located between 68th Street and 69th Street on El Cajon Boulevard.

A SITE DEVELOPMENT PERMIT for encroachment into Environmentally Sensitive Lands is required for Phase II of the project. Phase II would install approximately 1.16 miles of new water pipelines, consisting of 5,680 linear feet (LF) of new 66" diameter Cement Lined and Coated Steel transmission main and 422 LF of 8-inch PVC distribution main. The 66-inch transmission main will run from the Alvarado Water Treatment Plant (AWTP), located at the intersection of Lake Murray Boulevard and Kiowa Drive, to the intersection of 68<sup>th</sup> and El Cajon Boulevard. The northern terminus of the pipeline will be connected to Existing Valve Vault No. 3 located where the Earl Thomas Reservoir Outlet Pipeline intersects the Clear Wells Interconnect Pipeline at the AWTP. The south terminus will be connected to the Mid-City Pipeline Phase 1 project water lines which start on El Cajon Boulevard between 68<sup>th</sup> and 69<sup>th</sup> Streets. The project also includes replacement of a remote control panel and 34-foot tall antenna mast for the Murray 2<sup>nd</sup> Pipeline, as well as installation of insert flow meters for the Murray 2<sup>nd</sup> Pipeline and the Mid-City Pipeline.

The majority of the project alignment will be constructed using open trenching. The pipeline will be tunneled and no trenching will be required at three locations: 1) crossing Interstate 8; 2) under the San Diego County Water Authority 108-inch main on Lake Murray Boulevard; and 3) under the San Diego County Water Authority 48-inch main on El Cajon Boulevard. For the I-8 crossing, the tunnel launching pit will be located in the Denny's parking lot at 6970 Alvarado Road on the south side of I-8, and the receiving pit will be on the north side of I-8 in the City of La Mesa within the Lake Murray Boulevard public right-of-way. Both tunneling pits will be sited in existing development areas that do not contain sensitive biological resources.

There will be excavations in unpaved areas at the connection with Valve Vault No. 3 at the AWTP and at the Murray 2<sup>nd</sup> Pipeline. Existing Valve Vault No. 3 is on City owned land adjacent to Lake Murray Boulevard. The excavation for the Murray 2<sup>nd</sup> Pipeline is partially within a Multiple Habitat Preservation Area. It is on City owned property near the Del Cerro Baptist Church at the intersection of Pennsylvania Lane and Delaware Avenue. Related work will include traffic control, best management practices for erosion control and storm drain inlet

protection, ADA curb ramp installation, pipe abandonment, and resurfacing and restoration of disturbed areas to their original condition. Existing below grade water line will be abandoned along portions of Mohawk Street, 72<sup>nd</sup> Street, and a public alley north of Mohawk Street.

Equipment and pipeline staging areas would be located within existing roadway paved areas and parking lots adjacent to the roadways. An office trailer is expected to be used by the construction contractor. The trailer is expected to be located on City property at the Earl Thomas Reservoir near the Alvarado Water Treatment Plant.

Surrounding land uses and setting: Briefly describe the project's surroundings:

Elevations in the study area range from 472 feet above mean sea level (AMSL) near the southern extent of the Project to 513 AMSL near the northern terminus of the Project at the Alvarado Water Treatment Plant (AWTP). Surrounding land uses are best described as developed with mixed use development supported by single- and multi-family residential uses, commercial, and communication utilities for the AWTP. South of I-8, the topography increases in elevation as the Project heads south into the College Area, where single-family neighborhoods lie on a flat plateau overlooking I-8. The Project area also supports a school, multi-family residential uses, and commercial developments along 68th Street to El Cajon Boulevard.

10. Other public agencies whose approval is required (e.g., permits, financing approval, or participation agreement.):
  1. City of La Mesa Encroachment Permit for any work in La Mesa right-of-way or public easements.
  2. City of La Mesa Encroachment Agreement for any type of private improvements encroaching into the public right-of-way or public easement.
  3. Dept. of Occupational Safety and Health (DOSH) for construction of trenches or excavation which are five feet or deeper and into which a person is required to descend.
  4. Transportation permits for unusually wide and heavy loads.
  5. Caltrans discretionary review and approval, and an Encroachment Permit for any work in Caltrans right-of-way or public easements.

**ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:**

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.

- |   |  |   |
|---|--|---|
| <input type="checkbox"/> Aesthetics                         | <input type="checkbox"/> Greenhouse Gas Emissions      | <input type="checkbox"/> Population/Housing                         |
| <input type="checkbox"/> Agriculture and Forestry Resources | <input type="checkbox"/> Hazards & Hazardous Materials | <input type="checkbox"/> Public Services                            |
| <input type="checkbox"/> Air Quality                        | <input type="checkbox"/> Hydrology/Water Quality       | <input type="checkbox"/> Recreation                                 |
| <input checked="" type="checkbox"/> Biological Resources    | <input checked="" type="checkbox"/> Land Use/Planning  | <input type="checkbox"/> Transportation/Traffic                     |
| <input checked="" type="checkbox"/> Cultural Resources      | <input type="checkbox"/> Mineral Resources             | <input type="checkbox"/> Utilities/Service System                   |
| <input type="checkbox"/> Geology/Soils                      | <input type="checkbox"/> Noise                         | <input checked="" type="checkbox"/> Mandatory Findings Significance |

**DETERMINATION:** (To be completed by Lead Agency)

On the basis of this initial evaluation:

- The proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.
- Although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.
- The proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.
- The proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect (a) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and (b) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required.

- Although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or (MITIGATED) NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or (MITIGATED) NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

#### EVALUATION OF ENVIRONMENTAL IMPACTS:

- 1) A brief explanation is required for all answers except “No Impact” answers that are adequately supported by the information sources a lead agency cites in the parentheses following each question. A “No Impact” answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g., the project falls outside a fault rupture zone). A “No Impact” answer should be explained where it is based on project specific factors as well as general standards (e.g., the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis.)
- 2) All answers must take account of the whole action involved, including off-site as well as on-site, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.
- 3) Once the lead agency has determined that a particular physical impact may occur, the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. “Potentially Significant Impact” is appropriate if there is substantial evidence that an effect may be significant. If there are one or more “Potentially Significant Impact” entries when the determination is made, an EIR is required.
- 4) “Negative Declaration: Less Than Significant With Mitigation Incorporated” applies where the incorporation of mitigation measures has reduced an effect from “Potentially Significant Impact” to a “Less Than Significant Impact.” The lead agency must describe the mitigation measures, and briefly explain how they reduce the effect to a less than significant level (mitigation measures from “Earlier Analyses”, as described in (5) below, may be cross-referenced).
- 5) Earlier analyses may be used where, pursuant to the tiering, program EIR, or other CEQA process, an effect has been adequately analyzed in an earlier EIR or (mitigated) negative declaration. *Section 15063(c)(3)(D)*. In this case, a brief discussion should identify the following:
  - a. Earlier Analysis Used. Identify and state where they are available for review.

- b. Impacts Adequately Addressed. Identify which effects from the above checklist were within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.
  - c. Mitigation Measures. For effects that are “Less Than Significant With Mitigation Measures Incorporated”, describe the mitigation measures that were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.
- 6) Lead agencies are encouraged to incorporate into the checklist references to information sources for potential impacts (e.g., general plans, zoning ordinances). Reference to a previously prepared or outside document should, where appropriate, include a reference to the page or pages where the statement is substantiated.
- 7) Supporting Information Sources: A source list should be attached, and other sources used or individuals contacted should be cited in the discussion. Please note, all reports and documents mentioned in this document are available for public review in the Entitlements Division on the Fifth Floor of 1222 First Avenue, San Diego.
- 8) This is only a suggested form, and lead agencies are free to use different formats; however, lead agencies should normally address the questions from this checklist that are relevant to a project’s environmental effects in whatever format is selected.
- 9) The explanation of each issue should identify:
- a. The significance criteria or threshold, if any, used to evaluate each question; and
  - b. The mitigation measure identified, if any, to reduce the impact to less than significant.

Issue	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
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I) AESTHETICS – Would the project:

- a) Have a substantial adverse effect on a scenic vista?

All of the proposed work would occur either below grade or under existing bridges where existing pipeline would be replaced or repaired so no new visual impacts occur as a result of the project. In addition, it is not anticipated that the project would remove or replace trees or street lights. Therefore, the proposed project would have no significant impacts to public scenic vistas and no mitigation would be required.

- b) Substantially damage scenic resources, including but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

See answer to I.a. above. In addition, the project would not damage any existing scenic trees, rock outcroppings, or historic buildings (Refer to V.a.) as none of these features are located within the boundaries of the proposed project.

- c) Substantially degrade the existing visual character or quality of the site and its surroundings?

See answer to I.b. above.

- d) Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?

The project does not include any new or modified light sources such as new or replacement street lights, and the project would not utilize highly reflective materials. In addition, no substantial sources of light would be generated during project construction, as construction activities would occur during daylight hours. The project would also be subject to the City's Outdoor Lighting Regulations per Municipal Code Section 142.0740.

II) AGRICULTURAL AND FOREST RESOURCES: In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant



Issue	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
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environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. – Would the project:

- |   |                          |                          |                          |                                     |
|---|--------------------------|--------------------------|--------------------------|-------------------------------------|
| a) Converts Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
|---|--------------------------|--------------------------|--------------------------|-------------------------------------|

The project would occur within existing improved PROW or sewer or water easements which are not designated for agricultural use or farmland. In addition, agricultural land is not present in the vicinity of the project.

- |  |                          |                          |                          |                                     |
|--|--------------------------|--------------------------|--------------------------|-------------------------------------|
| b) Conflict with existing zoning for agricultural use, or a Williamson Act Contract? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
|--|--------------------------|--------------------------|--------------------------|-------------------------------------|

Refer to II.a.

- |   |                          |                          |                          |                                     |
|---|--------------------------|--------------------------|--------------------------|-------------------------------------|
| c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 1220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
|---|--------------------------|--------------------------|--------------------------|-------------------------------------|

The project would occur in an urbanized area of San Diego within existing improved PROW or sewer or water easements which are not designated as forest land. In addition, forest land land is not present in the vicinity of the project.

- |  |                          |                          |                          |                                     |
|--|--------------------------|--------------------------|--------------------------|-------------------------------------|
| d) Result in the loss of forest land or conversion of forest land to non-forest use? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
|--|--------------------------|--------------------------|--------------------------|-------------------------------------|

Refer to II.c.

- |  |                          |                          |                          |                                     |
|--|--------------------------|--------------------------|--------------------------|-------------------------------------|
| e) Involve other changes in the existing environment, which, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
|--|--------------------------|--------------------------|--------------------------|-------------------------------------|

Issue	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
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The project does not propose a change in land use and would not result in the conversion of Farmland since no Farmland exists within, or in the vicinity, of the project boundaries.

III. AIR QUALITY – Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied on to make the following determinations - Would the project:

- a) Conflict with or obstruct implementation of the applicable air quality plan?

The proposed sewer and water main replacement would not involve any future actions that would generate air quality emissions as a result of the proposed use (e.g. vehicle miles traveled). However, emissions would occur during the construction phase of the project and could increase the amount of harmful pollutants entering the air basin. The emissions would be minimal and would only occur temporarily during construction. Additionally, the construction equipment typically involved in water/sewer project is small-scale and generates relatively few emissions. When appropriate, dust suppression methods would be included as project components. As such, the project would not conflict with the region’s air quality plan.

- b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?

Refer to III.b

- c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?

As described above, construction operations could temporarily increase the emissions of dust and other pollutants. However, construction emissions would be temporary and implementation of Best Management Practices would reduce potential impacts related to construction activities to below a level of significance. Therefore, the project would not result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under applicable federal or state ambient air quality standards.

- d) Expose sensitive receptors to substantial

Issue	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
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pollutant concentrations?

Construction operations could temporarily increase the emissions of harmful pollutants, which could affect sensitive receptors adjacent to the project. However, construction emissions would be temporary and it is anticipated that implementation of construction BMPs would reduce potential impacts related to construction activities to minimal levels. Therefore, the project would not expose sensitive receptors to substantial pollutant concentrations.

- e) Create objectionable odors affecting a substantial number of people?

Operation of construction equipment and vehicles could generate odors associated with fuel combustion. However, these odors would dissipate into the atmosphere upon release and would only remain temporarily in proximity to the construction equipment and vehicles. Therefore, the project would not create odors affecting a substantial number of people

IV. BIOLOGICAL RESOURCES – Would the project:

- a) Have substantial adverse effects, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?

A Biological Letter Report for the Pacific Beach Pipeline Project was prepared by Tierra Data Inc. (August 22, 2014). The letter report analyzed the impacts of the proposed project on the biological resources located in the vicinity of the Pacific Beach Reservoir and the North Ingraham, South Ingraham and West Mission Bay Drive bridges. The remainder of the pipeline project occurs within improved public right-of-way and previously disturbed sewer and water easements which do not contain sensitive biological resources. The Biological Letter Report concluded the project would not result in significant, direct, indirect, or cumulative impacts to sensitive or regulated biological resources at the three affected bridges or reservoir site, and no mitigation is necessary for the project beyond standard Best Management Practices.

- b) Have a substantial adverse effect on any riparian habitat or other community identified in local or regional plans, policies, and regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?

Issue	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
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Refer to IV.a.

- c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including but not limited to marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

Refer to IV.a. According to the project’s biological letter report the project would not result in any impacts to wetlands or waters of the US near the site due to the use of standard Best Management Practices during project construction.

- d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?

According to the project’s biological letter report, Mission Bay is not a designated as a wildlife corridor and it does not restrict the movement of animals between habitats. The reservoir site is an isolated patch of habitat in an urbanized area that does not act as a wildlife corridor. As such, the project does not occur in designated wildlife corridors and, therefore, will not substantially interfere with wildlife movement.

- e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

Refer to IV.a. The project would comply with all local policies and ordinances protecting biological resources including satisfying mitigation requirements for impacts to sensitive biological resources in accordance with the City of San Diego Multiple Species Conservation Program and the City of San Diego Biology Guidelines. Furthermore, the site is not in or adjacent to an MHPA nor does it contain trees subject to a tree preservation policy.

- f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

Refer to IV.a and IV.e. The site is not within or adjacent to an MHPA. The project would not conflict with any local conservation plans.

- V. CULTURAL RESOURCES – Would the project:  
 a) Cause a substantial adverse change in the

Issue	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
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significance of an historical resource as defined in §15064.5?

The only potential historical resource that could be affected by the project is the abandoned Pacific Beach Reservoir. However, a Historical Resource Technical Report for the Pacific Beach Pipeline Project (Rincon Consultants, January 6, 2014) recommended that, based on the results of a records search, archival research, and a site visit, the Pacific Beach Reservoir is ineligible for listing in the California Historical Register of Historical Resources (CRHR). The Historical Report was reviewed by qualified City of San Diego Historic Review staff who concurred with the report's recommendation.

- b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?

The Pacific Beach Pipeline Project may include excavation of previously undisturbed native surficial soil, which has the potential to contain sensitive archaeological resources. Therefore, the project could result in a significant environmental impact on archaeological resources.

To reduce potential impacts to archaeological resources to below a level of significance, excavation within previously undisturbed soil, for either new trench alignments and/or for replacement of pipelines within the same trench alignment occurring at a deeper depth than the previously existing pipeline, would be monitored by a qualified archaeologist or archaeological monitor. Any significant archaeological resources that are encountered would be recovered and curated in accordance with the mitigation monitoring and Reporting Program (MMRP) detailed in Section V.

- c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

The portion of the Pacific Beach Pipeline project that is north of the North Ingraham Street bridge could involve excavation depths greater than 10 feet in the Linda Vista Formation (moderate sensitivity rating for discovery of paleontological resources), and the Bay Point and San Diego formations (high sensitivity rating). Therefore, the project could result in potentially significant impacts to fossil resources.

To reduce potential impacts on paleontological resources to below a level of significance, excavation within previously undisturbed formations at a depth of 10 or more feet, for either new trench alignments and/or for replacement of pipelines within the same trench alignment occurring at a deeper depth than the previously existing

Issue	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
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pipeline, would be monitored by a qualified paleontologist or paleontological monitor. Any significant paleontological resources encountered would be recovered and curated in accordance with the mitigation monitoring and Reporting Program (MMRP) detailed in Section V.

- d) Disturb any human remains, including those interred outside of formal cemeteries?

No cemeteries, formal or informal, have been identified on or adjacent to the project site. While there is a possibility of encountering human remains during subsequent project construction activities, if remains are found monitoring would be required. In addition, per CEQA Section 15064.5(e), the California Public Resources Code (Sec. 5097.98) and State Health and Safety Code (Sec. 7050.5), if human remains are discovered during construction, work would be required to halt in that area and no soil would be exported off-site until a determination could be made regarding the provenance of the human remains via the County Coroner and other authorities as required.

VI. GEOLOGY AND SOILS – Would the project:

- a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:
- i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.

The project would utilize proper engineering design and standard construction practices in order to ensure that potential impacts in this category based on regional geologic hazards would remain less than significant. Therefore risks from rupture of a known earthquake fault would be below a level of significance.

- ii) Strong seismic ground shaking?

See VI.a.i above. The project would be required to utilize proper engineering design and standard construction practices to ensure that the potential for impacts from ground shaking would be below a level of significance.

- iii) Seismic-related ground failure, including liquefaction?

Issue	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
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See VI.a and b above.

- |                 |                          |                          |                                     |                          |
|-----------------|--------------------------|--------------------------|-------------------------------------|--------------------------|
| iv) Landslides? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
|-----------------|--------------------------|--------------------------|-------------------------------------|--------------------------|

See VI.a and b above.

- |   |                          |                          |                          |                                     |
|---|--------------------------|--------------------------|--------------------------|-------------------------------------|
| b) Result in substantial soil erosion or the loss of topsoil? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
|---|--------------------------|--------------------------|--------------------------|-------------------------------------|

Refer to VI.a. In addition, the majority of the project would occur within the improved public right of way. Any disturbances to paved alleys and streets would be backfilled and resurfaced in kind. Excavation of the abandoned Pacific Beach Reservoir would be backfilled, graded and the entire site would be revegetated, which would preclude soil erosion or topsoil loss. Additionally, appropriate Best Management Practices would be utilized during project construction to prevent soil erosion. As such, the project would not result in a substantial amount of soil erosion or loss of topsoil.

- |  |                          |                          |                                     |                          |
|--|--------------------------|--------------------------|-------------------------------------|--------------------------|
| c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
|--|--------------------------|--------------------------|-------------------------------------|--------------------------|

The project is located within various Geologic Hazard Categories. However, proper engineering design and utilization of standard construction practices would ensure that the potential impacts would be less than significant.

- |  |                          |                          |                                     |                          |
|--|--------------------------|--------------------------|-------------------------------------|--------------------------|
| d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
|--|--------------------------|--------------------------|-------------------------------------|--------------------------|

Refer to VI.a.

- |  |                          |                          |                          |                                     |
|--|--------------------------|--------------------------|--------------------------|-------------------------------------|
| e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
|--|--------------------------|--------------------------|--------------------------|-------------------------------------|

Refer to VI.a. In addition, no septic or alternative wastewater systems are proposed since the scope of the project is to repair and replace existing public sewer and water mains.

VII. GREENHOUSE GAS EMISSIONS – Would the project:

- |   |                          |                          |                                     |                          |
|---|--------------------------|--------------------------|-------------------------------------|--------------------------|
| a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
|---|--------------------------|--------------------------|-------------------------------------|--------------------------|

Issue	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
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The City is utilizing data from the California Air Pollution Control Officers Association (CAPCOA) report "CEQA & Climate Change" dated January 2008 as an interim significance threshold to determine whether there is a potential for significant Greenhouse Gas (GHG) impacts and a GHG analysis will be required. The CAPCOA report references a 900 metric ton guideline as a conservative threshold for requiring further analysis and possible mitigation. This emission level is based on the amount of vehicle trips, the typical energy and water use associated with projects, and other factors.

CAPCOA identifies project types that are estimated to emit approximately 900 metric tons of GHG's annually. This 900 metric ton threshold is roughly equivalent to 35000 square feet of office space, 11,000 square feet of retail, 50 single family residential units, 70 multi-family residential units and 6,300 square-foot supermarkets.

Since the proposed sewer and water main repair project does not fit in the categories listed above, a GHG modeling analysis was conducted to determine the level of GHG emissions. The Roadway Construction Emission Model is a spreadsheet program created by the Sacramento Metropolitan Air Quality Management District to analyze construction related GHGs and was utilized to quantify the project's GHG emissions. The model utilizes project information (e.g. total construction months, project type, construction equipment, grading quantities and the total disturbance area, etc.) to quantify GHG emissions from heavy-duty construction equipment, haul trucks and worker commute trips associated with linear construction projects.

Results of the Roadway Construction Emissions Model output demonstrated that during the 14 months of construction the project would generated approximately 600 metric tons per year. The output for the project falls well below the 900 metric ton per year figure. Therefore, based on the aforementioned GHG analysis, the project would result in a less than significant CEQA Greenhouse Gas impact and mitigation would not be required.

- b) Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

The project as proposed would not conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing greenhouse gas emission in that it would be constructed in an established urban area with services and facilities available. In addition, the project is consistent with the General Plan.

VIII. HAZARDS AND HAZARDOUS MATERIALS –

- Would the project:
- a) Create a significant hazard to the public or the



Issue	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
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environment through routine transport, use, or disposal of hazardous materials?

Construction of the project may require the use of hazardous materials (e.g. fuels, lubricants, solvents, etc.) which would require proper storage, handling, use and disposal; however, these conditions would not occur during routine construction within the PROW. Construction specifications would include requirements for the contractor regarding where routine handling or disposal of hazardous materials could occur and what measures to implement in the event of a spill from equipment. Compliance with contract specifications would ensure that potential hazards are minimized to below a level of significance.

- b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?

Construction of the project may have the potential to traverse properties which could contain Leaking Underground Storage Tank (LUST) cleanup sites, permitted UST's, or contaminated sites located within 1,000 feet of the project alignments; however, in the event that construction activities encounter underground contamination, the contractor would be required to implement section 803 of the City's "WHITEBOOK" for "Encountering or Releasing Hazardous Substances or Petroleum Products" of the City of San Diego Standard Specifications for Public Works Construction which is included in all construction documents and would ensure the proper handling and disposal of any contaminated soils in accordance with all applicable local, state, and federal regulations. Compliance with these requirements would minimize the risk to the public and the environment; therefore, impacts would remain less than significant.

- c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

Portions of the project alignment are within one-quarter mile of existing schools and would involve trenching or excavation activities that could result in the release of hazardous emissions if unanticipated contamination is encountered within the PROW. However, section 803 of the City's "WHITEBOOK" to ensure that appropriate protocols are followed pursuant to County DEH requirements should any hazardous conditions be encountered. As such, impacts regarding the handling or discovery of hazardous materials, substances or waste within close proximity of a school would be below a level of significance with implementation of the measures required pursuant to the contract specifications and County DEH oversight.

Issue	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
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- |  |                          |                          |                          |                                     |
|--|--------------------------|--------------------------|--------------------------|-------------------------------------|
| d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
|--|--------------------------|--------------------------|--------------------------|-------------------------------------|

See VIIIa-c above. In addition, the project alignment and Pacific Beach Reservoir Site are not included on a list of hazardous materials locations.

- |   |                          |                          |                          |                                     |
|---|--------------------------|--------------------------|--------------------------|-------------------------------------|
| e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two mile of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
|---|--------------------------|--------------------------|--------------------------|-------------------------------------|

Portions of the project alignment are within the Airport Influence Area of the San Diego International Airport Land Use Compatibility Plan. However, since the proposed project involves linear underground sewer and water main repair, it would not introduce any new features that would result in a safety hazard for people residing or working in the area, or create a flight hazard.

- |   |                          |                          |                          |                                     |
|---|--------------------------|--------------------------|--------------------------|-------------------------------------|
| f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
|---|--------------------------|--------------------------|--------------------------|-------------------------------------|

The project site is not within proximity of a private airstrip.

- |   |                          |                          |                          |                                     |
|---|--------------------------|--------------------------|--------------------------|-------------------------------------|
| g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
|---|--------------------------|--------------------------|--------------------------|-------------------------------------|

Construction of the proposed project would temporarily affect traffic circulation within the project Area of Potential Effect (APE) and its adjoining roads. However, an approved Traffic Control Plan would be implemented during construction which would allow emergency plans to be employed. Therefore, the project would not physically interfere with and adopted emergency response plan or emergency evacuation plan.

- |  |                          |                          |                                     |                          |
|--|--------------------------|--------------------------|-------------------------------------|--------------------------|
| h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
|--|--------------------------|--------------------------|-------------------------------------|--------------------------|

The proposed project would be located within the City's Public Right-of-Way or sewer and water easements, and the Pacific Beach Reservoir site, which are not located within

Issue	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
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or adjacent to wildlands that could pose a threat of wildland fires. Additionally, sewer and water infrastructure projects do not introduce any new features that would increase the risk of fire.

IX. HYDROLOGY AND WATER QUALITY - Would the project:

- a) Violate any water quality standards or waste discharge requirements?

Potential impacts to existing water quality standards associated with the proposed project would include minimal short-term construction-related erosion sedimentation, but would not include any long term operational storm water impacts. The project would be required to comply with the City's Storm Water Standards Manual and would have to comply with either a Water Pollution Control Plan or Storm Water Pollution Prevention Plan. These plans would prevent or effectively minimize short-term water quality impacts during construction activities. Therefore, the proposed project would not violate any existing water quality standards or discharge requirements.

- b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?

The project does not use groundwater, nor would it create new impervious surfaces that would interfere with groundwater recharge.

- c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner, which would result in substantial erosion or siltation on- or off-site?

All areas that are trenched would be backfilled and resurfaced to their pre-construction condition, including resurfacing trenches within existing improved public rights-of-way. The Pacific Beach Reservoir site will be backfilled, graded and re-vegetated in accordance with an approved City Grading Permit and City grading standards. Thus, the project would not substantially alter drainage patterns.

- d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or

Issue	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
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substantially increase the rate or amount of surface runoff in a manner, which would result in flooding on- or off-site?

Refer to IX.c.

- |   |                          |                          |                          |                                     |
|---|--------------------------|--------------------------|--------------------------|-------------------------------------|
| e) Create or contribute runoff water, which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
|---|--------------------------|--------------------------|--------------------------|-------------------------------------|

Refer to IX.c. The project would be required to comply with all local and regional storm water quality standards during construction using approved Best Management Practices (BMPs), which would ensure that water quality is not degraded.

- |   |                          |                          |                          |                                     |
|---|--------------------------|--------------------------|--------------------------|-------------------------------------|
| f) Otherwise substantially degrade water quality? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
|---|--------------------------|--------------------------|--------------------------|-------------------------------------|

Refer to IX.c. The project would be required to comply with all local and regional storm water quality standards during construction using approved Best Management Practices (BMPs), which would ensure that water quality is not degraded.

- |  |                          |                          |                          |                                     |
|--|--------------------------|--------------------------|--------------------------|-------------------------------------|
| g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
|--|--------------------------|--------------------------|--------------------------|-------------------------------------|

The project does not propose any housing.

- |   |                          |                          |                          |                                     |
|---|--------------------------|--------------------------|--------------------------|-------------------------------------|
| h) Place within a 100-year flood hazard area, structures that would impede or redirect flood flows? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
|---|--------------------------|--------------------------|--------------------------|-------------------------------------|

The project does not propose any structures that would impede flood flows as it is a linear underground utility project.

- |  |                          |                          |                          |                                     |
|--|--------------------------|--------------------------|--------------------------|-------------------------------------|
| i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
|--|--------------------------|--------------------------|--------------------------|-------------------------------------|

The proposed project does not include any features that would increase the risk associated with flooding beyond those of existing conditions.

- |   |                          |                          |                          |                                     |
|---|--------------------------|--------------------------|--------------------------|-------------------------------------|
| j) Inundation by seiche, tsunami, or mudflow? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
|---|--------------------------|--------------------------|--------------------------|-------------------------------------|

The proposed project does not include any features that would increase the risk

Issue	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
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associated with inundation by seiche, tsunami, or mudflow beyond those of existing conditions.

X. LAND USE AND PLANNING – Would the project:

- a) Physically divide an established community?

The project would involve replacing and installing utility infrastructure underground and would not introduce new features that could divide an established community.

- b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?

The project would involve replacing and installing utility infrastructure underground and would be consistent with all applicable land use plans, policies, or regulations of an agency with jurisdiction over the project and would not conflict with any land use plans.

- c) Conflict with any applicable habitat conservation plan or natural community conservation plan?

Refer to IV. The project is not within or adjacent to the preserve areas of the City of San Diego Multiple Species Conservation Program and would therefore not conflict with any applicable habitat conservation plans.

- d) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?

The areas around the proposed project alignment and the abandoned reservoir property are not being used for the recovery of mineral resources and are not designed by the General Plan or other local, state or federal land use plan for mineral resources recovery; therefore, the project would not result in the loss of mineral resources.

- e) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?

Refer to X.e

XII. NOISE – Would the project result in:

- a) Generation of noise levels in excess of standards established in the local general plan or noise

Issue	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
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ordinance, or applicable standards of other agencies?

The project would not result in any the generation of operational noise levels in excess of existing standards or existing ambient noise levels in the vicinity of the project.

- b) Generation of excessive ground borne vibration or ground borne noise levels?

The project would not result in any the generation of operational ground borne vibration or noise levels in excess of existing standards or ambient levels.

- c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?

Refer to XII.a-b

- d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above existing without the project?

The proposed linear underground sewer and water repair project would result in construction noise, but would be temporary in nature; in addition, the project is required to comply with the San Diego Municipal Code, Chapter 5, Article 9.5, (§59.5.0404 Construction Noise). This section specifies that it is unlawful for any person, between the hours of 7:00 p.m. of any day and 7:00 a.m. of the following day, or on legal holidays (with exception of Columbus Day and Washington’s Birthday), or on Sundays, to erect, construct, demolish, excavate for, alter or repair any building or structure in such a manner as to create disturbing, excessive or offensive noise. In addition, the project would be required to conduct any construction activity so as to not cause, at or beyond the property lines of any property zoned residential, an average sound level greater than 75 decibels during the 12–hour period from 7:00 a.m. to 7:00 p.m.

- e) For a project located within an airport land use plan, or, where such a plan has not been adopted, within two miles of a public airport or public use airport would the project expose people residing or working in the area to excessive noise levels?

Portions of the project alignment are within the Airport Influence Area of the San Diego International Airport Land Use Compatibility Plan and most areas have higher ambient noise levels due to the fact that they are located within heavily traveled roadways. The project in and of itself would not generate operational noise. Compliance with OSHA

Issue	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
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standards will ensure the project workers would not be exposed to excessive noise levels.

- |  |                          |                          |                          |                                     |
|--|--------------------------|--------------------------|--------------------------|-------------------------------------|
| f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
|--|--------------------------|--------------------------|--------------------------|-------------------------------------|

The project site is not located within the vicinity of a private airstrip.

XIII. POPULATION AND HOUSING – Would the project:

- |   |                          |                          |                          |                                     |
|---|--------------------------|--------------------------|--------------------------|-------------------------------------|
| a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
|---|--------------------------|--------------------------|--------------------------|-------------------------------------|

The project scope does not include the construction of new or extended roads or infrastructure, or new homes and businesses. The project would replace and rehabilitate existing outdated sewer and water infrastructure. Therefore, the project would not induce population growth nor require the construction of new infrastructure.

- |   |                          |                          |                          |                                     |
|---|--------------------------|--------------------------|--------------------------|-------------------------------------|
| b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
|---|--------------------------|--------------------------|--------------------------|-------------------------------------|

No such displacement would result. There is no existing housing within the boundaries of the proposed project.

- |   |                          |                          |                          |                                     |
|---|--------------------------|--------------------------|--------------------------|-------------------------------------|
| c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
|---|--------------------------|--------------------------|--------------------------|-------------------------------------|

No such displacement would result. There is no existing housing or residents within the boundaries of the project.

XIV. PUBLIC SERVICES

- |   |                          |                          |                          |                                     |
|---|--------------------------|--------------------------|--------------------------|-------------------------------------|
| a) Would the project result in substantial adverse physical impacts associated with the provisions of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service rations, response times or other performance objectives for any of the public services: |                          |                          |                          |                                     |
| i) Fire Protection  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

Issue	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
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The project would not result in adverse physical impacts of fire facilities or adversely affect existing levels of fire services.

ii) Police Protection

The project would not affect existing levels of police protection service and would not require the construction or expansion of a police facility.

iii) Schools

The project would not affect existing levels of public services and would not require the construction or expansion of a school facility.

v) Parks

The project would not affect existing levels of public services and would not require the construction or expansion of a park facility.

vi) Other public facilities

The project would not affect existing levels of public services; therefore, no new or altered government facilities would be required.

XV. RECREATION -

a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?

The project would not adversely affect the availability of and/or need for new or expanded recreational resources.

b) Does the project include recreational facilities or require the construction or expansion of recreational facilities, which might have an adverse physical effect on the environment?

Refer to XV.a. The project does not propose recreation facilities nor require the construction or expansion of any such facilities.

XVI. TRANSPORTATION/TRAFFIC – Would the project?



Issue	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
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- a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?
- 

Construction of the proposed project would temporarily affect traffic circulation within the project Area of Potential Effect (APE) and its adjoining roads. However, an approved Traffic Control Plan would be implemented during construction such that traffic circulation would not be substantially impacted. Therefore, the project would not result in any significant permanent increase in traffic generation.

- b) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?
- 

Construction of the proposed project would temporarily affect traffic circulation within the project Area of Potential Effect (APE) and its adjoining roads. However, an approved Traffic Control Plan would be implemented during construction so that existing cumulative or individual levels of service are minimally impacted. Therefore, the project would not result in any significant permanent increase in traffic generation or permanent reduction in level of service.

- c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?
- 

Refer to XVI.c. In addition, the project would not result in safety risks or a change to air traffic patterns in that all work would occur underground or beneath existing bridge structures.

- d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?
- 

The project would not create a permanent increase in hazards resulting from design features and would reduce temporary hazards due to construction to a less than

Issue	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
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significant level through a Traffic Control Plan. The project does not propose any change in land use that would affect existing land uses in the area.

- e) Result in inadequate emergency access?

Construction of the proposed project would temporarily affect traffic circulation within the project Area of Potential Effect (APE) and its adjoining roads. However, an approved Traffic Control Plan would be implemented during construction such that emergency access would not be substantially impacted. Therefore, the project would not result in inadequate emergency access.

- f) Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?

The project would temporarily impact circulation during construction activities relative to traffic, pedestrians, public transit and bicycles. However, the preparation of a Traffic Control Plan would ensure that any disruption to these services would not be significant.

XVII. UTILITIES AND SERVICE SYSTEMS – Would the project:

- a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?

Construction of the proposed project would facilitate the treatment of wastewater and would not exceed the requirements of the Regional Quality Control Board.

- b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

Construction of the proposed project would result in improvements to water and sewer pipeline infrastructure and would not result in a significant unmitigated impact on the environment.

- c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

Construction of the proposed project would occur primarily within the PROW and

Issue	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
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would not create new impervious surfaces. Therefore, the project would not require the construction of new storm water drainage facilities or expansion of existing facilities.

- d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?

Construction of the proposed project would not increase the demand for water and would improve the existing water pipelines within the project area.

- e) Result in a determination by the wastewater treatment provided which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?      
Refer to XVII.c

- f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?

Construction of the project would result in the removal of the abandoned Pacific Beach Reservoir structure, but otherwise would likely generate minimal waste. Project waste would be disposed of in accordance with all applicable local and state regulations pertaining to solid waste including the permitted capacity of the landfill serving the project area. Demolition or construction materials which can be recycled shall comply with the City's Construction and Demolition Debris Ordinance. Operation of the project would not generate waste and, therefore, would not affect the permitted capacity of the landfill serving the project area.

- g) Comply with federal, state, and local statutes and regulation related to solid waste?

Refer to XVII.f. Any solid waste generated during construction related activities would be recycled or disposed of in accordance with all applicable local, state and federal regulations.

XVIII. MANDATORY FINDINGS OF SIGNIFICANCE -

- a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or

Issue	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
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prehistory?

The proposed project would not impact any Sensitive Biological Resources and the project would not be located within or adjacent to the Multi Habitat Planning Area (MHPA) of the MSCP. With respect to cultural resources, mitigation for archaeology and paleontology has been incorporated into the MND. Please see Section V of the MND for further details on all mitigation requirements. As a result, project implementation would not result in a significant impact to these resources.

- b) Does the project have impacts that are individually limited, but cumulatively considerable? (“Cumulatively considerable” means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable futures projects)?
- 

When viewed in terms of the overall impacts of Citywide linear pipeline repair projects, any potential incremental impacts to cultural resources from this project would be mitigated to below a level of significance. Collectively, all Citywide project impacts on cultural resources are reduced to a less than significant level through project mitigation. Please see Section V of the MND for further details on all mitigation requirements. As a result, project implementation would not result in any individually limited, but cumulatively significant impacts to these resources.

- c) Does the project have environmental effects, which will cause substantial adverse effects on human beings, either directly or indirectly?
- 

As stated previously, potentially significant impacts have been identified for archaeological and paleontological resources. However, mitigation has been included in Section V of this MND to reduce impacts to below a level of significance. As such, project implementation would not result in substantial adverse impact on human beings.

## INITIAL STUDY CHECKLIST

### REFERENCES

#### I. AESTHETICS / NEIGHBORHOOD CHARACTER

- City of San Diego General Plan; City of San Diego Land Development Municipal Code
- Community Plan.
- Local Coastal Plan.

#### II. AGRICULTURAL RESOURCES & FOREST RESOURCES

- City of San Diego General Plan.
- U.S. Department of Agriculture, Soil Survey - San Diego Area, California, Part I and II, 1973.
- California Agricultural Land Evaluation and Site Assessment Model (1997)
- Site Specific Report:

#### III. AIR QUALITY

- California Clean Air Act Guidelines (Indirect Source Control Programs) 1990.
- Regional Air Quality Strategies (RAQS) - APCD.
- Site Specific Report:

#### IV. BIOLOGY

- City of San Diego, Multiple Species Conservation Program (MSCP), Subarea Plan, 1997
- City of San Diego, MSCP, "Vegetation Communities with Sensitive Species and Vernal Pools" Maps, 1996.
- City of San Diego, MSCP, "Multiple Habitat Planning Area" maps, 1997.
- Community Plan - Resource Element.
- California Department of Fish and Game, California Natural Diversity Database, "State and Federally-listed Endangered, Threatened, and Rare Plants of California," January 2001.

- California Department of Fish & Game, California Natural Diversity Database, "State and Federally-listed Endangered and Threatened Animals of California," January 2001.
- City of San Diego Land Development Code Biology Guidelines.
- Site Specific Report: Biology Letter Report for the Pacific Beach Pipeline Project by Tierra Data Inc, dated August 22, 2014.

**V. CULTURAL RESOURCES (INCLUDES HISTORICAL RESOURCES)**

- City of San Diego Historical Resources Guidelines.
- City of San Diego Archaeology Library.
- Historical Resources Board List.
- Community Historical Survey:
- Site Specific Reports: Pacific Beach Pipeline Project Historical Resource Technical Report by Rincon Consultants, dated January 6, 2014

**VI. GEOLOGY/SOILS**

- City of San Diego Seismic Safety Study.
- U.S. Department of Agriculture Soil Survey - San Diego Area, California, Part I and II, December 1973 and Part III, 1975.
- Site Specific Report(s):

**VII. GREENHOUSE GAS EMISSIONS**

- Site Specific Report: Roadway Construction Emissions Models conducted for the proposed project.

**VIII. HAZARDS AND HAZARDOUS MATERIALS**

- San Diego County Hazardous Materials Environmental Assessment Listing,
- San Diego County Hazardous Materials Management Division
- FAA Determination
- State Assessment and Mitigation, Unauthorized Release Listing, Public Use Authorized.
- Airport Land Use Compatibility Plan.
- Site Specific Report:

**IX. HYDROLOGY/WATER QUALITY**

- Flood Insurance Rate Map (FIRM).
- Federal Emergency Management Agency (FEMA), National Flood Insurance Program - Flood Boundary and Floodway Map.
- Clean Water Act Section 303(b) list, [http://www.swrcb.ca.gov/tmdl/303d\\_lists.html](http://www.swrcb.ca.gov/tmdl/303d_lists.html).
- Site Specific Reports: Revegetation Plan For The Pacific Beach Reservoir Site by Tierra Data Inc., dated August 2014.

**X. LAND USE AND PLANNING**

- City of San Diego General Plan.
- Community Plan.
- Airport Land Use Compatibility Plan
- City of San Diego Zoning Maps
- FAA Determination

**XI. MINERAL RESOURCES**

- California Department of Conservation - Division of Mines and Geology, Mineral Land Classification.
- Division of Mines and Geology, Special Report 153 - Significant Resources Maps.
- Site Specific Report:

**XII. NOISE**

- Community Plan
- San Diego International Airport - Lindbergh Field CNEL Maps.
- Brown Field Airport Master Plan CNEL Maps.
- Montgomery Field CNEL Maps.
- San Diego Association of Governments - San Diego Regional Average Weekday Traffic Volumes.
- San Diego Metropolitan Area Average Weekday Traffic Volume Maps, SANDAG.
- City of San Diego General Plan.
- Site Specific Report:

**XIII. PALEONTOLOGICAL RESOURCES**

- City of San Diego Paleontological Guidelines.
- Deméré, Thomas A., and Stephen L. Walsh, "Paleontological Resources City of San Diego," Department of Paleontology San Diego Natural History Museum, 1996.
- Kennedy, Michael P., and Gary L. Peterson, "Geology of the San Diego Metropolitan Area, California. Del Mar, La Jolla, Point Loma, La Mesa, Poway, and SW 1/4 Escondido 7 1/2 Minute Quadrangles," California Division of Mines and Geology Bulletin 200, Sacramento, 1975.
- Kennedy, Michael P., and Siang S. Tan, "Geology of National City, Imperial Beach and Otay Mesa Quadrangles, Southern San Diego Metropolitan Area, California," Map Sheet 29, 1977.
- Site Specific Report:

**XIV. POPULATION / HOUSING**

- City of San Diego General Plan.
- Community Plan.
- Series 11 Population Forecasts, SANDAG.
- Other:

**XV. PUBLIC SERVICES**

- City of San Diego General Plan.
- Community Plan.

**XVI. RECREATIONAL RESOURCES**

- City of San Diego General Plan.
- Community Plan.
- Department of Park and Recreation
- City of San Diego - San Diego Regional Bicycling Map



\_\_\_ Additional Resources:

**XVII. TRANSPORTATION / CIRCULATION**

X City of San Diego General Plan.

X Community Plan.

\_\_\_ San Diego Metropolitan Area Average Weekday Traffic Volume Maps, SANDAG.

\_\_\_ San Diego Region Weekday Traffic Volumes, SANDAG.

\_\_\_ Site Specific Report:

**XVIII. UTILITIES**

X City of San Diego General Plan.

X Community Plan.

**XIX. WATER CONSERVATION**

X City of San Diego General Plan.

X Community Plan.

\_\_\_ Sunset Magazine, New Western Garden Book. Rev. ed. Menlo Park, CA: Sunset Magazine.



Edmund G. Brown Jr.  
Governor

STATE OF CALIFORNIA  
Governor's Office of Planning and Research  
State Clearinghouse and Planning Unit



Ken Alex  
Director

December 8, 2015

Mark Brunette  
City of San Diego  
1222 First Avenue, MS-501  
San Diego, CA 92101

Subject: Montezuma Pipeline/Mid-City Pipeline Phase 2 SDP (PTS No. 406277)  
SCH#: 2015111024

Dear Mark Brunette:

The State Clearinghouse submitted the above named Mitigated Negative Declaration to selected state agencies for review. The review period closed on December 7, 2015, and no state agencies submitted comments by that date. This letter acknowledges that you have complied with the State Clearinghouse review requirements for draft environmental documents, pursuant to the California Environmental Quality Act.

Please call the State Clearinghouse at (916) 445-0613 if you have any questions regarding the environmental review process. If you have a question about the above-named project, please refer to the ten-digit State Clearinghouse number when contacting this office.

Sincerely,

Scott Morgan  
Director, State Clearinghouse

1400 TENTH STREET P.O. BOX 3044 SACRAMENTO, CALIFORNIA 95812-3044  
TEL (916) 445-0613 FAX (916) 323-3018 www.opr.ca.gov

**Document Details Report  
State Clearinghouse Data Base**

**SCH#** 2015111024  
**Project Title** Montezuma Pipeline/Mid-City Pipeline Phase 2 SDP (PTS No. 406277)  
**Lead Agency** San Diego, City of

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**Type** MND Mitigated Negative Declaration

**Description** A Site Development Permit for the installation of approx. 1.16 miles of new water pipelines which consists of 5,680 linear feet of new 66" diameter Cement Lined and Coated Steel transmission main and 422 LF of 8-inch PVC distribution main. The 66-inch transmission main will urn from the Alvarado Water Treatment Plant (AWTP), located at the intersections of Lake Murray Blvd. and Kiowa Dr., to the intersection of 68th and El Cajon Blvd. The northern terminus of the pipeline will be connected to Existing Valve Vault No. 3 located where the Earl Thomas Reservoir Outlet Pipeline intersects the Clear Wells Interconnect Pipeline at the AWTP. The south terminus will be connected to the Mid-City Pipeline Phase 1 project water lines which start on el Cajon Blvd. between 68th and 69th Streets. The project also includes replacement of a remote control panel and antenna mast for the Murray 2nd Pipeline, as well as installation of insert flow meters for the Murray 2nd Pipeline and the Mid-City Pipeline. The majority of the project alignment will be constructed using open trenching. The pipeline will be tunneled and no trenching will be required at three locations: 1) crossing I-8; 2) under the San Diego County Water Authority 108-inch main on Lake Murray Blvd.; and 3) under the San Diego Water Authority 48-inch main on El Cajon Blvd. For the I-8 crossing, the tunnel launching pit will be located in the Denny's parking lot at 6970 Alvarado Road on the south side of I-8, and the receiving pit will be on the north side of I-8 in the City of La Mesa within the Lake Murray Blvd. public right of way. Both tunneling pits will be sited in existing development areas that do not contain sensitive biological resources.

There will be excavations in unpaved areas at the connection with Valve Vault No. 3 at the AWTP and at the Murray 2nd Pipeline. Existing Valve Vault No. 3 is on the City owned land adjacent to Lake Murray Blvd. The excavation for the Murray 21nd Pipeline is partially within a Multiple Habitat Preservation Area. It is on City owned property near the Del Cero Baptist Church at the intersection of Pennsylvania Lane and Delaware Ave. Related work will include traffic control, best management practices for erosion control and storm drain inlet protection, ADA curb ramp installation, pipe abandonment, and resurfacing and restoration of disturbed areas to their original condition. Existing below grade water line will be abandoned along portions of Mohawk Street, 72nd Street, and a public alley north of Mohawk Street.

**Document Details Report  
State Clearinghouse Data Base**

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**Lead Agency Contact**

**Name** Mark Brunette  
**Agency** City of San Diego  
**Phone** 619-446-5379 **Fax**  
**email**  
**Address** 1222 First Avenue, MS-501  
  
**City** San Diego **State** CA **Zip** 92101

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**Project Location**

**County** San Diego  
**City** La Mesa, San Diego  
**Region**  
**Lat / Long** 32° 46' 07" N / 117° 02' 50" W  
**Cross Streets** Several including Lake Murray Blvd. and El Cajon Blvd.  
**Parcel No.** 463-010-40, 464-010-07  
**Township** **Range** **Section** **Base**

---

**Proximity to:**

**Highways** 94,8  
**Airports**  
**Railways** MTS  
**Waterways** Lake Murray  
**Schools** SDSU, Crawford, Helix HS  
**Land Use** Public Right of Way, RS-1-2 (Residential - Single Family), AR-1-1 (Agricultural - Residential)

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**Project Issues** Archaeologic-Historic; Biological Resources; Toxic/Hazardous; Landuse

---

**Reviewing Agencies** Resources Agency; Department of Fish and Wildlife, Region 5; Department of Parks and Recreation; Department of Water Resources; California Highway Patrol; Caltrans, District 11; Air Resources Board; State Water Resources Control Board, Division of Drinking Water; State Water Resources Control Board, Division of Financial Assistance; Regional Water Quality Control Board, Region 9; Native American Heritage Commission; Public Utilities Commission; State Lands Commission

---

**Date Received** 11/06/2015 **Start of Review** 11/06/2015 **End of Review** 12/07/2015

**DEPARTMENT OF TRANSPORTATION**

DISTRICT 11, DIVISION OF PLANNING

4050 TAYLOR ST, M.S. 240

SAN DIEGO, CA 92110

PHONE (619) 688-6960

FAX (619) 688-4299

TTY 711

www.dot.ca.gov



*Serious drought.  
Help save water!*

November 19, 2015

11-SD-8

PM 21.81

SCH#2015111024

Montezuma/Mid City Pipelines MND

Mr. Mark Brunette  
City of San Diego  
1222 1<sup>st</sup> Ave, M.S. 501  
San Diego, CA 92101

Dear Mr. Brunette:

The California Department of Transportation (Caltrans) has received the Mitigated Negative Declaration (MND) dated November 6, 2015, for the Montezuma/Mid City Pipeline Project located at Lake Murray and Interstate 8 (I-8). Caltrans has the following comments:

Any work performed within Caltrans right-of-way (R/W) will require discretionary review and approval by Caltrans and an encroachment permit will be required for any work within the Caltrans R/W prior to construction. As part of the encroachment permit process, the applicant must provide an approved final environmental document including the California Environmental Quality Act (CEQA) determination addressing any environmental impacts within the Caltrans' R/W, and any corresponding technical studies. If these materials are not included with the encroachment permit application, the applicant will be required to acquire and provide these to Caltrans before the permit application will be accepted. Identification of avoidance and/or mitigation measures will be a condition of the encroachment permit approval as well as procurement of any necessary regulatory and resource agency permits. Encroachment permit submittals that are incomplete can result in significant delays in permit approval.

Additional information regarding encroachment permits may be obtained by contacting the Caltrans Permits Office at (619) 688-6158. Early coordination with Caltrans is strongly advised for all encroachment permits.

If you have any questions, please contact Roy Abboud at (619) 688-6968.

Sincerely,

JACOB M. ARMSTRONG, Branch Chief  
Development Review Branch

*"Provide a safe, sustainable, integrated and efficient transportation system  
to enhance California's economy and livability"*

# VIEJAS

TRIBAL GOVERNMENT

PQ Box 908  
Alpine, CA 91903  
#1 Viejas Grade Road  
Alpine, CA 91901

Phone: 6194453810  
Fax: 6194455337  
viejas.com

November 16, 2015

Mark Brunette  
1222 First Avenue, MS 501  
San Diego, CA 92101

**RE: Montezuma Pipeline/Mid-City Pipeline Phase 2, Project No. 406277**

Dear Mr. Brunette,

The Viejas Band of Kumeyaay Indians ("Viejas") has reviewed the proposed project and at this time we have determined that the project site is has cultural significance or ties to Viejas. Viejas Band request that a Kumeyaay Cultural Monitor be on site for ground disturbing activities to inform us of any new developments such as inadvertent discovery of cultural artifacts, cremation sites, or human remains. Please call Julie Hagen for scheduling at 619-659-2339 or email [jhagen@viejas-nsn.gov](mailto:jhagen@viejas-nsn.gov). Thank you

Sincerely,

VIEJAS BAND OF KUMEYAAY INDIANS



# San Diego County Archaeological Society, Inc.

Environmental Review Committee

5 December 2015

To: Mr. Mark Brunette  
Development Services Department  
City of San Diego  
1222 First Avenue, Mail Station 501  
San Diego, California 92101

Subject: Draft Mitigated Negative Declaration  
Montezuma Pipeline/Mid-City Pipeline Phase 2  
Project No. 406277

Dear Mr. Brunette:

I have reviewed the subject on behalf of this committee of the San Diego County Archaeological Society.

Based on the information contained in the DMND and the letter report from Helix Environmental Planning, we agree with the mitigation program prescribed for cultural resources.

SDCAS appreciates the opportunity to participate in the environmental review process for this project.

Sincerely,

  
James W. Royle, Jr., Chairperson  
Environmental Review Committee

cc: Helix Environmental Planning  
SDCAS President  
File

# RINCON BAND OF LUISEÑO INDIANS

## Culture Committee

1 W. Tribal Road · Valley Center, California 92082 ·  
(760) 297-2621 or (760) 297-2622 & Fax: (760) 749-8901



November 16, 2015

Mark Brunette  
The City of San Diego  
Development Services Department  
1222 First Avenue, MS 501  
San Diego, CA 92101

**Re: Montezuma Pipeline/Mid-City Pipeline Phase 2**

Dear Mr. Burnette:

This letter is written on behalf of the Rincon Band of Luiseño Indians. Thank you for inviting us to submit comments on the Montezuma Pipeline/Mid-City Pipeline Phase 2 Project. Rincon is submitting these comments concerning your projects potential impact on Luiseño cultural resources.

The Rincon Band has concerns for the impacts to historic and cultural resources and the finding of items of significant cultural value that could be disturbed or destroyed and are considered culturally significant to the Luiseño people. This is to inform you, your identified location is not within the Luiseño Aboriginal Territory. We recommend that you locate a tribe within the project area to receive direction on how to handle any inadvertent findings according to their customs and traditions.

If you would like information on tribes within your project area, please contact the Native American Heritage Commission and they will assist with a referral.

Thank you for the opportunity to protect and preserve our cultural assets.

Sincerely,

Vincent Whipple  
Manager  
Rincon Cultural Resources Department

---

Bo Mazzetti  
Tribal Chairman

Stephanie Spencer  
Vice Chairwoman

Steve Stallings  
Council Member

Laurie E. Gonzalez  
Council Member

Alfonso Kolb  
Council Member



**PALA TRIBAL HISTORIC  
PRESERVATION OFFICE**

PMB 50, 35008 Pala Temecula Road  
Pala, CA 92059  
760-891-3510 Office | 760-742-3189 Fax



December 21, 2015

Mark Brunette  
City of San Diego, Planning Dept.  
1222 First Ave, MS 413  
San Diego, CA 92101

Re: Montezuma Pipeline/ Mid- City Pipeline Phase 2- Project No. 406277

Dear Mr. Brunette:

The Pala Band of Mission Indians Tribal Historic Preservation Office has received your notification of the project referenced above. This letter constitutes our response on behalf of Robert Smith, Tribal Chairman.

We have consulted our maps and determined that the project as described is not within the boundaries of the recognized Pala Indian Reservation. The project is also beyond the boundaries of the territory that the tribe considers its Traditional Use Area (TUA). Therefore, we have no objection to the continuation of project activities as currently planned and we defer to the wishes of Tribes in closer proximity to the project area.

We appreciate involvement with your initiative and look forward to working with you on future efforts. If you have questions or need additional information, please do not hesitate to contact me by telephone at 760-891-3515 or by e-mail at [sgaughen@palatribe.com](mailto:sgaughen@palatribe.com).

Sincerely,

Shasta C. Gaughen, PhD  
Tribal Historic Preservation Officer  
Pala Band of Mission Indians

**ATTENTION: THE PALA TRIBAL HISTORIC PRESERVATION OFFICE IS RESPONSIBLE FOR ALL REQUESTS FOR CONSULTATION. PLEASE ADDRESS CORRESPONDENCE TO SHASTA C. GAUGHEN AT THE ABOVE ADDRESS. IT IS NOT NECESSARY TO ALSO SEND NOTICES TO PALA TRIBAL CHAIRMAN ROBERT SMITH.**

Consultation letter 1

NOTICE OF DETERMINATION

TO:  X  Recorder/County Clerk  
P.O. Box 1750, MS A33  
1600 Pacific Hwy, Room 260  
San Diego, CA 92101-2422

FROM: City of San Diego  
Development Services Department  
1222 First Avenue, MS 501  
San Diego, CA 92101

FILED  
Ernest J Dronenburg, Jr. Recorder County Clerk

MAY 05 2017

BY *Kathy A. Bates*  
DEPUTY

170067

Office of Planning and Research  
1400 Tenth Street, Room 121  
Sacramento, CA 95814

PROJECT NUMBER: 406277/S-11026.02.06

STATE CLEARINGHOUSE NUMBER: 2015111024

PROJECT TITLE: MONTEZUMA PIPELINE/MID-CITY PIPELINE PHASE 2

**PROJECT LOCATION:** The Project is located in eastern and mid-city San Diego along Lake Murray Boulevard/70th Street and neighboring side streets in portions of the College Area and Navajo communities. Portions of the Project along Lake Murray Boulevard at Interstate 8 (I-8) lie within the municipal boundaries of the City of La Mesa. The Project's southern terminus is at El Cajon Boulevard and 68th Street in the City of San Diego, California; the northern terminus is within the grounds of the Alvarado Water Treatment Plant along Lake Murray Boulevard. The project is located within the Navajo, College Area, and Mid-City: Eastern Area Community Plan areas and Council Districts 7 and 9.

**PROJECT DESCRIPTION:** A SITE DEVELOPMENT PERMIT for the installation of approximately 1.16 miles of new water pipelines which consists of 5,680 linear feet (LF) of new 66" diameter Cement Lined and Coated Steel transmission main and 422 LF of 8-inch PVC distribution main. The 66-inch transmission main will run from the Alvarado Water Treatment Plant (AWTP), located at the intersection of Lake Murray Boulevard and Kiowa Drive, to the intersection of 68th and El Cajon Boulevard. The northern terminus of the pipeline will be connected to Existing Valve Vault No. 3 located where the Earl Thomas Reservoir Outlet Pipeline intersects the Clear Wells Interconnect Pipeline at the AWTP. The south terminus will be connected to the Mid-City Pipeline Phase 1 project water lines which start on El Cajon Boulevard between 68th and 69th Streets. The project also includes replacement of a remote control panel and antenna mast for the Murray 2nd Pipeline, as well as installation of insert flow meters for the Murray 2nd Pipeline and the Mid-City Pipeline. The majority of the project alignment will be constructed using open trenching. The pipeline will be tunneled and no trenching will be required at three locations: 1) crossing Interstate 8; 2) under the San Diego County Water Authority 108-inch main on Lake Murray Boulevard; and 3) under the San Diego County Water Authority 48-inch main on El Cajon Boulevard. For the I-8 crossing, the tunnel launching pit will be located in the Denny's parking lot at 6970 Alvarado Road on the south side of I-8, and the receiving pit will be on the north side of I-8 in the City of La Mesa within the Lake Murray Boulevard public right-of-way. Both tunneling pits will be sited in existing development areas that do not contain sensitive biological resources.

There will be excavations in unpaved areas at the connection with Valve Vault No. 3 at the AWTP and at the Murray 2nd Pipeline. Existing Valve Vault No. 3 is on City owned land adjacent to Lake Murray Boulevard. The excavation for the Murray 2nd Pipeline is partially within a Multiple Habitat Preservation Area. It is on City owned property near the Del Cerro Baptist Church at the intersection of Pennsylvania Lane and Delaware Avenue. Related work will include traffic control, best management practices for erosion control and storm drain inlet protection, ADA curb ramp installation, pipe abandonment, and resurfacing and restoration of disturbed areas to their original condition. Existing below grade water line will be abandoned along portions of Mohawk Street, 72nd Street, and a public alley north of Mohawk Street.

**PROJECT APPLICANT:** City of San Diego Public Works Department, 525 B Street, Suite 750, MS 908A San Diego, CA 92101. Contact: Alice Altas, (619) 533-4105.

This is to advise that, on March 7, 2016 the Development Services Department approved the above described project and made the following determinations:

- 1. The project in its approved form \_\_\_ will,  X  will not, have a significant effect on the environment.

- 2.  An Environmental Impact Report was prepared for this project and certified pursuant to the provisions of CEQA.
- A Mitigated Negative Declaration was prepared for this project pursuant to the provisions of CEQA.
- An Addendum to Negative Declaration / Mitigated Negative Declaration / Environmental Impact Report No. \_\_\_\_\_ was prepared for this project pursuant to the provisions of CEQA.

Record of project approval may be examined at the address above.

- 3. Mitigation measures  were,  were not, made a condition of the approval of the project; and a mitigation, monitoring and reporting program  was,  was not, adopted for the project.
- 4. (EIR only) Findings  were,  were not, made pursuant to CEQA Guidelines Section 15091.
- 5. (EIR only) A Statement of Overriding Considerations  was,  was not, adopted for this project.

It is hereby certified that the final environmental report, including comments and responses, is available to the general public at the office of the Development Services Department, 1222 First Avenue, San Diego, CA 92101.

Analyst: Mark Brunette

Telephone: (619) 446-5379

Filed by: *Mark Panto*  
Signature

Senior Planner  
Title

**FILED IN THE OFFICE OF THE COUNTY CLERK**  
 San Diego County on MAY 05 2017  
 Posted MAY 05 2017 Removed JUN 05 2017  
 Returned to agency on JUN 05 2017  
 Deputy *Paul H. Bar*



State of California - Department of Fish and Wildlife

### 2017 ENVIRONMENTAL FILING FEE CASH RECEIPT

DFW 753.5a (Rev. 12/15/15) Previously DFG 753.5a

RECEIPT NUMBER: 37-2017- 0372
STATE CLEARINGHOUSE NUMBER (If applicable) 2015111024

**SEE INSTRUCTIONS ON REVERSE. TYPE OR PRINT CLEARLY.**

LEAD AGENCY CITY OF SAN DIEGO	LEAD AGENCY EMAIL --	DATE 05/05/17
COUNTY/STATE AGENCY OF FILING San Diego County		DOCUMENT NUMBER *20170067*
PROJECT TITLE MONTEZUMA PIPELINE/MID-CITY PIPELINE PHASE 2		

PROJECT APPLICANT NAME CITY OF SAN DIEGO PUBLIC WORKS DEPARTMENT	PROJECT APPLICANT EMAIL --	PHONE NUMBER 619.533.4105
PROJECT APPLICANT ADDRESS 525 B STREET SUITE 750 MS 908A	CITY SAN DIEGO	STATE CA
		ZIP CODE 92101

**PROJECT APPLICANT (Check appropriate box)**


- Local Public Agency     
  School District     
  Other Special District     
  State Agency     
  Private Entity

**CHECK APPLICABLE FEES:**

- |  |            |    |                  |
|--|------------|----|------------------|
| <input type="checkbox"/> Environmental Impact Report (EIR)                   | \$3,078.25 | \$ | _____            |
| <input checked="" type="checkbox"/> Mitigated/Negative Declaration (MND)(ND) | \$2,216.25 | \$ | _____ \$2,216.25 |
| <input type="checkbox"/> Certified Regulatory Program document (CRP)         | \$1,046.50 | \$ | _____            |
- 170067
- Exempt from fee
  - Notice of Exemption (attach)
  - CDFW No Effect Determination (attach) Fee previously paid (attach previously issued cash receipt copy)
- 
- |   |          |    |               |
|---|----------|----|---------------|
| <input type="checkbox"/> Water Right Application or Petition Fee (State Water Resources Control Board only) | \$850.00 | \$ | _____         |
| <input checked="" type="checkbox"/> County documentary handling fee   |          | \$ | _____ \$50.00 |
| <input type="checkbox"/> Other  |          | \$ | _____         |

**PAYMENT METHOD:**

- Cash   
  Credit   
  Check   
  Other 0001570894     
 TOTAL RECEIVED   
 \$ \_\_\_\_\_ \$2,266.25

SIGNATURE x 	AGENCY OF FILING PRINTED NAME AND TITLE San Diego County      KANDY MAE BAO      , Deputy
--	--





**Ernest J. Dronenburg, Jr.**  
**COUNTY OF SAN DIEGO**  
**ASSESSOR/RECORDER/COUNTY CLERK**



**ASSESSOR'S OFFICE**

1600 Pacific Highway, Suite 103  
 San Diego, CA 92101-2480  
 Tel. (619) 236-3771 \* Fax (619) 557-4056

[www.sdarcc.com](http://www.sdarcc.com)

**RECORDER/COUNTY CLERK'S OFFICE**

1600 Pacific Highway, Suite 260  
 P.O. Box 121750 \* San Diego, CA 92112-1750  
 Tel. (619)237-0502 \* Fax (619)557-4155

Transaction #: 383977220170505  
 Deputy: KBAO  
 Location: COUNTY ADMINISTRATION BUILDING  
 05-May-2017 09:50

**FEES:**

2,216.25	Qty of 1 Fish & Game Neg Dec (1800) for Ref# 20170067
50.00	Qty of 1 Fish and Game Filing Fee for Ref# 20170372
<hr/>	
2,266.25	TOTAL DUE

**PAYMENTS:**

2,266.25	Check
<hr/>	
2,266.25	TENDERED

**SERVICES AVAILABLE AT OFFICE LOCATIONS**

- \* Tax Bill Address Changes
- \* Records and Certified Copies:  
     Birth/ Marriage/ Death/ Real Estate
- \* Fictitious Business Names (DBAs)
- \* Marriage Licenses and Ceremonies
- \* Assessor Parcel Maps

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- \* Forms and Applications
- \* Frequently Asked Questions (FAQs)
- \* Grantor/ Grantee Index
- \* Fictitious Business Names Index (DBAs)
- \* Property Sales
- \* On-Line Purchases

**THE BACK OF THIS CHECK CONTAINS A SECURITY MARK - DO NOT ACCEPT WITHOUT HOLDING AT AN ANGLE TO VERIFY SECURITY MARK**

	<b>THE CITY OF SAN DIEGO</b> AMERICA'S FINEST CITY	BANK OF AMERICA NORTHERDOK, ILLINOIS COMMERCIAL DISBURSEMENT ACCOUNT	WARRANT CHECK NO. <b>0001570894</b>
		GENERAL 70-2328 719	AMOUNT <b>05/03/2017</b> \$ 2,266.25
PAY ** TWO THOUSAND TWO HUNDRED SIXTY-SIX AND 25/100 DOLLARS *****			
TO THE ORDER OF COUNTY OF SAN DIEGO ASSESSOR		VOID AFTER 180 DAYS PAYMENT WARRANTED BY	<i>Mary J. Lewis</i> Chief Financial Officer <i>Paul R. Marmelich</i> City Treasurer

0001570894 071923286 7765201321  
 Montezuma/Mid-City Pipeline Phase 2 and 70th Alvarado to Saranac Sidewalk  
 K-24-1821-DBB-3-D-C



# Ernest J. Dronenburg, Jr.

## COUNTY OF SAN DIEGO ASSESSOR/RECORDER/COUNTY CLERK

**ASSESSOR'S OFFICE**

1600 Pacific Highway, Suite 103  
San Diego, CA 92101-2480  
Tel. (619) 236-3771 \* Fax (619) 557-4056

[www.sdarcc.com](http://www.sdarcc.com)

**RECORDER/COUNTY CLERK'S OFFICE**

1600 Pacific Highway, Suite 260  
P.O. Box 121750 \* San Diego, CA 92112-1750  
Tel. (619)237-0502 \* Fax (619)557-4155

Transaction #: 383977220170505

Deputy: KBAO

Location: COUNTY ADMINISTRATION BUILDING

05-May-2017 09:50

**FEES:**

2,216.25	Qty of 1 Fish & Game Neg Dec (1800) for Ref# 20170067
50.00	Qty of 1 Fish and Game Filing Fee for Ref# 20170372
<hr/>	
2,266.25	TOTAL DUE

**PAYMENTS:**

2,266.25	Check
<hr/>	
2,266.25	TENDERED

**SERVICES AVAILABLE AT  
OFFICE LOCATIONS**

- \* Tax Bill Address Changes
- \* Records and Certified Copies:  
Birth/ Marriage/ Death/ Real Estate
- \* Fictitious Business Names (DBAs)
- \* Marriage Licenses and Ceremonies
- \* Assessor Parcel Maps
- \* Property Ownership
- \* Property Records
- \* Property Values
- \* Document Recordings

**SERVICES AVAILABLE ON-LINE AT  
[www.sdarcc.com](http://www.sdarcc.com)**

- \* Forms and Applications
- \* Frequently Asked Questions (FAQs)
- \* Grantor/ Grantee Index
- \* Fictitious Business Names Index (DBAs)
- \* Property Sales
- \* On-Line Purchases  
Assessor Parcel Maps  
Property Characteristics  
Recorded Documents

**NOTICE OF EXEMPTION**

(Check one or both)

TO:  X  Recorder/County Clerk  
P.O. Box 1750, MS A-33  
1600 Pacific Hwy, Room 260  
San Diego, CA 92101-2400

FROM: City of San Diego  
Public Works Department  
525 B Street, Suite 750, MS 908A  
San Diego, CA 92101

Office of Planning and Research  
1400 Tenth Street, Room 121  
Sacramento, CA 95814

**Project Name:** 70<sup>th</sup>-Alvarado to Saranac Sidewalk

**Project No. / WBS No.:** B-17065.02.06

**Project Location-Specific:** The Project is located within the road right-of-way on the west side of 70<sup>th</sup> Street between Alvarado Road and Saranac Street within the College Area Community Planning Area (Council District 9).

**Project Location-City/County:** San Diego/San Diego

**Description of nature and purpose of the Project:** The Project will install approximately 600 linear feet (LF) of four- to five-foot wide concrete sidewalk and curb and gutter to replace the existing asphalt concrete (AC) walkway on the west side of 70<sup>th</sup> Street between Alvarado Road and Saranac Street. The Project also includes installation of new curb ramps, a two-foot tall gravity retaining wall, relocation of signs, and restriping along 70<sup>th</sup> Street. A four-foot tall chain link fence will be installed for pedestrian safety adjacent to the existing concrete channel at the intersection with Alvarado Road. The concrete channel will be protected-in-place. Minor ornamental vegetation removal will occur at the southern end of the project to accommodate the new sidewalk.

**Name of Public Agency Approving Project:** City of San Diego

**Name of Person or Agency Carrying Out Project:** City of San Diego Public Works Department  
Contact: Jerry Jakubauskas; Phone: (619) 533-3755  
525 B Street, Suite 750 (MS 908A), San Diego, CA 92101

Exempt Status: (CHECK ONE)

- ( ) Ministerial (Sec. 21080(b)(1); 15268);
- ( ) Declared Emergency (Sec. 21080(b)(3); 15269(a));
- ( ) Emergency Project (Sec. 21080(b)(4); 15269 (b)(c))
- (X) Categorical Exemption: 15301 (Existing Facilities); and 15303 (New Construction or Conversion of Small Structures)

Reasons why project is exempt: The City of San Diego conducted an environmental review which determined that the project meets the categorical exemption criteria set forth in CEQA State Guidelines, Sections 15301 (Existing Facilities) which allows for the minor alteration of existing public facilities involving negligible or no expansion of use beyond that existing at the time of the lead agency's determination including existing highways and streets, sidewalks, gutters, and similar facilities; 15303 (New Construction or Conversion of Small Structures) which allows for the construction of new, small facilities; and where the exceptions listed in Section 15300.2 would not apply.


Lead Agency Contact Person: Jerry Jakubauskas

Telephone: (619) 533-3755

If filed by applicant:

1. Attach certified document of exemption finding.
2. Has a notice of exemption been filed by the public agency approving the project? ( ) Yes ( ) No

It is hereby certified that the City of San Diego has determined the above activity to be exempt from CEQA

  
\_\_\_\_\_  
Carrie Purcell, Assistant Deputy Director

February 26, 2019  
\_\_\_\_\_  
Date

Check One:

- (X) Signed By Lead Agency  
( ) Signed by Applicant

Date Received for Filing with County Clerk or OPR:



**APPENDIX B**  
**FIRE HYDRANT METER PROGRAM**

<b>CITY OF SAN DIEGO CALIFORNIA DEPARTMENT INSTRUCTIONS</b>	<b>NUMBER DI 55.27</b>	<b>DEPARTMENT Water Department</b>
<b>SUBJECT  FIRE HYDRANT METER PROGRAM (FORMERLY: CONSTRUCTION METER PROGRAM)</b>	<b>PAGE 1 OF 10</b>	<b>EFFECTIVE DATE  October 15, 2002</b>
	<b>SUPERSEDES DI 55.27</b>	<b>DATED April 21, 2000</b>

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.)

<b>CITY OF SAN DIEGO CALIFORNIA DEPARTMENT INSTRUCTIONS</b>	<b>NUMBER DI 55.27</b>	<b>DEPARTMENT Water Department</b>
<b>SUBJECT  FIRE HYDRANT METER PROGRAM (FORMERLY: CONSTRUCTION METER PROGRAM)</b>	<b>PAGE 2 OF 10</b>	<b>EFFECTIVE DATE  October 15, 2002</b>
	<b>SUPERSEDES DI 55.27</b>	<b>DATED April 21, 2000</b>

- 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.

<b>CITY OF SAN DIEGO CALIFORNIA DEPARTMENT INSTRUCTIONS</b>	<b>NUMBER DI 55.27</b>	<b>DEPARTMENT Water Department</b>
<b>SUBJECT  FIRE HYDRANT METER PROGRAM (FORMERLY: CONSTRUCTION METER PROGRAM)</b>	<b>PAGE 3 OF 10</b>	<b>EFFECTIVE DATE  October 15, 2002</b>
	<b>SUPERSEDES DI 55.27</b>	<b>DATED April 21, 2000</b>

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.

<b>CITY OF SAN DIEGO CALIFORNIA DEPARTMENT INSTRUCTIONS</b>	<b>NUMBER DI 55.27</b>	<b>DEPARTMENT Water Department</b>
<b>SUBJECT  FIRE HYDRANT METER PROGRAM (FORMERLY: CONSTRUCTION METER PROGRAM)</b>	<b>PAGE 4 OF 10</b>	<b>EFFECTIVE DATE  October 15, 2002</b>
	<b>SUPERSEDES DI 55.27</b>	<b>DATED April 21, 2000</b>

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.

<b>CITY OF SAN DIEGO CALIFORNIA DEPARTMENT INSTRUCTIONS</b>	<b>NUMBER DI 55.27</b>	<b>DEPARTMENT Water Department</b>
<b>SUBJECT  FIRE HYDRANT METER PROGRAM (FORMERLY: CONSTRUCTION METER PROGRAM)</b>	<b>PAGE 5 OF 10</b>	<b>EFFECTIVE DATE  October 15, 2002</b>
	<b>SUPERSEDES DI 55.27</b>	<b>DATED April 21, 2000</b>

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

<b>CITY OF SAN DIEGO CALIFORNIA DEPARTMENT INSTRUCTIONS</b>	<b>NUMBER DI 55.27</b>	<b>DEPARTMENT Water Department</b>
<b>SUBJECT  FIRE HYDRANT METER PROGRAM (FORMERLY: CONSTRUCTION METER PROGRAM)</b>	<b>PAGE 6 OF 10</b>	<b>EFFECTIVE DATE  October 15, 2002</b>
	<b>SUPERSEDES DI 55.27</b>	<b>DATED April 21, 2000</b>

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

<b>CITY OF SAN DIEGO CALIFORNIA DEPARTMENT INSTRUCTIONS</b>	<b>NUMBER DI 55.27</b>	<b>DEPARTMENT Water Department</b>
<b>SUBJECT  FIRE HYDRANT METER PROGRAM (FORMERLY: CONSTRUCTION METER PROGRAM)</b>	<b>PAGE 7 OF 10</b>	<b>EFFECTIVE DATE  October 15, 2002</b>
	<b>SUPERSEDES DI 55.27</b>	<b>DATED April 21, 2000</b>

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



<b>CITY OF SAN DIEGO CALIFORNIA DEPARTMENT INSTRUCTIONS</b>	<b>NUMBER DI 55.27</b>	<b>DEPARTMENT Water Department</b>
<b>SUBJECT  FIRE HYDRANT METER PROGRAM (FORMERLY: CONSTRUCTION METER PROGRAM)</b>	<b>PAGE 8 OF 10</b>	<b>EFFECTIVE DATE  October 15, 2002</b>
	<b>SUPERSEDES DI 55.27</b>	<b>DATED April 21, 2000</b>

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.

<b>CITY OF SAN DIEGO CALIFORNIA DEPARTMENT INSTRUCTIONS</b>	<b>NUMBER DI 55.27</b>	<b>DEPARTMENT Water Department</b>
<b>SUBJECT  FIRE HYDRANT METER PROGRAM (FORMERLY: CONSTRUCTION METER PROGRAM)</b>	<b>PAGE 9 OF 10</b>	<b>EFFECTIVE DATE  October 15, 2002</b>
	<b>SUPERSEDES DI 55.27</b>	<b>DATED April 21, 2000</b>

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.

<b>CITY OF SAN DIEGO CALIFORNIA DEPARTMENT INSTRUCTIONS</b>	<b>NUMBER DI 55.27</b>	<b>DEPARTMENT Water Department</b>
<b>SUBJECT  FIRE HYDRANT METER PROGRAM (FORMERLY: CONSTRUCTION METER PROGRAM)</b>	<b>PAGE 10 OF 10</b>	<b>EFFECTIVE DATE  October 15, 2002</b>
	<b>SUPERSEDES DI 55.27</b>	<b>DATED April 21, 2000</b>

- 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.) <u>Zip:</u>	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: <input type="text"/>	<input type="checkbox"/>	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>			

<b>Fire Hydrant Meter Removal Request</b>	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: <b>\$ 936.00</b>	Fees Amount: <b>\$ 62.00</b>
Meter Serial #	Meter Size: <b>05</b>	Meter Make and Style: <b>6-7</b>
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**

City of San Diego, CM&FS Div., 9753 Chesapeake Drive, SD CA 92123

**Project Name:**

Work Order No or Job Order No.

City Purchase Order No.

Resident Engineer (RE):

RE Phone#: Fax#:

**Contractor's Name:**

Contractor's Address:

Contractor's Phone #:

Contractor's fax #:

Contact Name:

**Invoice No.**

**Invoice Date:**

Billing Period: ( To )

Item #	Item Description	Contract Authorization				Previous Totals To Date		This Estimate		Totals to Date	
		Unit	Price	Qty	Extension	%/QTY	Amount	% / QTY	Amount	% / QTY	Amount
1					\$ -		\$ -		\$ -	0.00%	\$ -
2					\$ -		\$ -		\$ -	0.00%	\$ -
3					\$ -		\$ -		\$ -	0.00%	\$ -
4					\$ -		\$ -		\$ -	0.00%	\$ -
5					\$ -		\$ -		\$ -	0.00%	\$ -
6					\$ -		\$ -		\$ -	0.00%	\$ -
7					\$ -		\$ -		\$ -	0.00%	\$ -
8					\$ -		\$ -		\$ -	0.00%	\$ -
5					\$ -		\$ -		\$ -	0.00%	\$ -
6					\$ -		\$ -		\$ -	0.00%	\$ -
7					\$ -		\$ -		\$ -	0.00%	\$ -
8					\$ -		\$ -		\$ -	0.00%	\$ -
9					\$ -		\$ -		\$ -	0.00%	\$ -
10					\$ -		\$ -		\$ -	0.00%	\$ -
11					\$ -		\$ -		\$ -	0.00%	\$ -
12					\$ -		\$ -		\$ -	0.00%	\$ -
13					\$ -		\$ -		\$ -	0.00%	\$ -
14					\$ -		\$ -		\$ -	0.00%	\$ -
15					\$ -		\$ -		\$ -	0.00%	\$ -
16					\$ -		\$ -		\$ -	0.00%	\$ -
17	Field Orders				\$ -		\$ -		\$ -	0.00%	\$ -
<b>CHANGE ORDER No.</b>					\$ -		\$ -		\$ -	0.00%	\$ -
					\$ -		\$ -		\$ -	0.00%	\$ -
Total Authorized Amount (including approved Change Order)					\$ -		\$ -		\$ -	<b>Total Billed</b>	\$ -

**SUMMARY**

A. Original Contract Amount	\$ -
B. Approved Change Order #00 Thru #00	\$ -
C. Total Authorized Amount (A+B)	\$ -
D. Total Billed to Date	\$ -
E. Less Total Retention (5% of D)	\$ -
F. Less Total Previous Payments	\$ -
<b>G. Payment Due Less Retention</b>	<b>\$0.00</b>
H. Remaining Authorized Amount	\$0.00

I certify that the materials have been received by me in the quality and quantity specified

\_\_\_\_\_  
Resident Engineer

\_\_\_\_\_  
Construction Engineer

**Retention and/or Escrow Payment Schedule**

Total Retention Required as of this billing (Item E)	\$0.00
Previous Retention Withheld in PO or in Escrow	\$0.00
<b>Add'l Amt to Withhold in PO/Transfer in Escrow:</b>	<b>\$0.00</b>
<b>Amt to Release to Contractor from PO/Escrow:</b>	

Contractor Signature and Date: \_\_\_\_\_

NOTE: CONTRACTOR TO CALCULATE TO THE 2ND DECIMAL PLACE.

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)"

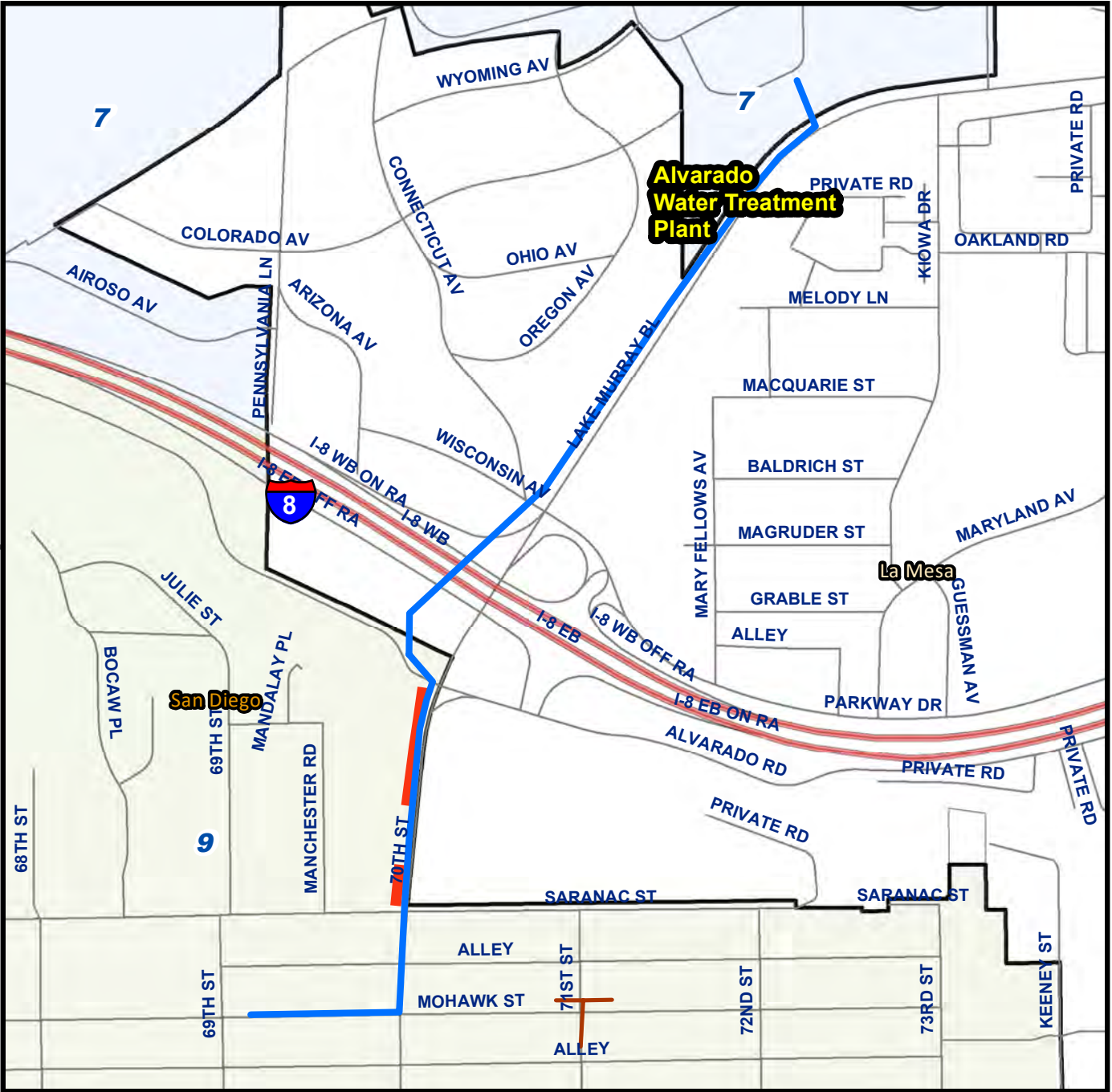
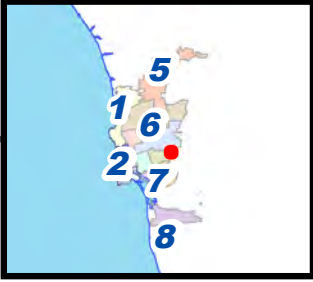
Year	January	February	March	April	May	June	July	August	September	October	November	December
2018				15,000	25,000	52,000	52,000	100,000	10,000	100,000	100,000	100,000
2019	10,000	10,000	85,000	58,000	100,000	100,000	100,000	100,000	100,000	100,000	1,000,000	1,000,000
2020	100,000	100,000	100,000	1,000,000	1,000,000							
2021												
2022												
2023												
2024												
2025												

SAMPLE REFERENCE

**APPENDIX E**  
**LOCATION MAP**

## Montezuma/Mid-City Pipeline Project - Phase 2 And 70th-Alvarado to Saranac Sidewalk

FOR QUESTIONS ABOUT THIS PROJECT  
Call: (619) 533-4207  
Email: [engineering@sandiego.gov](mailto:engineering@sandiego.gov)



### Legend

- Mid City Pipeline phase 2
- Mid City Pipeline phase 2 (resurfacing only)
- Sidewalk



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**APPENDIX F**

**SWPPP CONSTRUCTION BMP MAINTENANCE LOG**

## SWPPP Construction BMP Maintenance Log

Examples of construction BMP maintenance activities include but are not limited to tasks listed below. The contractor is ultimately responsible for compliance with the Storm Water Standards Manual and/or the Construction General Permit, and for ensuring all BMPs function per manufacturer's specifications. Use the attached log to schedule and document maintenance activities. The log shall be kept with the project SWPPP document at all times.

### **Construction BMP Maintenance Activities**

- Maintain stabilized construction entrances/exits
- Redress gravel/rock to full coverage and remove any sediment accumulation
- Remove and replace geotextile/compost blanket/plastic with holes or tears
- Redress and restabilize erosion or rilling greater than 1-inch deep
- Reapply hydraulic stabilization products to full coverage
- Remove and replace silt fence/fiber roll/gravel bags/etc. with holes or tears
- Reinstall or replace silt fence/fiber roll/etc. with sags
- Remove sediment accumulation from perimeter controls
- Remove sediment accumulation from storm drain inlet protection and check dams
- Remove sediment accumulation from energy dissipators
- Repair or remove any vehicle/equipment that leaks
- Remove any accumulation in drip pans or containment
- Empty concrete washouts when they reach 75% capacity
- Empty waste disposal containers when they reach 95% capacity

Construction BMP Maintenance Log

**Project Title:**

**WBS/IO No:**

**WDID:**

Scheduled Date/Time	Completion Date/Time	Location	Maintenance Tasks Performed	Logged By



**APPENDIX G**

**CONTRACTOR'S DAILY QUALITY CONTROL INSPECTION REPORT**

**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:

\_\_\_\_\_

\_\_\_\_\_

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: \_\_\_\_\_

Wet Track Abrasion: \_\_\_\_\_

Consistency Test: \_\_\_\_\_

Extraction Test: \_\_\_\_\_

Water Content: \_\_\_\_\_

Spread Rate: \_\_\_\_\_

Notes

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

QCP Administrator 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](http://www.waterboards.ca.gov/water_issues/programs/npdes/docs/drinkingwater/final_statewide_wqo2014_0194_dwq.pdf)), and as follows:

<b>Project Name:</b>				<b>WBS No.:</b>			<b>Watershed No.</b>						
<b>Qualified Person Conducting Tests:</b>				<b>signature</b>									
<b>BMPs MUST BE IN PLACE PRIOR TO ANY SCHEDULED DISCHARGE</b>					By signing, I certify that all of the statements and conditions for drinking water discharge events are correct.								
Event #1													
Discharge Location <sup>1</sup>	Category <sup>2</sup> (Select one)	Notification <sup>3</sup> (Select all that apply)	BMPs in Place <sup>4</sup> (Select all that apply)	Volume <sup>5</sup> (gal)	Sampling <sup>6</sup> (take samples at 10 mins, 50-60 mins & last 10 mins)				Exceedence <sup>7</sup>			Notes Report exceedence to RE & complete page 2 of 2	
					Measure	Unit	Time	Result	Limit	No	Yes		
<b>Inlet Location</b>  <b>Start</b>  <b>Date:</b> <b>Time:</b>  <b>End</b>  <b>Date:</b> <b>Time:</b>	<b>Superchlorinated</b> <small>(Chlorine added for disinfection)</small>	<b>TSW</b> <small>(All Categories)</small>	<b>Sweep flow path</b> <small>(gutter, street, etc.)</small>	<b>Total</b>	<b>Chlorine</b>	mg/L			0.1 mg/L= Exceedence				
	<b>Large Volume</b> <small>(≥ 325,850 gal)</small>	<b>PUD</b> <small>(All Categories)</small>	<b>Dechlorination</b> <small>(diffusers, chemicals, etc.)</small>				<b>Reused</b> <small>(if any)</small>						
	<b>Well Dev/Rehab</b> <small>(Not Typical)</small>	<b>Water Board</b> <small>(Large Volume Only)</small>	<b>Inlet Protection</b>	<b>Erosion Controls</b>		<b>Turbidity</b>	NTU			20 NTU= Exceedence 225 NTU= Exceedence for Ocean			
	<b>Small Volume/Other</b> <small>(No Sampling Required)</small>	<b>County</b> <small>(≥100,000 gal &amp; within ¼ mile of ocean/bay; or if enters the County's MS4)</small>						<b>Sediment Controls</b>					
					<b>pH</b>	Unit			Range 6.5 to 8.5				
Event #2													
Discharge Location <sup>1</sup>	Category <sup>2</sup> (Select one)	Notification <sup>3</sup> (Select all that apply)	BMPs in Place <sup>4</sup> (Select all that apply)	Volume <sup>5</sup> (gal)	Sampling <sup>6</sup> (take samples at 10 mins, 50-60 mins & last 10 mins)				Exceedence <sup>7</sup>			Notes Report exceedence to RE & complete page 2 of 2	
					Measure	Unit	Time	Result	Limit	No	Yes		
<b>Inlet Location</b>  <b>Start</b>  <b>Date:</b> <b>Time:</b>  <b>End</b>  <b>Date:</b> <b>Time:</b>	<b>Superchlorinated</b> <small>(Chlorine added for disinfection)</small>	<b>TSW</b> <small>(All Categories)</small>	<b>Sweep flow path</b> <small>(gutter, street, etc.)</small>	<b>Total</b>	<b>Chlorine</b>	mg/L			0.1 mg/L= Exceedence				
	<b>Large Volume</b> <small>(≥ 325,850 gal)</small>	<b>PUD</b> <small>(All Categories)</small>	<b>Dechlorination</b> <small>(diffusers, chemicals, etc.)</small>				<b>Reused</b> <small>(if any)</small>						
	<b>Well Dev/Rehab</b> <small>(Not Typical)</small>	<b>Water Board</b> <small>(Large Volume Only)</small>	<b>Inlet Protection</b>	<b>Erosion Controls</b>		<b>Turbidity</b>	NTU			20 NTU= Exceedence 225 NTU= Exceedence for Ocean			
	<b>Small Volume/Other</b> <small>(No Sampling Required)</small>	<b>County</b> <small>(≥100,000 gal &amp; within ¼ mile of ocean/bay; or if enters the County's MS4)</small>						<b>Sediment Controls</b>					
					<b>pH</b>	Unit			Range 6.5 to 8.5				

**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)

<b>Event #1</b>	
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.	
<b>4) If any answers are YES, Notify the RE immediately for further action</b>	

<b>Event #2</b>	
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.	
<b>4) If any answers are YES, Notify the RE immediately for further action</b>	

## 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	<a href="mailto:SWPPP@SanDiego.gov">SWPPP@SanDiego.gov</a>
PUD	3 days prior to all discharges	<a href="mailto:CompReports@SanDiego.gov">CompReports@SanDiego.gov</a> <a href="mailto:Rdavenport@SanDiego.gov">Rdavenport@SanDiego.gov</a>
San Diego Water Board	3 days prior to Large Volume discharges	<a href="mailto:SanDiego@WaterBoards.ca.gov">SanDiego@WaterBoards.ca.gov</a> <a href="mailto:Ben.Neill@WaterBoards.ca.gov">Ben.Neill@WaterBoards.ca.gov</a>
County of San Diego	3 days prior if 100,000 gal and within 1/4 mile of ocean/bay	DEH: <a href="mailto:Joseph.Palmer@SDCounty.ca.gov">Joseph.Palmer@SDCounty.ca.gov</a> <a href="mailto:Dominique.Edwards@SDCounty.ca.gov">Dominique.Edwards@SDCounty.ca.gov</a>
	3 days prior if enter county MS4 or unincorporated County	WPP: <a href="mailto:Nicholas.DeValle@SDCounty.ca.gov">Nicholas.DeValle@SDCounty.ca.gov</a> <a href="mailto:LUEG.Watersheds@sdcounty.ca.gov">LUEG.Watersheds@sdcounty.ca.gov</a>

- 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**  
**CALTRANS ENCROACHMENT PERMIT**

**See Google Drive Link:**

<https://drive.google.com/drive/folders/1xe5V0kkNhbwZoAYaSI-PH1NfpQL2LwRi>

**APPENDIX J**  
**PERMITTED CITY OF LA MESA TRAFFIC CONTROL PLANS**

**See Google Drive Link:**

<https://drive.google.com/drive/folders/1xe5V0kkNhbwZoAYaSI-PH1NfpQL2LwRi>

**APPENDIX K**  
**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 \_\_\_\_\_ 24 HR. PHONE ( ) \_\_\_\_\_

ADDRESS \_\_\_\_\_

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 <sup>1</sup>

## 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.

<sup>1</sup> 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 <sup>3</sup>
Chemical	Quantity <input type="checkbox"/> GAL <input type="checkbox"/> LBS <input type="checkbox"/> FT <sup>3</sup>
Chemical	Quantity <input type="checkbox"/> GAL <input type="checkbox"/> LBS <input type="checkbox"/> FT <sup>3</sup>
Clean-Up Procedures & Timeline:	
Completed By:	Phone:
Print Name:	Title:

**EMERGENCY RELEASE FOLLOW - UP NOTICE REPORTING FORM**

<b>A</b>	BUSINESS NAME	FACILITY EMERGENCY CONTACT & PHONE NUMBER ( ) -	
<b>B</b>	INCIDENT DATE MO DAY YR	TIME OES NOTIFIED (use 24 hr time)	OES CONTROL NO.
<b>C</b>	INCIDENT ADDRESS LOCATION	CITY / COMMUNITY	COUNTY ZIP
<b>D</b>	CHEMICAL OR TRADE NAME (print or type)		CAS Number
<b>D</b>	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"/>	
<b>D</b>	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
<b>D</b>	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
<b>E</b>	ACTIONS TAKEN		
<b>F</b>	KNOWN OR ANTICIPATED HEALTH EFFECTS (Use the comments section for addition information)		
<b>F</b>	<input type="checkbox"/> ACUTE OR IMMEDIATE (explain) _____		
<b>F</b>	<input type="checkbox"/> CHRONIC OR DELAYED (explain) _____		
<b>F</b>	<input type="checkbox"/> NOTKNOWN (explain) _____		
<b>G</b>	ADVICE REGARDING MEDICAL ATTENTION NECESSARY FOR EXPOSED INDIVIDUALS		
<b>H</b>	COMMENTS (INDICATE SECTION (A - G) AND ITEM WITH COMMENTS OR ADDITIONAL INFORMATION)		
<b>I</b>	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.		
<b>I</b>	REPORTING FACILITY REPRESENTATIVE (print or type) _____		
<b>I</b>	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 L**  
**SAMPLE 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 M**  
**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.
• 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

## **APPENDIX N**

### **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 2021 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**

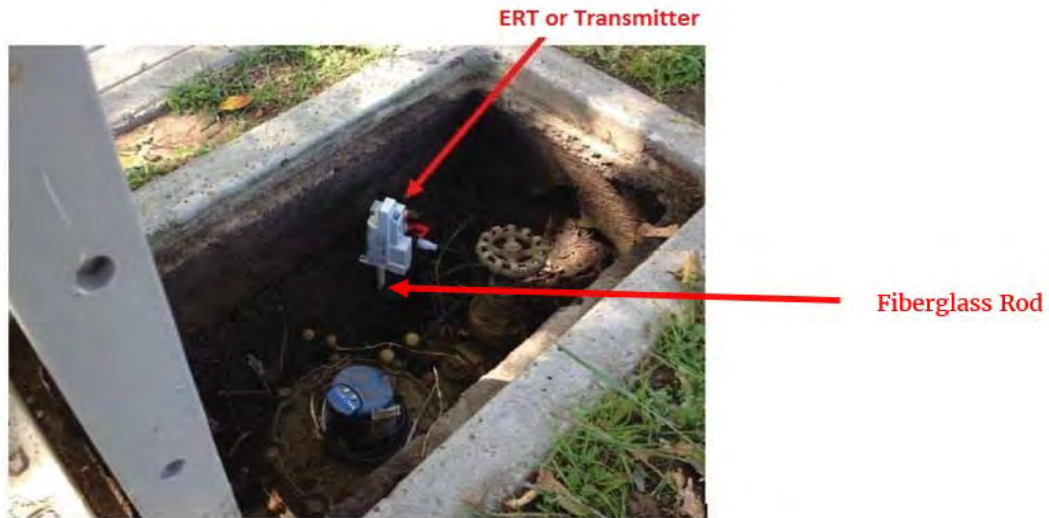


Photo 6 below is an example of disturbance that shall be avoided:

**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 Elvira Santiesteban, Compliance & Metering Manager 619-380-3804 and Kevin Wilson, Senior Water Utility Supervisor 619-857-8257 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 Elvira Santiesteban, Compliance & Metering Manager 619-380-3804 and Kevin Wilson, Senior Water Utility Supervisor 619-857-8257.**

**APPENDIX O**  
**OSHA CLASSIFICATION MID-CITY**

DEPARTMENT OF INDUSTRIAL RELATIONS  
**DIVISION OF OCCUPATIONAL SAFETY  
AND HEALTH ADMINISTRATION**  
MINING AND TUNNELING UNIT  
6150 VAN NUYS BOULEVARD, SUITE 310  
VAN NUYS, CA 91401-3333  
(818) 901-5420 FAX (818) 901-5579



RECEIVED

JAN 14 2016

PSOMAS

January 7, 2016

PSOMAS  
3111 Camino Del Rio North, Suite 702  
San Diego, CA 92108

Attention: Michael A. Pollard, P.E.  
Senior Project Manager

Subject: Underground Classification Numbers: C070-073-16T to C072-073-16T  
Mid-City Pipeline Phase II

Dear Mr. Pollard,

The information provided to this office regarding the referenced project has been reviewed. An Underground Classification of "Potentially Gassy" has been assigned to the tunnels identified in your submittal. Please provide copies of the Classifications to the Tunnel Contractor and ensure that copies of the Classifications are posted at the job site.

Please remind the Contractor to notify this office to schedule the mandated Pre-Job Safety Conference with the Division prior to commencing any activity associated with the project.

If you have any questions, please contact this office.

Sincerely,

A handwritten signature in blue ink, appearing to read "James Wittry".

James Wittry  
District Manager

cc: file



State of California

Department of Industrial Relations

DIVISION OF OCCUPATIONAL SAFETY AND HEALTH  
MINING AND TUNNELING UNIT

C070-073-16T

Van Nuys Office R5D2

# Underground Classification

Mid City Pipeline, Phase II  
City of San Diego

(NAME OF TUNNEL OR MINE AND COMPANY NAME)

of PSOMAS for: City of San Diego  
525 "B" Street, Suite 750, MS 908A San Diego, CA 92101  
(MAILING ADDRESS)

at Lake Murray Boulevard, north of Interstate 8  
La Mesa, California  
(LOCATION)

has been classified as \*\*\* POTENTIALLY GASSY \*\*\*  
(CLASSIFICATION)

as required by the California Labor Code Section 7955.

The Division shall be notified if sufficient quantities of flammable gas or vapors have been encountered underground. Classifications are based on the California Labor Code Part 9, Tunnel Safety Orders and Mine Safety Orders.

A 84 inch diameter steel casing (to accommodate a 66 inch diameter carrier pipe) approximately 27 feet in length to be installed along Lake Murray Boulevard, approximately 1,140 feet north of Highway 8 between station 45+42 and station 45+69, in the City of La Mesa, California.

January 6, 2016

Reference: Submittal from PSOMAS for the City of San Diego dated December 2, 2015

District Manager



State of California

Department of Industrial Relations

DIVISION OF OCCUPATIONAL SAFETY AND HEALTH  
MINING AND TUNNELING UNIT

C071-073-16T

Van Nuys Office R5D2

# Underground Classification

Mid City Pipeline, Phase II  
City of San Diego

(NAME OF TUNNEL OR MINE AND COMPANY NAME)

of PSOMAS for: City of San Diego  
525 "B" Street, Suite 750, MS 908A San Diego, CA 92101  
(MAILING ADDRESS)

at Lake Murray Boulevard, near Interstate 8  
La Mesa and San Diego, California  
(LOCATION)

has been classified as \*\*\* POTENTIALLY GASSY \*\*\*  
(CLASSIFICATION)

as required by the California Labor Code Section 7955.

The Division shall be notified if sufficient quantities of flammable gas or vapors have been encountered underground. Classifications are based on the California Labor Code Part 9, Tunnel Safety Orders and Mine Safety Orders.

A 84 inch diameter steel casing (to accommodate a 66 inch diameter carrier pipe) approximately 711 feet in length to be installed under Interstate 8 from Lake Murray Boulevard to a parking lot located on Alvarado Road at a Denny's restaurant between station 30+91 and station 38+02, in the cities of La Mesa and San Diego, California.

January 6, 2016

Reference: Submittal from PSOMAS for the City of San Diego dated December 2, 2015

District Manager





State of California  
Department of Industrial Relations  
DIVISION OF OCCUPATIONAL SAFETY AND HEALTH  
MINING AND TUNNELING UNIT

C072-073-16T

Van Nuys Office R5D2

# Underground Classification

Mid City Pipeline, Phase II  
City of San Diego

(NAME OF TUNNEL OR MINE AND COMPANY NAME)

PSOMAS for: City of San Diego

of 525 "B" Street, Suite 750, MS 908A San Diego, CA 92101  
(MAILING ADDRESS)

El Cajon Boulevard and 69th Street  
San Diego, California  
(LOCATION)

has been classified as \*\*\* POTENTIALLY GASSY \*\*\*  
(CLASSIFICATION)

as required by the California Labor Code Section 7955.

The Division shall be notified if sufficient quantities of flammable gas or vapors have been encountered underground. Classifications are based on the California Labor Code Part 9, Tunnel Safety Orders and Mine Safety Orders.

A 84 inch diameter steel casing (to accommodate a 66 inch diameter carrier pipe) approximately 62 feet in length to be installed between station 4+30 and station 4+92, in the City of San Diego, California.

January 6, 2016

Reference: Submittal from PSOMAS for the City of San Diego dated December 2, 2015

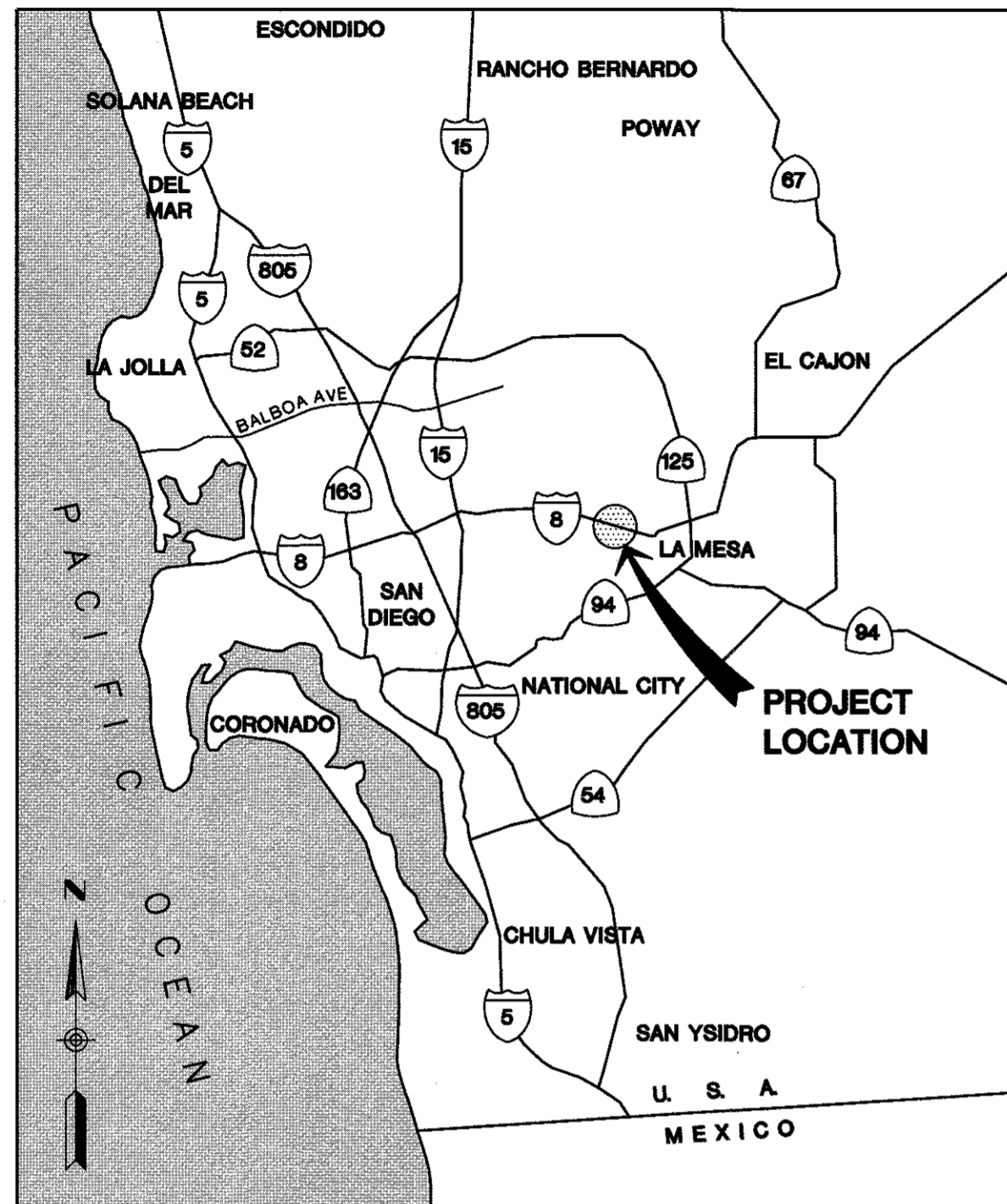
District Manager

**APPENDIX P**

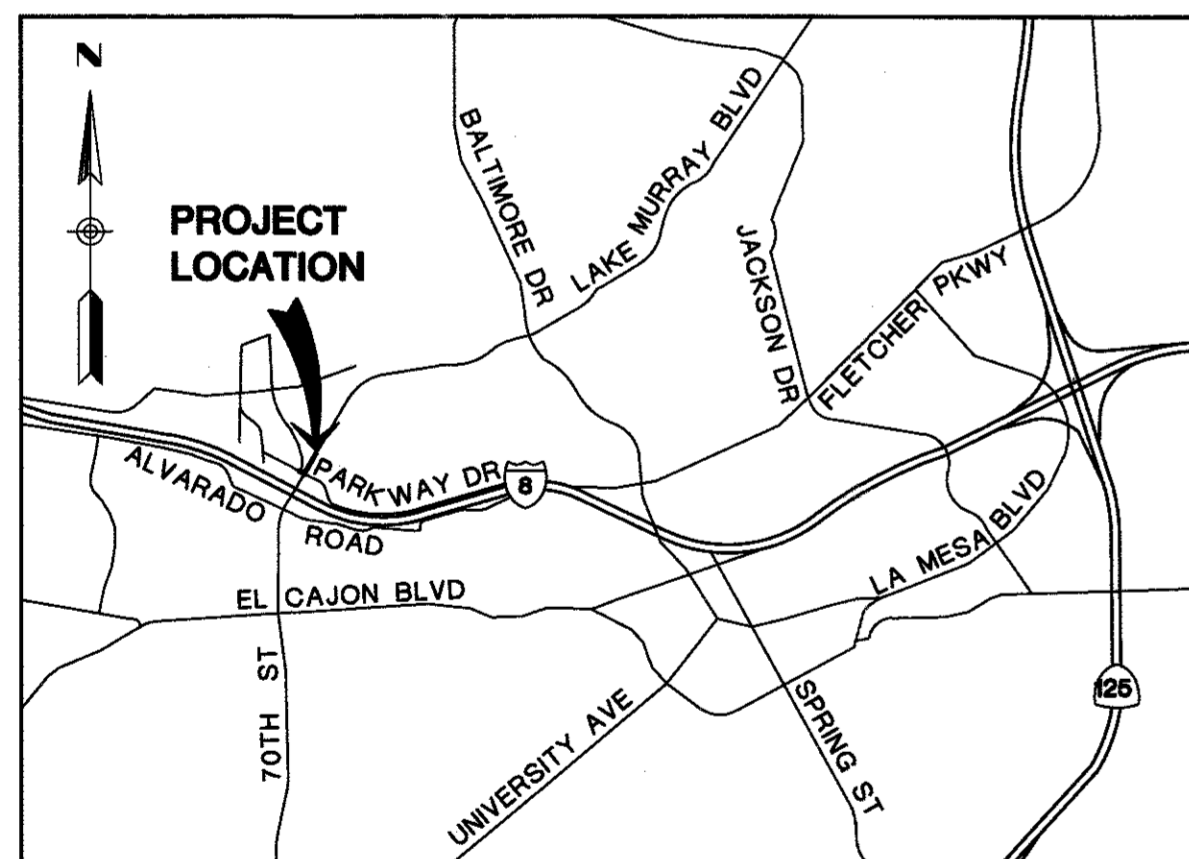
**PERMITTED CITY OF LA MESA IMPROVEMENTS (LM SHEETS)**

# CITY OF LA MESA LAKE MURRAY CI SEWER REPLACEMENT

BID NO. ~~1000~~



**VICINITY MAP**  
N.T.S.



**LOCATION MAP**  
N.T.S.

### WORK TO BE DONE

THE IMPROVEMENTS GENERALLY CONSIST OF REMOVING EXISTING SEWER PIPELINES AND MANHOLES AND REPLACING THEM WITH NEW AS SHOWN ON THESE PLANS & SPECIFICATIONS. THE WORK SHALL BE DONE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION AND THE CITY OF LA MESA STANDARD DRAWINGS INCLUDING THE REGIONAL SAN DIEGO STANDARD DRAWINGS.

### STANDARD SPECIFICATIONS & DRAWINGS

STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION ("GREEN BOOK"), 2021 EDITION, INCLUDING REGIONAL SUPPLEMENT AMENDMENTS

CALTRANS STANDARD SPECIFICATIONS, CURRENT EDITION

CALTRANS MANUAL OF TRAFFIC CONTROLS FOR CONSTRUCTION AND MAINTENANCE WORK ZONES, CHAPTER 5.

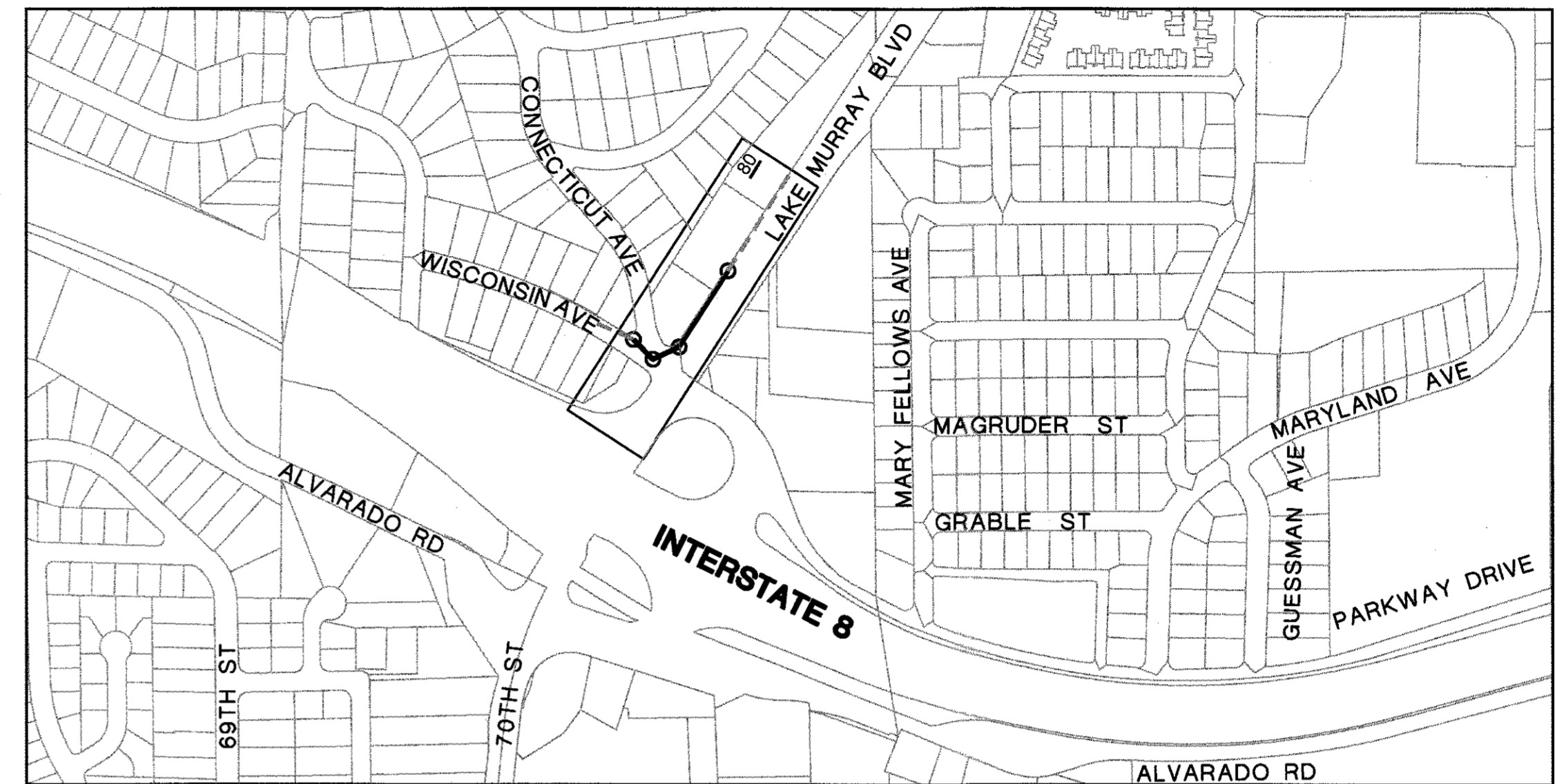
CITY OF LA MESA STANDARD DRAWINGS, (CURRENT EDITION) INCLUDING SAN DIEGO AREA REGIONAL STANDARD DRAWINGS (2018 EDITION) WITH APPENDIX 'A', (TRAFFIC CONTROL PLANS).

WATER AGENCIES STANDARD (WAS) SPECIFICATIONS

CALIFORNIA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD), CURRENT EDITION

### SHEET LEGEND

DESCRIPTION	EXISTING	PROPOSED	STD DWG
SEWER MAIN UNDER 18"	SS	SS	SP-02 (MODIFIED), G-24
SEWER MAIN 18" AND ABOVE	SS	SS	SP-02 (MODIFIED), G-24
ABANDON SEWER MAIN/LATERAL	---	---/--- SS ---/---	---
ENCASED SEWER MAIN	SS	SS	---
REMOVE & REPLACE SEWER MANHOLE	○	○	SM-02, SM-03, SM-05, SM-07, M-3, M-4
SEWER LATERAL	---	---	SS-01, SS-02, SS-03, SS-04
CONCRETE CROSS GUTTER	---	---	G-12
CONCRETE CURB & GUTTER	---	---	G-2
CONCRETE SWALE	---	---	
STORM DRAIN	---	---	
GAS LINE	---	---	
OVERHEAD UTILITY (ELECTRIC/TELEPHONE/CABLE TV)	OHU	OHU	
ELECTRIC CONDUIT/CABLE	E	E	
TELEPHONE CONDUIT(S)	T	T	
CABLE TELEVISION CONDUIT(S)	CA TV	CA TV	
WATER MAIN & VALVE	W	W	
WATER LATERAL & METER	---	---	
POWER POLE	+	+	
STREET LIGHT	○	○	
TRAFFIC SIGNAL	⊗	⊗	
FENCING (CHAIN LINK)	X	X	
TRAFFIC SIGNAL, UTILITY BOX	□	□	
FIRE HYDRANT	+	+	
PROPERTY LINE/RIGHT OF WAY	---	---	
CALTRANS RIGHT OF WAY	---	---	
DETAIL BUBBLE	①	①	



**KEY MAP**  
N.T.S.

### KEY MAP LEGEND:

—	SEWER IMPROVEMENT
○	SEWER MANHOLE IMPROVEMENT
---	EXISTING SEWER
○	EXISTING SEWER MANHOLE
3	SHEET NUMBER

### SOURCE OF TOPOGRAPHY

TOPOGRAPHIC DATA PROVIDED BY THE CITY OF SAN DIEGO PER AERIAL MAPPING AND FIELD SURVEY MEASUREMENTS PERFORMED ON JULY 10, 2013.

### BASIS OF BEARINGS

THE BASIS OF BEARINGS FOR THIS PROJECT WAS DERIVED FROM A PREVIOUS STATIC GPS SURVEY USING ROS 14492, NAD 83 FEET, ZONE 6 (EPOCH 91.35), UTILIZING RTK/GPS FIELD PROCEDURES WITH A CALVRS BASE STATION BROADCAST 2013 AND CONSTRAINING TO GPS 17, GPS 1108 CHECKING GPS 1105, S 59°07'28" E.

CITY OF SAN DIEGO PRELIMINARY SURVEY FIELD NOTES:

MID-CITY PIPELINE PHASE II, WATKINS, 218-1752, WO. S-11026, 7/10/2013

### ENGINEER OF WORK CERTIFICATE

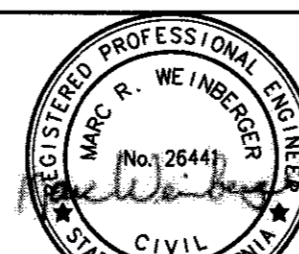
I HEREBY DECLARE THAT I AM THE ENGINEER OF WORK FOR THIS PROJECT, THAT I HAVE EXERCISED RESPONSIBLE CHARGE OVER THE DESIGN OF THE PROJECT AS DEFINED IN SECTION 6703 OF THE CALIFORNIA BUSINESS AND PROFESSIONS CODE, AND THE DESIGN IS CONSISTENT WITH CURRENT STANDARDS.

I UNDERSTAND THAT THE CHECK OF PROJECT DRAWINGS AND SPECIFICATIONS FOR THE CITY OF LA MESA AND HELIX WATER DISTRICT IS CONFINED TO A REVIEW ONLY AND DOES NOT RELIEVE ME OF RESPONSIBILITIES FOR PROJECT DESIGN.

SIGNED: Marc R. Weinberger DATE: 02/07/2022  
MARC R. WEINBERGER, RCE No. 26441, EXP. 03/31/2024



**PSOMAS**  
401 B Street, Suite 1600  
San Diego, CA 92101  
(619) 961-2800 (619) 961-2392 fax  
www.psomas.com



REFERENCE PLANS:  
VARIOUS AS-BUILT PLANS  
3031/3031A, 2187, 0353;  
HELIX WATER DISTRICT  
PLANS: 9151, 7382, 240;  
CITY OF SAN DIEGO PLAN  
4097

BENCHMARK	
DESCRIPTION:	NWBP SARANAC STREET AND 69TH STREET, ELEV. 460.779 MSL, BASED ON NGVD 29 FEET AS SHOWN IN THE CITY OF SAN DIEGO BENCH BOOK.
RECORD FROM:	CITY OF SAN DIEGO, MID-CITY PIPELINE PHASE II, WATKINS, 218-1752, WO. S-11026, 7/10/2013
ELEVATION:	460.779 MSL DATUM: NGVD 29

HELIX WATER DISTRICT  
S-22-007  
ACCEPTED BY: [Signature] DATE: 9/6/22  
SIGNATURE VALID FOR 1 YEAR FROM DATE

**RECORD DRAWING**  
BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
APPROVED: \_\_\_\_\_ DATE: \_\_\_\_\_

CITY OF LA MESA APPROVED CHANGES			
NO.	DESCRIPTION	APPROVED	DATE

**LM-1**

**MONTEZUMA PPL / MID-CITY PIPELINE PH2**  
LAKE MURRAY BL  
WISCONSIN TO 250' NORTH  
OF WISCONSIN AV

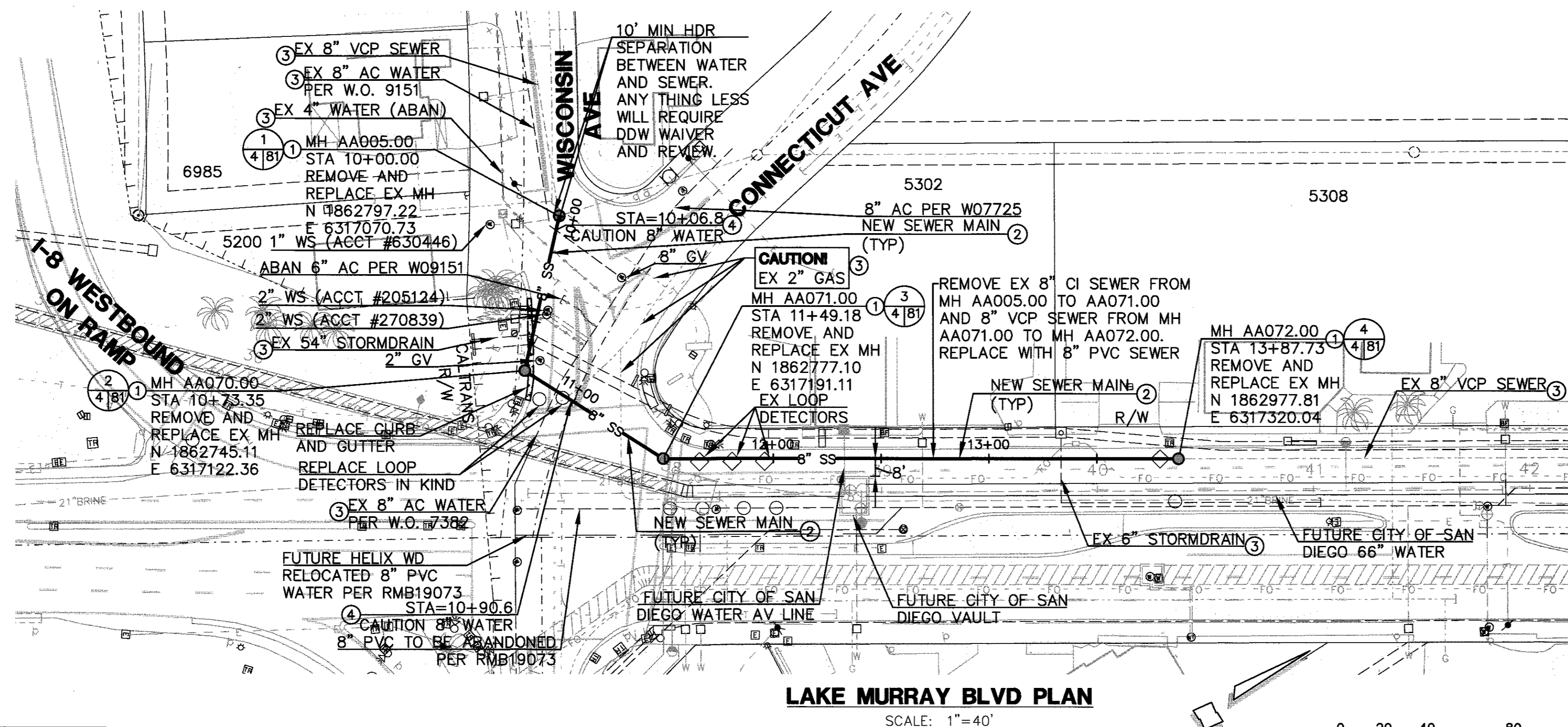
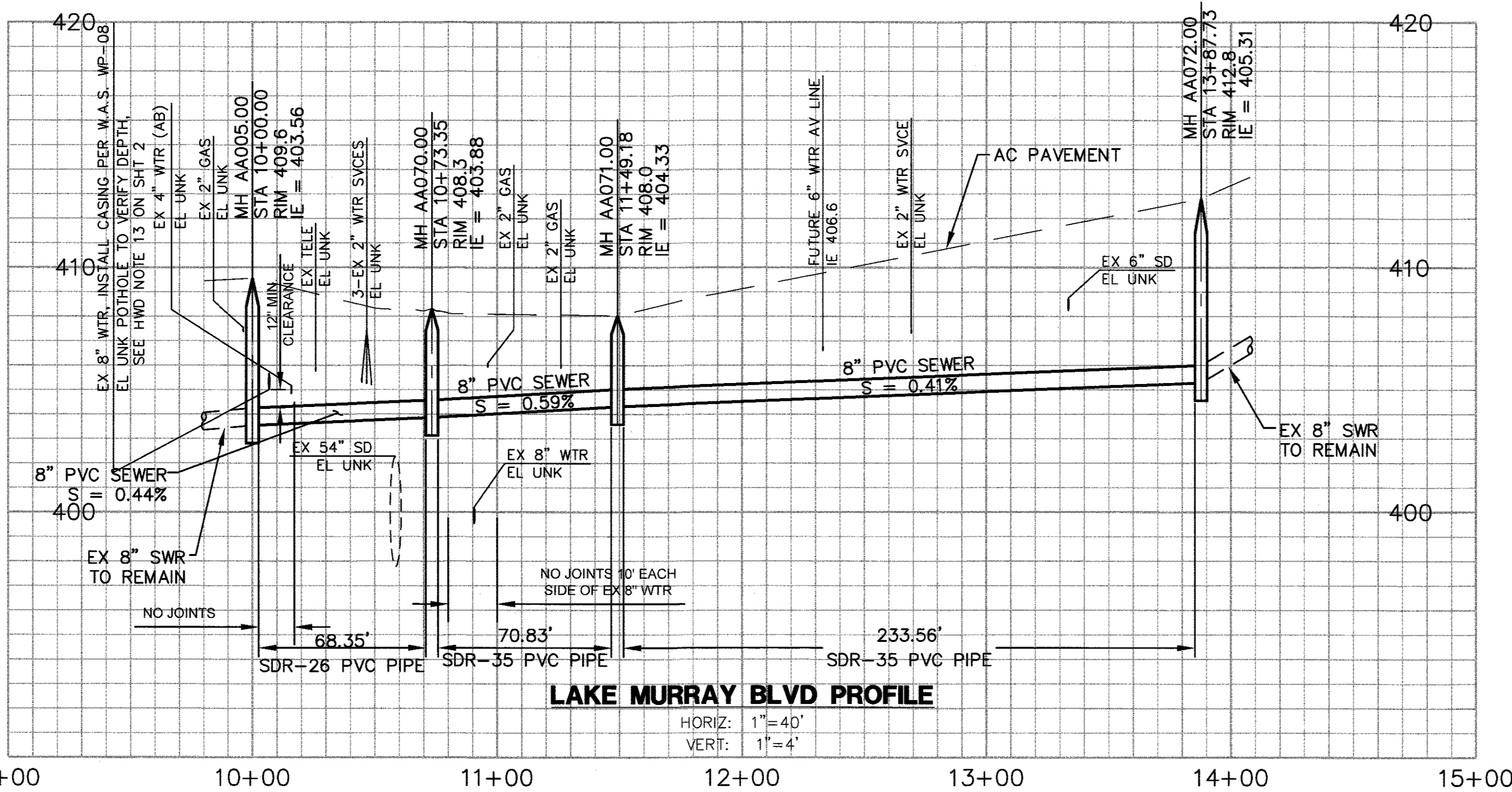
CITY OF SAN DIEGO, CALIFORNIA PUBLIC WORKS DEPARTMENT SHEET 78 OF 104 SHEETS	WATER WBS S-11026 SEWER WBS N/A
APPROVED BY: <u>[Signature]</u> FOR CITY ENGINEER BRIAN VITELLE PRINT DCE NAME DATE: 07/28/2022 DATE: 07/28/2022 RCE #	SUBMITTED BY: <u>MARYAM KARGAR</u> PROJECT MANAGER DATE: 07/28/2022 PROJECT ENGINEER <u>JOEY FLORES</u>
DESCRIPTION BY APPROVED DATE FILMED	222-1755 CCS27 COORDINATE
ORIGINAL PSO <u>[Signature]</u> 07/28/2022	1862444, 6316407 CCS83 COORDINATE
CONTRACTOR _____ DATE STARTED _____ INSPECTOR _____ DATE COMPLETED _____	37333-78-D

**LAKE MURRAY CI SEWER REPLACEMENT**  
**TITLE SHEET**

CITY OF LA MESA, CALIFORNIA ENGINEERING DEPARTMENT SHEET 1 OF 27 SHEETS	W.O. NO. _____
APPROVED BY: <u>[Signature]</u> CITY ENGINEER REC # <u>46469</u> DATE: <u>8-25-2022</u>	DIVISION HEAD <u>MARC WEINBERGER</u> DESIGN ENGINEER
DESCRIPTION BY APPROVED DATE FILMED	CONTROL CERTIFICATION SEE SHEETS LAMBERT COORDINATES
UTILITIES: <u>W-2</u> DEVELOPMENT: <u>DM</u>	927101
TRAFFIC: <u>MK</u> CAPITAL PROJ.	

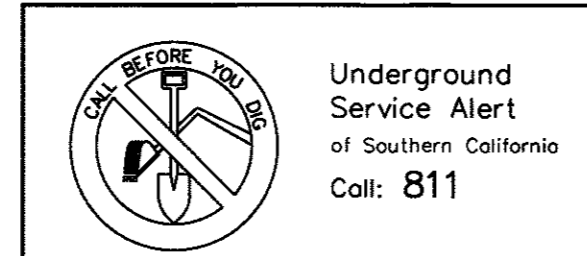
ORIGINAL SCALE: \_\_\_\_\_ BID NO. 19-03 LAKE MURRAY CI SEWER REPLACEMENT/STREET RESURFACING





SEWER LINE DATA TABLE				
NO.	BRG/DELTA	RADIUS	LENGTH	REMARKS
①	N44°43'56"W	-	73.35'	8" PVC
②	S65°03'03"W	-	75.83'	8" PVC
③	S32°43'01"W	-	238.56'	8" PVC

LENGTHS SHOWN ARE FROM CENTER OF MH TO CENTER OF MH



**PSOMAS**  
 401 B Street, Suite 1600  
 San Diego, CA 92101  
 (619) 961-2800 (619) 961-2392 fax  
 www.psomas.com

MARC R. WEINBERGER  
 CIVIL ENGINEER  
 No. 26441  
 STATE OF CALIFORNIA

DATE: 05/13/2022  
 P.E. 26441

REFERENCE PLANS:  
 VARIOUS AS-BUILT PLANS  
 3031/3031A, 2187, 0353;  
 HELIX WATER DISTRICT  
 PLANS: 9151, 7382, 240;  
 CITY OF SAN DIEGO PLAN  
 4097

BENCHMARK  
 DESCRIPTION: NWBP SARANAC STREET AND 69TH STREET,  
 ELEV. 460.779 MSL, BASED ON NGVD 29 FEET  
 AS SHOWN IN THE CITY OF SAN DIEGO BENCH  
 BOOK.

RECORD FROM: CITY OF SAN DIEGO, MID-CITY PIPELINE PHASE II,  
 WATKINS, 218-1752, WO. S-11026, 7/10/2013  
 ELEVATION: 460.779 MSL DATUM: NGVD 29

**RECORD DRAWING**

BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
 APPROVED: \_\_\_\_\_ DATE: \_\_\_\_\_

CITY OF LA MESA APPROVED CHANGES

NO.	DESCRIPTION	APPROVED	DATE

**LM-3**  
 MONTEZUMA PPL / MID-CITY PIPELINE PH2  
 8" SEWER REPLACEMENT  
 LAKE MURRAY BL NORTH OF  
 WISCONSIN AVE STA 10+00.00 TO  
 13+87.73

CITY OF SAN DIEGO, CALIFORNIA PUBLIC WORKS DEPARTMENT SHEET 80 OF 104 SHEETS	WATER WBS S-11026 SEWER WBS N/A
APPROVED: <i>[Signature]</i> DATE: 07/28/2022 FOR CITY ENGINEER: BRIAN VITELLE DATE: C73039 PRINT DCE NAME: RCE #	DESIGNED BY: MARYAM KARGAR PROJECT MANAGER CHECKED BY: JOEY FLORES PROJECT ENGINEER
DESCRIPTION: ORIGINAL BY: PSO APPROVED: <i>[Signature]</i> DATE: 07/28/2022 FILED:	222-1755 CCS27 COORDINATE 1862444, 6316407 CCS83 COORDINATE 37333-80 -D
CONTRACTOR: _____ INSPECTOR: _____	DATE STARTED: _____ DATE COMPLETED: _____

**LAKE MURRAY CI SEWER REPLACEMENT  
 LAKE MURRAY BLVD - MH AA005.00 TO AA072.00**

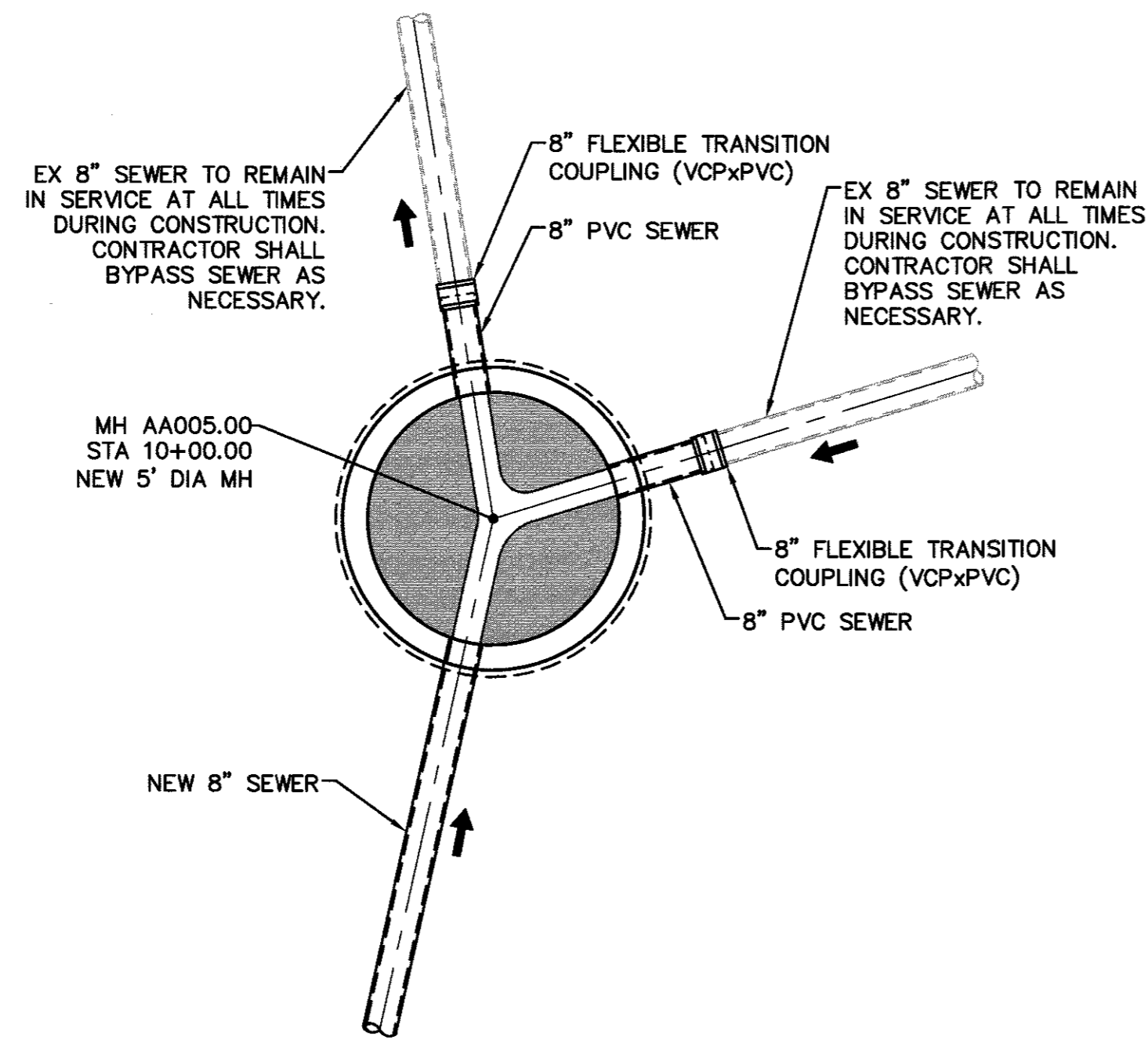
CITY OF LA MESA, CALIFORNIA ENGINEERING DEPARTMENT SHEET 3 OF 27 SHEETS DATE: 8-25-2022 CITY ENGINEER: <i>[Signature]</i> REC: 80279-14879 DATE: _____	W.O. NO. _____ DIVISION HEAD: _____
DESCRIPTION: ORIGINAL BY: _____ APPROVED: _____ DATE: _____ FILED:	MARC WEINBERGER DESIGN ENGINEER CONTROL CERTIFICATION LAMBERT COORDINATES 927103
UTILITIES: <i>[Signature]</i> TRAFFIC: <i>[Signature]</i>	DEVELOPMENT: <i>[Signature]</i> CAPITAL PROJ: _____

- CONSTRUCTION NOTES:**
- MANHOLE SHALL BE 5' DIA (OR AS NOTED ON PLANS) EPOXY LINED PER SDRSD SM-02, SM-03, SM-05, M-3 & M-4. RECONNECT EXISTING LINES AS NECESSARY. ALL NEW MANHOLES SHALL HAVE COAL TAR EPOXY COATING & EXTERNAL RUBBER SLEEVES ON ALL JOINTS PER SPECIFICATIONS.
  - PVC SEWER PER SDRSD SP-02 (MODIFIED), G-24 TYPE B & SPECIFICATIONS. ALL PVC PIPE SHALL USE GASKETED BELL & SPIGOT JOINTS. TRENCH BACKFILL MAY USE NATIVE MATERIALS AS LONG AS IT MEETS THE SPECIFICATIONS.
  - PROTECT-IN-PLACE EXISTING UTILITY.
  - INSTALL CASING ON THE WATER MAIN AT THE CROSSING PER WATER AGENCIES' STANDARD DRAWING WP-08.

- SHEET NOTES:**
- ALL EXISTING UTILITIES ARE SHOWN IN THEIR APPROXIMATE LOCATION. CONTRACTOR SHALL VERIFY EXACT LOCATION, CONNECTIONS AND DEPTHS PRIOR TO STARTING WORK.
  - THE LOCATION OF SHOWN SEWER LATERALS IS APPROXIMATE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION & ELEVATION PRIOR TO EXCAVATION WORK FOR THE SEWER MAIN.
  - THE CONTRACTOR SHALL LOCATE THE SEWER LATERALS AND RECONNECT THEM. IF THE CONTRACTOR ENCOUNTERS PRIVATE SEWER LATERALS 6" OR LARGER THAT ARE CONNECTED TO THE SEWER MAIN, THE CONTRACTOR SHALL REPORT TO THE CITY ENGINEER AND AWAIT FURTHER INSTRUCTIONS. THE CITY MAY DIRECT THE CONTRACTOR TO RECONNECT THE SEWER LATERALS ACCORDING TO THE FOLLOWING TABLE:
- | SEWER LATERAL CONNECTIONS |                         |                    |
|---------------------------|-------------------------|--------------------|
| SIZE/TYPE OF LATERAL      | SIZE OF MAIN            | CONNECTION MADE AT |
| 4" DIAMETER               | 8" OR LARGER            | MAIN               |
| 6" DIAMETER               | 15" DIAMETER OR SMALLER | MAIN OR MANHOLE    |
| 8" DIAMETER               | 18" DIAMETER OR LARGER  | MANHOLE            |
- EXISTING SEWER LATERALS MAY OR MAY NOT BE SHOWN ON PLANS. CONTRACTOR SHALL RECONNECT ALL SEWER LATERALS WHETHER SHOWN ON PLANS OR NOT.
  - THE CAUTION GAS NOTE IS SHOWN FOR GAS MAINS ONLY. GAS SERVICES ARE NOT SHOWN ON PLANS.
  - MOST STREETS HAVE LOW CROSSING OVERHEAD UTILITY LINES, THESE ARE TYPICALLY NOT SHOWN ON PLANS.
  - COORDINATE ALL WORK/ACCESS ON PRIVATE PROPERTY & IN EASEMENTS W/PROPERTY OWNER.

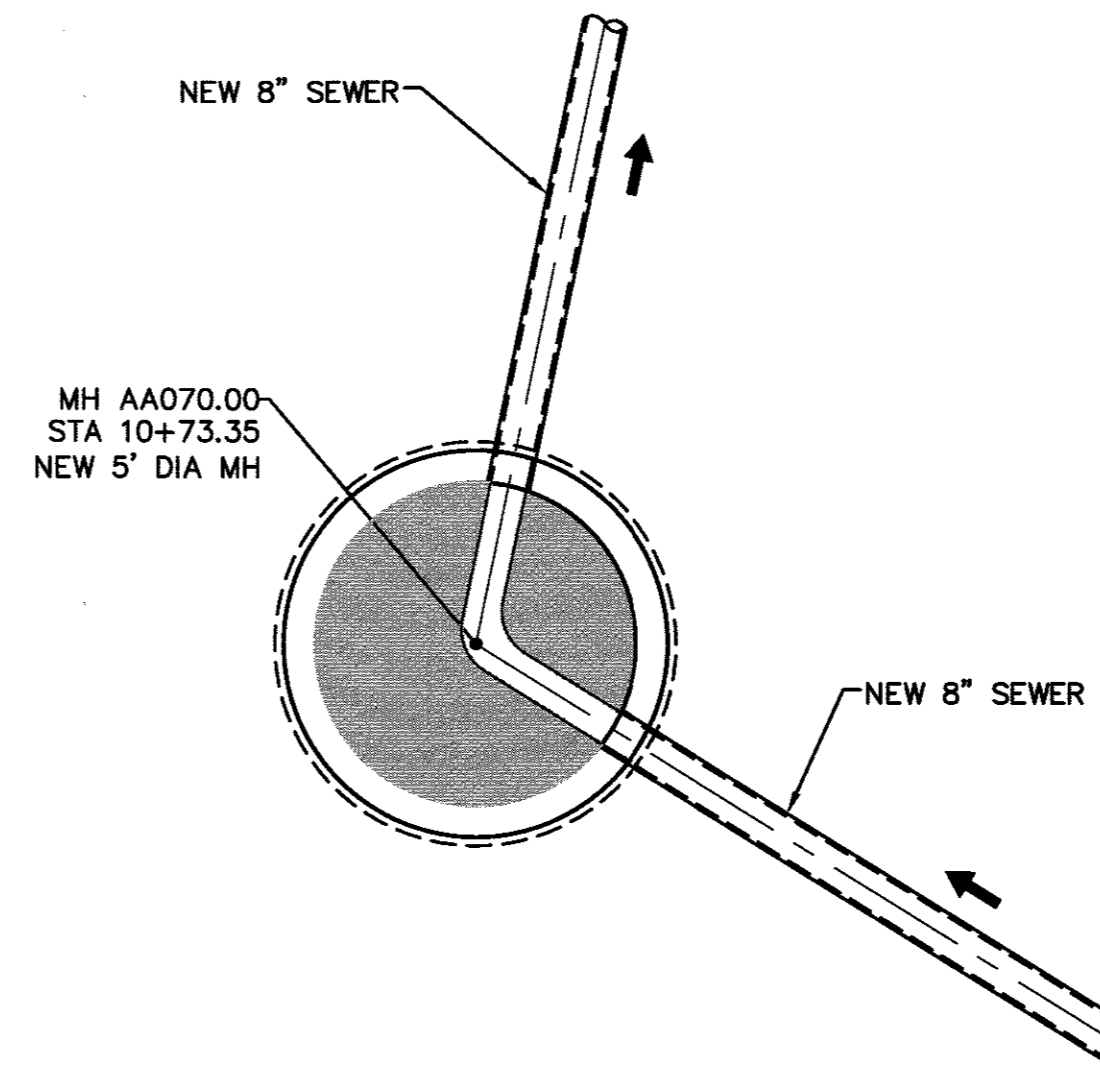
ORIGINAL SCALE: \_\_\_\_\_  
 LAKE MURRAY CI SEWER REPLACEMENT/STREET RESURFACING  
 BID NO. 19-03

DWC: S:\SAND0900-Mid-City-PL-WATRES\TASKS\Phase 2 Rebid Construction-Plans\GIS1026-MidCity-LM3.dwg USER: kolene.gni  
 DATE: Jul 25, 2022 2:41pm XREFS: x-bdr-lin-s11026-midcity-ph2 x-top-s11026-midcity-ph2 x-utl-s11026-midcity-ph2  
 c-ssw-lin-s11026-midcity-ph2 c-wtr-s11026-midcity-ph2



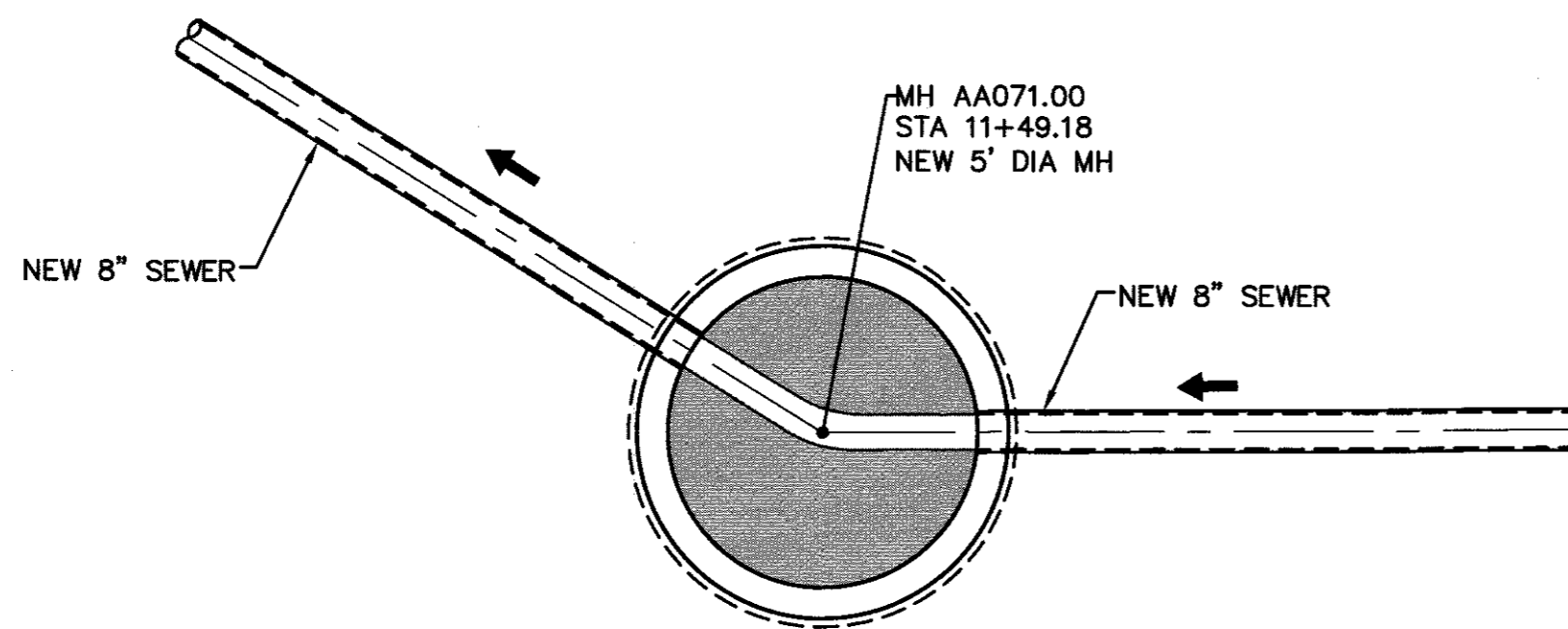
(SEE CITY OF SAN DIEGO SHEET NUMBER 80, CITY OF LA MESA SHEET NUMBER 3)

**MH AA005.00** ①  
SCALE: 1"=3'



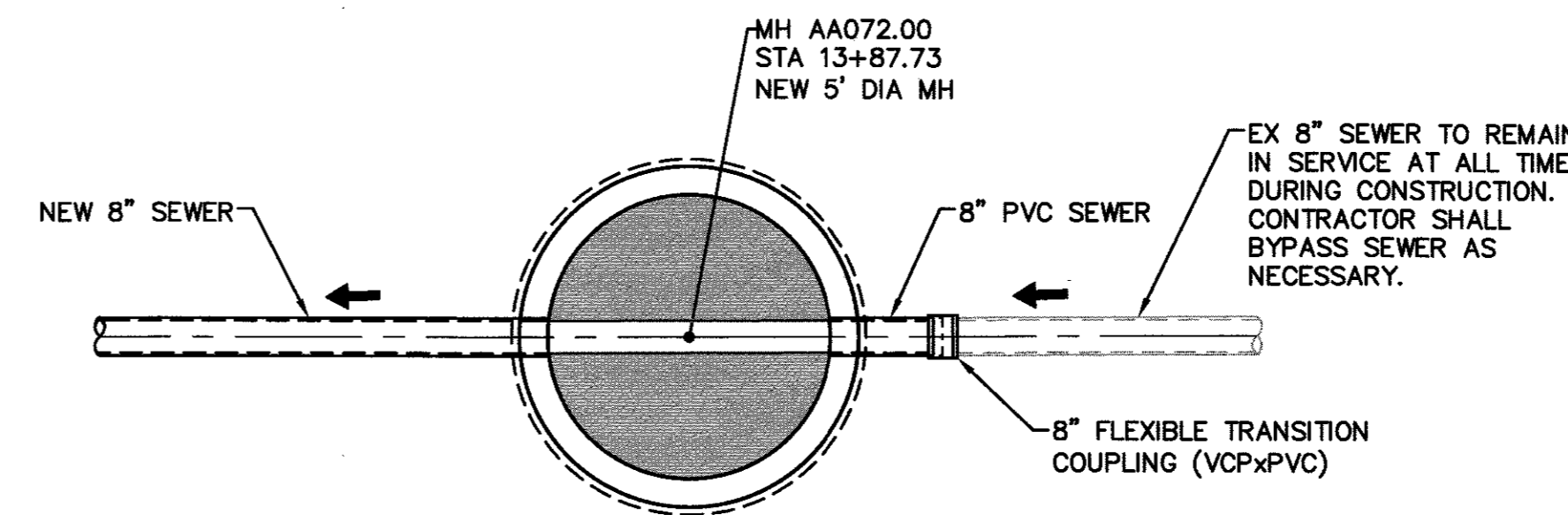
(SEE CITY OF SAN DIEGO SHEET NUMBER 80, CITY OF LA MESA SHEET NUMBER 3)

**MH AA070.00** ②  
SCALE: 1"=3'



(SEE CITY OF SAN DIEGO SHEET NUMBER 80, CITY OF LA MESA SHEET NUMBER 3)

**MH AA071.00** ③  
SCALE: 1"=3'



(SEE CITY OF SAN DIEGO SHEET NUMBER 80, CITY OF LA MESA SHEET NUMBER 3)

**MH AA072.00** ④  
SCALE: 1"=3'

LM-4

MONTEZUMA PPL / MID-CITY PIPELINE PH2  
8" SEWER REPLACEMENT  
LAKE MURRAY BL NORTH OF  
WISCONSIN AV

CITY OF SAN DIEGO, CALIFORNIA PUBLIC WORKS DEPARTMENT SHEET 81 OF 104 SHEETS		WATER WBS S-11026 SEWER WBS N/A		
APPROVED: <i>[Signature]</i> FOR CITY ENGINEER BRIAN VITELLE PRINT DCE NAME	DATE: 07/28/2022 DATE: C73039 RCE #	DESIGNED BY: MARYAM KARGAR PROJECT MANAGER CHECKED BY: JOEY FLORES PROJECT ENGINEER		
DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	PSO	<i>[Signature]</i>	07/28/2022	
		222-1755 CCS27 COORDINATE		
		1862444, 6316407 CCS83 COORDINATE		
CONTRACTOR	DATE STARTED	37333- 81 -D		
INSPECTOR	DATE COMPLETED			

LAKE MURRAY CI SEWER REPLACEMENT  
DETAILS

CITY OF LA MESA, CALIFORNIA ENGINEERING DEPARTMENT		W.O. NO.		
SHEETS 4 OF 27 SHEETS				
<i>[Signature]</i> CITY ENGINEER		8-15-2022 DATE		
REC <i>[Signature]</i>		DIVISION HEAD		
DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL				
		MARC WEINBERGER DESIGN ENGINEER		
		CONTROL CERTIFICATION		
		LAMBERT COORDINATES		
UTILITIES: <i>[Signature]</i>		DEVELOPMENT: <i>[Signature]</i>		
TRAFFIC: <i>[Signature]</i>		CAPITAL PROJ: <i>[Signature]</i>		
		927104		

RECORD DRAWING

BY: \_\_\_\_\_ DATE: \_\_\_\_\_

APPROVED: \_\_\_\_\_ DATE: \_\_\_\_\_

CITY OF LA MESA APPROVED CHANGES

NO.	DESCRIPTION	APPROVED	DATE

**Underground Service Alert**  
of Southern California  
Call: 811

TWO WORKING DAYS BEFORE YOU DIG

**PSOMAS**  
401 B Street, Suite 1600  
San Diego, CA 92101  
(619) 961-2800 (619) 961-2392 fax  
www.psomas.com

*[Signature]*  
MARC R. WEINBERGER P.E. 26441  
DATE: 05/13/2022

**REGISTERED PROFESSIONAL ENGINEER**  
MARC R. WEINBERGER  
(No. 26441)  
CIVIL  
STATE OF CALIFORNIA

REFERENCE PLANS:  
VARIOUS AS-BUILT PLANS  
3031/3031A, 2187, 0353;  
HELIX WATER DISTRICT  
PLANS: 9151, 7382, 240;  
CITY OF SAN DIEGO PLAN  
4097

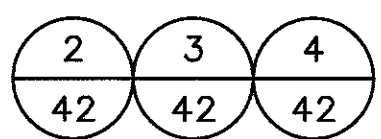
BENCHMARK  
DESCRIPTION: NWBP SARANAC STREET AND 69TH STREET,  
ELEV. 460.779 MSL, BASED ON NGVD 29 FEET  
AS SHOWN IN THE CITY OF SAN DIEGO BENCH  
BOOK.

RECORD FROM: CITY OF SAN DIEGO, MID-CITY PIPELINE PHASE II,  
WATKINS, 218-1752, WO. S-11026, 7/10/2013  
ELEVATION: 460.779 MSL DATUM: NGVD 29

DWG: S:\SAN020900-Mid-City-PL\WATRES\TASKS\Phase 2 Rebid Construction-Plans\S11026-MidCity-Ph2-LM04.dwg  
 DATE: Jan 28, 2022 4:02pm  
 USER: andrew.balone  
 XREFS: x-bdr-lm-s11026-midcity-ph2

ORIGINAL SCALE: \_\_\_\_\_  
 LAKE MURRAY CI SEWER REPLACEMENT/STREET RESURFACING  
 BID NO. 19-03

**NOTES:**

- CONTRACTOR SHALL RAISE EXISTING CITY VALVE AND MANHOLE COVERS TO GRADE AFTER STREET RESURFACING. CONTRACTOR SHALL CONTACT ALL AFFECTED PRIVATE UTILITIES TO RAISE THEIR VALVES AND MANHOLES 90 DAYS AHEAD OF PAVING ACTIVITIES.
- CONTRACTOR SHALL REPLACE-IN-KIND ALL LANDSCAPING/IRRIGATION SYSTEMS, BACKFLOW DEVICES AND UTILITY BOXES REMOVED OR DAMAGED DURING CONSTRUCTION ACTIVITIES.
- EXISTING STREET LIGHTS WITHIN CONSTRUCTION/TRAFFIC ACTIVITIES SHALL BE TEMPORARILY RELOCATED. COORDINATE LOCATION WITH CITY INSPECTOR.
- ALL STRIPING SHALL BE REPLACED PER TRAFFIC CONTROL PLANS. SEE SHEETS XX-XX
- SEE SHEETS 45 THROUGH 47 FOR CURB RAMP REPLACEMENT.
- SEE DETAILS 

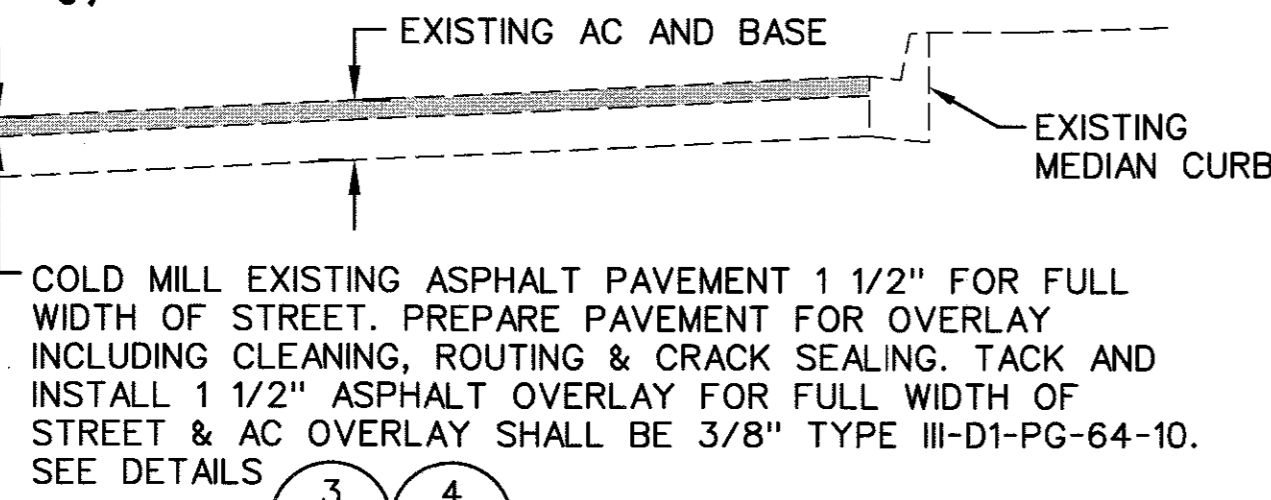
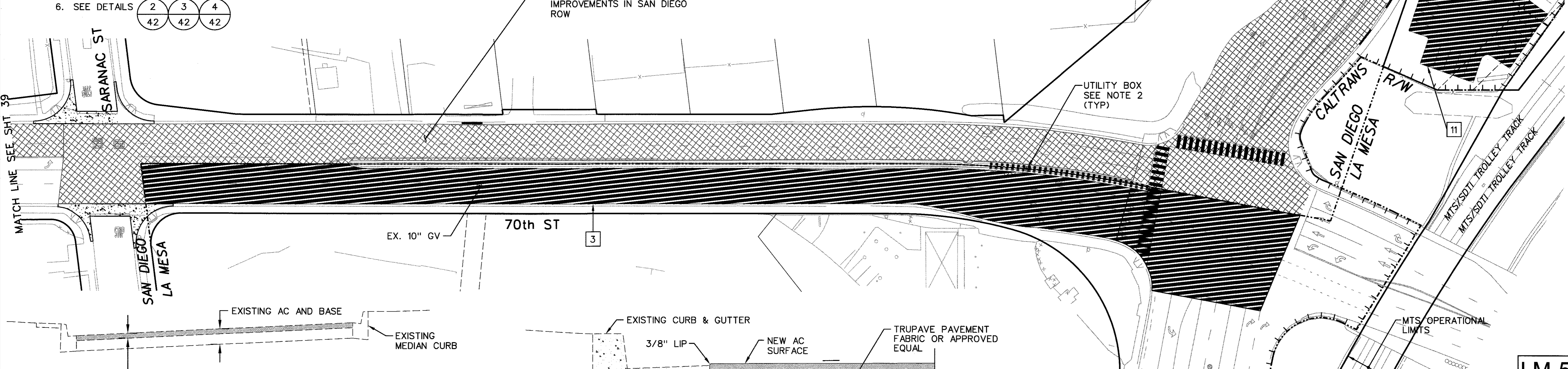
PAVING SCHEDULE NOTES						
NO.	LOCATION	STREET SEGMENT ID	RESTORATION REQUIRED	LENGTH	WIDTH	APPROX. AREA (SF)
3	70th ST BETWEEN SARANAC ST AND ALVARADO RD.	SS-030371	FULL WIDTH COLD MILLING AND AC OVERLAY	938'	VAR	34,990 SF
11	DENNY'S PARKING LOT NORTH OF ALVARADO RD	N/A	FULL WIDTH COLD MILLING AND AC OVERLAY	VAR	VAR	9,910 SF
TOTAL AREA OF FULL WIDTH COLD MILLING AND OVERLAY						44,900 SF
TOTAL AREA OF CONCRETE REPLACEMENT						0 SF

\*QUANTITIES FOR PROPOSED STREET IMPROVEMENTS IN THE CITY OF LA MESA RIGHT-OF-WAY ONLY

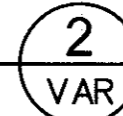
SEE SHEET 40 FOR IMPROVEMENTS IN SAN DIEGO ROW

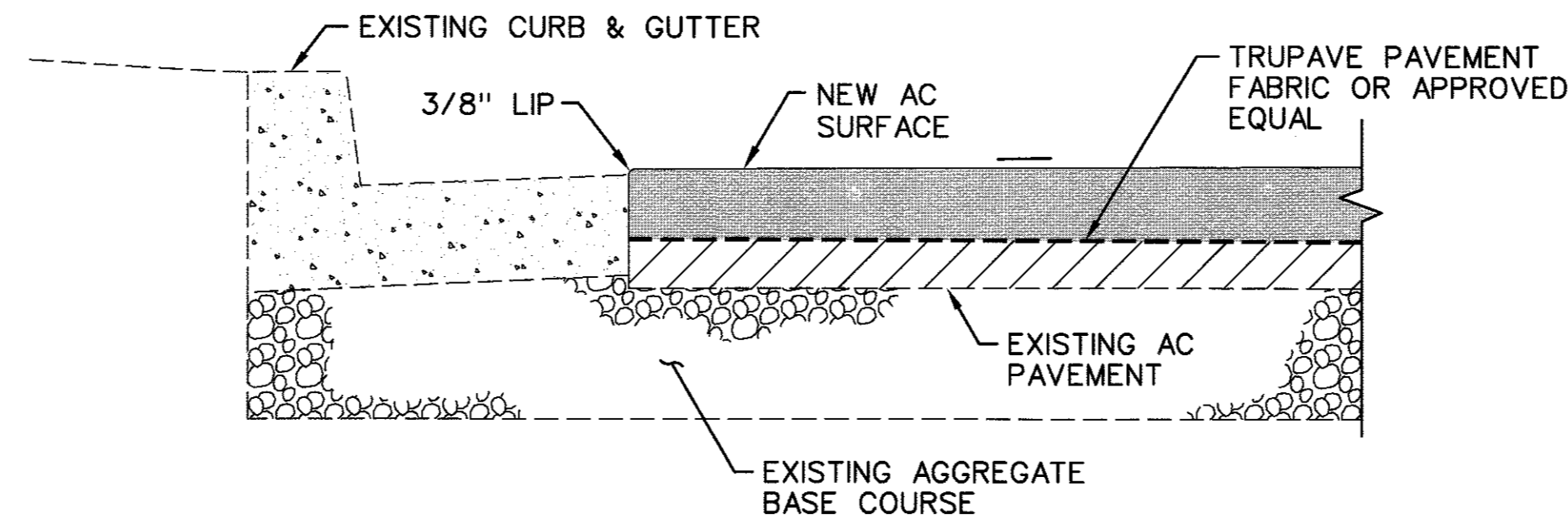
SEE SHEET 40 FOR IMPROVEMENTS IN SAN DIEGO ROW

UTILITY BOX SEE NOTE 2 (TYP)

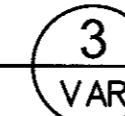


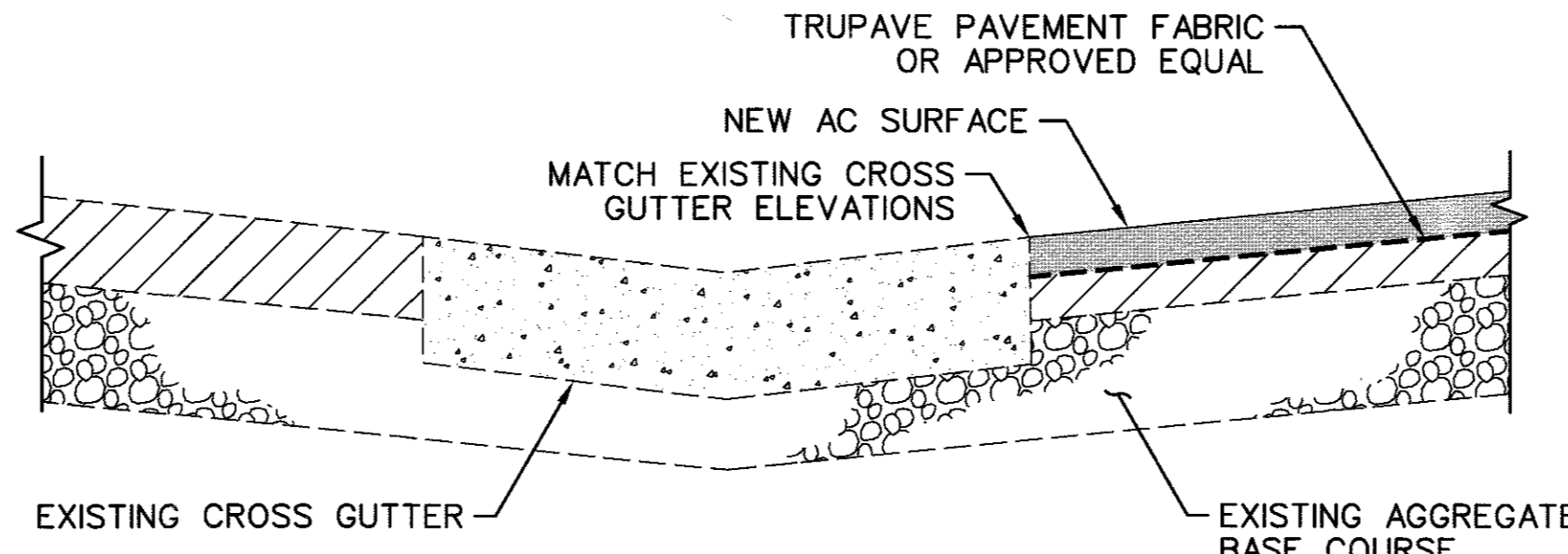
**CITY OF LA MESA FULL WIDTH COLD MILLING AND AC PAVEMENT OVERLAY**  
NOT TO SCALE

 2  
VAR

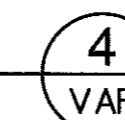


**ASPHALT SURFACE AT EXISTING CURB AND GUTTER**  
NOT TO SCALE







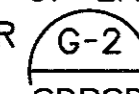


 3  
VAR

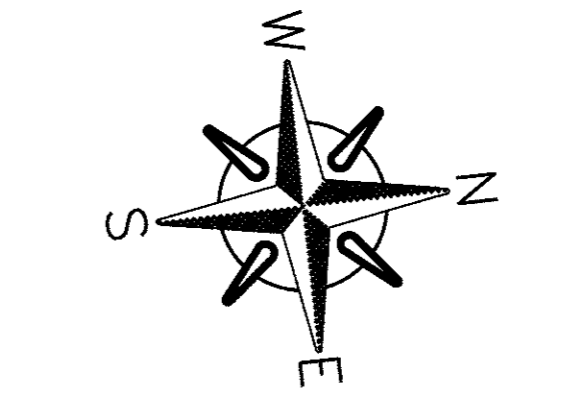


**ASPHALT SURFACE AT EXISTING CROSS-GUTTER**  
NOT TO SCALE

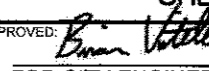
 4  
VAR

**LEGEND**



-  APPROXIMATE LIMITS OF FULL WIDTH COLD MILLING AND AC OVERLAY (2 INCH) CITY OF SAN DIEGO
-  APPROXIMATE LIMITS OF FULL WIDTH COLD MILLING AND AC OVERLAY (2 INCH) CITY OF LA MESA
-  LOCATION PER PAVING SCHEDULE NOTES (THIS SHEET)
-  REPLACE CITY OF SAN DIEGO CONCRETE CURB & GUTTER PER
-  REPLACE CITY OF SAN DIEGO CONCRETE CURB PER SHEET 40
-  REPLACE CITY OF LA MESA CONCRETE CURB & GUTTER PER  G-2 SDRSD
-  APPROX. LOCATION OF CONTINENTAL CROSSWALK
-  CROSS GUTTER



**MONTEZUMA PPL / MID-CITY PIPELINE PH2**  
**STREET RESURFACING**  
**70th ST / ALVARADO RD**

CITY OF SAN DIEGO, CALIFORNIA PUBLIC WORKS DEPARTMENT SHEET 82 OF 104 SHEETS	WATER WBS S-11026 SEWER WBS N/A
APPROVED BY:  DATE: 07/28/2022	DESIGNED BY: MARYAM KARGAR
FOR CITY ENGINEER: BRIAN VITELLE DATE: C73039	PROJECT MANAGER: MARYAM KARGAR
PRINT DCE NAME: RCE #	PROJECT ENGINEER: JOEY FLORES
DESCRIPTION: ORIGINAL	BY: PSO
DATE: 07/28/2022	FILED: 222-1755
COORDINATE: CCS27	1862444, 6316407
COORDINATE: CCS83	37333-82 -D
CONTRACTOR	DATE STARTED
INSPECTOR	DATE COMPLETED

**LAKE MURRAY CI SEWER REPLACEMENT**  
**70TH ST/ALVARADO RD - STREET RESURFACING**

CITY OF LA MESA, CALIFORNIA ENGINEERING DEPARTMENT SHEET 5 OF 27 SHEETS	W.O. NO.
APPROVED BY:  DATE: 8-25-2023	DIVISION HEAD
CITY ENGINEER: REC-60279-46469	DESIGN ENGINEER: MARC WEINBERGER
DESCRIPTION: ORIGINAL	BY: H.W.
DATE: 8-25-2023	FILED: 218-1755
COORDINATE: 1858444, 6316407	CONTROL CERTIFICATION: LAMBERT COORDINATES
UTILITIES: H.W.	DEVELOPMENT: 
TRAFFIC: MKC	CAPITAL PROJ: 927105


**RECORD DRAWING**

BY: \_\_\_\_\_ DATE: \_\_\_\_\_

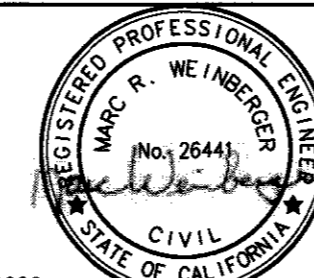
APPROVED: \_\_\_\_\_ DATE: \_\_\_\_\_

CITY OF LA MESA APPROVED CHANGES

NO.	DESCRIPTION	APPROVED	DATE

 Underground Service Alert of Southern California Call: 811

**PSOMAS**  
401 B Street, Suite 1600  
San Diego, CA 92101  
(619) 961-2800 (619) 961-2392 fax  
www.psomas.com

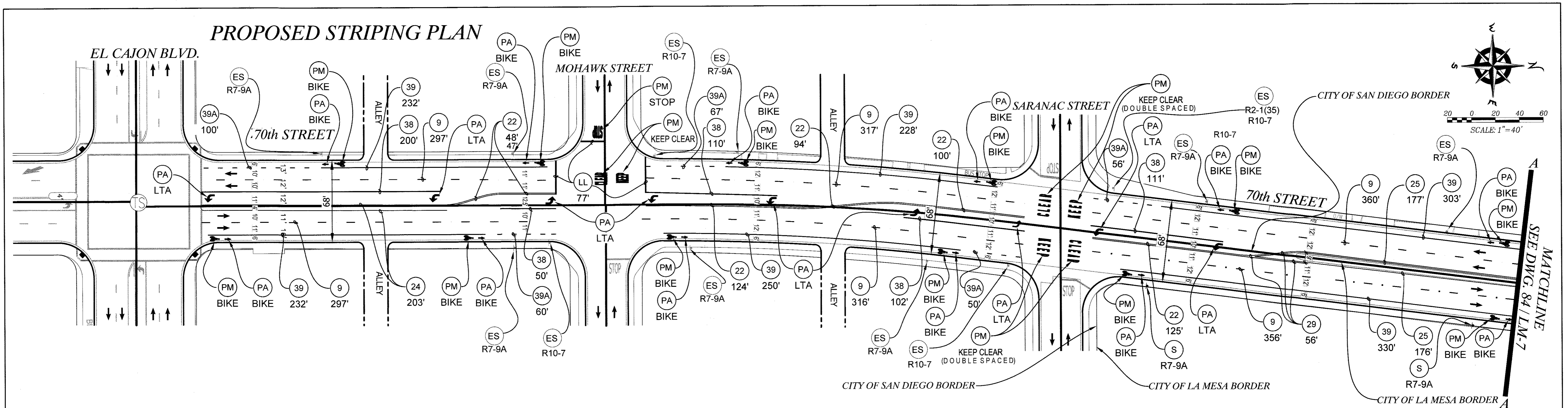
 MARYAM KARGAR  
No. 26441  
CIVIL  
STATE OF CALIFORNIA

05/13/2022  
MARC R. WEINBERGER P.E. 26441 DATE

**REFERENCE PLANS:**  
VARIOUS AS-BUILT PLANS  
3031/3031A, 2187, 0353;  
HELIX WATER DISTRICT  
PLANS: 9151, 7382, 240;  
CITY OF SAN DIEGO PLAN  
4097

**BENCHMARK**  
DESCRIPTION: NWBP SARANAC STREET AND 69TH STREET, ELEV. 460.779 MSL, BASED ON NGVD 29 FEET AS SHOWN IN THE CITY OF SAN DIEGO BENCH BOOK.  
RECORD FROM: CITY OF SAN DIEGO, MID-CITY PIPELINE PHASE II, WATKINS, 218-1752, W.O. S-11026, 7/10/2013  
ELEVATION: 460.779 MSL DATUM: NGVD 29

ORIGINAL SCALE: \_\_\_\_\_ BID NO. 19-03 LAKE MURRAY CI SEWER REPLACEMENT/STREET RESURFACING



**STRIPING AND SIGNING GENERAL NOTES**

- INSTALLATION OF ALL STRIPING, SIGNS AND PAVEMENT MARKERS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
- ALL STRIPING AND SIGNING SHALL CONFORM TO THE MOST RECENTLY ADOPTED EDITION OF THE FOLLOWING MANUALS:
 

DESCRIPTION	EDITION
STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION (THE "GREENBOOK")	2021
CITY OF SAN DIEGO STANDARD DRAWINGS	2021
CALIFORNIA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (CAMUTCD)	2014
- ALL SIGNING AND STRIPING IS SUBJECT TO THE APPROVAL OF THE CITY ENGINEER PRIOR TO INSTALLATION AND/OR REMOVAL.
- THE CONTRACTOR SHALL REMOVE ALL CONFLICTING STRIPING, PAVEMENT MARKINGS AND LEGENDS BY SANDBLASTING AND/OR GRINDING WITH THE SEAL. ANY DEBRIS SHALL BE PROMPTLY REMOVED BY THE CONTRACTOR.
- ALL SIGNS SHOWN ON THE PLANS SHALL BE NEW SIGNS PROVIDED AND INSTALLED BY THE CONTRACTOR, EXCEPT FOR EXISTING SIGNS SPECIFICALLY INDICATED TO BE RELOCATED, REMAIN, OR REMOVED AND SALVAGED.
- STRIPED CROSSWALKS SHALL HAVE AN INSIDE DIMENSION OF 10 FEET UNLESS INDICATED OTHERWISE.
- ALL LIMIT LINES/STOP LINES, CROSSWALK LINES, PAVEMENT LEGENDS, AND ARROWS (EXCEPT WITHIN BIKE LANES) SHALL BE THERMOPLASTIC.
- THE CONTRACTOR SHALL NOTIFY THE CITY TRAFFIC ENGINEER AT (858) 495-4741 A MINIMUM OF FIVE (5) WORKING DAYS PRIOR TO AND UPON COMPLETION OF STRIPING AND SIGNING.

**DETAIL NUMBER**

- 9 - 6" WHITE DASHED LANE STRIPING WITH TYPE "G" ONE-WAY PAVEMENT MARKERS; REF: CALTRANS STD. PLAN A20A DETAIL 9 (XXX' = NUMBER OF FEET)
- 22 - 6" YELLOW PAINTED CENTERLINE STRIPING W / TYPE "D" PAVEMENT MARKERS; REF: CALTRANS STD. PLAN A20A DETAIL 22 (XXX' = NUMBER OF FEET)
- 25 - 6" YELLOW PAINTED LEFT EDGE LINE STRIPING; REF: CALTRANS STD. PLAN A20B DETAIL 25(XXX' = NUMBER OF FEET)
- 29 - 6" DOUBLE YELLOW PAINTED MEDIAN STRIPING W / TYPE "D" PAVEMENT MARKERS; REF: CALTRANS STD. PLAN A20B DETAIL 29 (XX' = NUMBER OF FEET)
- 38 - 8" WHITE PAINTED CHANNELIZING STRIPING W / TYPE "G" ONE-WAY PAVEMENT MARKERS; REF: CALTRANS STD. PLAN A20D DETAIL 38 (XX' = NUMBER OF FEET)
- 39 - 6" WHITE PAINTED BIKE LANE STRIPING; REF: CALTRANS STD. PLAN A24C DETAIL 39 (XX' = NUMBER OF FEET)
- 39A - 6" WHITE PAINTED DASHED BIKE LANE TERMINATION STRIPING; REF: CALTRANS STD. PLAN A24C DETAIL 39A (XX' = NUMBER OF FEET)

**CONSTRUCTION NOTES**

- PA - TYPE IV (R OR L) RIGHT OR LEFT TURN ARROW THERMOPLASTIC PAVEMENT MARKING PER CALTRANS STANDARD PLAN A24A
- R / L TA
- LL - THERMOPLASTIC PAVEMENT MARKING. 12" SOLID WHITE LIMIT LINE PER CALTRANS STANDARD PLAN A24E (XX' = NUMBER OF FEET)
- XX'
- PM - THERMOPLASTIC PAVEMENT MARKING. STOP LEGEND PER CALTRANS STANDARD PLAN A24D
- STOP
- PM - THERMOPLASTIC PAVEMENT MARKING. "KEEP CLEAR" LEGEND PER CALTRANS STANDARD PLAN A24E
- KEEP CLEAR
- PM - THERMOPLASTIC PAVEMENT MARKING. BIKE LANE SYMBOL WHERE NOTED ON THE PLAN. (REF: CALTRANS STD. PLAN A24C "BIKE LANE SYMBOL WITH PERSON")
- BIKE
- PA - BIKE LANE PAVEMENT ARROW. (REF: CALTRANS STD. PLAN A24A)
- BIKE
- S - INSTALL SIGN AT LOCATION NOTED ON PLAN. (XX-XX = CAMUTCD OR CALTRANS SIGN CALLOUT)
- XX-XX
- TS - SIGNALIZED INTERSECTION
- EXISTING SIGN AT LOCATION NOTED ON PLAN. (XX-XX = CAMUTCD OR CALTRANS SIGN CALLOUT ARE TO REMAIN)

LM-6

**MONTEZUMA PPL / MID-CITY PIPELINE PH 2**  
SIGNING & STRIPING PLANS FOR:

**70th STREET**  
EL CAJON BOULEVARD TO ALVARADO ROAD

CITY OF SAN DIEGO, CALIFORNIA PUBLIC WORKS DEPARTMENT SHEET 83 OF 104 SHEETS		WATER WBS S-11026 SEWER WBS NA
APPROVED BY: <i>Brian Vitelle</i> FOR CITY ENGINEER BRIAN VITELLE DEPUTY CITY ENGINEER	DATE: 07/28/2022	SUBMITTED BY: MARYAM KARGAR PROJECT MANAGER CHECKED BY: JOEY FLORES PROJECT ENGINEER
DESCRIPTION: ORIGINAL	BY: D&A	APPROVED: <i>Brian Vitelle</i>
		DATE: 07/28/2022
		FILMED:
		222-1755 CC827 COORDINATE
		1862444, 6316407 CC863 COORDINATE
CONTRACTOR INSPECTOR:	DATE STARTED:	DATE COMPLETED:
		37333-83-D

**CITY OF LA MESA**  
SIGNING AND STRIPING / IMPROVEMENT PLANS FOR:  
**LAKE MURRAY CI SEWER REPLACEMENT**  
70th STREET - SARANAC STREET TO ALVARADO ROAD  
CITY OF LA MESA, CALIFORNIA - PUBLIC WORKS/ENGINEERING DIVISION  
SHEET 6 OF 27 SHEETS

CITY ENGINEER: <i>Bill E. Darnell</i>	R.C.E. # 46969	DATE: 8-25-2022	DIVISION HEAD:
DESCRIPTION: ORIGINAL	BY: D&A	APPROVED:	DATE:
UTILITIES TRAFFIC: <i>mk</i>	DEVELOPMENT PUBLIC WORKS: <i>SK</i>		222-1755 CONTROL CERTIFICATION 1862444, 6316407 LAMBERT COORDINATES 9721.06

SCALE: 1" = 40'

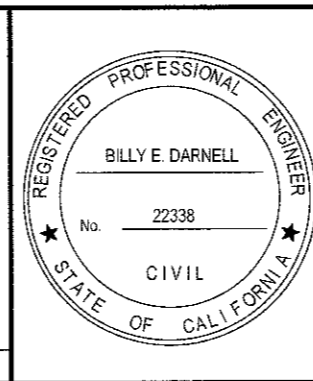
PLANS PREPARED UNDER THE SUPERVISION OF:

*Bill E. Darnell* 10/2/2020 DATE

BILL E. DARNELL  
DESIGN ENGINEER R.C.E. No. 22338

**Darnell & ASSOCIATES, INC.**  
4411 MERCURY STREET, SUITE 207A  
SAN DIEGO, CA 92111  
(619) 233-9373

DWG: 130801-70th St LM SS-1A DATE: 09/14/2020 BY: D&B/JAM



**RECORD DRAWING**

INDEXED BY: \_\_\_\_\_

BY: \_\_\_\_\_ RCE: \_\_\_\_\_ DATE: \_\_\_\_\_

REVIEWED BY: \_\_\_\_\_ DATE: \_\_\_\_\_

APPROVED: \_\_\_\_\_ DATE: \_\_\_\_\_

CITY INSPECTOR DATE

CITY ENGINEER DATE

**BENCHMARK DATA**

DESCRIPTION: NWBP SARANAC STREET AND 69th STREET, ELEV. 460.779 MSL, BASED ON NGVD 29 FEET AS SHOWN IN THE CITY OF SAN DIEGO BENCH BOOK

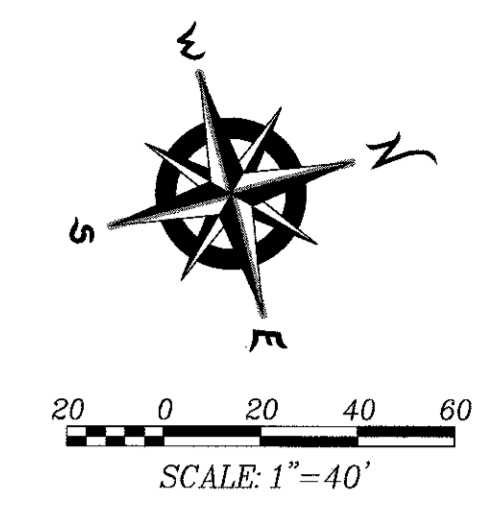
RECORD FROM: CITY OF SAN DIEGO MID-CITY PIPELINE PHASE II, WATKINS, 218-1752, WO. S-11026, 7/10/2013

ELEVATION: 460.779 MSL DATUM: NGVD 29

BID NO. 19-03 LAKE MURRAY CI SEWER REPLACEMENT/STREET RESURFACING



# PROPOSED STRIPING PLAN

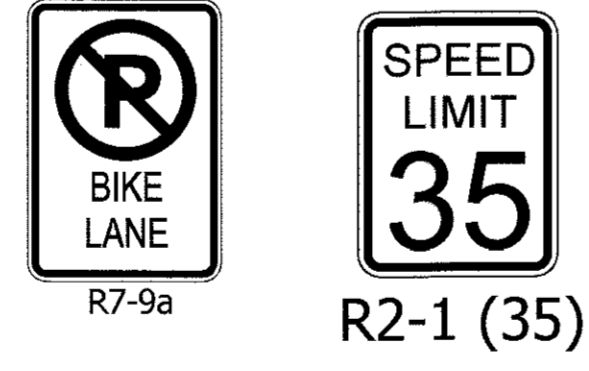
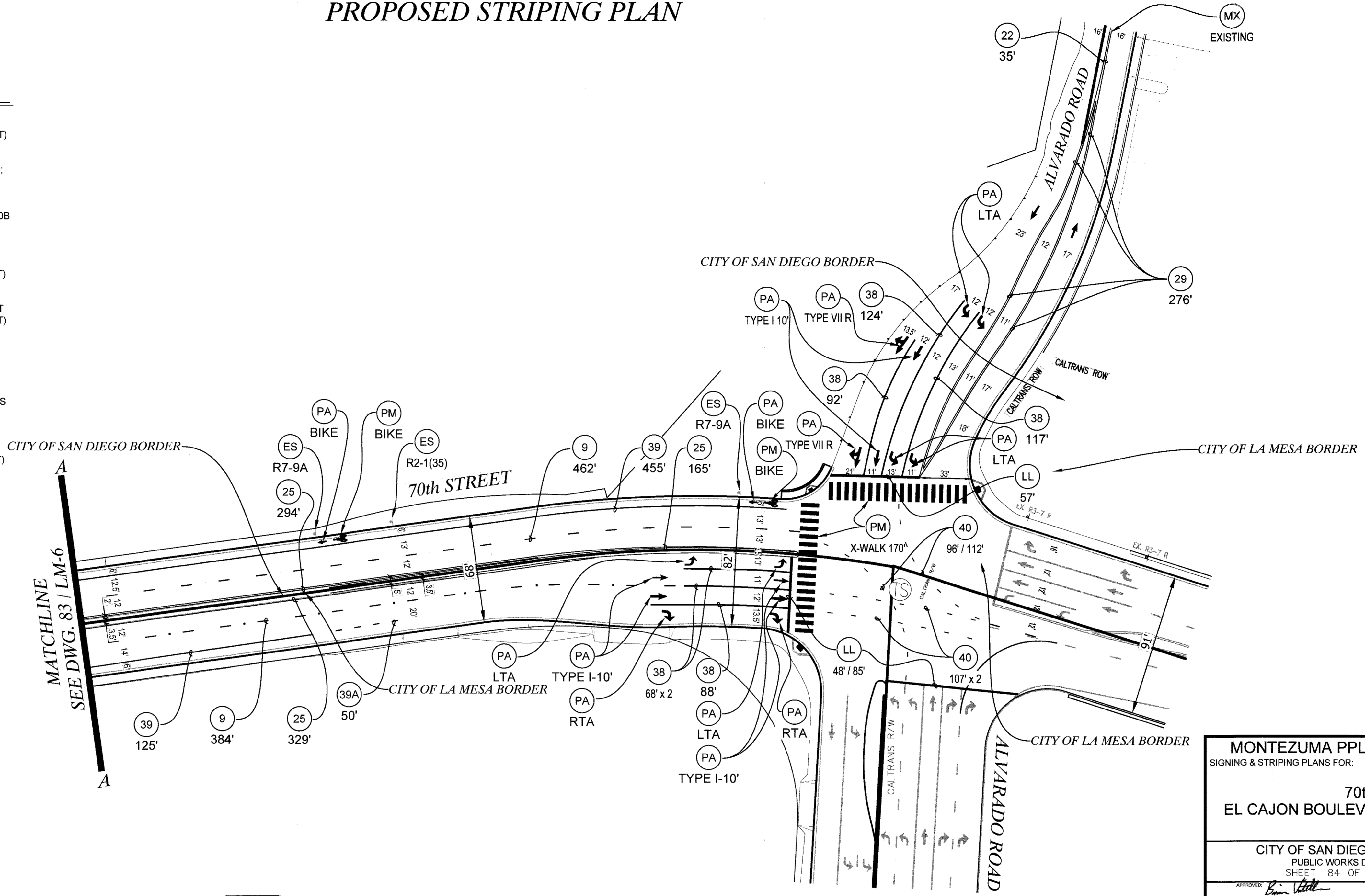


## DETAIL NUMBER

- 9 -6" WHITE DASHED LANE STRIPING WITH TYPE "G" ONE-WAY PAVEMENT MARKERS; REF: CALTRANS STD. PLAN A20A DETAIL 9 (XXX' = NUMBER OF FEET)
- 22 -6" YELLOW PAINTED CENTERLINE STRIPING W / TYPE "D" PAVEMENT MARKERS; REF: CALTRANS STD. PLAN A20A DETAIL 22 (XXX' = NUMBER OF FEET)
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- 29 -6" DOUBLE YELLOW PAINTED MEDIAN STRIPING W / TYPE "D" PAVEMENT MARKERS; REF: CALTRANS STD. PLAN A20B DETAIL 29 (XX' = NUMBER OF FEET)
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- 39 -6" WHITE PAINTED BIKE LANE STRIPING; REF: CALTRANS STD. PLAN A20D DETAIL 39 (XX' = NUMBER OF FEET)
- 39A -6" WHITE PAINTED DASHED BIKE LANE TERMINATION STRIPING; REF: CALTRANS STD. PLAN A20D DETAIL 39A (XX' = NUMBER OF FEET)
- 40 -6" WHITE PAINTED DASHED LANE LINE EXTENSION THRU INTERSECTIONS STRIPING; REF: CALTRANS STD. PLAN A20D DETAIL 40 (XX' = NUMBER OF FEET)

## CONSTRUCTION NOTES

- MX -MATCH EXISTING STRIPING AT LOCATION SHOWN ON THE PLAN.
- PA -TYPE IV (R OR L) RIGHT OR LEFT TURN ARROW THERMOPLASTIC PAVEMENT MARKING PER CALTRANS STANDARD PLAN A24A
- R / L TA
- PA -TYPE VII R COMBINATION THRU / RIGHT TURN ARROW THERMOPLASTIC PAVEMENT MARKING. REF: CALTRANS STD. PLAN A24A
- TYPE VII R
- LL -THERMOPLASTIC PAVEMENT MARKING. 12" SOLID WHITE LIMIT LINE PER CALTRANS STANDARD PLAN A24E (XX' = NUMBER OF FEET)
- XX'
- PM -THERMOPLASTIC PAVEMENT CONTINENTAL CROSSWALK MARKINGS. PER 2021 CITY OF SAN DIEGO STANDARD DRAWING SDM-116 (10' MIN. HEIGHT X 2' MIN. WIDTH WITH 3' MIN. SPACING IN BETWEEN EACH BAR.)
- X-WALK
- PM -THERMOPLASTIC PAVEMENT MARKING. BIKE LANE SYMBOL WHERE NOTED ON THE PLAN. (REF: CALTRANS STD. PLAN A24B "BIKE LANE SYMBOL WITH PERSON")
- BIKE
- PA -BIKE LANE PAVEMENT ARROW. (REF: CALTRANS STD. PLAN A24A)
- BIKE
- S -INSTALL SIGN AT LOCATION NOTED ON PLAN. (XX-XX = CAMUTCD OR CALTRANS SIGN CALLOUT)
- XX-XX
- TS -SIGNALIZED INTERSECTION
- PA -TYPE 1-10 FOOT THERMOPLASTIC PAVEMENT ARROW PER CALTRANS STANDARD PLAN A24A
- TYPE 1-10



LM-7

<b>MONTEZUMA PPL / MID-CITY PIPELINE PH 2</b> SIGNING & STRIPING PLANS FOR:			
<b>70th STREET</b> <b>EL CAJON BOULEVARD TO ALVARADO ROAD</b>			
CITY OF SAN DIEGO, CALIFORNIA PUBLIC WORKS DEPARTMENT SHEET 84 OF 104 SHEETS		WATER WBS S-11026 SEWER WBS NA	
APPROVED: <i>Brian Vitell</i> FOR CITY ENGINEER BRIAN VITELLE DEPUTY CITY ENGINEER	DATE: 07/28/2022	SUBMITTED BY: <b>MARYAM KARGAR</b> PROJECT MANAGER	
DESCRIPTION: ORIGINAL	BY: D&A	APPROVED: <i>Brian Vitell</i> DATE: 07/28/2022	
PROJECT ENGINEER: <b>JOEY FLORES</b>		CONTROL CERTIFICATION: 222-1755	
CONTRACTOR: _____		1862444, 6316407 CCS83 COORDINATE	
INSPECTOR: _____		37333-84-D	
<b>CITY OF LA MESA</b> SIGNING AND STRIPING / IMPROVEMENT PLANS FOR: <b>LAKE MURRAY CI SEWER REPLACEMENT</b> <b>70th STREET - SARANAC STREET TO ALVARADO ROAD</b> CITY OF LA MESA, CALIFORNIA - PUBLIC WORKS/ENGINEERING DIVISION SHEET 7 OF 27 SHEETS			
CITY ENGINEER: <i>Maryam Kargar</i>		DATE: <b>8-25-2022</b>	
DESCRIPTION: ORIGINAL	BY: D&A	APPROVED: _____ DATE: _____	
DESIGNER: _____		222-1755 CONTROL CERTIFICATION	
1862444, 6316407 LAMBERT COORDINATES		9721.07	
UTILITIES: _____	TRAFFIC: <i>mk</i>	DEVELOPMENT: <i>mk</i> PUBLIC WORKS:	

SCALE: 1" = 40'

PLANS PREPARED UNDER THE SUPERVISION OF:  
*Bill E. Darnell*  
BILL E. DARNELL  
DESIGN ENGINEER R.C.E. No. 22338  
DATE: 10/2/2020

**Darnell & ASSOCIATES, INC.**  
4411 MERCURY STREET, SUITE 207A  
SAN DIEGO, CA 92111  
(619) 253-9373

DWG: 130801-70th SLM SS-1A DATE: Feb. 4, 2022 BY: DaB/JAM

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE.

REGISTERED PROFESSIONAL ENGINEER  
BILLY E. DARNELL  
No. 22338  
CIVIL  
STATE OF CALIFORNIA

**RECORD DRAWING**

INDEXED BY: \_\_\_\_\_

BY: \_\_\_\_\_ RCE: \_\_\_\_\_ DATE: \_\_\_\_\_

REVIEWED BY: \_\_\_\_\_ CITY INSPECTOR DATE: \_\_\_\_\_

APPROVED: \_\_\_\_\_ CITY ENGINEER DATE: \_\_\_\_\_

**BENCHMARK DATA**

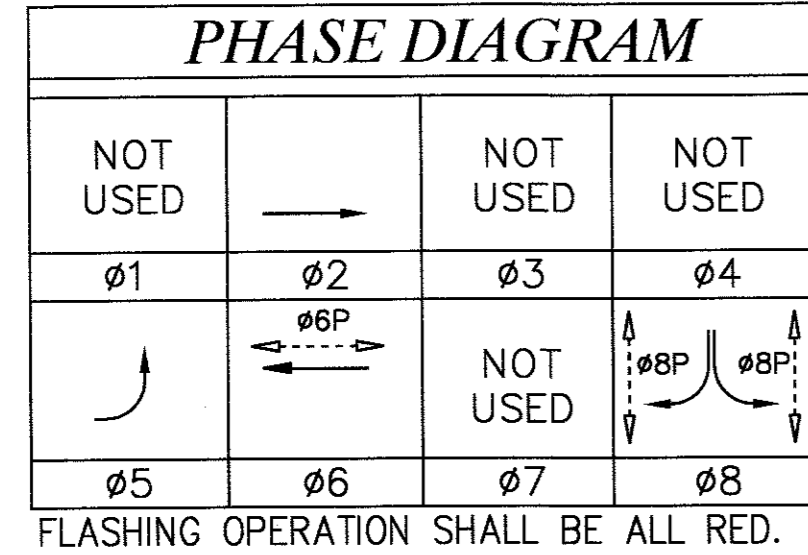
DESCRIPTION: NWBP SARANAC STREET AND 69th STREET, ELEV. 460.779 MSL, BASED ON NGVD 29 FEET AS SHOWN IN THE CITY OF SAN DIEGO BENCH BOOK

RECORD FROM: CITY OF SAN DIEGO MID-CITY PIPELINE PHASE II, WATKINS, 218-1752, WO. S-11026, 7/10/2013

ELEVATION: 460.779 MSL DATUM: NGVD 29

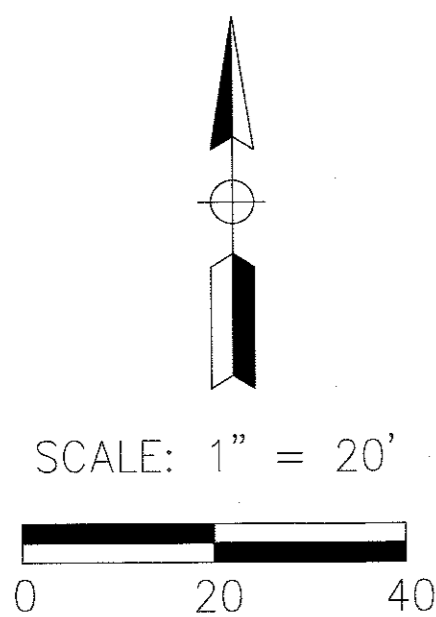
CONDUCTOR TABLE *		CONDUIT SIZE & RUN							
AWG SIZE OR CABLE TYPE	PHASE	POLE OR CIRCUIT	3"	3"	2"	3"	3"	3"	3"
3	CONDUCTOR	POLE - A	1	1	1	1	1	1	1
		POLE - B	1	1	1	1	1	1	1
		POLE - C	1	1	1	1	1	1	1
		POLE - D	1	1	1	1	1	1	1
		POLE - E	1	1	1	1	1	1	1
TOTAL CABLES	3 CONDUCTOR/12 CONDUCTOR	2	1	2	2	2	2	2	2
#14	SIGNAL SERVICE			2	2	2	2	2	2
#14	LUMINAIRE	2	2	2	2	2	2	2	2
#14	COMMON	1	1	1	1	1	1	1	1
FIBER OPTIC	INTERCONNECT CABLE								
TYPE	#2 LOOP DETECTOR								
"B"	"								
DLC	"								
EVP CABLE	#4 EVB	1							
	#6 EVC								
	#8 EVD								
VIDEO (N)	TOTAL EVP	1							
POWER	1(N)								
VIDEO (N)	1(N)								
COAX (N)	1(N)								
TOTAL VIDEO (N)	2(N)								
CONDUIT FILL PERCENTAGE		11.8%	0.9%	6.8%	12.2%	21.2%	23.7%	20.6%	29.6%

LAKE MURRAY BLVD. AT KIOWA DR.



TRAFFIC SIGNAL NOTES:

- ALL TRAFFIC SIGNAL EQUIPMENT AND CONSTRUCTION SHALL CONFORM TO CALIFORNIA DEPARTMENT OF TRANSPORTATION STANDARD DRAWINGS, SPECIFICATIONS AND IN CONFORMANCE WITH THE MUTCD, UNLESS EQUIPMENT IS SUPPLIED OR OTHERWISE SPECIFIED BY THE CITY OF LA MESA (SEE SPECIFICATIONS).
- CONTRACTOR IS RESPONSIBLE FOR ABANDONING ALL EXISTING LOOP DETECTORS AND CONDUIT RUNS IN PLACE. REMOVE AND DISPOSE OF EXISTING WIRES APPROPRIATELY, EXCEPT FOR ADVANCE LOOP DETECTORS AND CONDUITS.
- CONTRACTOR IS RESPONSIBLE FOR REMOVING AND DISPOSING OF EXISTING ABANDONED TYPE "B" DLC WIRES APPROPRIATELY EXCEPT FOR ADVANCE LOOP DETECTORS.



SCALE: 1" = 20'

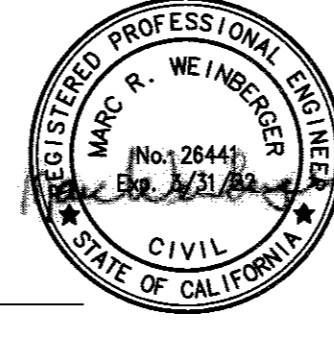
WARNING

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE.

**PSOMAS**

401 B Street, Suite 1600  
San Diego, CA 92101  
(619) 961-2800 (619) 961-2392 fax  
www.psomas.com

*Marc R. Weinberger*  
MARC R. WEINBERGER P.E. 26441 DATE 05/13/2022



**RECORD DRAWING**

INDEXED BY: \_\_\_\_\_

BY: \_\_\_\_\_ RCE: \_\_\_\_\_ DATE: \_\_\_\_\_

REVIEWED BY: \_\_\_\_\_ DATE: \_\_\_\_\_

CITY INSPECTOR

APPROVED: \_\_\_\_\_ DATE: \_\_\_\_\_

CITY ENGINEER

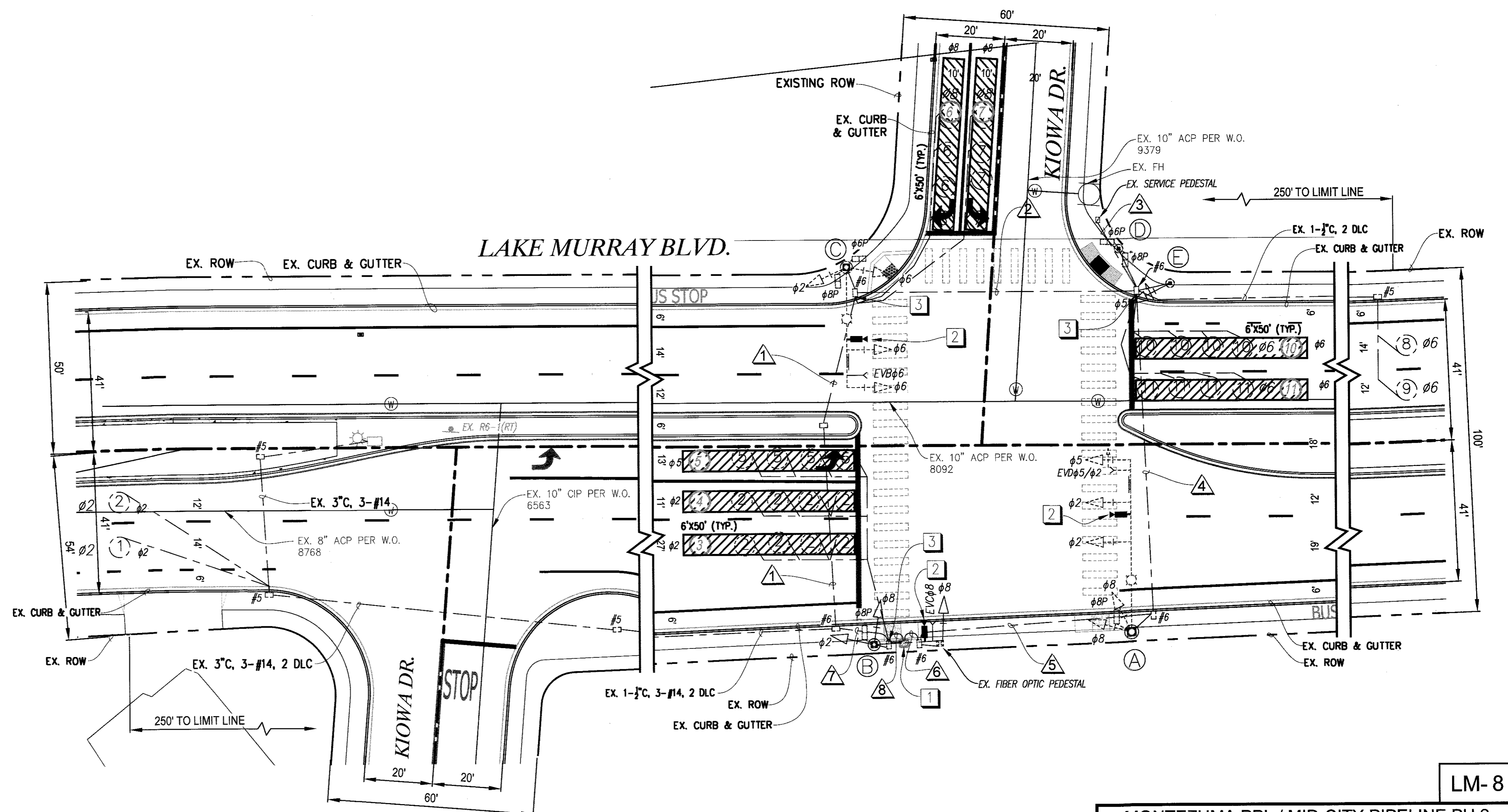
**BENCHMARK DATA**

DESCRIPTION: NWBP SARANAC STREET AND 69th STREET, ELEV. 460.779 MSL, BASED ON NGVD 29 FEET AS SHOWN IN THE CITY OF SAN DIEGO BENCH BOOK

RECORD FROM: CITY OF SAN DIEGO MID-CITY PIPELINE PHASE II, WATKINS, 218-1752, WO. S-11026, 7/10/2013

ELEVATION: 460.779 MSL DATUM: NGVD 29

MONTEZUMA PPL / MID-CITY PIPELINE PH 2 TRAFFIC SIGNAL MODIFICATION PLAN FOR:			
<b>LAKE MURRAY BOULEVARD AT KIOWA DR.</b>			
TO PROVIDE TEMPORARY VIDEO DETECTION TRAFFIC CONTROL SIGNAL MODIFICATIONS AS NEEDED			
CITY OF SAN DIEGO, CALIFORNIA PUBLIC WORKS DEPARTMENT SHEET 85 OF 104 SHEETS		WATER WBS S-11026 SEWER WBS NA	
APPROVED: <i>Brian Vitell</i> FOR CITY ENGINEER BRIAN VITELLE DEPUTY CITY ENGINEER	DATE: 07/28/2022	SUBMITTED BY: MARYAM KARGAR PROJECT MANAGER	
DESCRIPTION: ORIGINAL	BY: D&A	APPROVED: <i>Brian Vitell</i>	DATE FILMED: 07/28/2022
222-1755 CCS27 COORDINATE		1862444, 6316407 CCS83 COORDINATE	
CONTRACTOR: _____ INSPECTOR: _____		DATE STARTED: _____ DATE COMPLETED: _____	
CITY OF LA MESA ENGINEER OF PUBLIC WORKS			
TRAFFIC SIGNAL MODIFICATION PLANS FOR:			
<b>LAKE MURRAY BOULEVARD AT KIOWA DR. &amp; CONNECTICUT AVE. / PARKWAY DR.</b>			
CITY OF LA MESA, CALIFORNIA - PUBLIC WORKS/ENGINEERING DIVISION SHEET 8 OF 27 SHEETS			
CITY ENGINEER: <i>Brian Vitell</i>	R.C.E. #3386	DATE: 8-25-2022	DIVISION HEAD: _____
DESIGNER: _____	DATE: _____	DATE: _____	DATE: _____
DESIGN ENGINEER: _____	DATE: _____	DATE: _____	DATE: _____
CONTROL CERTIFICATION: _____	DATE: _____	DATE: _____	DATE: _____
1862444, 6316407 LAMBERT COORDINATES	DATE: _____	DATE: _____	DATE: _____
9271.08	DATE: _____	DATE: _____	DATE: _____



CONSTRUCTION NOTES

- FURNISH AND INSTALL ITERIS VIDEO DETECTION CAMERA SYSTEM OR APPROVED EQUAL, FOR VIDEO CAMERA VIDEO DETECTION IN EXISTING TRAFFIC SIGNAL CONTROLLER CABINET. ITERIS SYSTEM SHALL CONSIST OF A VANTAGE EDGE 2 PROCESSOR, VANTAGE EXTENSION MODULES, ITERIS RZ-4A WDR CAMERAS. CONTRACTOR SHALL PULL A 3/16 POWER CABLE AND BOLDEN B281 COAXIAL CABLE IN A COMPLETE HOME RUN PULL FROM EACH CAMERA TO CABINET WITH NO SPLICES. CONTRACTOR TO PROGRAM VIDEO CAMERA SYSTEM TO PROVIDE VIDEO DETECTION ZONES SHOWN ON PLAN. THE SIZE OF THE VIDEO DETECTION ZONES TO BE APPROVED BY CITY OF LA MESA ENGINEER. EITHER SYSTEM SHALL HAVE A 17" DROP DOWN MONITOR.
- FURNISH AND INSTALL ITERIS RZ-4A WDR (OR APPROVED EQUAL) VIDEO DETECTION CAMERA ON THE SIGNAL MAST ARM FOR POLE (A) AND POLE (C). THE ITERIS RZ-4A WDR VIDEO DETECTION CAMERAS SHALL BE FURNISHED. CAMERAS SHALL BE PLACED ON MAST-ARMS WITH EXTENDER BRACKET CENTERED TO ONCOMING LANE SEGMENT.
- CUT AND ABANDON LOOP DETECTOR DLC'S TO DETECTOR NUMBERS 3, 4, 5, 6, 7, 10, & 11 IN THEIR TRAFFIC SIGNAL PULL BOXES WHERE NOTED ON THE PLAN. VIDEO DETECTION ZONES TO BE USED IN LIEU OF TRADITIONAL LOOP DETECTORS WITH THE EXCEPTION OF ADVANCE WARNING DETECTION SHOWN ON THE PLAN.

LM-8

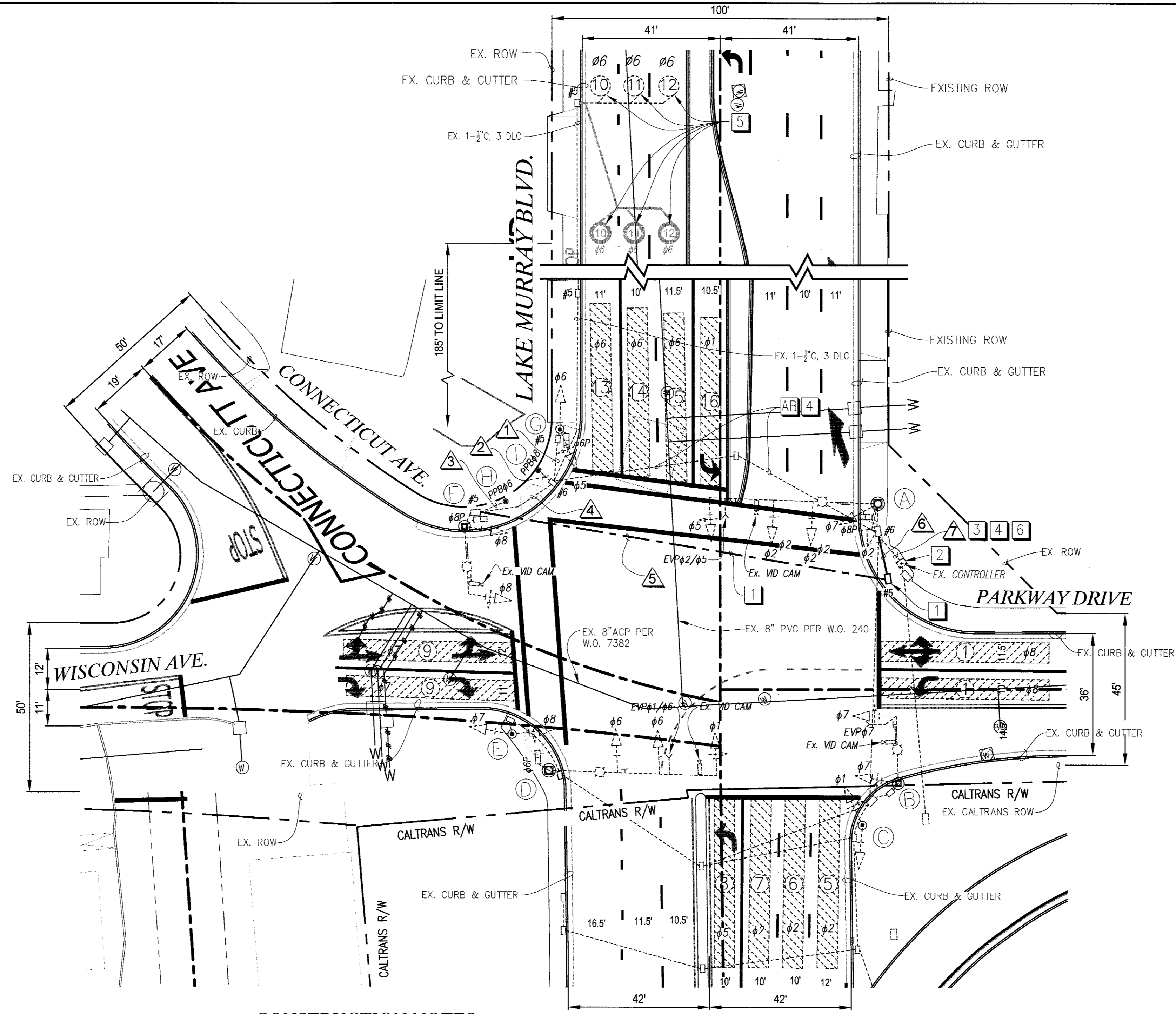
BID NO. 19-03 LAKE MURRAY CI SEWER REPLACEMENT/RESURFACING

CONDUCTOR TABLE *		POLE OR CIRCUIT	CONDUIT SIZE & RUN							
AWG SIZE OR CABLE TYPE	PHASE		2" (E)	2" (E)	2" (E)	2" (E)	3" (N)	3" (N)	3" (N)	2-3" (E)
CONDUCTORS	3#14 (N) (PPB)	POLE - F	-	-	-	-	-	-	-	-
	5#14 (N) (PED HEAD)	POLE - G	-	-	-	-	-	-	-	-
	(N)	POLE - H (PPB)	-	-	-	-	-	-	-	-
	12#14 (SIGNAL)	POLE - I (PPB)	-	-	-	-	-	-	-	-
TOTAL CABLES	3 COND / 5 COND / 12 COND		-	-	-	-	-	-	-	-
#8	SIGNAL SERVICE									2(E)
#8	LUMINAIRE (N)									2(N)
#10	COMMON									2(N)
FIBER OPTIC	INTERCONNECT CABLE									1(E)
TYPE										
"B"	#6 ADV. LOOP DETECTORS (N)									3(N)
DLC	TOTAL DLC									3(N)
EVP CABLE										
#8	EVP (N)									1(N)
TOTAL EVP										1(N)
VIDEO POWER (N)										1(N)
VIDEO COAX (N)										1(N)
TOTAL VIDEO (N)										2(N)

(N) = NEW (E) = EXISTING

**TRAFFIC SIGNAL NOTES:**

- ALL PULL BOXES SHALL BE #5, AND HAVE THE WORDS "TRAFFIC SIGNAL" ON THE COVER, AND CONDUIT SHALL BE AS SHOWN IN THE CONDUCTOR AND CONDUIT SCHEDULE.
- ALL TRAFFIC SIGNAL EQUIPMENT AND CONSTRUCTION SHALL CONFORM TO CALIFORNIA DEPARTMENT OF TRANSPORTATION STANDARD DRAWINGS, SPECIFICATIONS AND IN CONFORMANCE WITH THE MUTCD, UNLESS EQUIPMENT IS SUPPLIED OR OTHERWISE SPECIFIED BY THE CITY OF LA MESA (SEE SPECIFICATIONS).
- CONDUCTOR SCHEDULE IS FURNISHED AS AN INSTALLATION GUIDELINE ONLY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE THE CORRECT CONDUCTORS REQUIRED FOR THE INTENDED OPERATION.
- CONTRACTOR SHALL SUBMIT A TRAFFIC CONTROL PLAN FOR TRAFFIC SIGNAL INSTALLATION PER CALTRANS MUTCD TO THE CITY OF LA MESA ENGINEERING SERVICES DIVISION A MINIMUM OF FIVE (5) WORKING DAYS PRIOR TO CONSTRUCTION.
- FLASHING SIGNAL OPERATION SHALL BE RED ON ALL PHASES. PEDESTRIAN HEADS SHALL BE BLANK DURING FLASHING OPERATION.
- CONTRACTOR SHALL BE RESPONSIBLE FOR ANY MONUMENTS AND/OR BENCHMARKS WHICH WILL BE DISTURBED OR DESTROYED BY CONSTRUCTION. SUCH POINTS SHALL BE REFERENCED AND REPLACED WITH APPROPRIATE MONUMENTS BY A LICENSED LAND SURVEYOR OR A REGISTERED CIVIL ENGINEER AUTHORIZED TO PRACTICE LAND SURVEYING. A CORNER RECORD OR RECORD OF SURVEY, AS APPROPRIATE, SHALL BE FILED BY THE LICENSED LAND SURVEYOR OR REGISTERED CIVIL ENGINEER AS REQUIRED BY THE LAND SURVEYORS ACT.
- CONTRACTOR IS RESPONSIBLE FOR ABANDONING EXISTING CONDUITS, AND REMOVING ALL EXISTING CONDUCTORS AND FOR INSURING THAT FIBER OPTIC CONNECTIONS ARE OPERATIONAL AFTER CONSTRUCTION IS COMPLETE.
- INSTALL W 3-3 & W20-1 SIGNS ON ALL APPROACHES AS PART OF THE TRAFFIC CONTROL PLAN (300' BACK) DURING CONSTRUCTION. REMOVE SIGNS AFTER CONSTRUCTION IS COMPLETED.
- CONTRACTOR IS RESPONSIBLE FOR MAINTAINING AND PROTECTING ALL UTILITIES DURING CONSTRUCTION.
- ANY CONCRETE SIDEWALK MODIFIED OR DAMAGED AS A RESULT OF CONSTRUCTION MUST HAVE THE ENTIRE PANEL REPLACED FROM JOINT TO JOINT.
- CONTRACTOR SHALL PLAN A PRE-CONSTRUCTION MEETING WITH CALTRANS SIGNAL OPERATIONS (SHERI BABAKI, 619-954-8570) PRIOR TO THE START OF THE PROJECT.
- CONTACT CALTRANS SIGNAL OPERATIONS (SHERI BABAKI) AND ELECTRICAL MAINTENANCE (MARTIN ESCALANTE, 619-572-3410) FIVE DAYS PRIOR TO START OF WORK FOR EACH PHASE OF THE PROJECT.

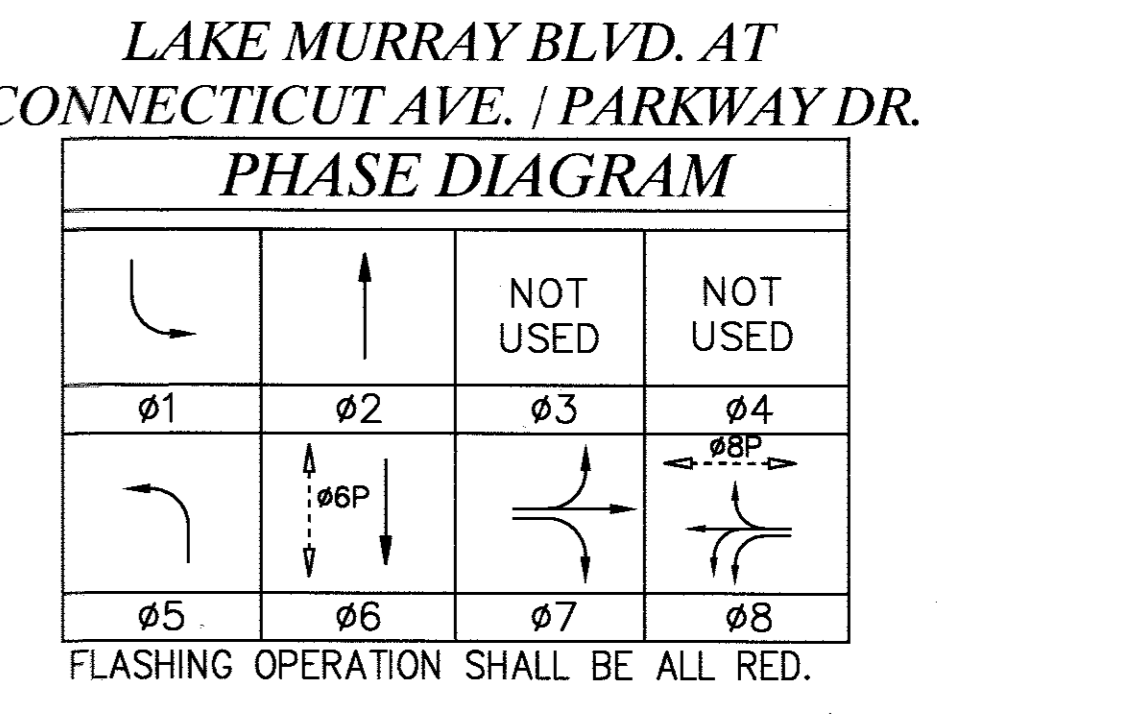


**CONSTRUCTION NOTES**

- FURNISH & INSTALL #5 PULLBOX AND 3" CONDUIT WHERE SHOWN ON THE PLAN.
- INSTALL CONDUCTORS FROM CONTROLLER THRU 7, 6, 5, 4, 3, 2, & 1 TO POLES 1, 2, 3, 4, & 5 PER CONDUCTOR SCHEDULE SHOWN AT TOP LEFT.
- CONTRACTOR SHALL REMOVE ABANDONED CONDUCTORS IN 7 & 8 CONDUIT RUNS.
- CONTRACTOR IS RESPONSIBLE FOR ABANDONING ALL NOTED EXISTING CONDUIT RUNS IN PLACE 8. REMOVE AND DISPOSE OF EXISTING WIRES / CONDUCTORS / DLC'S BACK TO CONTROLLER APPROPRIATELY.
- CONTRACTOR TO ABANDON EXISTING #6 ADVANCE LOOP DETECTORS & INSTALL NEW LOOP DETECTORS 185 FEET FROM THE LIMIT LINE.
- CONTRACTOR SHALL PROTECT IN PLACE CONDUCTORS FROM POLE 4.

PERMIT NUMBER: \_\_\_\_\_  
 CO: SD RTE: \_\_\_\_\_ PM: \_\_\_\_\_  
 AS-BUILT PLANS FOR ROADWAY  
 GEOMETRIC AND ABOVE GROUND  
 FEATURES

STATE REPRESENTATIVE \_\_\_\_\_ DATE \_\_\_\_\_



LM-9

MONTEZUMA PPL / MID-CITY PIPELINE PH 2  
 TRAFFIC SIGNAL MODIFICATION PLAN FOR:

**LAKE MURRAY BOULEVARD  
 AT KIOWA DR.**

TO PROVIDE TEMPORARY VIDEO DETECTION TRAFFIC CONTROL  
 SIGNAL MODIFICATIONS AS NEEDED

CITY OF SAN DIEGO, CALIFORNIA  
 PUBLIC WORKS DEPARTMENT  
 SHEET 86 OF 104 SHEETS

APPROVED: *[Signature]* DATE: 07/28/2022  
 FOR CITY ENGINEER: BRIAN VITELLE  
 DEPUTY CITY ENGINEER

WATER WBS: S-11026  
 SEWER WBS: NA

SUBMITTED BY: MARYAM KARGAR  
 PROJECT MANAGER  
 CHECKED BY: JOEY FLORES  
 PROJECT ENGINEER

DESCRIPTION: ORIGINAL BY: D&A APPROVED: *[Signature]* DATE: 07/28/2022 FILMED: \_\_\_\_\_

222-1755  
 CCS27 COORDINATE  
 1862444, 6316407  
 CCS83 COORDINATE

CONTRACTOR: \_\_\_\_\_ DATE STARTED: \_\_\_\_\_ DATE COMPLETED: \_\_\_\_\_  
 INSPECTOR: \_\_\_\_\_

37333-86-D

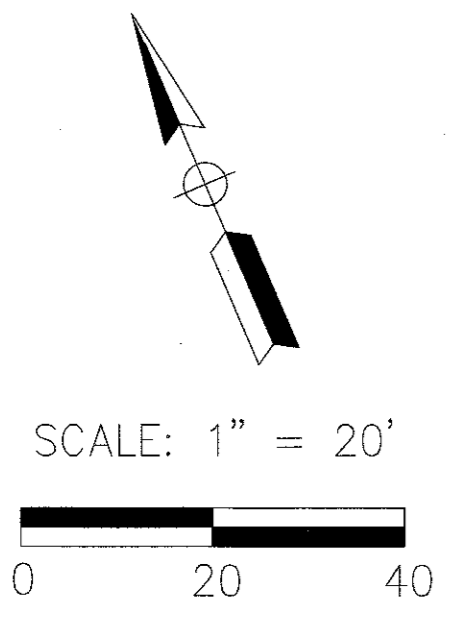
CITY OF LA MESA  
 TRAFFIC SIGNAL MODIFICATION PLANS FOR:

**LAKE MURRAY BOULEVARD AT  
 KIOWA DR. & CONNECTICUT AVE. / PARKWAY DR.**

CITY OF LA MESA, CALIFORNIA - PUBLIC WORKS/ENGINEERING DIVISION  
 SHEET OF 27 SHEETS

8-25-2022  
 CITY ENGINEER: R.C.E. 93395 DATE: \_\_\_\_\_ DIVISION HEAD: \_\_\_\_\_  
 DESCRIPTION: ORIGINAL BY: PSO APPROVED: \_\_\_\_\_ DATE: \_\_\_\_\_ FILMED: \_\_\_\_\_ DESIGN ENGINEER: \_\_\_\_\_  
 222-1755  
 CONTROL CERTIFICATION  
 1862444, 6316407  
 LAMBERT COORDINATES  
 9271.09

UTILITIES: J.H. DEVELOPMENT: S.H.  
 TRAFFIC: M.K. PUBLIC WORKS: \_\_\_\_\_



SCALE: 1" = 20'

WARNING  
 IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE.

**PSOMAS**  
 401 B Street, Suite 1600  
 San Diego, CA 92101  
 (619) 961-2800 (619) 961-2392 fax  
 www.psomas.com

*[Signature]*  
 MARC R. WEINBERGER P.E. 28441 DATE: 05/13/2022



**RECORD DRAWING**

INDEXED BY: \_\_\_\_\_  
 BY: \_\_\_\_\_ RCE: \_\_\_\_\_ DATE: \_\_\_\_\_  
 REVIEWED BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
 CITY INSPECTOR

APPROVED: \_\_\_\_\_ DATE: \_\_\_\_\_  
 CITY ENGINEER

**BENCHMARK DATA**

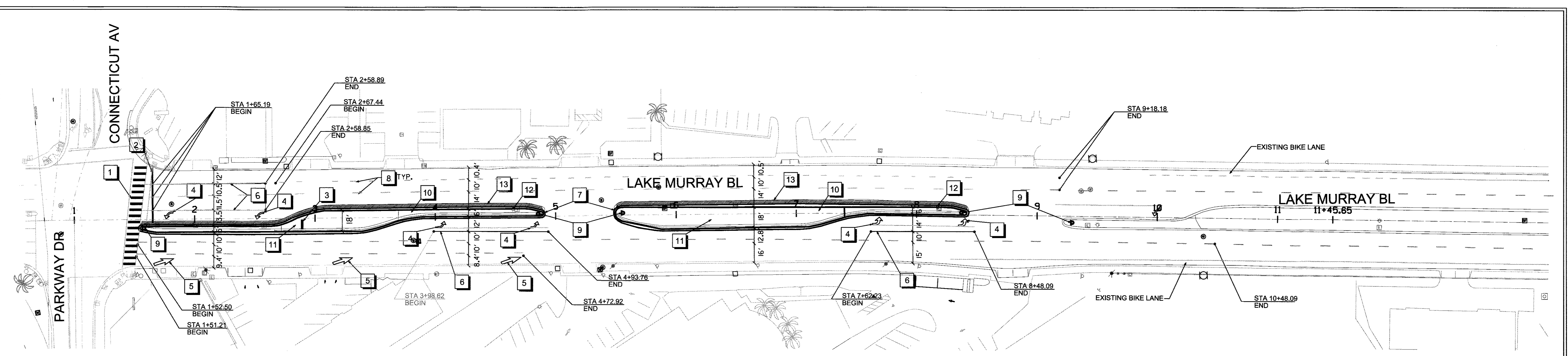
DESCRIPTION: NWBP SARANAC STREET AND 69th STREET,  
 ELEV. 460.779 MSL, BASED ON NGVD 29 FEET AS SHOWN IN THE  
 CITY OF SAN DIEGO BENCH BOOK

RECORD FROM: CITY OF SAN DIEGO MID-CITY PIPELINE PHASE II,  
 WATKINS, 218-1752, W.O. S-11026, 7/10/2013

ELEVATION: 460.779 MSL DATUM: NGVD 29

BID NO. 19-03 LAKE MURRAY CI SEWER REPLACEMENT/RESURFACING

ORIGINAL SCALE: 1" = 10' CITY OF LA MESA LAKE MURRAY CI SEWER REPLACEMENT/STREET RESURFACING



**CONSTRUCTION NOTES**

- 1 INSTALL THERMOPLASTIC WHITE CONTINENTAL CROSSWALK STRIPING PER SDM-116.
- 2 INSTALL 12" WHITE LIMIT LINE PER CALTRANS STANDARD PLAN A24E.
- 3 LA MESA MONUMENT SIGN SEE DETAIL A, B & C.
- 4 INSTALL TYPE IV (L) LEFT TURN ARROW THERMOPLASTIC PAVEMENT MARKING AS NOTED ON PLAN PER CALTRANS STANDARD A24A.
- 5 INSTALL TYPE VI (R) PAVEMENT MARKING AS NOTED ON PLAN PER CALTRANS STANDARD A24A.
- 6 INSTALL 8" WHITE CHANNELIZING LINE PER CALTRANS STANDARD A20D, DETAIL 38.
- 7 INSTALL 4" YELLOW MEDIAN ISLAND LINE PER CALTRANS STANDARD PLAN A20B, DETAIL 25.
- 8 INSTALL WHITE 4" LANE LINE PER CALTRANS STANDARD PLAN A20A, DETAIL 9.
- 9 INSTALL NEW SIGNS AND POST AS NOTED ON PLAN PER STD. DWG. M-45. SEE SIGN LEGEND.
- 10 EXISTING MEDIAN TO BE REMOVED.
- 11 SEE LANDSCAPE SHEETS FOR LANDSCAPE DETAILS.
- 12 CONTRACTOR TO RELOCATE THE EXISTING LIGHT POLE ACCORDING PER THE NEW LOCATION OF NEW MEDIAN.
- 13 INSTALL YELLOW DIAGONAL CROSSHATCH MARKINGS.

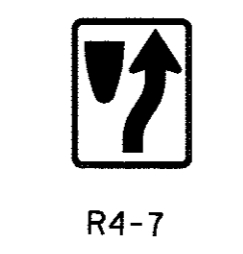
**STRIPING AND SIGNING GENERAL NOTES**

1. INSTALLATION ALL STRIPING, SIGNS AND PAVEMENT MARKERS SHALL BE THE RESPONSIBILITY OF CONTRACTOR.
2. ALL STRIPING AND SIGNING SHALL CONFORM TO THE MOST RECENT ADOPTED EDITION OF THE FOLLOWING MANUALS:
  - \* MUTCD AND CALIFORNIA SUPPLEMENT
  - \* CITY OF SAN DIEGO STANDARD DRAWINGS
  - \* CALTRANS STD. SPECIFICATIONS
3. ALL SIGNING AND STRIPING ARE SUBJECT TO THE APPROVAL OF THE RESIDENT ENGINEER PRIOR TO INSTALLATION AND/OR REMOVAL.
4. CONTRACTOR SHALL REMOVE ALL CONFLICTING STRIPING, PAVEMENT MARKINGS AND LEGENDS BY SANDBLASTING AND/OR GRINDING. ANY DEBRIS SHALL BE PROMPTLY REMOVED BY THE CONTRACTOR.
5. SIGN POSTS SHALL BE INSTALLED WITH SQUARE PERFORATED STEEL TUBING WITH BREAKAWAY BASE PER CITY OF SAN DIEGO REGIONAL STANDARD DRAWINGS, DRAWING NO. M-45.
6. ALL RAISED MEDIAN NOSES SHALL BE PAINTED YELLOW.
7. ANY DEVIATION FROM THE STRIPING AND SIGNING PLANS SHALL BE APPROVED BY THE RESIDENT ENGINEER PRIOR TO ANY CHANGES BEING MADE IN THE FIELD.

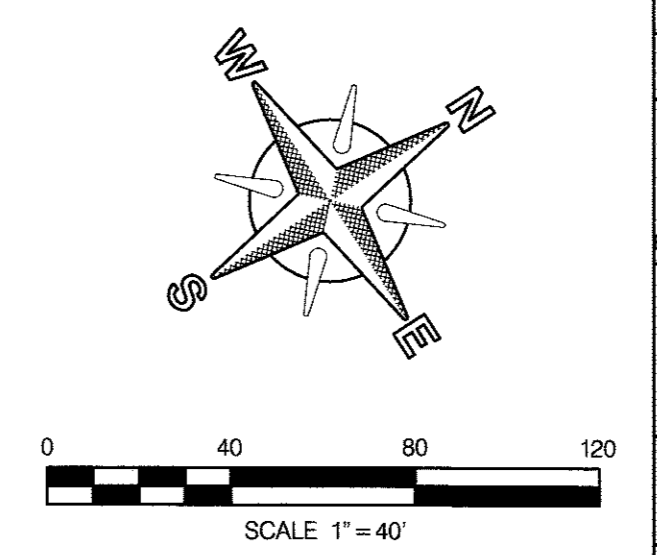
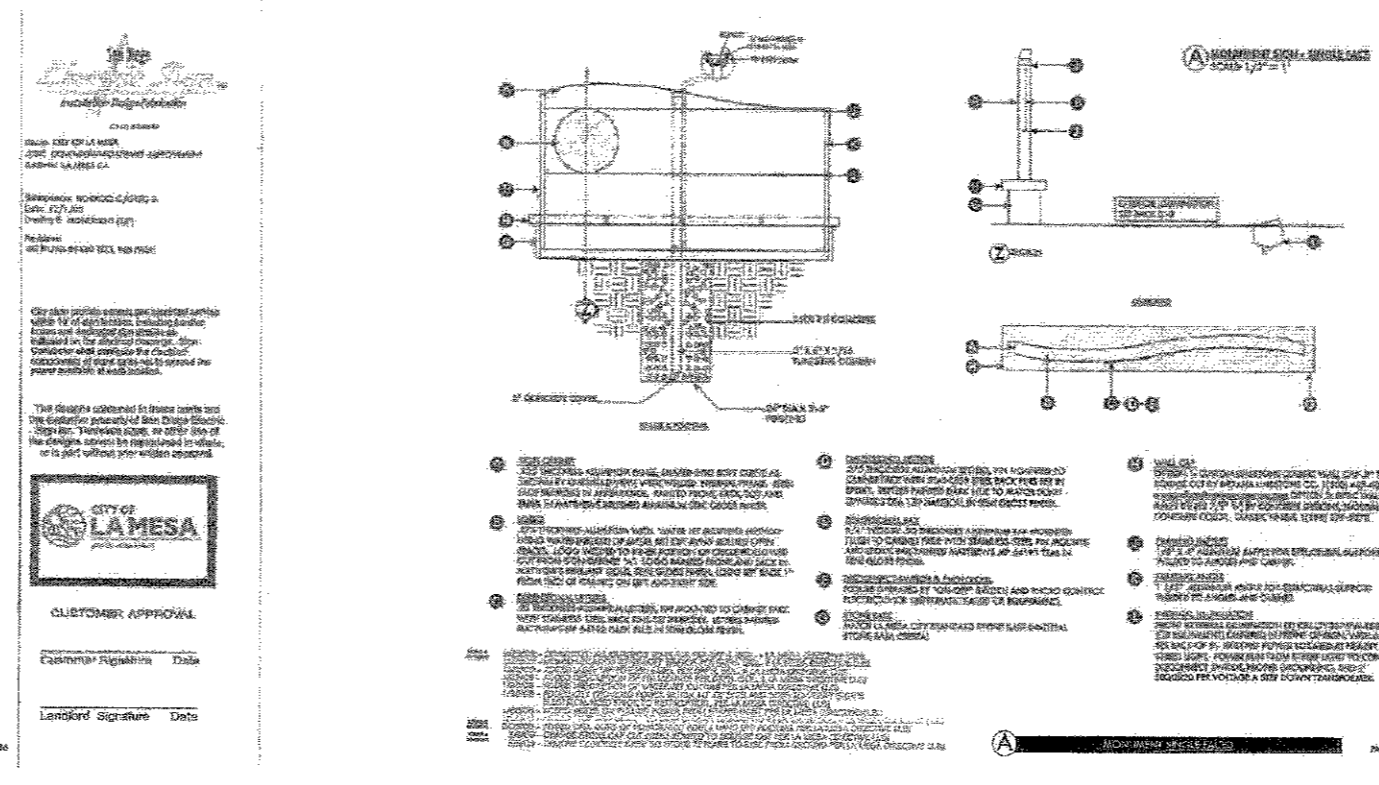
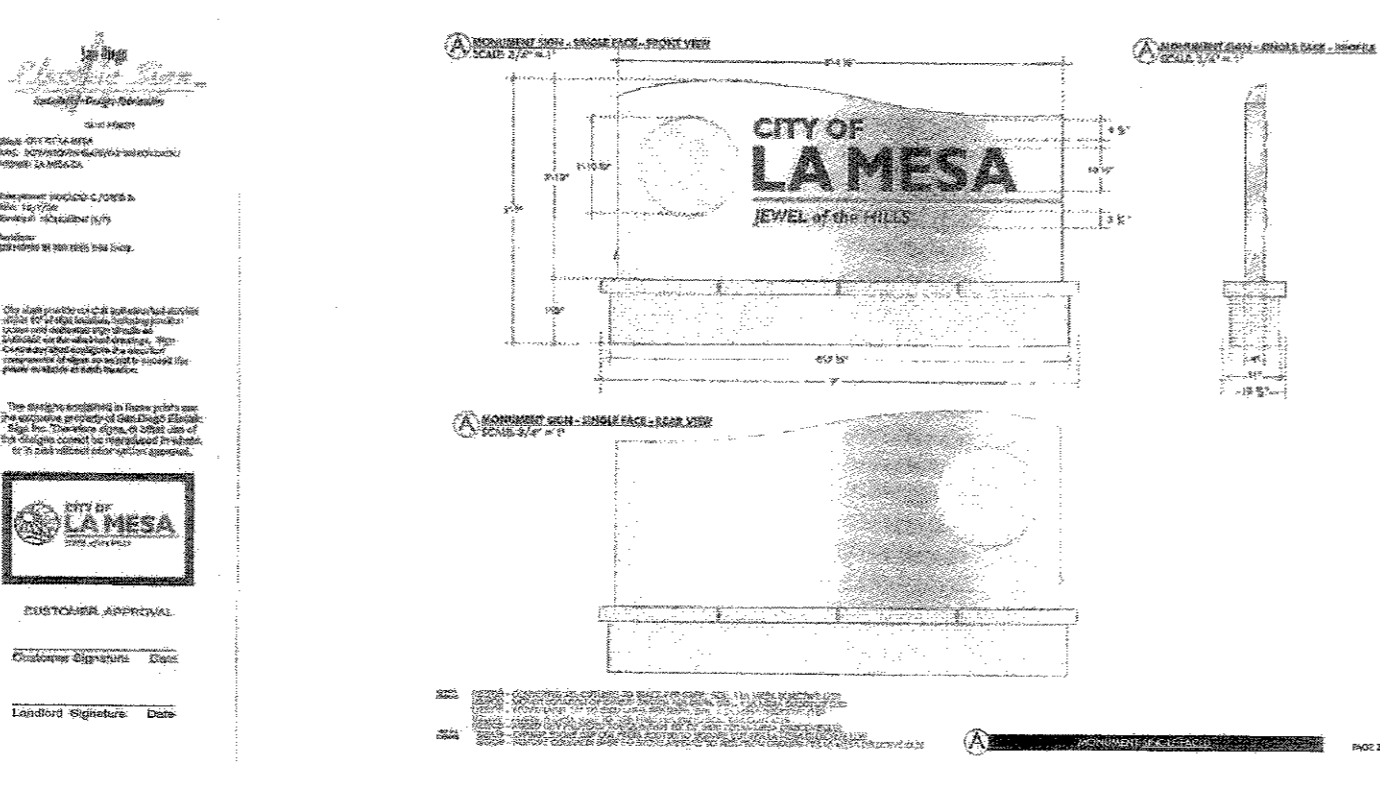
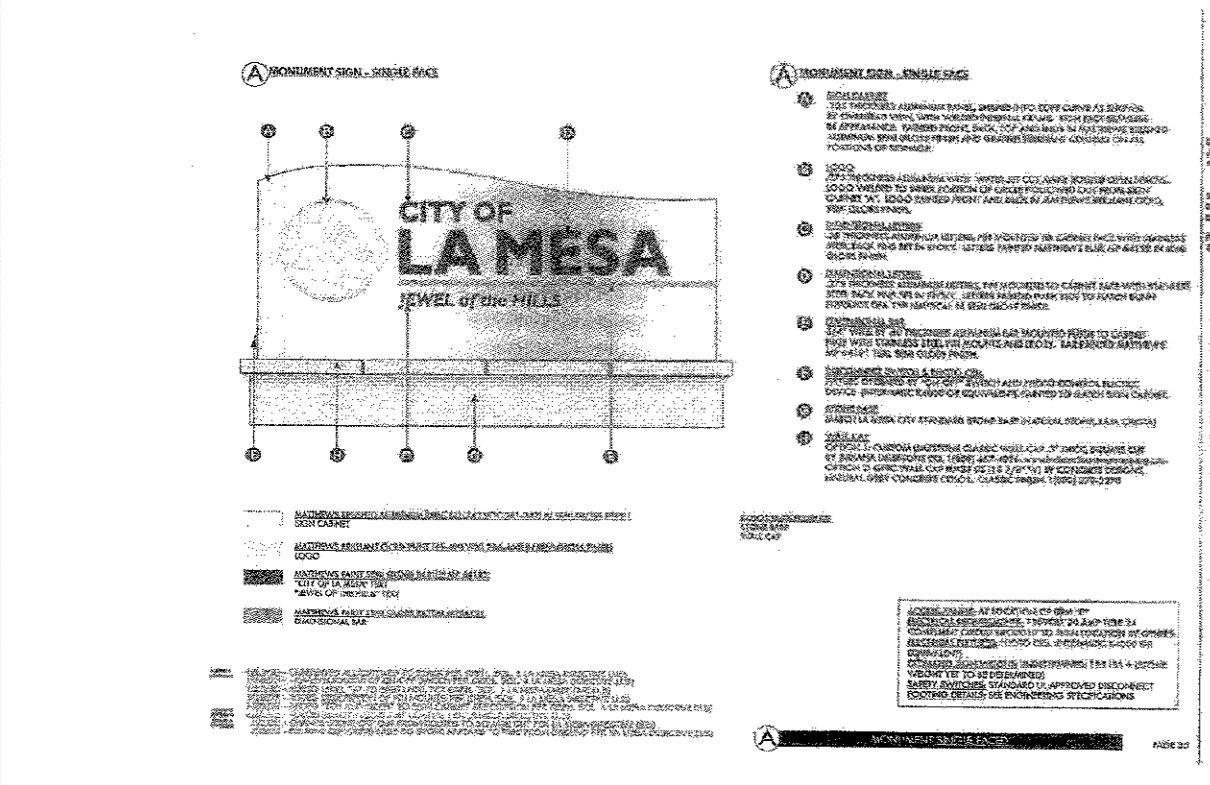
**STRIPING AND SIGNING CONT.**

8. ALL SIGNS SHOWN ON THE STRIPING AND SIGNING PLANS SHALL BE NEW SIGNS PROVIDED AND INSTALLED BY THE CONTRACTOR, EXCEPT FOR EXISTING SIGNS SPECIFICALLY INDICATED TO BE RELOCATED OR TO REMAIN.
9. ALL LIMIT LINES/STOP LINES, CROSSWALK LINES, PAVEMENT LEGENDS, AND ARROWS (EXCEPT WITHIN BIKE LANES) SHALL BE THERMOPLASTIC.
10. CONTRACTOR SHALL NOTIFY CITY TRAFFIC ENGINEER AT (619) 667-1166 A MINIMUM OF FIVE (5) WORKING DAYS PRIOR TO AND UPON COMPLETION OF STRIPING AND SIGNING.

**SIGN LEGEND**



LM-10



MONTEZUMA PPL /MID-CITY PIPELINE PH 2 STRIPING PLAN LAKE MURRAY BL		WATER WBS S-11026 SEWER WBS
CITY OF SAN DIEGO, CALIFORNIA PUBLIC WORKS DEPARTMENT SHEET 87 OF 104 SHEETS		APPROVED BY: MARYAM KARGAR PROJECT MANAGER
FOR CITY ENGINEER BRIAN VITELLE	DATE: 07/28/2022 RCE#: C73039	CHIEF OF PROJECT ENGINEER JOEY FLORES
DESCRIPTION	BY	APPROVED
ORIGINAL	NF	B. Vitelle
		DATE
		07/28/2022
		FILED
		222-1755
		CCS27 COORDINATE
		862444-636407
		CCS83 COORDINATE
CONTRACTOR	DATE STARTED	37333-87-D
INSPECTOR	DATE COMPLETED	
ENCROACHMENT PERMIT: _____ ISSUED: _____		
CITY OF LA MESA JEWEL OF THE HILLS		
MONTEZUMA PPL/MID-CITY PIPELINE PH2 STRIPING PLAN LAKE MURRAY BL		
CITY OF LA MESA, CALIFORNIA DEPARTMENT OF PUBLIC WORKS/ENGINEERING DIVISION SHEET 10 OF 27 SHEETS		
CITY ENGINEER	R.C.E. #3306	DATE
Brian Vitelle	76487	8-25-2022
DESCRIPTION	BY	APPROVED
ORIGINAL	NF	
		DATE
UTILITIES: M.H.	DEVELOPMENT: DWK	MAINTENANCE ZONE
TRAFFIC: WJK	CAPITAL PROJ:	9271.10

**UNDERGROUND SERVICE ALERT**  
SECTION 4216 & 4217 OF THE GOVERNMENT CODE REQUIRES A DIG ALERT IDENTIFICATION NUMBER BE ISSUED BEFORE A "PERMIT TO EXCAVATE" WILL BE VALID. FOR YOUR DIG ALERT I.D. NUMBER CALL UNDERGROUND SERVICE ALERT TOLL FREE @ 1-800-422-4133 TWO (2) WORKING DAYS BEFORE YOU DIG.  
WEB ADDRESS: WWW.DIGALERT.ORG

**RECORD DRAWING**

BY: \_\_\_\_\_ DATE \_\_\_\_\_

APPROVED: \_\_\_\_\_ DATE \_\_\_\_\_

HELIUM WATER DISTRICT  
S-XX-XXX

REVIEWED BY: \_\_\_\_\_ DATE \_\_\_\_\_

**BENCHMARK**

DESCRIPTION: SEE EACH SHEET

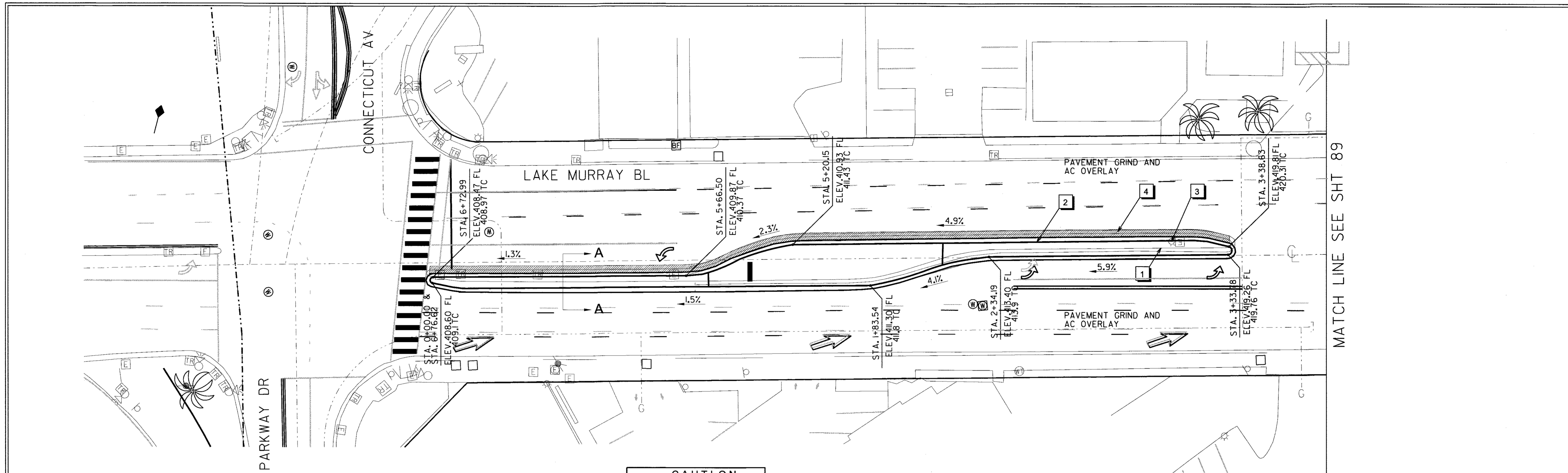
LOCATION: \_\_\_\_\_

RECORD FROM: \_\_\_\_\_

ELEVATION: \_\_\_\_\_ DATUM: \_\_\_\_\_

CITY OF LA MESA APPROVED CHANGES			
NO.	DESCRIPTION	APPROVED	DATE

ORIGINAL SCALE: 1/8" = 1'-0" INCHES LAKE MURRAY CI SEWER REPLACEMENT/STREET RESURFACING



MATCH LINE SEE SHT 89

**CAUTION**  
 HP GAS! CONTRACTOR TO VERIFY EXACT LOCATION AND MUST NOTIFY SDG&E THREE (3) WEEKS IN ADVANCE PRIOR TO EXCAVATION SDG&E STANDBY REQUIRED

**GENERAL NOTES**

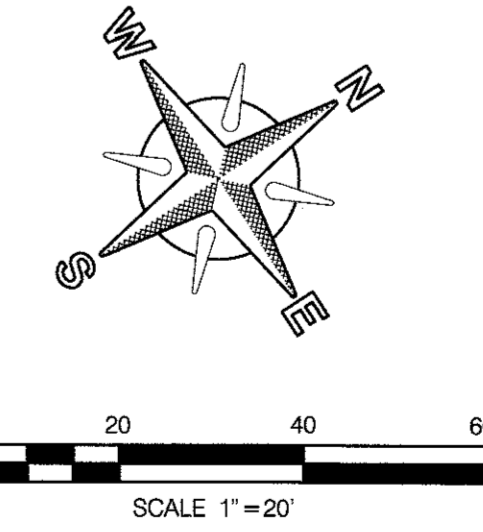
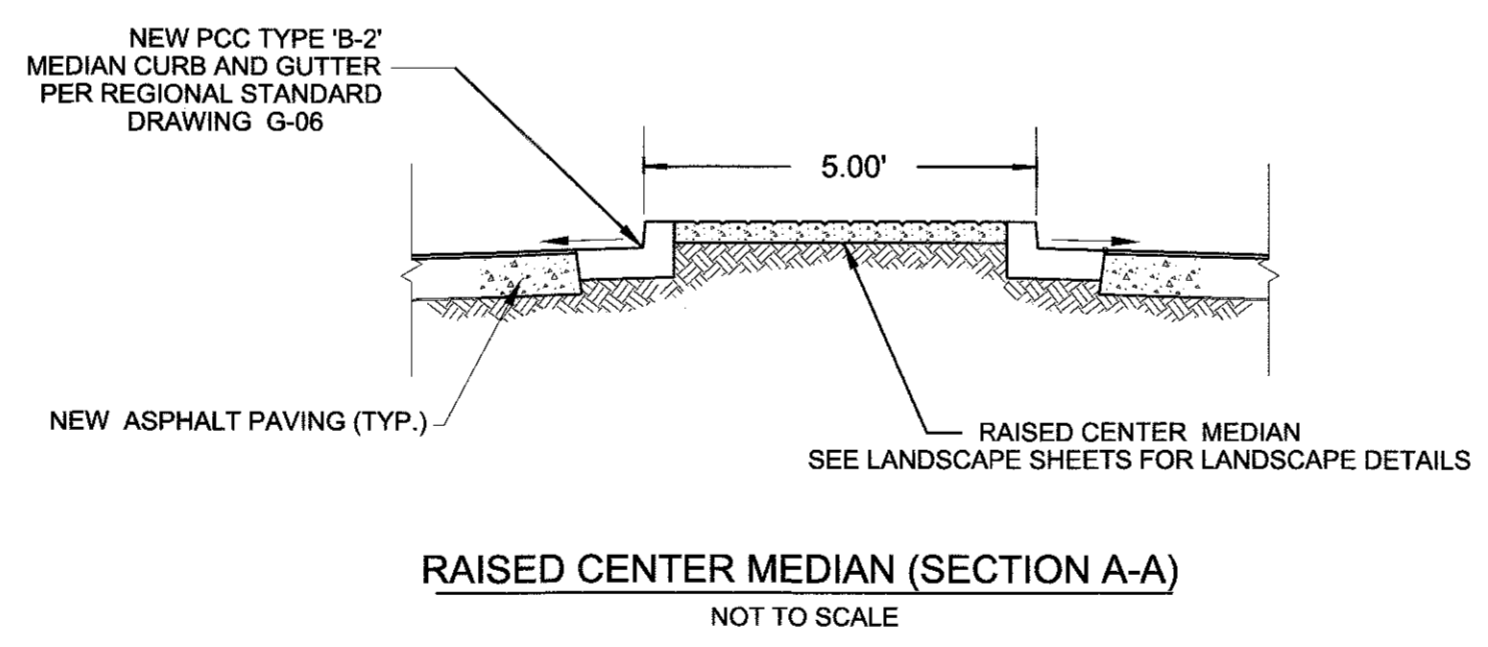
- CONTRACTOR SHALL OBTAIN NECESSARY CLEARANCE AND ANY REQUIRED PERMITS FROM PROPERTY OWNER(S) BEFORE COMMENCING ANY PORTION OF WORK OUTSIDE OF THE CITY OF LA MESA RIGHT-OF-WAY.
- ALL CONFLICTING STRIPING AND MARKINGS SHALL BE REMOVED BY SANDBLASTING OR GRINDING.
- IF ANY EXISTING HARDSCAPE OR LANDSCAPE NOT INDICATED AS SUCH ON THESE PLANS IS DAMAGED OR REMOVED DURING DEMOLITION OR CONSTRUCTION, IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO ASSURE THAT IT SHALL BE REPAIRED OR REPLACED IN KIND.

**CONSTRUCTION NOTES**

- EXISTING MEDIAN TO BE REMOVED.
- NEW MEDIAN TO BE BUILT BY CONTRACTOR, SEE LANDSCAPE SHEETS FOR LANDSCAPE DETAILS.
- CONTRACTOR TO RELOCATE THE EXISTING LIGHT POLE ACCORDINGLY PER THE NEW LOCATION OF NEW MEDIAN.
- INSTALL 3" YELLOW DIAGONAL CROSSHATCH MARKINGS.

**NOTE:**  
 INSTALL MEDIAN OBJECT MARKER SIGN AND PAINT ALL MEDIAN NOSES YELLOW.

CURB DATA TABLE						
CHAINAGE	EVENT	NORTHING	EASTING	Δ OR BEARING	RADIUS	LENGTH
0+00.00	POB	1862752.55	6317228.32	N 44°34'3.61" E		8.56
0+08.56	PI	1862758.64	6317234.33	N 40°16'19.77" E		4.14
0+12.69	PI	1862761.80	6317237.00	N 32°36'16" E		153.29
1+65.98	PC	1862890.93	6317319.60	Δ = 18°28'19.02"	137.93	44.47
2+10.45	PRC	1862931.58	6317337.16	Δ = 11°33'32.17"	82.34	16.61
2+27.06	PT	1862947.17	6317342.81	N 25°41'29.14" E		7.13
2+34.19	PI	1862953.59	6317345.90	N 32°28'6.29" E		99.47
3+33.66	PC	1863037.51	6317399.30	Δ = 186°10'08.20"	1.72	4.98
3+38.64	PT	1863039.68	6317396.66	S 46°17'58.09" W		9.27
3+47.91	PI	1863033.27	6317389.96	S 37°12'41.89" W		5.23
3+53.14	PI	1863029.11	6317386.80	S 32°22'00.76" W		152.62
5+05.77	PC	1862900.20	6317305.09	Δ = 22°52'08.37"	109.54	43.72
5+49.49	PRC	1862859.63	6317289.57	Δ = 9°02'39.77"	64.74	10.22
5+59.71	PCC	1862849.72	6317287.10	Δ = 9°11'58.83"	1.00	0.16
5+59.87	PT	1862849.58	6317287.04	S 27°44'32" W		6.62
5+66.50	PI	1862843.71	6317283.95	S 32°42'32.67" W		106.49
6+72.99	PC	1862754.11	6317226.41	Δ = 167°07'23.75"	1.24	3.63
6+76.62	PT	1862752.55	6317228.32			



LM-11

**MONTEZUMA PPL /MID-CITY PIPELINE PH 2**  
 STRIPING PLAN  
 LAKE MURRAY BL

CITY OF SAN DIEGO, CALIFORNIA  
 PUBLIC WORKS DEPARTMENT  
 SHEET 88 OF 104 SHEETS

APPROVED: *Brian Vitelle* DATE: 07/28/2022  
 FOR CITY ENGINEER: BRIAN VITELLE R.O.E.# C73039  
 PRINT DCE NAME: PROJECT ENGINEER: JOEY FLORES

DESIGNER: MARYAM KARGAR  
 PROJECT MANAGER: MARYAM KARGAR  
 PROJECT ENGINEER: JOEY FLORES  
 COORDINATOR: JOEY FLORES  
 222-1755  
 CCS83 COORDINATE: 1862444-6316407  
 CCS83 COORDINATE: 37333-88-D

CONTRACTOR: DATE STARTED: DATE COMPLETED: 37333-88-D

ENCROACHMENT PERMIT: ISSUED: CITY OF LA MESA  
 2021

**MONTEZUMA PPL /MID-CITY PIPELINE PH2**  
 STRIPING PLAN  
 LAKE MURRAY BL

CITY OF LA MESA, CALIFORNIA  
 DEPARTMENT OF PUBLIC WORKS/ENGINEERING DIVISION  
 SHEET 11 OF 27 SHEETS

APPROVED: *Maryam Kargar* DATE: 8-25-2022  
 CITY ENGINEER: R.C.E. # 46969  
 DESCRIPTION: ORIGINAL: NF BY: APPROVED: DATE: FILMED: C.I.P. NO.:

UTILITIES: H.P. DEVELOPMENT: CAPITAL PROJ.: 9271.11  
 TRAFFIC: M.S.

**UNDERGROUND SERVICE ALERT**  
 SECTION 4216 & 4217 OF THE GOVERNMENT CODE REQUIRES A DIG ALERT IDENTIFICATION NUMBER BE ISSUED BEFORE A "PERMIT TO EXCAVATE" WILL BE VALID. FOR YOUR DIG ALERT I.D. NUMBER CALL UNDERGROUND SERVICE ALERT TOLL FREE @ 1-800-422-4133 TWO (2) WORKING DAYS BEFORE YOU DIG.  
 WEB ADDRESS: WWW.DIGALERT.ORG

**RECORD DRAWING**

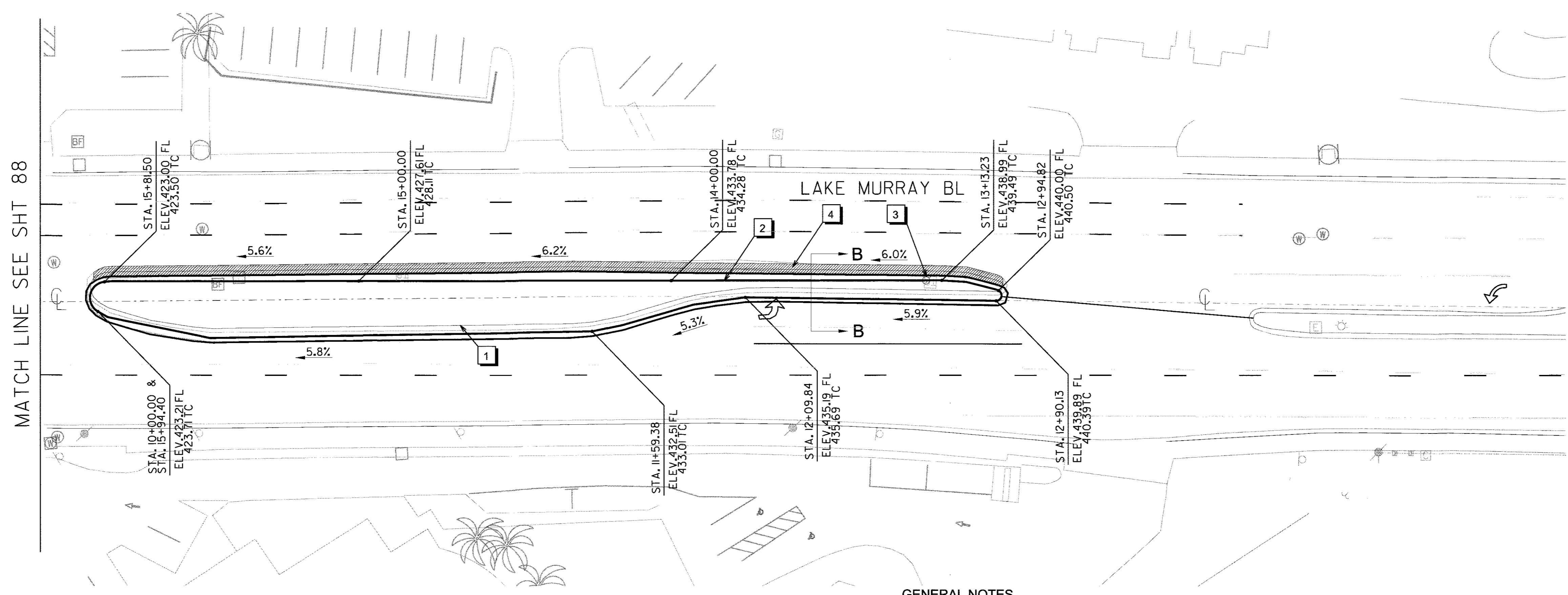
BY: DATE: APPROVED: DATE: HELIX WATER DISTRICT S-XX-XXX REVIEWED BY: DATE:

**BENCHMARK**

DESCRIPTION: SEE EACH SHEET LOCATION: RECORD FROM: ELEVATION: DATUM:

**CITY OF LA MESA APPROVED CHANGES**

NO.	DESCRIPTION	APPROVED	DATE



MATCH LINE SEE SHT 88

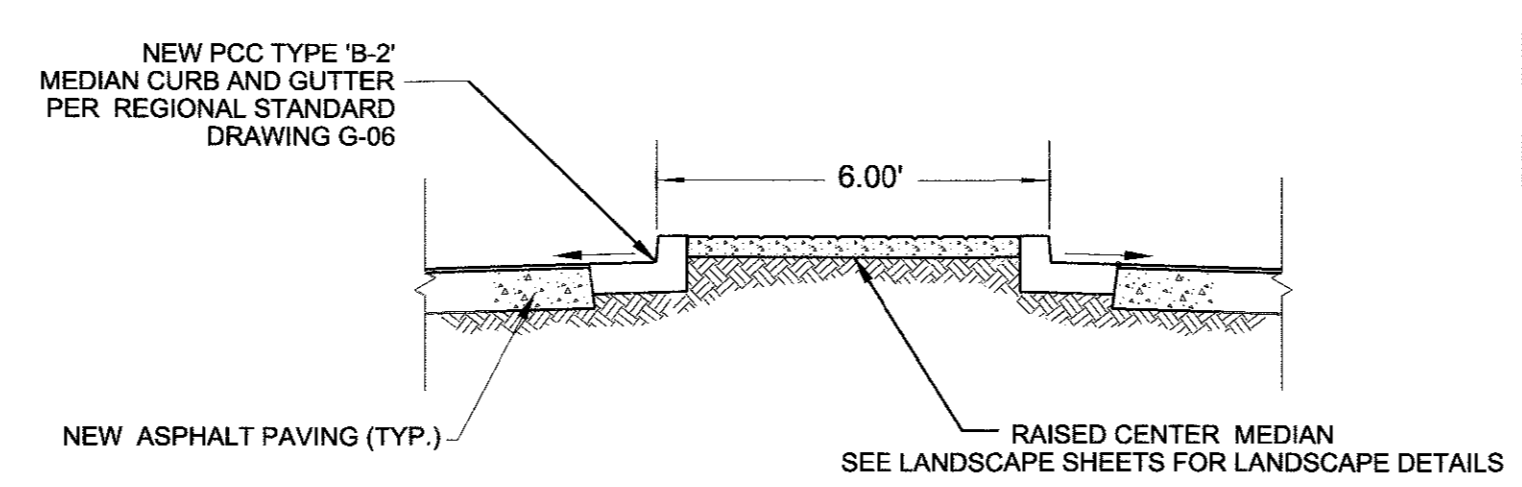
CURB DATA TABLE						
CHAINAGE	EVENT	NORTHING	EASTING	Δ OR BEARING	RADIUS	LENGTH
10+00.00	POB	1863089.60	6317436.51	N 62°54'34.54" E		3.60
10+03.60	PI	1863091.24	6317439.72	N 44°25'50.62" E		33.47
10+37.06	PI	1863115.14	6317463.14	N 32°04'18.70" E		122.31
11+59.38	PI	1863218.78	6317528.09	N 21°25'50.76" E		9.87
11+69.25	PI	1863227.97	6317531.70	N 18°55'46.98" E		23.79
11+93.04	PI	1863250.73	6317538.63	N 25°09'58.58" E		16.80
12+09.84	PI	1863265.93	6317545.77	N 33°43'38.33" E		80.30
12+90.13	PC	1863332.72	6317590.35	Δ = 156°48'21.83"	1.71	4.69
12+94.82	PT	1863335.10	6317587.99	S 56°57'14.49" W		0.85
12+95.67	PI	1863334.64	6317587.28	S 47°01'33.94" W		9.79
13+05.46	PI	1863327.97	6317580.12	S 36°20'55.07" W		7.77
13+13.23	PI	1863321.71	6317575.51	S 32°57'53.97" W		265.83
15+79.06	PI	1863098.68	6317430.87	S 28°10'50.91" W		2.44
15+81.50	PC	1863096.53	6317429.72	Δ = 145°16'18.62"	5.09	12.89
15+94.40	PT	1863089.60	6317436.51			

**GENERAL NOTES**

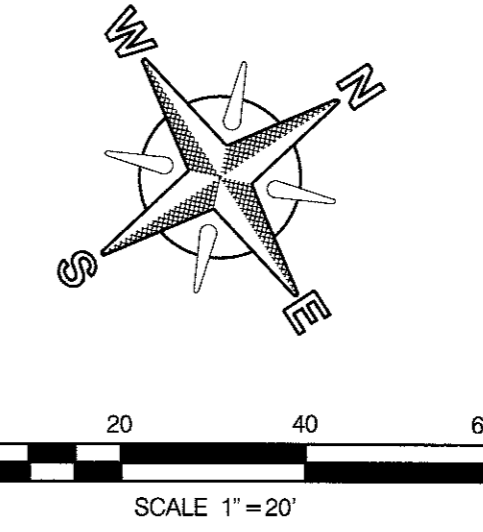
- CONTRACTOR SHALL OBTAIN NECESSARY CLEARANCE AND ANY REQUIRED PERMITS FROM PROPERTY OWNER(S) BEFORE COMMENCING ANY PORTION OF WORK OUTSIDE OF THE CITY OF LA MESA RIGHT-OF-WAY.
- ALL CONFLICTING STRIPING AND MARKINGS SHALL BE REMOVED BY SANDBLASTING OR GRINDING.
- IF ANY EXISTING HARDSCAPE OR LANDSCAPE NOT INDICATED AS SUCH ON THESE PLANS IS DAMAGED OR REMOVED DURING DEMOLITION OR CONSTRUCTION, IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO ASSURE THAT IT SHALL BE REPAIRED OR REPLACED IN KIND.

**CONSTRUCTION NOTES**

- EXISTING MEDIAN TO BE REMOVED.
- NEW MEDIAN TO BE BUILT BY CONTRACTOR, SEE LANDSCAPE SHEETS FOR LANDSCAPE DETAILS.
- CONTRACTOR TO RELOCATE THE EXISTING LIGHT POLE ACCORDINGLY PER THE NEW LOCATION OF NEW MEDIAN.
- INSTALL YELLOW DIAGONAL CROSSHATCH MARKINGS.



RAISED CENTER MEDIAN (SECTION B-B)  
NOT TO SCALE



LM-12

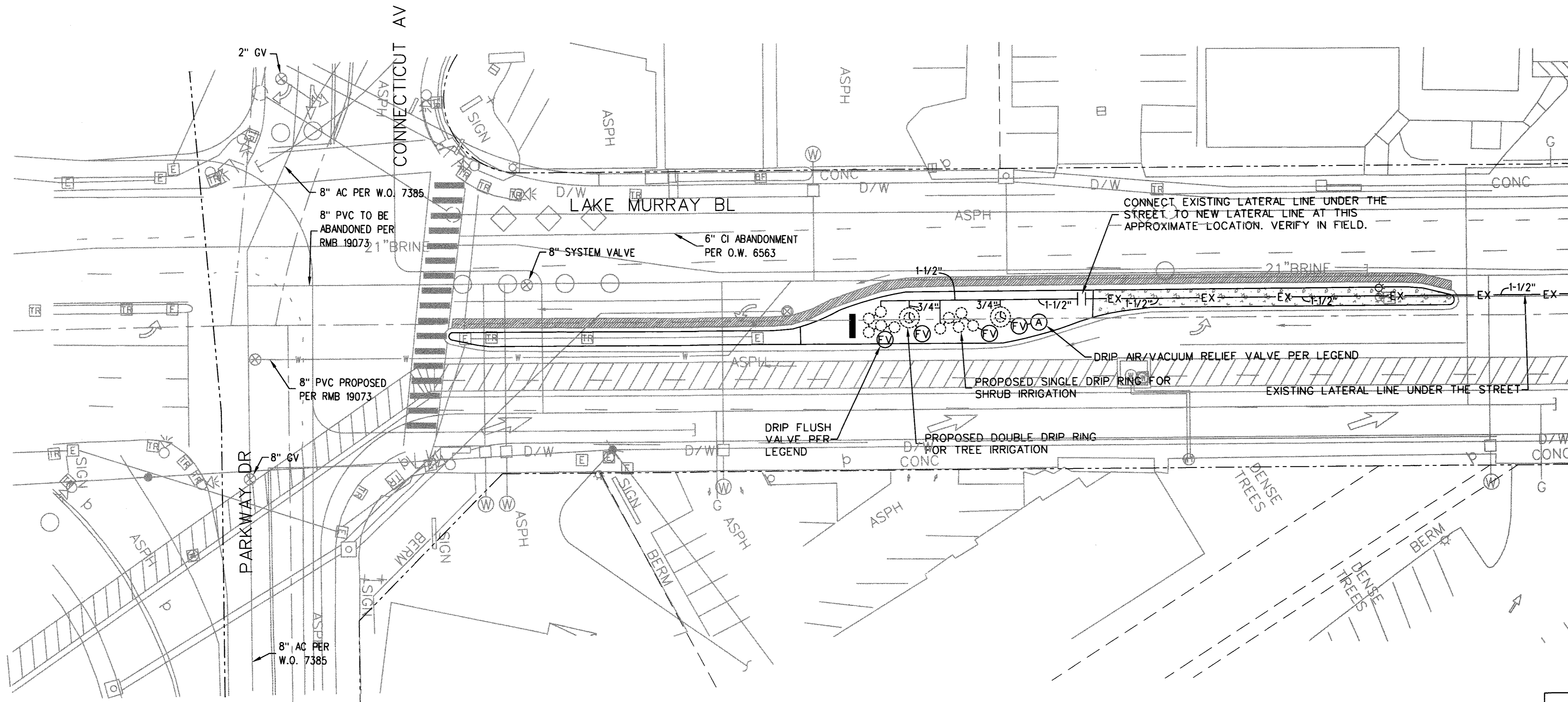
MONTEZUMA PPL /MID-CITY PIPELINE PH 2			
STRIPING PLAN			
LAKE MURRAY BL			
CITY OF SAN DIEGO, CALIFORNIA PUBLIC WORKS DEPARTMENT SHEET 89 OF 104 SHEETS		WATER S-11026 SEWER	
APPROVED: <i>Brian Vitelle</i>	DATE: 07/28/2022	SUBMITTED BY: MARYAM KARGAR	
FOR CITY ENGINEER: BRIAN VITELLE	DATE: C73039	PROJECT MANAGER	
PRINT DCE NAME:	RCE: C73039	CHECKED BY: JOEY FLORES	
DESCRIPTION	BY	APPROVED	DATE FILMED
ORIGINAL	NF	<i>Brian Vitelle</i>	07/28/2022
		CCS87 COORDINATE	
		222-1755	
		1862444-6316407	
		CCS89 COORDINATE	
CONTRACTOR:		DATE STARTED:	
INSPECTOR:		DATE COMPLETED:	
		37333-89-D	
ENCROACHMENT PERMIT: _____ ISSUED: _____			
CITY OF LA MESA			
MONTEZUMA PPL /MID-CITY PIPELINE PH2			
STRIPING PLAN			
LAKE MURRAY BL			
CITY OF LA MESA, CALIFORNIA			
DEPARTMENT OF PUBLIC WORKS/ENGINEERING DIVISION			
SHEET 12 OF 27 SHEETS			
APPROVED: <i>Brian Vitelle</i>		DATE: 8-25-2022	
CITY ENGINEER		R.C. 5-03000	
DESCRIPTION		BY	
ORIGINAL		NF	
		APPROVED	
		DATE	
		FILMED	
		DATE	
		DATE	
		DATE	
UTILITIES:		DEVELOPMENT:	
TRAFFIC:		CAPITAL PROJ.:	
		9271.12	

**UNDERGROUND SERVICE ALERT**  
SECTION 4216 & 4217 OF THE GOVERNMENT CODE REQUIRES A DIG-ALERT IDENTIFICATION NUMBER BE ISSUED BEFORE A "PERMIT TO EXCAVATE" WILL BE VALID. FOR YOUR DIG ALERT I.D. NUMBER CALL UNDERGROUND SERVICE ALERT TOLL FREE @ 1-800-422-4133 TWO (2) WORKING DAYS BEFORE YOU DIG.  
WEB ADDRESS: WWW.DIGALERT.ORG

**RECORD DRAWING**  
BY: \_\_\_\_\_ DATE \_\_\_\_\_  
APPROVED: \_\_\_\_\_ DATE \_\_\_\_\_  
HELIX WATER DISTRICT  
S-XX-XXX  
REVIEWED BY: \_\_\_\_\_ DATE \_\_\_\_\_

**BENCHMARK**  
DESCRIPTION: SEE EACH SHEET  
LOCATION: \_\_\_\_\_  
RECORD FROM: \_\_\_\_\_  
ELEVATION: \_\_\_\_\_ DATUM: \_\_\_\_\_

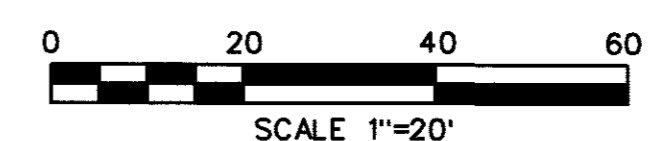
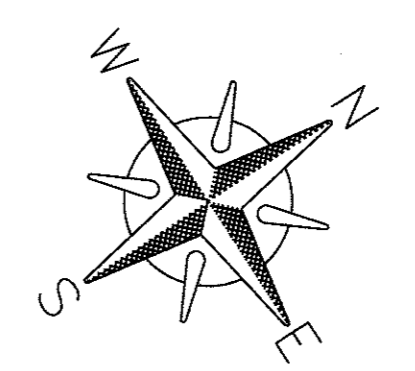
CITY OF LA MESA APPROVED CHANGES			
NO.	DESCRIPTION	APPROVED	DATE



MATCH LINE SEE SHT 91

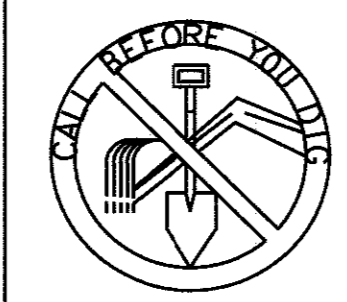
LM-13

SEE SHEET LM-15 FOR IRRIGATION LEGEND  
 SEE SHEET LM-16 FOR IRRIGATION NOTES  
 SEE SHEET LM-17 AND LM-18 FOR IRRIGATION DETAILS



MONTEZUMA PPL / MID-CITY PIPELINE PH 2		WATER WBS S-11026
IRRIGATION PLAN FOR LAKE MURRAY BL		SEWER WBS
CITY OF SAN DIEGO, CALIFORNIA PUBLIC WORKS DEPARTMENT SHEET 90 OF 104 SHEETS		FOR CITY ENGINEER DATE 07/28/2022 BRIAN VITELLE PRINT DGE NAME
APPROVED BY: <i>Brian Vitelle</i>		SUBMITTED BY: MARYAM KARGAR PROJECT MANAGER
DESCRIPTION		CHECKED BY: JACOB RIVERA PROJECT ENGINEER
ORIGINAL	BY TDG	222-1755 CCS27 COORDINATE 186244-6316407 CCS83 COORDINATE
CONTRACTOR		37333-90-D
INSPECTOR		
<b>CITY OF LA MESA</b> <small>CITY OF CALIFORNIA</small>		
ENCROACHMENT PERMIT: _____ ISSUED: _____		
<b>MONTEZUMA PPL/MID-CITY PIPELINE PH2</b>		
<b>IRRIGATION PLAN</b>		
<b>LAKE MURRAY BL</b>		
CITY OF LA MESA, CALIFORNIA DEPARTMENT OF PUBLIC WORKS/ENGINEERING DIVISION SHEET 13 OF 27 SHEETS		
DATE: <b>8-25-2022</b>		C.I.P. NO.
CITY ENGINEER: <i>Brian Vitelle</i> R.C.E. # <i>16461</i>		DIVISION HEAD
DESCRIPTION: _____ BY: _____ APPROVED: _____ DATE: _____ FILMED: _____		MAINTENANCE ZONE
ORIGINAL: _____ TDG: _____		<b>9271.13</b>
UTILITIES: <i>LD</i>		DEVELOPMENT CAPITAL PROJ. <i>LD</i>
TRAFFIC: <i>WK</i>		

**TESHIMA DESIGN GROUP**  
 LANDSCAPE ARCHITECTURE • LAND PLANNING  
 9903 BUSINESSPARK AVE, SUITE 101 • SAN DIEGO, CA 92121  
 761 690-8824



**UNDERGROUND SERVICE ALERT**  
 SECTION 4216 & 4217 OF THE GOVERNMENT CODE REQUIRES A DIG ALERT IDENTIFICATION NUMBER BE ISSUED BEFORE A "PERMIT TO EXCAVATE" WILL BE VALID. FOR YOUR DIG ALERT I.D. NUMBER CALL UNDERGROUND SERVICE ALERT TOLL FREE @ 1-800-422-4133 TWO (2) WORKING DAYS BEFORE YOU DIG.  
 WEB ADDRESS: WWW.DIGALERT.ORG

**RECORD DRAWING**

BY: \_\_\_\_\_ DATE \_\_\_\_\_

APPROVED: \_\_\_\_\_ DATE \_\_\_\_\_

HELIX WATER DISTRICT  
S-XX-XXX

REVIEWED BY: \_\_\_\_\_ DATE \_\_\_\_\_

**BENCHMARK**

DESCRIPTION: SEE EACH SHEET

LOCATION: \_\_\_\_\_

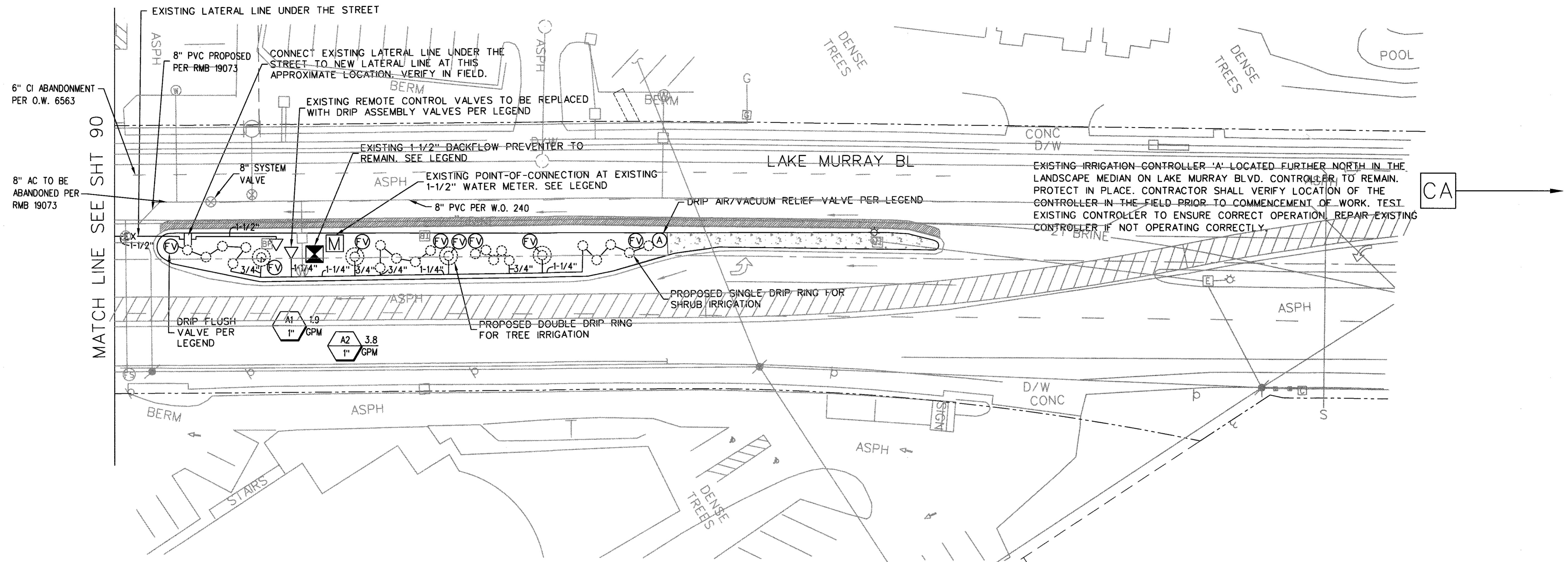
RECORD FROM: \_\_\_\_\_

ELEVATION: \_\_\_\_\_ DATUM: \_\_\_\_\_

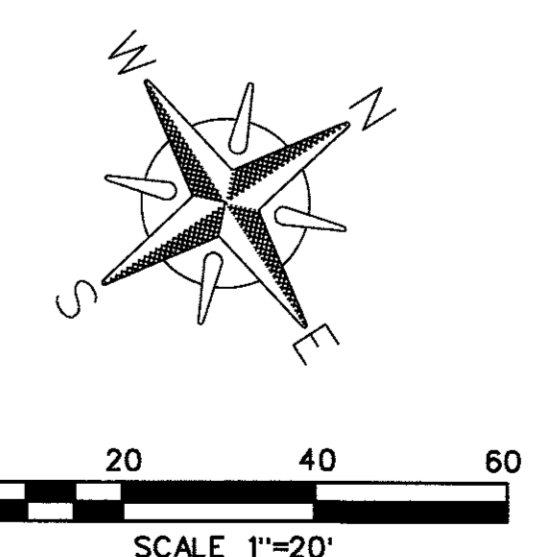
**CITY OF LA MESA APPROVED CHANGES**

NO.	DESCRIPTION	APPROVED	DATE

LAKE MURRAY CI SEWER REPLACEMENT/STREET RESURFACING ORIGINAL SCALE: 1"=20'



SEE SHEET LM-15 FOR IRRIGATION LEGEND  
 SEE SHEET LM-16 FOR IRRIGATION NOTES  
 SEE SHEET LM-17 AND LM-18 FOR IRRIGATION DETAILS



**TESHIMA DESIGN GROUP**  
 LANDSCAPE ARCHITECTURE • LAND PLANNING  
 990 BUSINESSPARK AVE. SUITE 301 • SAN DIEGO, CA 92108  
 TEL 619 491-4241 FAX 619 491-4242

DATE: 2-4-22



**UNDERGROUND SERVICE ALERT**  
 SECTION 4218 & 4217 OF THE GOVERNMENT CODE REQUIRES A DIG ALERT IDENTIFICATION NUMBER BE ISSUED BEFORE A "PERMIT TO EXCAVATE" WILL BE VALID. FOR YOUR DIG ALERT I.D. NUMBER CALL UNDERGROUND SERVICE ALERT TOLL FREE @ 1-800-422-4133 TWO (2) WORKING DAYS BEFORE YOU DIG.  
 WEB ADDRESS: WWW.DIGALERT.ORG

**RECORD DRAWING**  
 BY: \_\_\_\_\_ DATE \_\_\_\_\_  
 APPROVED: \_\_\_\_\_ DATE \_\_\_\_\_  
 HELIX WATER DISTRICT  
 S-XX-XXX  
 REVIEWED BY \_\_\_\_\_ DATE \_\_\_\_\_

**BENCHMARK**  
 DESCRIPTION: SEE EACH SHEET  
 LOCATION: \_\_\_\_\_  
 RECORD FROM: \_\_\_\_\_  
 ELEVATION: \_\_\_\_\_ DATUM: \_\_\_\_\_

CITY OF LA MESA APPROVED CHANGES			
NO.	DESCRIPTION	APPROVED	DATE

LM-14

**MONTEZUMA PPL / MID-CITY PIPELINE PH 2**  
 IRRIGATION PLAN  
 FOR  
 LAKE MURRAY BL

CITY OF SAN DIEGO, CALIFORNIA  
 PUBLIC WORKS DEPARTMENT  
 SHEET 91 OF 104 SHEETS

APPROVED: *Brian Vitelle* 07/28/2022  
 FOR CITY ENGINEER  
 BRIAN VITELLE  
 PRINT DCE NAME

DATE: 07/28/2022  
 PROJECT NUMBER: C73039  
 RCE

DESIGNED BY: MARYAM KARGAR  
 PROJECT MANAGER

DRAWN BY: JACOB RIVERA  
 PROJECT ENGINEER

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	TDG	<i>Brian Vitelle</i>	07/28/2022	

CONTRACTOR: \_\_\_\_\_ DATE STARTED: \_\_\_\_\_  
 INSPECTOR: \_\_\_\_\_ DATE COMPLETED: \_\_\_\_\_

1862444-6316407  
 CCS27 COORDINATE  
 CCS83 COORDINATE

37333-91-D

ENCROACHMENT PERMIT: \_\_\_\_\_ ISSUED: \_\_\_\_\_

**CITY OF LA MESA**  
 DEPARTMENT OF PUBLIC WORKS/ENGINEERING DIVISION  
 SHEET 14 OF 27 SHEETS

APPROVED: *Maryam Kargar* 8-25-2022  
 CITY ENGINEER

APPROVED: *Jacob Rivera* 8-25-2022  
 PROJECT ENGINEER

C.I.P. NO. \_\_\_\_\_  
 DIVISION HEAD \_\_\_\_\_  
 MAINTENANCE ZONE \_\_\_\_\_

UTILITIES: JCH  
 TRAFFIC: MJC

DEVELOPMENT: CAPITAL PROJ. \_\_\_\_\_

**927114**

ORIGINAL SCALE: 1"=20' INCHES



### IRRIGATION EQUIPMENT LEGEND

SYMBOL	DESCRIPTION	MANUF	MODEL	SIZE	NOTES
M	EXISTING IRRIGATION POTABLE WATER METER TO REMAIN	EXISTING	EXISTING	1-1/2"	EXISTING TO REMAIN. PROTECT IN PLACE. APPROX. WHERE SHOWN, FIELD VERIFY.
[X]	EXISTING REDUCED PRESSURE BACKFLOW PREVENTER TO REMAIN	EXISTING	EXISTING	1-1/2"	EXISTING TO REMAIN. PROTECT IN PLACE. BACKFLOW ASSEMBLY SHALL BE TESTED FOR LEAKS AND TO ENSURE CORRECT OPERATION BY STATE OF CALIFORNIA CERTIFIED BACKFLOW SPECIALIST. BACKFLOW SHALL BE REPAIRED OR REPLACED IF NECESSARY.
▽	EXISTING REMOTE CONTROL VALVE TO BE REPLACED WITH NEW DRIP ASSEMBLY	SEE NOTES	SEE NOTES	SEE NOTES	REPLACE EXISTING REMOTE CONTROL VALVE WITH NEW DRIP ASSEMBLY. ASSEMBLY SHALL INCLUDE: (1) HUNTER 1" ICV CONTROL VALVE, MODEL ICV-101G. (1) NETAFIM 3/4" MANUAL DISC FILTER, MODEL DF075-120. (1) NETAFIM 3/4" PRESSURE REGULATOR, MODEL PRV075LF35V2K.  INSTALL IN VALVE BOX WITH GREEN LID. VALVE BOX SHALL BE LARGE ENOUGH TO ACCOMMODATE CONTROL VALVE ASSEMBLY. SEE DETAIL I-35, SHEET LM-17.  CONNECT NEW REMOTE CONTROL VALVE TO EXISTING CONTROLLER 'A' WITH EXISTING WIRE. CONTRACTOR SHALL TEST EXISTING WIRE FOR CONTINUITY AND REPAIR OR REPLACE IF NEEDED.
CA	EXISTING CONTROLLER 'A' TO REMAIN	EXISTING	EXISTING	EXISTING	EXISTING IRRIGATION CONTROLLER 'A' LOCATED FURTHER NORTH IN THE LANDSCAPE MEDIAN ON LAKE MURRAY BLVD. CONTROLLER TO REMAIN. PROTECT IN PLACE. CONTRACTOR SHALL VERIFY LOCATION OF THE CONTROLLER IN THE FIELD PRIOR TO COMMENCEMENT OF WORK. TEST EXISTING CONTROLLER TO ENSURE CORRECT OPERATION. REPAIR EXISTING CONTROLLER IF NOT OPERATING CORRECTLY.
[C]	TREE DRIP TUBING DOUBLE RING (TECHLINE HCVXR)	NETAFIM	TLHCVXR7-12XX	1/2"	INSTALL WITH 0.77 GPH DRIPPERS SPACED AT 12" O.C. INSTALL PER MANUFACTURER'S SPECIFICATIONS. STAKE AT 5' O.C. AND AT EACH CHANGE OF DIRECTION WITH NETAFIM 6" SOIL STAPLE, MODEL TLS6. COVER TUBING WITH 2" OF DECOMPOSED GRANITE. TUBING SHALL NOT BE EXPOSED. INSTALL PER DETAILS I-2, I-3 AND I-4, SHEET LM-18. INSTALL WITH MANUAL FLUSH VALVES, AIR/VACCUUM RELIEF VALVES AND HUNTER ECO-INDICATORS.
[C]	SHRUB DRIP TUBING SINGLE RING (TECHLINE HCVXR)	NETAFIM	TLHCVXR7-12XX	1/2"	INSTALL WITH 0.77 GPH DRIPPERS SPACED AT 12" O.C. INSTALL PER MANUFACTURER'S SPECIFICATIONS. STAKE AT 5' O.C. AND AT EACH CHANGE OF DIRECTION WITH NETAFIM 6" SOIL STAPLE, MODEL TLS6. COVER TUBING WITH 2" OF DECOMPOSED GRANITE. TUBING SHALL NOT BE EXPOSED. INSTALL PER DETAILS I-2, I-3 AND I-4, SHEET LM-18. INSTALL WITH MANUAL FLUSH VALVES, AIR/VACCUUM RELIEF VALVES AND HUNTER ECO-INDICATORS.
(FV)	MANUAL FLUSH VALVE	NETAFIM	TLSOV		INSTALL IN 10" ROUND VALVE BOX WITH 12" DEEP GRAVEL SUMP. INSTALL MANUAL FLUSH VALVE AT THE TERMINAL POINT OF ALL DRIP SYSTEM, AND AT LOW POINTS WHERE POSSIBLE. SEE DETAIL I-37, SHEET LM-17.
(A)	AIR/VACUUM RELIEF VALVE	NETAFIM	T LAVRV	1"	INSTALL AT HIGHEST POINT ON CIRCUIT. SEE MANUFACTURER'S SPECIFICATIONS. INSTALL IN A 6" ROUND VALVE BOX. SEE DETAIL I-36, SHEET LM-17.
NOT SHOWN	ECO-INDICATOR	HUNTER	ECO-ID		INSTALL ONE ECO-INDICATOR PER DRIP LINE ZONE. INSTALL AT FURTHERMOST MOST POINT FROM VALVE LOCATIONS. INSTALL PER MANUFACTURER'S SPECIFICATIONS.
[L]	NON-PRESSURIZED LATERAL LINE CONNECTION	PVC	SCH. 40	1-1/2"	CONNECT NEW SCH. 40 LATERAL LINE TO EXISTING LATERAL LINE CROSSING THE STREET AT THIS APPROXIMATE LOCATION.

[EX]	EXISTING NON-PRESSURIZED LATERAL LINE UNDER THE STREET TO REMAIN	PVC	EXISTING	1-1/2"	EXISTING LATERAL LINE UNDER THE STREET TO BE REUSED. CONTRACTOR SHALL TEST EXISTING LATERAL LINE FOR LEAKS AND REPAIR OR REPLACE IF NEEDED. CONNECT TO NEW LATERAL LINE AS SHOWN ON THE PLAN.
[L]	NON-PRESSURIZED LATERAL SUPPLY	PVC	SCH. 40	SEE PLAN	INSTALL AT 12" DEPTH. SEE DETAIL I-25, SHEET LM-17.
[C]	CONTROLLER STATION				
	MAXIMUM GPM				
	VALVE SIZE				

LM-15

SEE SHEET LM-16 FOR IRRIGATION NOTES  
SEE SHEET LM-17 AND LM-18 FOR IRRIGATION DETAILS

**MONTEZUMA PPL / MID-CITY PIPELINE PH 2**  
IRRIGATION LEGEND  
FOR  
LAKE MURRAY BL

CITY OF SAN DIEGO, CALIFORNIA  
PUBLIC WORKS DEPARTMENT  
SHEET 92 OF 104 SHEETS

WATER WBS S-11026  
SEWER WBS

APPROVED: *[Signature]* DATE: 07/28/2022  
FOR CITY ENGINEER: BRIAN VITELLE  
PRINT DCE NAME: RCE

DATE: 07/28/2022  
DATE: 07/28/2022

FOR PROJECT MANAGER: MARYAM KARGAR  
PROJECT MANAGER: JACOB RIVERA  
PROJECT ENGINEER: JACOB RIVERA

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	TDG	<i>[Signature]</i>	07/28/2022	

222-1755  
CCS27 COORDINATE  
1862444-6316407  
CCS83 COORDINATE

CONTRACTOR: \_\_\_\_\_ DATE STARTED: \_\_\_\_\_  
INSPECTOR: \_\_\_\_\_ DATE COMPLETED: \_\_\_\_\_

37333-92-D

**CITY OF LA MESA**  
ENGINEER OF THE TITLE

ENCROACHMENT PERMIT: \_\_\_\_\_ ISSUED: \_\_\_\_\_

**MONTEZUMA PPL/MID-CITY PIPELINE PH2**  
IRRIGATION LEGEND  
LAKE MURRAY BL

CITY OF LA MESA, CALIFORNIA  
DEPARTMENT OF PUBLIC WORKS/ENGINEERING DIVISION  
SHEET 15 OF 27 SHEETS

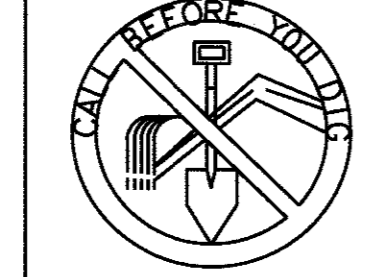
8-25-2022  
C.I.P. NO. \_\_\_\_\_

DESCRIPTION	BY	APPROVED	DATE	FILMED	
					ORIGINAL

UTILITIES: *[Signature]* DEVELOPMENT: *[Signature]*  
TRAFFIC: *[Signature]* CAPITAL PROJ. *[Signature]*

**9271.15**

**TESHIMA DESIGN GROUP**  
LANDSCAPE ARCHITECTURE • LAND PLANNING  
793 BUSINESSPARK AVE. SUITE 101 • SAN DIEGO, CA 92108  
760 699-4234 FAX 760 699-3822  
TDG JOB NO. 13-15 DATE: 2-4-22



**UNDERGROUND SERVICE ALERT**  
SECTION 4216 & 4217 OF THE GOVERNMENT CODE REQUIRES A DIG ALERT IDENTIFICATION NUMBER BE ISSUED BEFORE A "PERMIT TO EXCAVATE" WILL BE VALID. FOR YOUR DIG ALERT I.D. NUMBER CALL UNDERGROUND SERVICE ALERT TOLL FREE @ 1-800-422-4133 TWO (2) WORKING DAYS BEFORE YOU DIG.  
WEB ADDRESS: WWW.DIGALERT.ORG

**RECORD DRAWING**

BY: \_\_\_\_\_ DATE \_\_\_\_\_  
APPROVED: \_\_\_\_\_ DATE \_\_\_\_\_

HELIX WATER DISTRICT  
S-XX-XXX

REVIEWED BY: \_\_\_\_\_ DATE \_\_\_\_\_

**BENCHMARK**

DESCRIPTION: SEE EACH SHEET

LOCATION: \_\_\_\_\_

RECORD FROM: \_\_\_\_\_  
ELEVATION: \_\_\_\_\_ DATUM: \_\_\_\_\_

CITY OF LA MESA APPROVED CHANGES

NO.	DESCRIPTION	APPROVED	DATE

LAKE MURRAY CI SEWER REPLACEMENT/STREET RESURFACING

**IRRIGATION NOTES:**

1. ALL LOCAL MUNICIPAL AND STATE LAWS, RULES AND REGULATIONS GOVERNING OR RELATING TO ANY PORTION OF THIS WORK ARE HEREBY INCORPORATED INTO AND MADE A PART OF THESE SPECIFICATIONS AND THEIR PROVISIONS SHALL BE CARRIED OUT BY THE CONTRACTOR.
2. THE CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS REQUIRED TO PERFORM THE WORK INDICATED HEREIN BEFORE BEGINNING WORK. THE CONTRACTOR SHALL OBTAIN THE PERTINENT ENGINEERING OR ARCHITECTURAL PLANS AND AS-BUILT DRAWINGS BEFORE BEGINNING WORK.
3. CONTRACTOR SHALL COORDINATE ALL IRRIGATION LINES AND CONTROLLER WIRES WITH PROPOSED LOCATIONS OF PLANT MATERIAL AND ROOT BARRIERS PRIOR TO INSTALLATION. ALL IRRIGATION SLEEVES SHALL BE COORDINATED AND INSTALLED PRIOR TO INSTALLATION OF ANY PAVING, WALL FOOTINGS/FOUNDATIONS, CURBS AND ETC.
4. THIS DESIGN IS DIAGRAMMATIC. ALL EQUIPMENT SHOWN IN PAVED AREAS IS FOR DESIGN CLARITY ONLY AND IS TO BE INSTALLED WITHIN PLANTING AREAS AS NECESSARY.
5. DO NOT WILLFULLY INSTALL ANY EQUIPMENT AS SHOWN ON THE PLANS WHEN IT IS OBVIOUS IN THE FIELD THAT UNKNOWN CONDITIONS EXIST THAT WERE NOT EVIDENT AT THE TIME THESE PLANS WERE PREPARED. ANY SUCH CONDITIONS SHALL BE BROUGHT TO THE ATTENTION OF THE CONSTRUCTION MANAGER PRIOR TO ANY WORK OR THE IRRIGATION CONTRACTOR SHALL ASSUME ALL RESPONSIBILITY FOR ANY FIELD CHANGES DEEMED NECESSARY BY THE OWNER.
6. INSTALL ALL EQUIPMENT AS SHOWN IN THE DETAILS AND SPECIFICATIONS. CONTRACTOR SHALL BE RESPONSIBLE TO COMPLY WITH OTAY WATER DISTRICT, CITY, COUNTY AND STATE REQUIREMENTS FOR BOTH EQUIPMENT AND INSTALLATION.
7. ALL LATERALS, MAINLINE AND WIRE UNDER PEDESTRIAN PAVED AREAS TO BE INSTALLED IN A SCH. 40 SLEEVE TWICE THE DIAMETER OF THE PIPE CARRIED. ALL LATERALS, MAINLINE AND WIRE UNDER VEHICLE PAVED AREAS TO BE INSTALLED IN A SCH. 80 SLEEVE TWICE THE DIAMETER OF THE PIPE CARRIED. ALL WIRE UNDER PAVED AREAS TO BE INSTALLED IN A SCH. 40 SLEEVE THE SIZE REQUIRED TO EASILY PULL WIRE THROUGH. ALL SLEEVES TO BE INSTALLED WITH A MINIMUM DEPTH AS SHOWN ON THE SLEEVING DETAILS. SLEEVES TO EXTEND AT LEAST 12" PAST THE EDGE OF THE PAVING. ALL SLEEVES TO BE AS SHOWN ON THE PLANS.
8. ALL HEADS ARE TO BE INSTALLED WITH THE NOZZLE, SCREEN AND ARCS SHOWN ON THE PLANS. ALL HEADS ARE TO BE ADJUSTED TO PREVENT OVERSPRAY ONTO BUILDING, WALLS, FENCES AND HARDSCAPE. THIS INCLUDES, BUT NOT LIMITED TO, ADJUSTMENT OF DIFFUSER PIN OR ADJUSTMENT SCREW, REPLACEMENT OF PRESSURE COMPENSATING SCREENS, REPLACEMENT OF NOZZLES WITH MORE APPROPRIATE RADIUS UNITS AND THE REPLACEMENT OF NOZZLES WITH ADJUSTABLE ARC UNITS.
9. ALL HEADS INDICATED ON THE PLANS AT A SPACING LESS THAN 75% OF FULL OPEN THROW, AS PER MANUFACTURER'S RECOMMENDATIONS, ARE TO RECEIVE A PCS SCREEN OF APPROPRIATE SIZE TO REDUCE THE RADIUS TO MORE CLOSELY MATCH THE SPACING. REFER TO THE MANUFACTURER'S CHARTS PROVIDED WITH PCS SCREENS FOR SIZING OF SCREENS.
10. PROVIDE CLEAN SAND BEDDING AND BACKFILL FOR PRESSURE MAINLINE PIPE (3 IN. BELOW AND 6 IN. ABOVE PIPE MINIMUM).
11. IRRIGATION SYSTEMS ARE TO BE INSTALLED AS SHOWN ON THE PLANS & IN ACCORDANCE W/THE CRITERIA AND STANDARDS OF THE CITY OF SAN DIEGO AS OF THE APPROVED DATE OF THESE PLANS.
12. ALL LATERAL END RUNS SHALL BE 3/4" SCH. 40, UNLESS OTHERWISE NOTED.

13. ALL REMOTE CONTROL VALVES SHALL BE INSTALLED IN VALVE BOXES, ONE VALVE PER BOX. LOCATE ALL REMOTE CONTROL AND QUICK COUPLING VALVES ADJACENT TO WALKS OR CURBS.
14. CHECK VALVES SHALL BE INSTALLED AS REQUIRED TO PREVENT ALL LOW HEAD DRAINAGE.
15. THE CONTRACTOR SHALL VERIFY THE LOCATIONS OF ALL EXISTING UTILITIES, STRUCTURES AND SERVICES BEFORE COMMENCING WORK. THE LOCATIONS OF UTILITIES, STRUCTURES AND SERVICES SHOWN IN THESE PLANS ARE APPROXIMATE ONLY. ANY DISCREPANCIES BETWEEN THESE PLANS AND ACTUAL FIELD CONDITIONS SHALL BE REPORTED TO THE OWNER'S REPRESENTATIVE.

**IRRIGATION PIPE AND EQUIPMENT LOCATION NOTES:**

1. ALL IRRIGATION EQUIPMENT, DRIP/SPRINKLERS AND PIPE THAT ARE SHOWN IN PAVING IS FOR DRAWING CLARITY ONLY. ALL EQUIPMENT SHALL BE INSTALLED WITHIN LANDSCAPED AREA. NO IRRIGATION EQUIPMENT SHALL BE LOCATED IN HARDSCAPE.
2. MAINLINE AND VALVE LOCATIONS SHOWN ON THIS DRAWING ARE DESIGNED AS DIAGRAMMATIC AND APPROXIMATE. THE LANDSCAPE CONTRACTOR SHALL STAKE ALL IRRIGATION APPURTENANCE LOCATION FOR REVIEW AND APPROVAL. FINAL LOCATION AND EXACT POSITIONING OF ALL IRRIGATION APPURTENANCE SHALL BE DETERMINED BY THE OWNER'S AUTHORIZED REPRESENTATIVE. MINOR MODIFICATIONS OF ALL IRRIGATION APPURTENANCE AS REQUESTED BY THE OWNER SHALL BE PROVIDED BY THE CONTRACTOR AT NO ADDITIONAL COST. FAILURE TO OBTAIN OWNER'S APPROVAL PRIOR TO THE INSTALLATION SHALL CAUSE THE CONTRACTOR TO MAKE OWNER DIRECTED REVISION AT NO CHARGE.

**WATER PRESSURE NOTE:**

CONTRACTOR SHALL VERIFY THAT THERE IS ADEQUATE PRESSURE AVAILABLE AT THE SITE FOR THE IRRIGATION SYSTEM TO WORK PROPERLY. IF THE PRESSURE IS TOO LOW OR TOO HIGH FOR THE DRIP SYSTEM TO WORK PROPERLY CONTRACTOR SHALL NOTIFY LANDSCAPE ARCHITECT FOR INSTRUCTIONS PRIOR TO PROCEEDING WITH INSTALLATION.

IF AVAILABLE PRESSURE EXCEEDS 80 PSI CONTRACTOR SHALL INSTALL PRESSURE REGULATOR AT THE BACKFLOW PREVENTER ASSEMBLY.

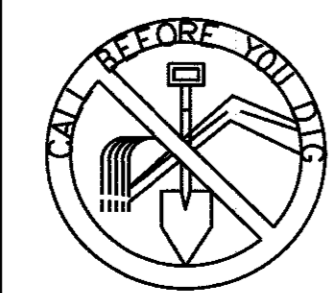
**EXISTING IRRIGATION NOTES:**

1. ALL EXISTING IRRIGATION EQUIPMENT SHOWN IS BASED ON FIELD OBSERVATIONS AND INFORMATION OBTAINED FROM RANDY GOODELL, CITY OF LA MESA PARK MAINTENANCE SUPERVISOR. CONTRACTOR SHALL VERIFY IN FIELD THE LOCATION AND SIZE OF ALL THE EXISTING IRRIGATION EQUIPMENT PRIOR TO COMMENCEMENT OF WORK. SHOULD EXISTING IRRIGATION EQUIPMENT LOCATION OR SIZE BE DIFFERENT THEN SHOWN ON THIS PLAN, CONTRACTOR SHALL NOTIFY LANDSCAPE ARCHITECT FOR INSTRUCTION PRIOR TO PROCEEDING WITH INSTALLATION.
2. CONTRACTOR SHALL MAINTAIN ALL EXISTING LANDSCAPE IN A HEALTHY GROWING CONDITIONS. THIS MIGHT REQUIRE HAND WATERING DURING CONSTRUCTION. ANY PLANT MATERIAL LOST DURING CONSTRUCTION SHALL BE REPLACED AT CONTRACTOR'S OWN EXPENSE.
3. EXISTING IRRIGATION SYSTEM TO REMAIN SHALL BE TESTED AND REPAIRED TO PROVIDE SATISFACTORY COVERAGE TO ALL LANDSCAPE AREAS. ADJUST EXISTING IRRIGATION TO ACCOMMODATE NEW CONSTRUCTION IF NECESSARY. ANY EXISTING IRRIGATION DAMAGED DURING CONSTRUCTION SHALL BE REPAIRED OR REPLACED AT CONTRACTOR'S OWN EXPANSE.
4. CONTRACTOR SHALL TEST ALL EXISTING MAINLINE AND LATERALS FOR LEAKS AND REPAIR IF NECESSARY.

LM-16

MONTEZUMA PPL / MID-CITY PIPELINE PH 2		IRRIGATION NOTES FOR LAKE MURRAY BL	
CITY OF SAN DIEGO, CALIFORNIA PUBLIC WORKS DEPARTMENT SHEET 93 OF 104 SHEETS		WATER WBS S-11026 SEWER WBS	
APPROVED: <i>Brian Vitelle</i>	DATE: 07/28/2022	SUBMITTED BY: MARYAM KARGAR PROJECT MANAGER	
FOR CITY ENGINEER: BRIAN VITELLE	DATE: 07/28/2022	CHECKED BY: JACOB RIVERA PROJECT ENGINEER	
PRINT DCE NAME: RCE	RCE	222-1755 CCS27 COORDINATE	
DESCRIPTION	BY	APPROVED	DATE FILMED
ORIGINAL	TDG	<i>R. Vitelle</i>	07/28/2022
			1862444-6316407 CCS83 COORDINATE
CONTRACTOR: _____		DATE STARTED: _____	
INSPECTOR: _____		DATE COMPLETED: _____	
ENCROACHMENT PERMIT: _____		ISSUED: _____	
MONTEZUMA PPL/MID-CITY PIPELINE PH2 IRRIGATION NOTES LAKE MURRAY BL			
CITY OF LA MESA, CALIFORNIA DEPARTMENT OF PUBLIC WORKS/ENGINEERING DIVISION SHEET 16 OF 27 SHEETS			
CITY ENGINEER: <i>Brian Vitelle</i>		DATE: 8-25-2022	
R.C.E. NO. 16469		C.I.P. NO. _____	
DESCRIPTION	BY	APPROVED	DATE FILMED
ORIGINAL	TDG		
DIVISION HEAD: _____			
MAINTENANCE ZONE: _____			
UTILITIES: <i>U.D.</i>		DEVELOPMENT: <i>D.M.</i>	
TRAFFIC: <i>MKS</i>		CAPITAL PROJ.: _____	
<b>9271.16</b>			

ORIGINAL SCALE: 1" = 10' 0"



**UNDERGROUND SERVICE ALERT**  
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WEB ADDRESS: WWW.DIGALERT.ORG

**RECORD DRAWING**

BY: \_\_\_\_\_ DATE \_\_\_\_\_

APPROVED: \_\_\_\_\_ DATE \_\_\_\_\_

HELIUM WATER DISTRICT  
S-XX-XXX

REVIEWED BY: \_\_\_\_\_ DATE \_\_\_\_\_

**BENCHMARK**

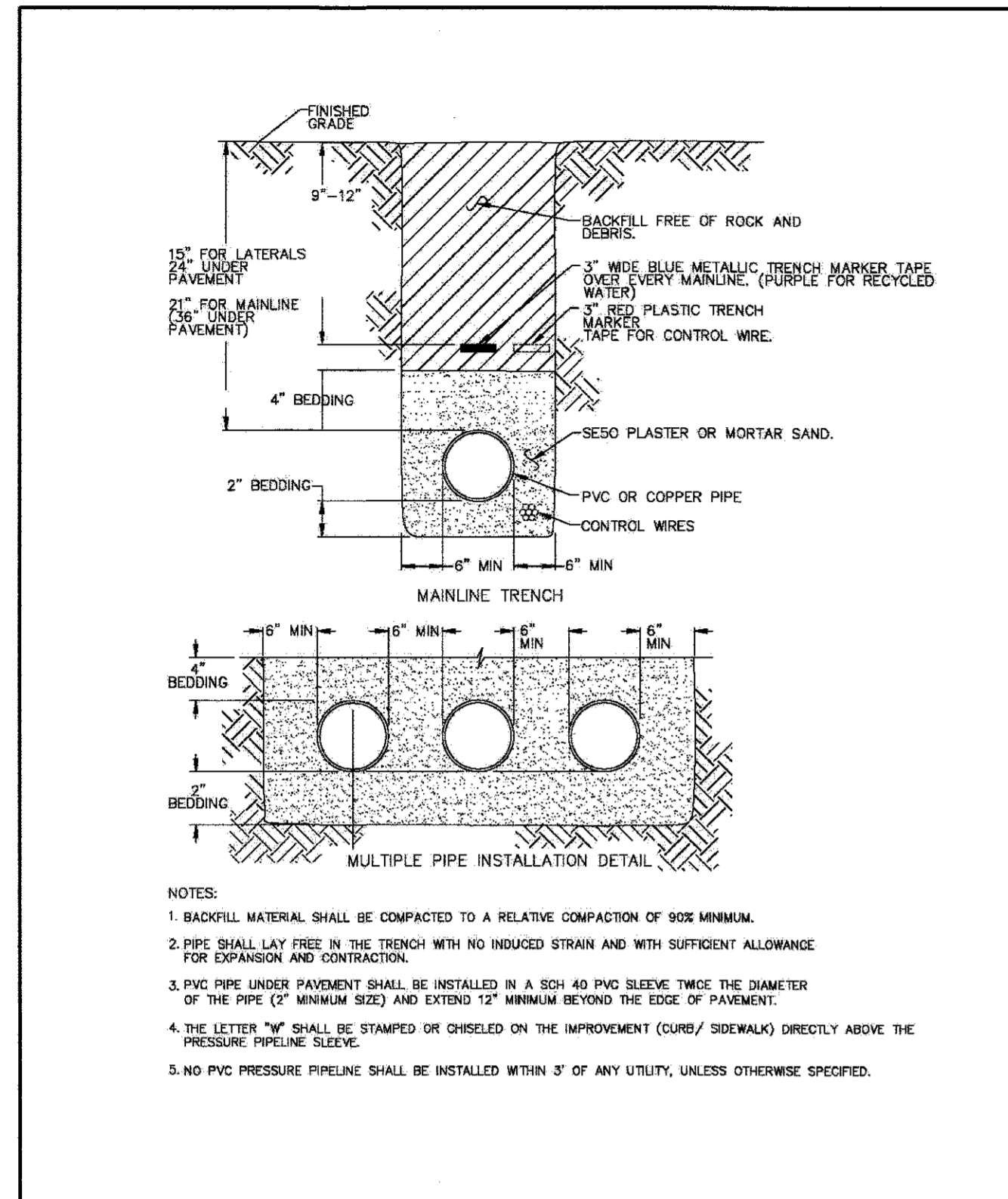
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LOCATION: \_\_\_\_\_

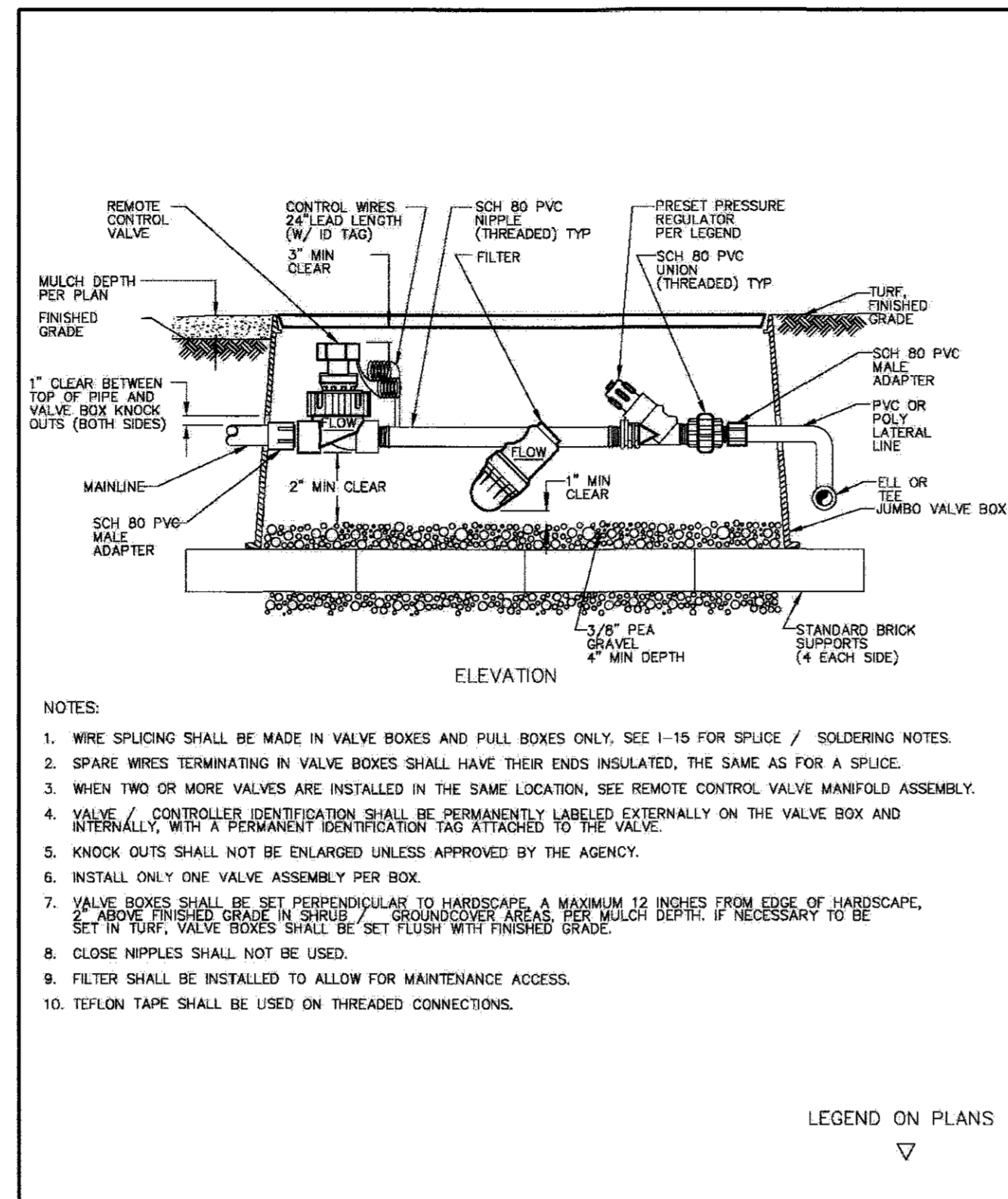
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ELEVATION: \_\_\_\_\_ DATUM: \_\_\_\_\_

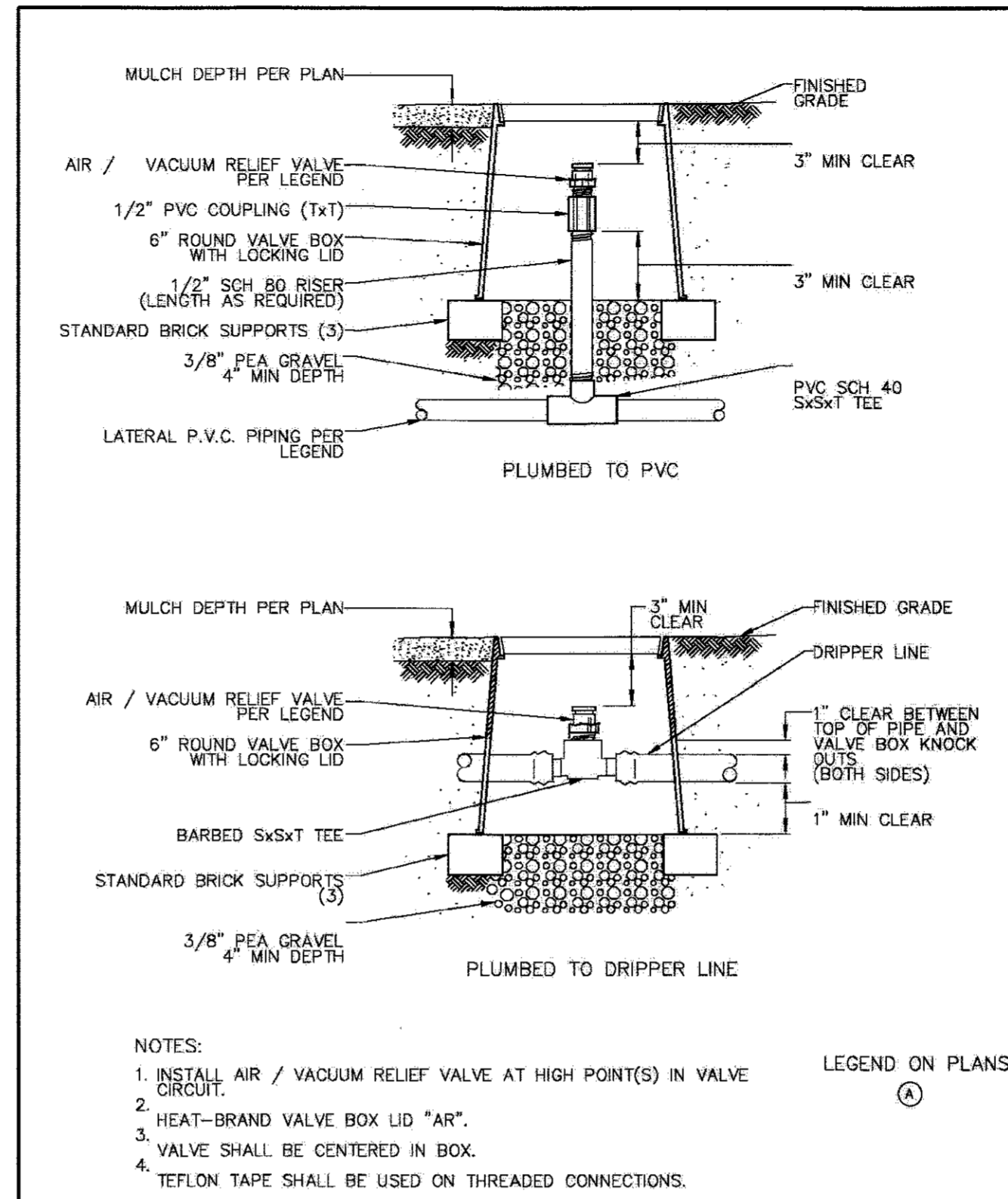
CITY OF LA MESA APPROVED CHANGES			
NO	DESCRIPTION	APPROVED	DATE



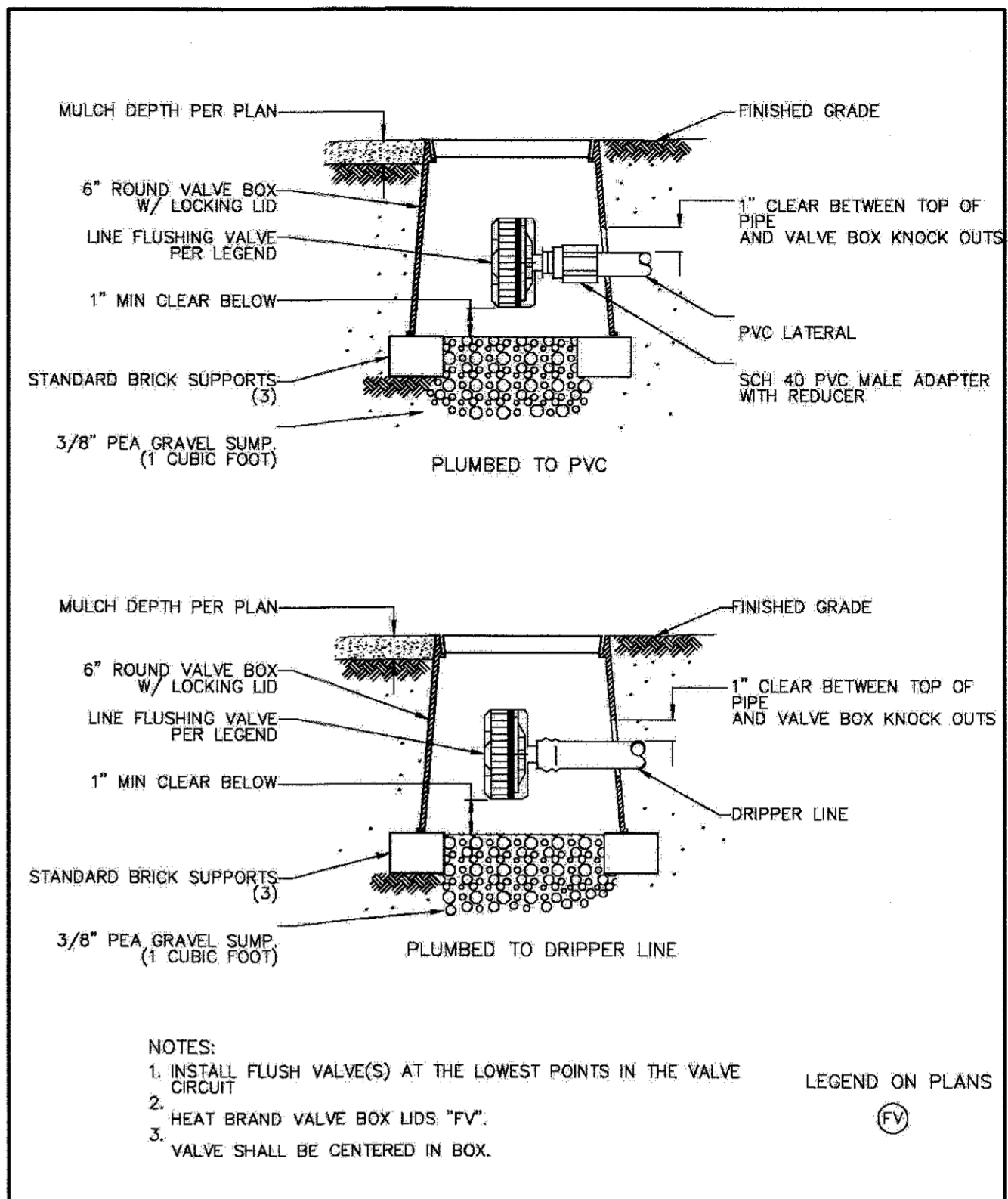
Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		Kerecheval	12/75	
Update	KA	N. Bette	11/71	
Reviewed	EA	T. Stanton	10/75	
IRRIATION TRENCH PVC OR COPPER PIPE				DRAWING NUMBER 1-25



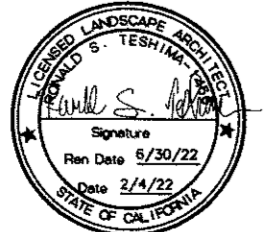
Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		M. Carr	12/75	
Update	KA	N. Bette	11/71	
Reviewed	EA	T. Stanton	10/75	
REMOTE CONTROL VALVE DRIP IRRIGATION				DRAWING NUMBER 1-35



Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		M. Carr	1/76	
Update	KA	N. Bette	11/71	
Reviewed	EA	T. Stanton	10/75	
AIR / VACUUM RELIEF VALVE				DRAWING NUMBER 1-36



Revision	By	Approved	Date	SAN DIEGO REGIONAL STANDARD DRAWING RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE
ORIGINAL		BHA, Deshou	12/75	
Update	KA	N. Bette	11/71	
Reviewed	EA	T. Stanton	10/75	
DRIP IRRIGATION FLUSH VALVE (AUTOMATIC)				DRAWING NUMBER 1-37



**UNDERGROUND SERVICE ALERT**  
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WEB ADDRESS: WWW.DIGALERT.ORG

RECORD DRAWING  
BY: \_\_\_\_\_ DATE \_\_\_\_\_  
APPROVED: \_\_\_\_\_ DATE \_\_\_\_\_  
HELIIX WATER DISTRICT  
S-XX-XXX  
REVIEWED BY: \_\_\_\_\_ DATE \_\_\_\_\_

BENCHMARK  
DESCRIPTION: SEE EACH SHEET  
LOCATION: \_\_\_\_\_  
RECORD FROM: \_\_\_\_\_  
ELEVATION: \_\_\_\_\_ DATUM: \_\_\_\_\_

CITY OF LA MESA APPROVED CHANGES			
NO.	DESCRIPTION	APPROVED	DATE

CITY ENGINEER	BY	APPROVED	DATE	C.I.P. NO. _____
DESCRIPTION	BY	APPROVED	DATE	
ORIGINAL	TDG			DIVISION HEAD _____
				MAINTENANCE ZONE _____
UTILITIES				9271.17
TRAFFIC				

LAKE MURRAY CI SEWER REPLACEMENT/STREET RESURFACING

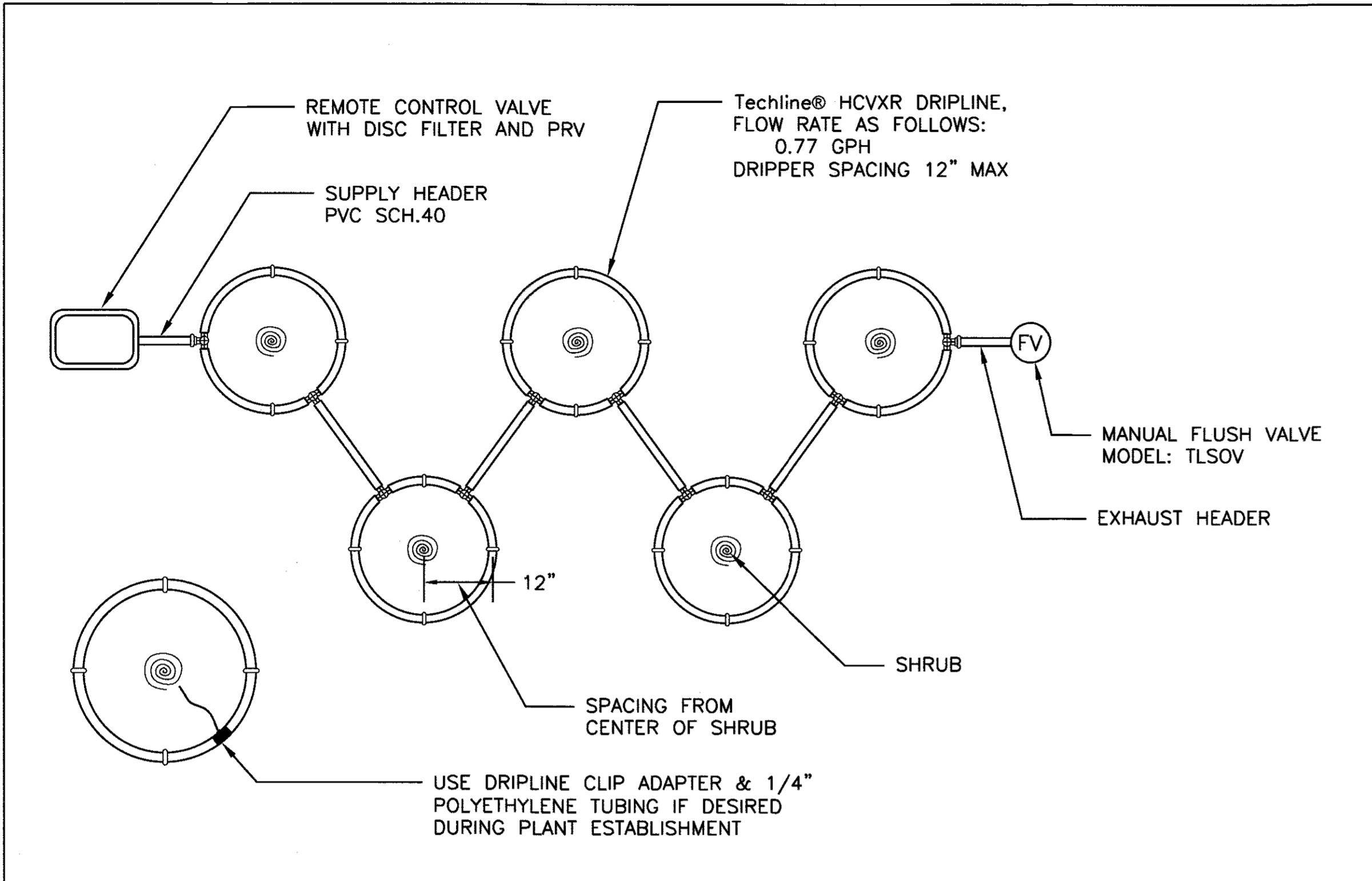
LM-17

MONTEZUMA PPL / MID-CITY PIPELINE PH 2  
IRRIGATION DETAILS  
FOR  
LAKE MURRAY BL

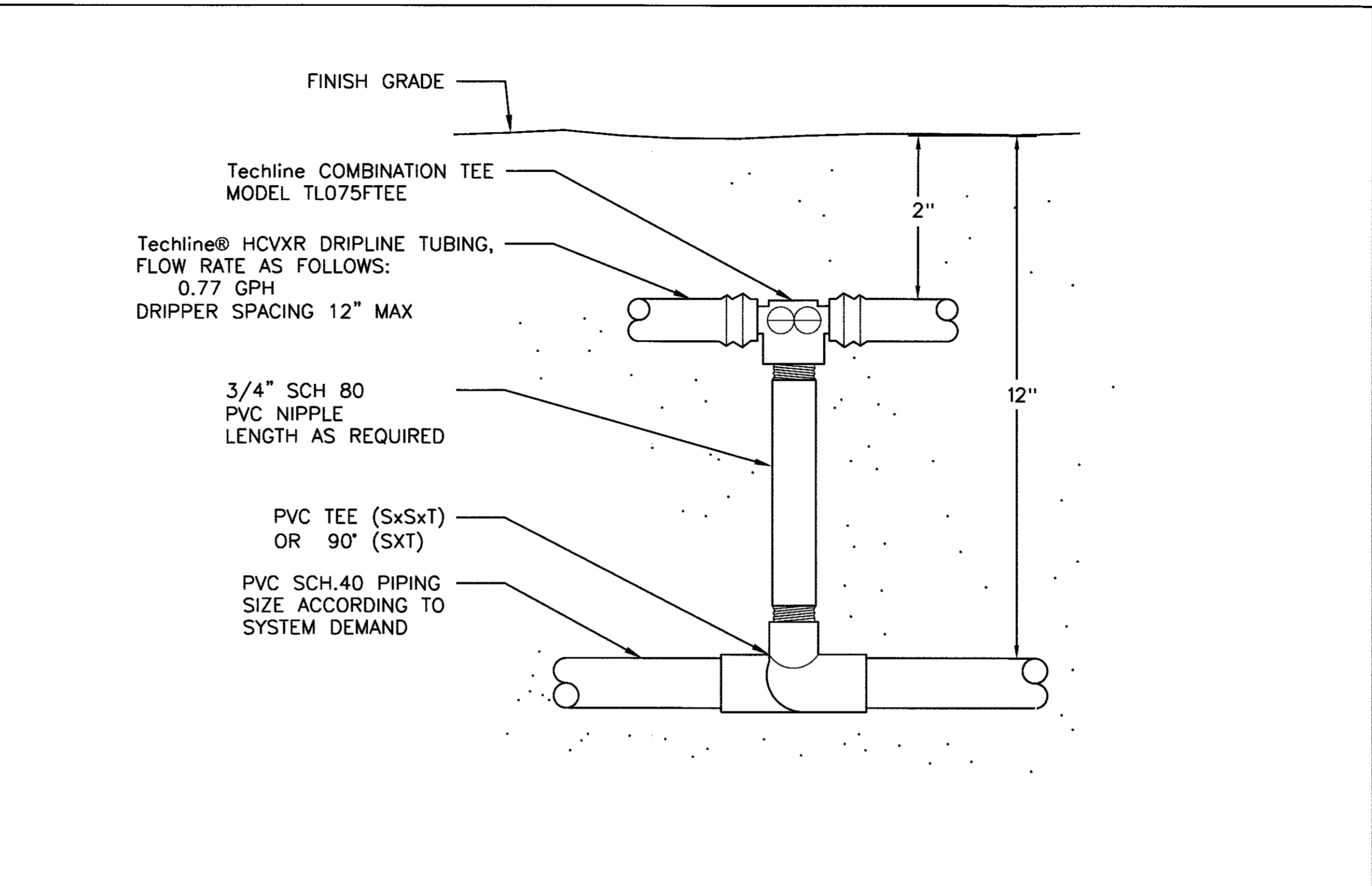
CITY OF SAN DIEGO, CALIFORNIA PUBLIC WORKS DEPARTMENT SHEET 94 OF 104 SHEETS		WATER WBS S-11026 SEWER WBS _____		
APPROVED BY: <i>Brian Vitelle</i> FOR CITY ENGINEER BRIAN VITELLE PRINT DCE NAME	DATE: 07/28/2022 C73039	SUBMITTED BY: MARYAM KARGAR PROJECT MANAGER CHECKED BY: JACOB RIVERA PROJECT ENGINEER		
DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	TDG			
CONTRACTOR	DATE STARTED			
INSPECTOR	DATE COMPLETED			

ENCROACHMENT PERMIT: \_\_\_\_\_ ISSUED: \_\_\_\_\_  
**MONTEZUMA PPL/MID-CITY PIPELINE PH2**  
**IRRIGATION DETAILS**  
**LAKE MURRAY BL**  
CITY OF LA MESA, CALIFORNIA  
DEPARTMENT OF PUBLIC WORKS/ENGINEERING DIVISION  
SHEET 17 OF 27 SHEETS

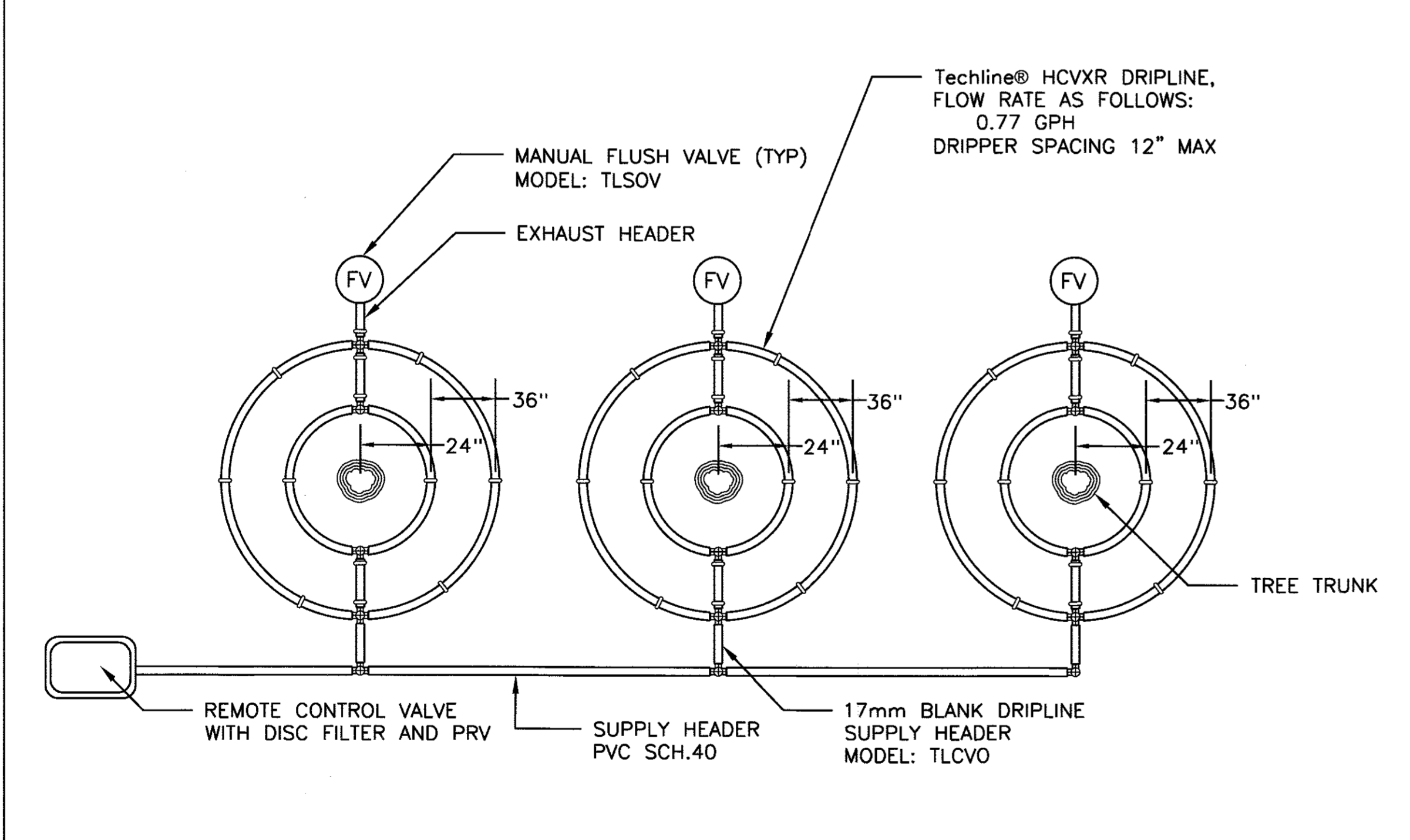
APPROVED BY: <i>Maryam Kargar</i> CITY ENGINEER	DATE: 8-25-2022	C.I.P. NO. _____
DESCRIPTION	BY	
ORIGINAL	TDG	DIVISION HEAD _____
		MAINTENANCE ZONE _____
UTILITIES		9271.17
TRAFFIC		



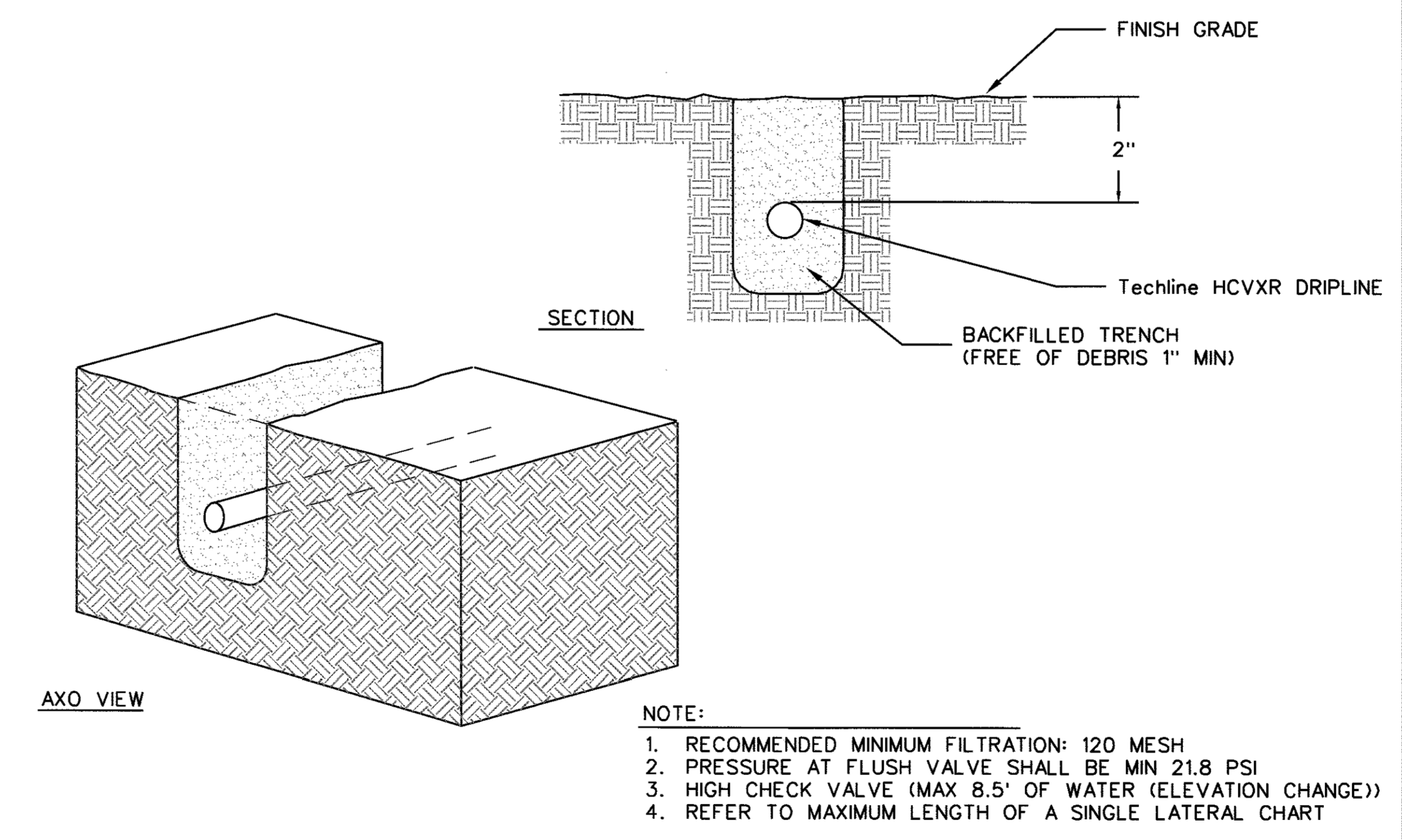
**I-1 TECHLINE HCVXR SHRUB RING LAYOUT** NOT TO SCALE



**I-2 TECHLINE HCVXR START CONNECTION** NOT TO SCALE



**I-3 TECHLINE HCVXR TREE RINGS LAYOUT** NOT TO SCALE



**I-4 TECHLINE HCVXR TRENCHING** NOT TO SCALE

LM-18

**MONTEZUMA PPL / MID-CITY PIPELINE PH 2**  
IRRIGATION DETAILS  
FOR  
LAKE MURRAY BL

CITY OF SAN DIEGO, CALIFORNIA PUBLIC WORKS DEPARTMENT SHEET 95 OF 104 SHEETS		WATER WBS S-11026 SEWER WBS		
APPROVED: <i>Brian Vitelle</i> FOR CITY ENGINEER BRIAN VITELLE PRINT DCE NAME	DATE 07/28/2022 C73039	SUBMITTED BY MARYAM KARGAR PROJECT MANAGER CHECKED BY JACOB RIVERA PROJECT ENGINEER		
DESCRIPTION	BY	APPROVED	DATE	FILED
ORIGINAL	TDG	<i>Brian Vitelle</i>	07/28/2022	
CONTRACTOR		DATE STARTED	DATE COMPLETED	
INSPECTOR				37333-95-D

**CITY OF LA MESA**  
DEPARTMENT OF PUBLIC WORKS/ENGINEERING DIVISION  
SHEET 18 OF 27 SHEETS

8-25-2022  
C.I.P. NO.

CITY OF LA MESA APPROVED CHANGES	
NO.	DESCRIPTION

UTILITIES: H-1  
TRAFFIC: MK  
DEVELOPMENT: S-1  
CAPITAL PROJ: S-1

**9271.18**

**TESHIMA DESIGN GROUP**  
LANDSCAPE ARCHITECTURE • LAND PLANNING  
2905 BUSINESSPARK AVE. SUITE 101 • SAN DIEGO, CA 92128  
TEL: 619 499-8044 FAX: 619 499-1822

TDG JOB NO. 13-15 DATE: 2-4-22

**UNDERGROUND SERVICE ALERT**

SECTION 4216 & 4217 OF THE GOVERNMENT CODE REQUIRES A DIG ALERT IDENTIFICATION NUMBER BE ISSUED BEFORE A "PERMIT TO EXCAVATE" WILL BE VALID. FOR YOUR DIG ALERT I.D. NUMBER CALL UNDERGROUND SERVICE ALERT TOLL FREE @ 1-800-422-4133 TWO (2) WORKING DAYS BEFORE YOU DIG.

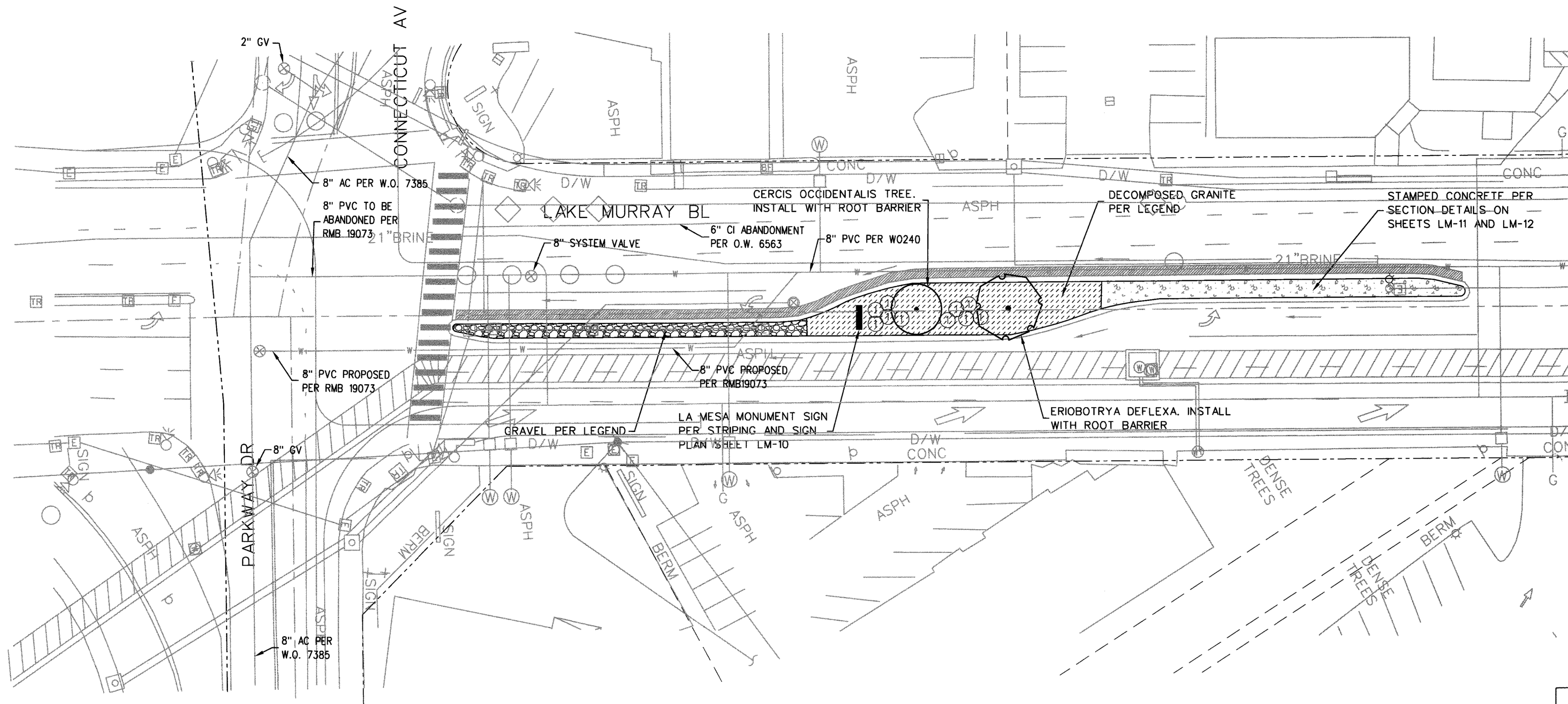
WEB ADDRESS: WWW.DIGALERT.ORG

**RECORD DRAWING**

BY: \_\_\_\_\_ DATE \_\_\_\_\_  
APPROVED: \_\_\_\_\_ DATE \_\_\_\_\_

**BENCHMARK**

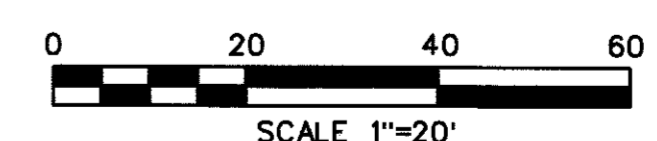
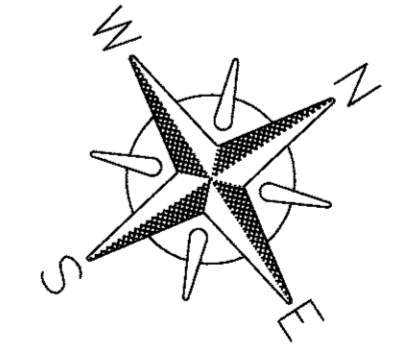
DESCRIPTION: SEE EACH SHEET  
LOCATION: \_\_\_\_\_  
RECORD FROM: \_\_\_\_\_  
ELEVATION: \_\_\_\_\_ DATUM: \_\_\_\_\_



MATCH LINE SEE SHT 97

LM-19

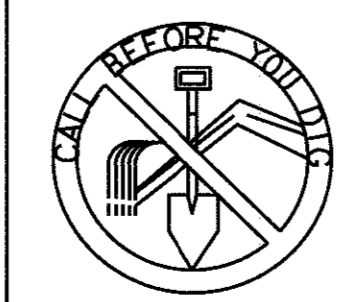
SEE SHEET LM-21 FOR PLANT LIST  
 SEE SHEET LM-21 FOR DECOMPOSED GRANITE AND GRAVEL LEGEND  
 SEE SHEET LM-22 FOR PLANTING NOTES  
 SEE SHEETS LM-23 FOR PLANTING DETAILS



MONTEZUMA PPL / MID-CITY PIPELINE PH 2		WATER WBS S-11026
PLANTING PLAN FOR LAKE MURRAY BL		SEWER WBS
CITY OF SAN DIEGO, CALIFORNIA PUBLIC WORKS DEPARTMENT SHEET 96 OF 104 SHEETS		FOR CITY ENGINEER DATE 07/28/2022 BRIAN VITELLE PRINT DCE NAME RCE
APPROVED BY: <i>Brian Vitelle</i>		SUBMITTED BY: MARYAM KARGAR PROJECT MANAGER
DESCRIPTION ORIGINAL		CHECKED BY: JACOB RIVERA PROJECT ENGINEER
BY TDG	APPROVED <i>Brian Vitelle</i>	DATE 07/28/2022
CONTRACTOR		222-1755 CCS27 COORDINATE
INSPECTOR		1862444-6316407 CC583 COORDINATE
DATE STARTED		37333-96-D
DATE COMPLETED		
<b>CITY OF LA MESA</b> <small>CITY OF THE FIELDS</small>		
ENCROACHMENT PERMIT: _____ ISSUED: _____		
<b>MONTEZUMA PPL/MID-CITY PIPELINE PH2</b>		
<b>PLANTING PLAN</b>		
<b>LAKE MURRAY BL</b>		
CITY OF LA MESA, CALIFORNIA DEPARTMENT OF PUBLIC WORKS/ENGINEERING DIVISION SHEET 19 OF 27 SHEETS		
CITY ENGINEER: <i>Brian Vitelle</i> R.C.E. #00004 DATE: 8-25-2022		C.I.P. NO. _____
DESCRIPTION: SEE EACH SHEET LOCATION: _____ RECORD FROM: _____ ELEVATION: _____ DATUM: _____		DIVISION HEAD _____
NO. _____ DESCRIPTION _____ APPROVED _____ DATE _____ ORIGINAL TDG		MAINTENANCE ZONE _____
UTILITIES: <i>H/H</i> TRAFFIC: <i>M/R</i>		DEVELOPMENT: <i>DS/A</i> <b>9271.19</b>

LAKE MURRAY CI SEWER REPLACEMENT/STREET RESURFACING

**TESHIMA DESIGN GROUP**  
 LANDSCAPE ARCHITECTURE • LAND PLANNING  
 5903 BUSINESSPARK AVE. SUITE 101 • SAN DIEGO, CA 92121  
 TEL: 619 451-1004 FAX: 619 451-1005



**UNDERGROUND SERVICE ALERT**  
 SECTION 4216 & 4217 OF THE GOVERNMENT CODE REQUIRES A DIG ALERT IDENTIFICATION NUMBER BE ISSUED BEFORE A "PERMIT TO EXCAVATE" WILL BE VALID. FOR YOUR DIG ALERT I.D. NUMBER CALL UNDERGROUND SERVICE ALERT TOLL FREE @ 1-800-422-4133 TWO (2) WORKING DAYS BEFORE YOU DIG.  
 WEB ADDRESS: WWW.DIGALERT.ORG

**RECORD DRAWING**  
 BY: \_\_\_\_\_ DATE \_\_\_\_\_  
 APPROVED: \_\_\_\_\_ DATE \_\_\_\_\_  
 HELIX WATER DISTRICT  
 S-XX-XXX  
 REVIEWED BY: \_\_\_\_\_ DATE \_\_\_\_\_

**BENCHMARK**  
 CITY OF LA MESA APPROVED CHANGES  

NO.	DESCRIPTION	APPROVED	DATE

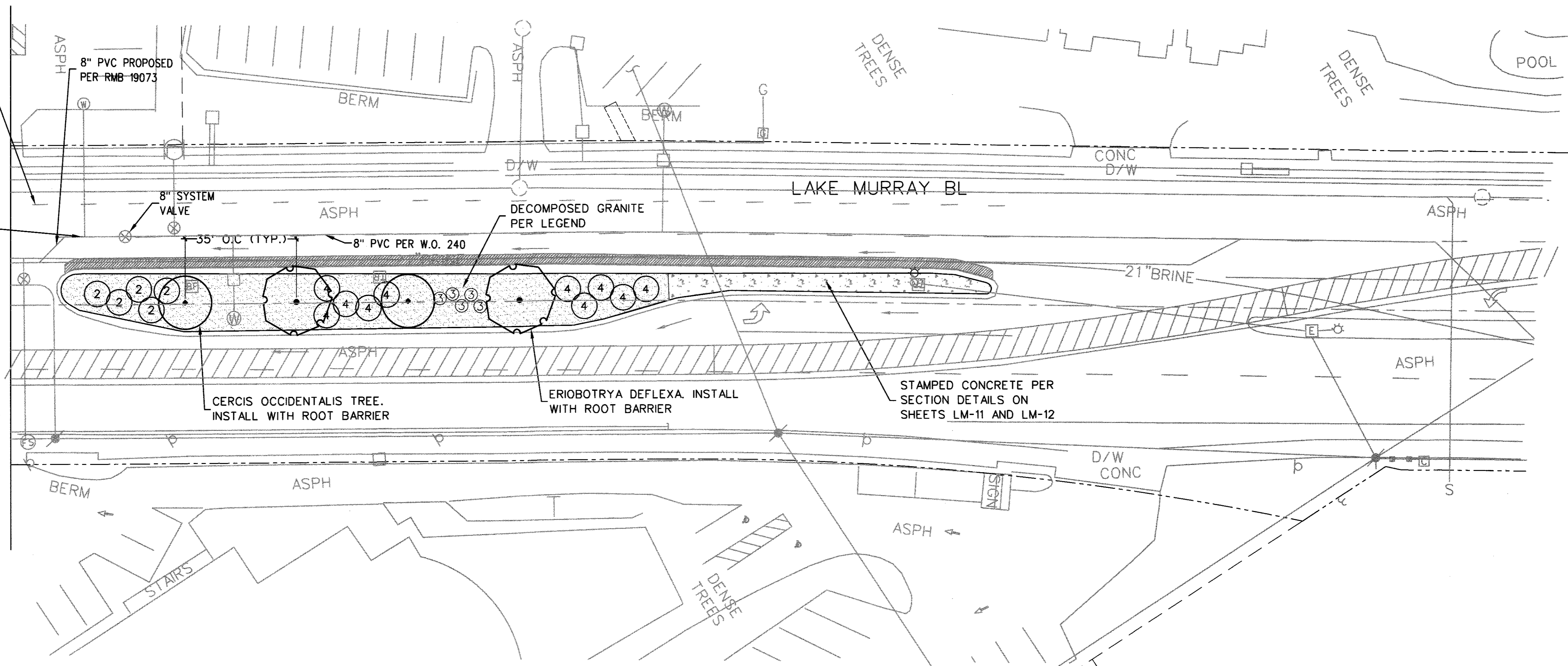
TDG JOB NO. 13-15

DATE: 2-4-22

6" CI ABANDONMENT  
PER O.W. 6563

8" AC TO BE  
ABANDONED PER  
RMB 19073

MATCH LINE SEE SHT 96

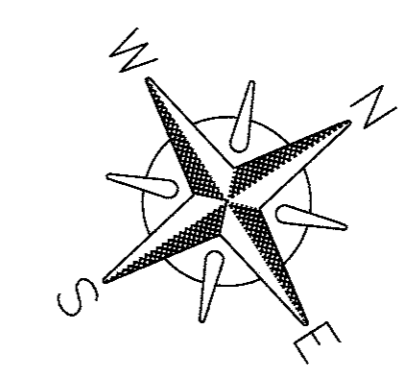


CERCIS OCCIDENTALIS TREE.  
INSTALL WITH ROOT BARRIER

ERIOBOTRYA DEFLEXA. INSTALL  
WITH ROOT BARRIER

STAMPED CONCRETE PER  
SECTION DETAILS ON  
SHEETS LM-11 AND LM-12

SEE SHEET LM-21 FOR PLANT LIST  
SEE SHEET LM-21 FOR DECOMPOSED GRANITE AND GRAVEL LEGEND  
SEE SHEET LM-22 FOR PLANTING NOTES  
SEE SHEETS LM-23 FOR PLANTING DETAILS



LM-20

MONTEZUMA PPL / MID-CITY PIPELINE PH 2  
PLANTING PLAN  
FOR  
LAKE MURRAY BL

CITY OF SAN DIEGO, CALIFORNIA PUBLIC WORKS DEPARTMENT SHEET 92 OF 104 SHEETS		WATER WBS S-11026
APPROVED BY: <i>Brian Vitelle</i> FOR CITY ENGINEER BRIAN VITELLE PRINT DCE NAME	DATE 07/28/2022 C73039	SUBMITTED BY: MARYAM KARGAR PROJECT MANAGER
DESCRIPTION	BY	APPROVED
ORIGINAL	TDG	<i>Brian Vitelle</i>
		DATE
		07/28/2022
		FILMED
		222-1755
		CCS27 COORDINATE
		1862444-6316407
		CCS83 COORDINATE
CONTRACTOR:	DATE STARTED:	
INSPECTOR:	DATE COMPLETED:	37333-97-D

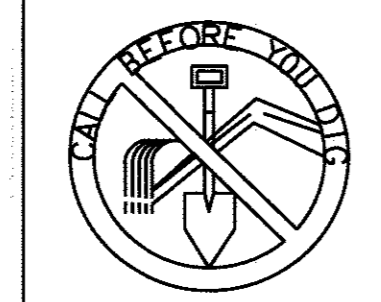


MONTEZUMA PPL/MID-CITY PIPELINE PH2  
PLANTING PLAN  
LAKE MURRAY BL

CITY OF LA MESA, CALIFORNIA  
DEPARTMENT OF PUBLIC WORKS/ENGINEERING DIVISION  
SHEET 20 OF 27 SHEETS

CITY ENGINEER		R.C.E. NUMBER		DATE		C.I.P. NO.	
DESCRIPTION	BY	APPROVED	DATE	FILMED			
ORIGINAL	TDG						
UTILITIES:	H.M.	DEVELOPMENT:	D.M.				
TRAFFIC:	M.K.	CAPITAL PROJ.:					9271.20

**TESHIMA DESIGN GROUP**  
LANDSCAPE ARCHITECTURE • LAND PLANNING  
9903 BUSINESSPARK AVE. SUITE 101 • SAN DIEGO, CA 92128  
TEL: 619 594-8200 FAX: 619 594-8201  
TDG JOB NO. 13-15 DATE: 2-4-22



**UNDERGROUND SERVICE ALERT**  
SECTION 4216 & 4217 OF THE GOVERNMENT CODE REQUIRES A DIG ALERT IDENTIFICATION NUMBER BE ISSUED BEFORE A "PERMIT TO EXCAVATE" WILL BE VALID. FOR YOUR DIG ALERT I.D. NUMBER CALL UNDERGROUND SERVICE ALERT TOLL FREE @ 1-800-422-4133 TWO (2) WORKING DAYS BEFORE YOU DIG.  
WEB ADDRESS: WWW.DIGALERT.ORG

**RECORD DRAWING**  
BY: \_\_\_\_\_ DATE \_\_\_\_\_  
APPROVED: \_\_\_\_\_ DATE \_\_\_\_\_  
HELIX WATER DISTRICT  
S-XX-XXX  
REVIEWED BY: \_\_\_\_\_ DATE \_\_\_\_\_

**BENCHMARK**  
DESCRIPTION: SEE EACH SHEET  
LOCATION: \_\_\_\_\_  
RECORD FROM: \_\_\_\_\_  
ELEVATION: \_\_\_\_\_ DATUM: \_\_\_\_\_

CITY OF LA MESA APPROVED CHANGES			
NO.	DESCRIPTION	APPROVED	DATE

LAKE MURRAY CI SEWER REPLACEMENT/STREET RESURFACING ORIGINAL SCALE: 1"=20'

### PLANT LIST

TREES

SYMBOL	BOTANICAL NAME	COMMON NAME	QTY	SIZE	FORM	FUNCTION	NOTES	
	CERCIS OCCIDENTALIS	WESTERN REDBUD	3	24" BOX	20'x20'	ROUND	ACCENT	STANDARD. DOUBLE STAKE AND PLANT PER DETAIL L-01 ON SHEET LM-23. FULL HEAD, STRAIGHT TRUNK AND MATCHING. INSTALL WITH ROOT BARRIER PER DETAIL L-06 ON SHEET LM-23.
	ERIOBOTRYA DEFLEXA	BRONZE LOQUAT	3	24" BOX	25'x25'	ROUND	SHADE	STANDARD. DOUBLE STAKE AND PLANT PER DETAIL L-01 ON SHEET LM-23. FULL HEAD, STRAIGHT TRUNK AND MATCHING. INSTALL WITH ROOT BARRIER PER DETAIL L-06 ON SHEET LM-23.

SHRUBS

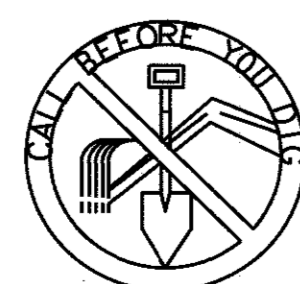
SYMBOL	BOTANICAL NAME	COMMON NAME	QTY	SIZE	FORM	FUNCTION	NOTES	
①	KNIPHOFIA UVARIA	RED-HOT POKER	10	1 GALLON	3'x3'	SWORD-LIKE	FLOWER	FULL AND BUSHY. SEE DETAIL L-02 ON SHEET LM-23.
②	SALVIA CLEVELANDII	CLEVELAND SAGE	5	1 GALLON	4'x4'	ROUND	FLOWER	FULL AND BUSHY. SEE DETAIL L-02 ON SHEET LM-23.
③	COREOPSIS GRANDIFLORA	COREOPSIS	5	15 GALLON	30"x30"	LOW	ACCENT	FULL AND BUSHY. SEE DETAIL L-02 ON SHEET LM-23.
④	CISTUS X PULVERULENTUS 'SUNSET'	SUNSET ROCK ROSE	10	1 GALLON	30"x4'	SPREADING	ACCENT	FULL AND BUSHY. SEE DETAIL L-02 ON SHEET LM-23.

### GRAVEL AND DECOMPOSED GRANITE LEGEND

SYMBOL	DESCRIPTION
	GRAVEL SHALL BE BAJA CREST RED RUBBLE (4"-6" IN SIZE) AS AVAILABLE FROM KRC ROCK, OR APPROVED EQUAL. INSTALL WITH PERMEABLE WEED BARRIER FABRIC. SEE DETAIL L-03, SHEET LM-23. CONTRACTOR SHALL PROVIDE SAMPLES TO CITY FOR APPROVAL PRIOR TO DELIVERY TO THE SITE.
	DECOMPOSED GRANITE SHALL BE DESERT GOLD (3" DEEP) AS AVAILABLE FROM KRC ROCK, OR APPROVED EQUAL. INSTALL WITH PERMEABLE WEED BARRIER FABRIC. SEE DETAIL L-03, SHEET LM-23. CONTRACTOR SHALL PROVIDE SAMPLES TO CITY FOR APPROVAL PRIOR TO DELIVERY TO THE SITE.
	DECOMPOSED GRANITE SHALL BE BAJA BROWN (3" DEEP) AS AVAILABLE FROM KRC ROCK, OR APPROVED EQUAL. INSTALL WITH PERMEABLE WEED BARRIER FABRIC. SEE DETAIL L-03, SHEET LM-23. CONTRACTOR SHALL PROVIDE SAMPLES TO CITY FOR APPROVAL PRIOR TO DELIVERY TO THE SITE.

SEE SHEET LM-22 FOR PLANTING NOTES  
SEE SHEETS LM-23 FOR PLANTING DETAILS

**TESHIMA DESIGN GROUP**  
LANDSCAPE ARCHITECTURE • LAND PLANNING  
5903 BUSINESSPARK AVE. SUITE 101 • SAN DIEGO, CA 92121  
761 699-8001



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S-XX-XXX  
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**BENCHMARK**  
DESCRIPTION: SEE EACH SHEET  
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ELEVATION: \_\_\_\_\_ DATUM: \_\_\_\_\_

CITY OF LA MESA APPROVED CHANGES			
NO.	DESCRIPTION	APPROVED	DATE

**CITY OF LA MESA**  
DEPARTMENT OF PUBLIC WORKS/ENGINEERING DIVISION  
SHEET 21 OF 27 SHEETS  
DATE: 8-25-2022  
C.I.P. NO. 9271.21

LM-21

MONTEZUMA PPL / MID-CITY PIPELINE PH 2  
PLANT LIST AND DG/GRAVEL LEGEND  
FOR LAKE MURRAY BL

CITY OF SAN DIEGO, CALIFORNIA  
PUBLIC WORKS DEPARTMENT  
SHEET 28 OF 104 SHEETS  
WATER WBS S-11026  
SEWER WBS \_\_\_\_\_  
APPROVED BY: *Brian Vitelle* DATE: 07/28/2022  
FOR CITY ENGINEER: BRIAN VITELLE DATE: 07/28/2022  
PROJECT MANAGER: MARYAM KARGAR  
PROJECT ENGINEER: JACOB RIVERA  
DEVELOPER: JACOB RIVERA  
DATE: 07/28/2022  
ORIGINAL: \_\_\_\_\_ BY: *Brian Vitelle* DATE: 07/28/2022  
FILMED: \_\_\_\_\_  
222-1755  
CCS27 COORDINATE  
1862444-6316407  
CCS83 COORDINATE  
CONTRACTOR: \_\_\_\_\_ DATE STARTED: \_\_\_\_\_  
INSPECTOR: \_\_\_\_\_ DATE COMPLETED: 37333-98-D

CITY OF LA MESA  
ENCROACHMENT PERMIT: \_\_\_\_\_ ISSUED: \_\_\_\_\_

MONTEZUMA PPL/MID-CITY PIPELINE PH2  
PLANT LIST AND DG/GRAVEL LEGEND  
LAKE MURRAY BL  
CITY OF LA MESA, CALIFORNIA  
DEPARTMENT OF PUBLIC WORKS/ENGINEERING DIVISION  
SHEET 21 OF 27 SHEETS

LAKE MURRAY CI SEWER REPLACEMENT/STREET RESURFACING  
ORIGINAL SCALE: 6" = 1'-0"

**PLANTING NOTES:**

- CONTRACTOR SHALL HAVE A THOROUGH STANDARD SOIL TEST PERFORMED IN FOUR DIFFERENT LOCATIONS ON THE SITE AND COMPLETED BY A LICENSED AGRONOMIC LABORATORY PRIOR TO AND AFTER LEACHING OF SALTS AND PRIOR TO ANY PLANTING OF PLANT MATERIAL. THE SOILS TEST SHALL INCLUDE, BUT NOT BE LIMITED TO, THE TESTING OF SOIL SALT LEVELS, NUTRIENT LEVELS, AND SOIL PERCOLATION. CONTRACTOR SHALL BE RESPONSIBLE FOR SUPPLYING AMENDMENTS AND FERTILIZERS AT THE LEVEL INDICATED IN THE SOILS TEST REPORT. CONTRACTOR TO PROVIDE A COPY OF THE SOIL TEST AND AMENDMENTS TO LANDSCAPE ARCHITECT.
- THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL REQUIRED PERMITS PRIOR TO COMMENCING LANDSCAPE INSTALLATION.
- PLANTING TO BE INSTALLED AS SHOWN ON THE PLANS AND IN ACCORDANCE WITH THE CRITERIA AND STANDARDS OF THE CITY OF SAN DIEGO LANDSCAPE ORDINANCE SECTION 142.0401, THE CITY OF SAN DIEGO DEVELOPMENT MANUAL LANDSCAPE STANDARDS (LATEST EDITION), CITY OF LA MESA LATEST STANDARDS AND OTHER APPLICABLE STANDARDS AS OF THE APPROVED DATE OF THESE PLANS.
- ROOT BARRIERS SHALL BE INSTALLED WITH ALL TREES THAT ARE WITHIN TEN (10) FEET OF ANY HARDSCAPE. INSTALL ROOT BARRIERS ADJACENT, AND PARALLEL TO, EDGE OF HARDSCAPE. BARRIERS SHALL BE TEN (10) FEET IN LENGTH MINIMUM ON EACH SIDE OF TREE AND 24" DEEP. ROOT BARRIERS WILL NOT BE WRAPPED AROUND THE ROOTBALL. ROOT BARRIER SHALL BE BIO-BARRIER OR APPROVED EQUAL.
- ALL PLANT SIZES ARE MINIMUMS. SIZES ARE TYPICAL FOR EACH PLANT SPECIES. ALL PLANTS ARE TO BE FREE OF DISEASE AND SCARS, AND TO HAVE GOOD COLOR, FULL HEADS AND GOOD CALIPER (15 GALLON - 3/4" MINIMUM, 24" BOX - 1 1/4" MINIMUM, 36" BOX - 2" MINIMUM).
- PRIOR TO PLANTING, IRRIGATION SYSTEM SHALL BE FULLY OPERATIONAL AND ALL PLANTING AREAS SHALL BE FULLY WATERED IMMEDIATELY AFTER PLANTING.
- PRIOR TO PLANTING, ALL PLANTING AREAS SHALL BE FREE OF WEEDS, ROCKS (2" AND GREATER IN DIAMETER) AND DEBRIS. RAKE AND FINE GRADE ALL PLANTING AREAS PRIOR TO PLANTING. APPLY PRE-EMERGENT HERBICIDE IN ALL AREAS PRIOR TO INSTALLING DECOMPOSED GRANITE AND GRAVEL.
- UPON COMPLETION OF PLANTING OPERATIONS AND BEFORE ANY SITE OBSERVATIONS, REMOVE ALL EXTRANEIOUS MATERIAL AND DEBRIS, AND BROOM AND WASH THE AREA CLEAN.
- LONG TERM MAINTENANCE OF THIS PROJECT SHALL BE PROVIDED BY THE CITY OF LA MESA.
- THE CONTRACTOR SHALL FINE GRADE ALL PLANTING AREAS, FILLING AS NEEDED OR REMOVING SURPLUS DIRT, REMOVING ROCKS AND DEBRIS OVER 1/2 INCH IN DIAMETER, AND FLOATING TO SMOOTH AND UNIFORM GRADE. ALL AREAS SHALL SLOPE TO DRAIN. ALL SLOPES SHALL BE GRADED TO ELIMINATE WATER AND SOIL RUNOFF ONTO SIDEWALKS AND HARDSCAPE. ALL LANDSCAPE AREAS SHALL HAVE POSITIVE SURFACE DRAINAGE (2% GRADE) AWAY FROM STRUCTURES AND TERMINATING IN AN APPROVED DRAINAGE SYSTEM.
- CONTRACTOR SHALL ACCEPT AND TAKE RESPONSIBILITY FOR ALL TREES DELIVERED TO THE SITE AND PROVIDE A ONE-YEAR WARRANTY.
- ALL PLANTS MUST BE CONTAINER GROWN AS INDICATED IN THE PLANT LIST.
- ALL TREES MUST BE STRAIGHT TRUNKED, FULL HEADED, HAVE MATCHING FORM AND MEET ALL REQUIREMENTS SPECIFIED.
- ALL TREES MUST BE STAKED AS SHOWN IN THE DETAILS.
- PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING ALL UNDERGROUND UTILITIES AND SHALL AVOID DAMAGE TO ALL UTILITIES DURING THE COURSE OF THE WORK. THE CONTRACTOR IS RESPONSIBLE FOR REPAIRING ANY AND ALL DAMAGE TO UTILITIES, STRUCTURES, SITE APPURTENANCES, ETC. WHICH OCCURS AS A RESULT OF THE LANDSCAPE CONSTRUCTION.

**EXISTING TREE, SHRUBS AND GROUND COVER REMOVAL NOTES:**

- CONTRACTOR SHALL REMOVE ALL EXISTING TREES, SHRUBS AND GROUND COVER FROM THE SITE AND REPLACE AS SHOWN ON THE PLAN. WHERE A STUMP GRINDER CAN BE USED, NOTE THE FOLLOWING: CUT TREE FLUSH WITH GROUND AS CLOSE AS POSSIBLE. USE A HEAVY DUTY STUMP GRINDER AND GRIND THE STUMP A MINIMUM OF 24" FROM FINISH GRADE.  
  
WHERE A STUMP GRINDER CAN NOT BE USED, NOTE THE FOLLOWING: CUT TREE FLUSH WITH GROUND OR AS CLOSE AS POSSIBLE. IMMEDIATELY SCORE THE STUMP IN TWO DIRECTIONS. IMMEDIATELY AFTER SCORING USE A PAINT BRUSH AND PAINT LIBERALLY AT FULL STRENGTH ORTHO BRUSH KILLER. STUMP MUST BE MOIST.

- THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL QUANTITIES SHOWN ON THESE PLANS BEFORE PRICING THE WORK.
- CONTRACTOR IS RESPONSIBLE FOR DELIVERY SCHEDULE AND PROTECTION BETWEEN DELIVERY AND PLANTING PER SPECIFICATIONS TO MAINTAIN HEALTHY PLANT CONDITIONS.
- THE CONTRACTOR IS RESPONSIBLE FOR FULLY MAINTAINING (INCLUDING BUT NOT LIMITED TO: WATERING, SPRAYING, MULCHING, FERTILIZING, ETC.) ALL OF THE PLANT MATERIALS FOR THE PERIOD OF TIME SHOWN IN SITEWORK SPECIFICATIONS.
- THE CONTRACTOR SHALL COMPLETELY GUARANTEE ALL PLANT MATERIAL FOR A PERIOD DEFINED IN THE SITEWORK SPECIFICATIONS BEGINNING ON THE DATE OF TOTAL ACCEPTANCE. THE CONTRACTOR SHALL PROMPTLY MAKE ALL REPLACEMENTS BEFORE THE END OF THE GUARANTEE PERIOD.
- ANY PLANT MATERIAL WHICH DIES, TURNS BROWN, OR DEFOLIATES (PRIOR TO TOTAL ACCEPTANCE OF THE WORK) SHALL BE PROMPTLY REMOVED FROM THE SITE AND REPLACED WITH MATERIAL OF THE SAME SPECIES, QUANTITY, AND SIZE AND MEETING ALL PLANT LIST SPECIFICATIONS.
- LOCATIONS OF EXISTING BURIED UTILITY LINES SHOWN ON THE PLANS ARE BASED UPON BEST AVAILABLE INFORMATION AND ARE TO BE CONSIDERED APPROXIMATE. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE LOCATIONS OF UTILITY LINES AND ADJACENT TO THE WORK AREA. THE CONTRACTOR IS RESPONSIBLE FOR THE PROTECTION OF ALL UTILITY LINES DURING THE CONSTRUCTION PERIOD.
- SAFE, CLEARLY MARKED PEDESTRIAN AND VEHICULAR ACCESS TO ALL ADJACENT PROPERTIES MUST BE MAINTAINED THROUGHOUT THE CONSTRUCTION PROCESS.
- ALL PLANT MATERIALS QUANTITIES SHOWN ARE APPROXIMATE. CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLETE COVERAGE OF ALL PLANTING BEDS AT SPACING SHOWN.
- LOCATE AND TAG ALL PLANT MATERIAL. MATERIAL SHALL BE IN CONFORMANCE WITH PLANTING PLAN DESCRIPTIONS AND SPECIFICATIONS. ALL PLANT MATERIAL IS SUBJECT TO REVIEW AND APPROVAL PRIOR TO INSTALLATION. PROVIDE PHOTOS OF REPRESENTATIVE EXAMPLES OF EACH TAGGED BLOCK TO LANDSCAPE ARCHITECT MINIMUM 21 DAYS BEFORE ANTICIPATED DELIVERY. PHOTOS SHALL INCLUDE A PERSON FOR SCALE PURPOSES. PHOTOS SHALL INCLUDE WIDTH AND HEIGHT OF EACH PLANT. LANDSCAPE ARCHITECT MAY OPT TO REVIEW MATERIAL AT GROWING NURSERY. ALL PLANT MATERIAL SHALL BE APPROVED AT THE PROJECT SITE BY THE LANDSCAPE ARCHITECT PRIOR TO ANY PLANTING. MATERIAL DELIVERED TO THE SITE MAY BE REJECTED BASED ON UNHEALTHY APPEARANCE OR NON-CONFORMANCE WITH SPECIFICATIONS EVEN IF PREVIOUSLY REVIEWED BY THE LANDSCAPE ARCHITECT OR THE OWNER. ALL PLANT MATERIAL REJECTED BY THE OWNER OR LANDSCAPE ARCHITECT SHALL BE REMOVED FROM THE PROJECT SITE AT NO ADDITIONAL COST AND REPLACED PRIOR TO ANY PLANTING.
- REPORT DISCREPANCIES IN THE DRAWINGS OR BETWEEN THE DRAWINGS AND ACTUAL FIELD CONDITIONS TO THE LANDSCAPE ARCHITECT. CORRECTED DRAWINGS OR INSTRUCTION SHALL BE ISSUED PRIOR TO THE CONTINUATION OF THIS WORK. ASSUME FULL RESPONSIBILITY FOR ALL NECESSARY CORRECTIONS DUE TO FAILURE TO REPORT KNOWN DISCREPANCIES.
- LOCATION OF N.I.C. CONSTRUCTION ELEMENTS SUCH AS LIGHTS, SIGNS, VENTS, HYDRANTS, TRANSFORMERS, ETC. ARE APPROXIMATE. NOTIFY THE LANDSCAPE ARCHITECT IMMEDIATELY SHOULD THE LOCATION OF THESE ITEMS INTERFERE WITH THE PROPER EXECUTION OF WORK.

LM-22

MONTEZUMA PPL / MID-CITY PIPELINE PH 2  
PLANTING NOTES  
FOR  
LAKE MURRAY BL

CITY OF SAN DIEGO, CALIFORNIA  
PUBLIC WORKS DEPARTMENT  
SHEET 99 OF 104 SHEETS

WATER WBS S-11026  
SEWER WBS

APPROVED: *[Signature]* DATE 07/28/2022  
FOR CITY ENGINEER  
BRIAN VITELLE  
PRINT DCE NAME RICE

DATE 07/28/2022  
PROJECT MANAGER  
MARYAM KARGAR  
PROJECT ENGINEER  
JACOB RIVERA  
222-1755  
CCS27 COORDINATE  
1862444-6316407  
CCS83 COORDINATE

CONTRACTOR \_\_\_\_\_ DATE STARTED \_\_\_\_\_  
INSPECTOR \_\_\_\_\_ DATE COMPLETED \_\_\_\_\_ 37333-99-D

CITY OF LA MESA  
DEPARTMENT OF PUBLIC WORKS/ENGINEERING DIVISION  
SHEET 22 OF 27 SHEETS

8-25-2022  
C.I.P. NO. \_\_\_\_\_  
DIVISION HEAD \_\_\_\_\_  
MAINTENANCE ZONE \_\_\_\_\_  
9271.22

**TESHIMA DESIGN GROUP**  
LANDSCAPE ARCHITECTURE • LAND PLANNING  
3903 BUSINESSPARK AVE. SUITE 101 • SAN DIEGO, CA 92121  
760 650 8918

TDG JOB NO. 13-15  
DATE: 2-4-22



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HELIIX WATER DISTRICT  
S-XX-XXX  
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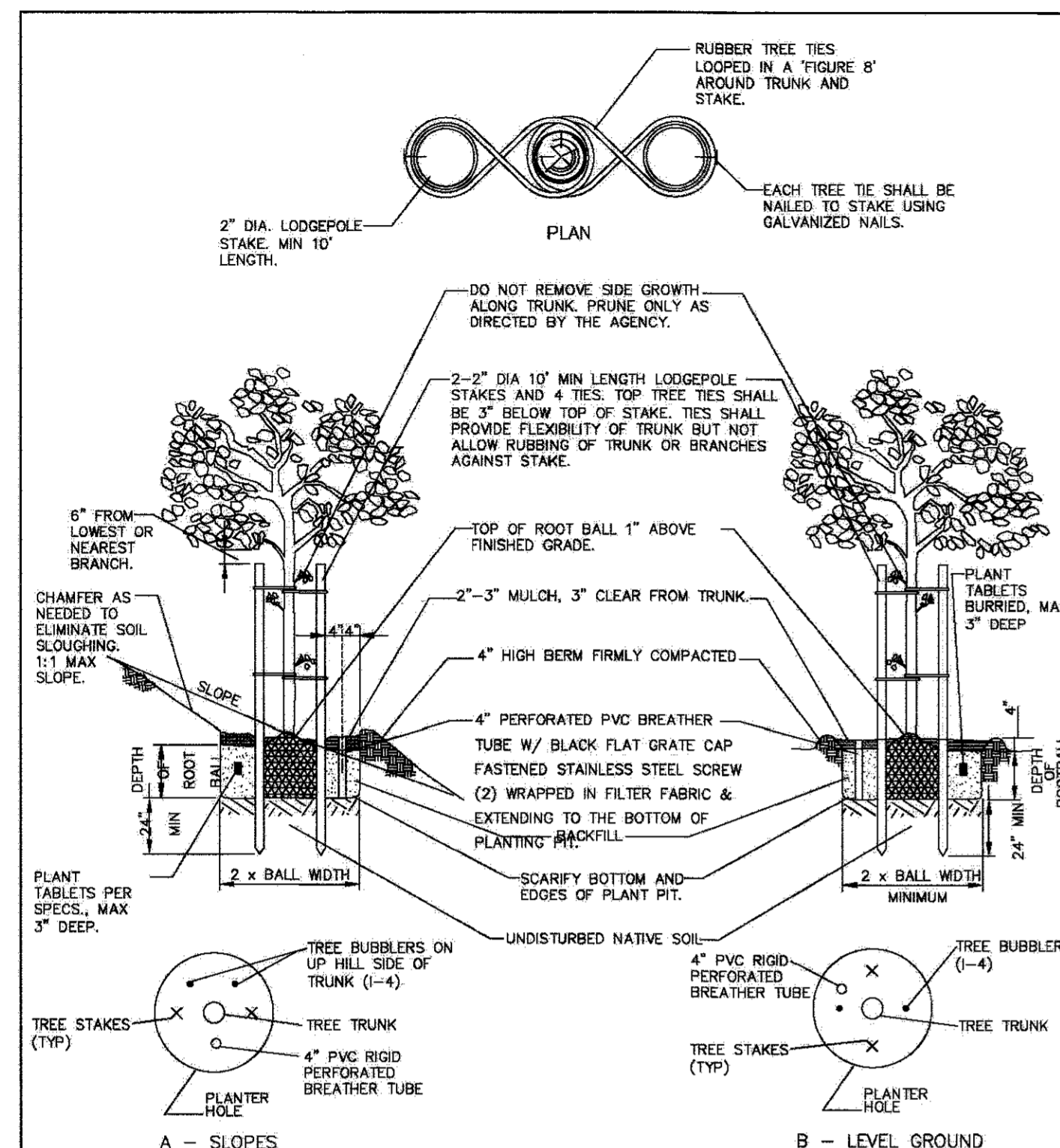
**BENCHMARK**  
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LOCATION: \_\_\_\_\_  
RECORD FROM: \_\_\_\_\_  
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CITY OF LA MESA APPROVED CHANGES			
NO.	DESCRIPTION	APPROVED	DATE

CITY ENGINEER				DATE			
DESCRIPTION	BY	APPROVED	DATE	DESCRIPTION	BY	APPROVED	DATE
ORIGINAL	TDG	<i>[Signature]</i>	07/28/2022				

ORIGINAL SCALE: 6" = 11' INCHES





NOTES

- DOUBLE STAKE 15 GAL AND LARGER TREES, SINGLE STAKE TREES SMALLER THAN 15 GAL.
- FOR SINGLE STAKED TREES, PLACE STAKE ON WINDWARD SIDE OF TREE.
- LOCATE STAKES OUTSIDE OF ROOTBALL.
- PROVIDE MINIMUM DISTANCE FROM OTHER OBJECTS AS FOLLOWS:  
20' TRAFFIC SIGNALS, 12' STREET LIGHTS, 10' FIRE HYDRANTS, SEWER LINES AND SDG&E FOR PAD MOUNTED EQUIPMENT, AND 5' UNDERGROUND SDG&E ELECTRIC AND GAS LINES.

Revision	By	Approved	Date
ORIGINAL	Kercheval		12/7/75
Date Metric	SE N. Balita		06/11
Reviewed	JM T. Stanton		10/1/15
Reviewed	EW T. Stanton		10/1/18

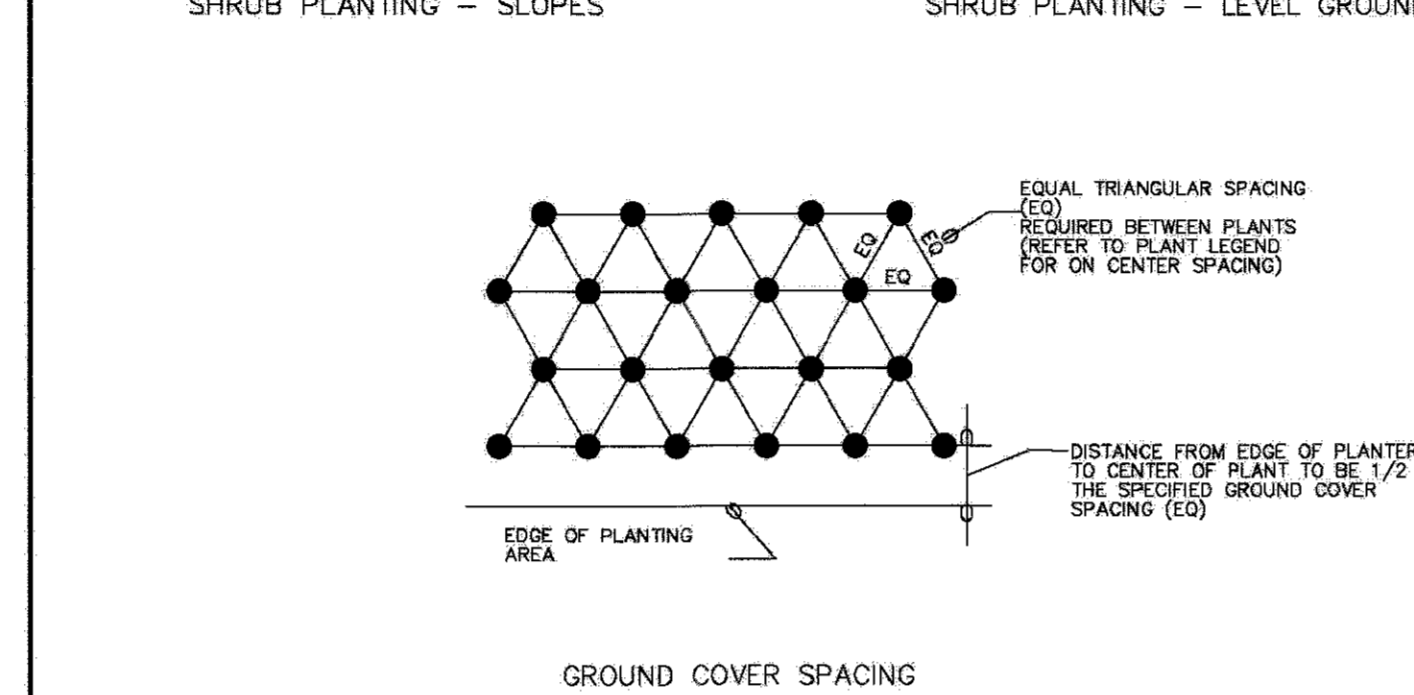
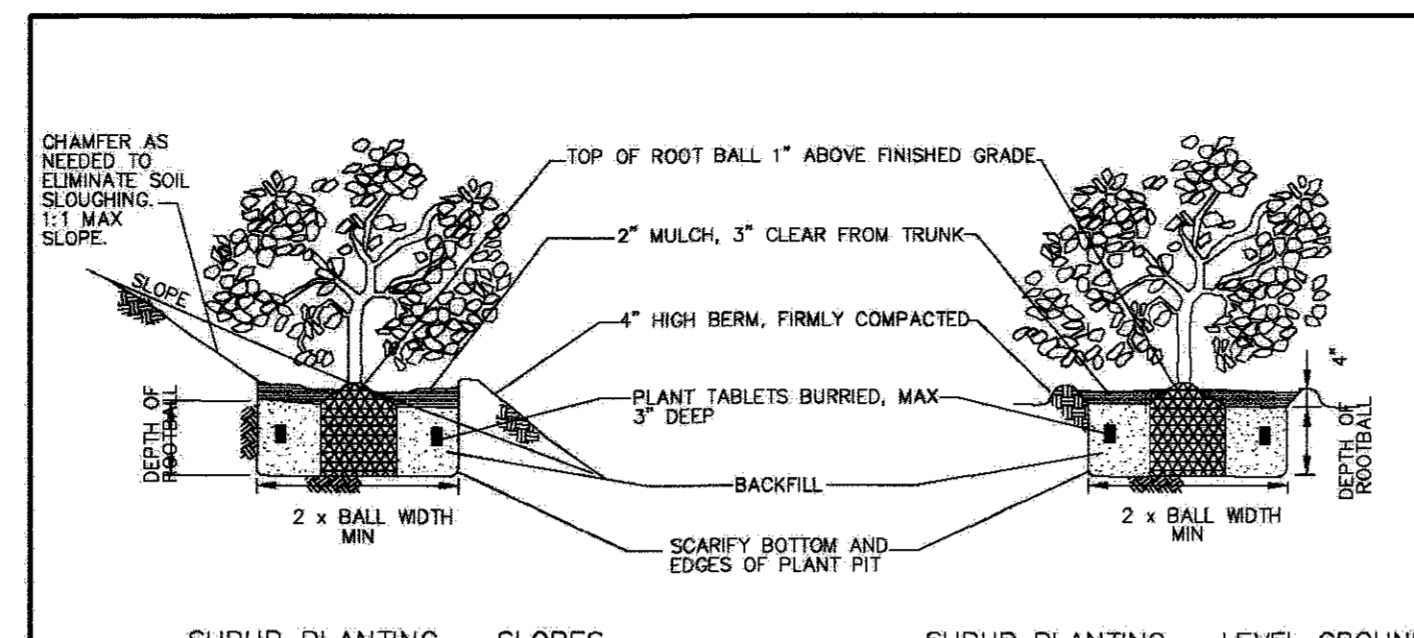
SAN DIEGO REGIONAL STANDARD DRAWING

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*[Signature]* 10/26/2018  
Supersedes R.C.S. 19246 Date

TREE PLANTING AND STAKING

DRAWING NUMBER L-01



Revision	By	Approved	Date
ORIGINAL	Kercheval		12/7/75
Date Metric	KA N. Balita		06/11
Reviewed	JM T. Stanton		10/1/15
Reviewed	EW T. Stanton		10/1/18

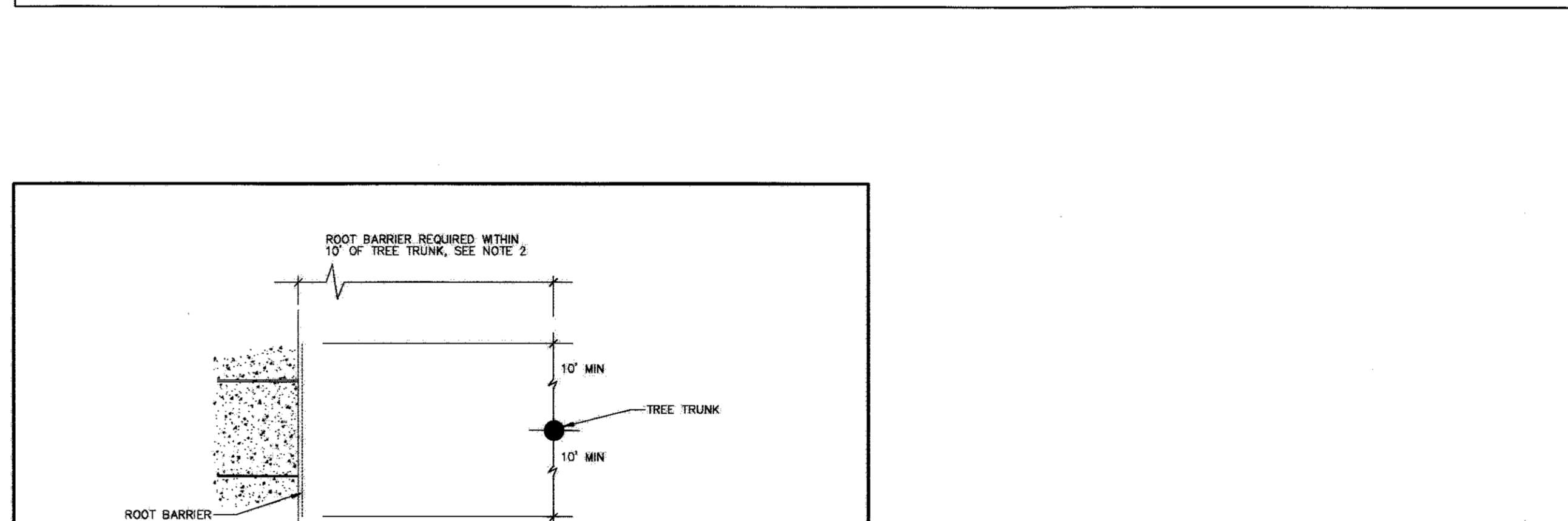
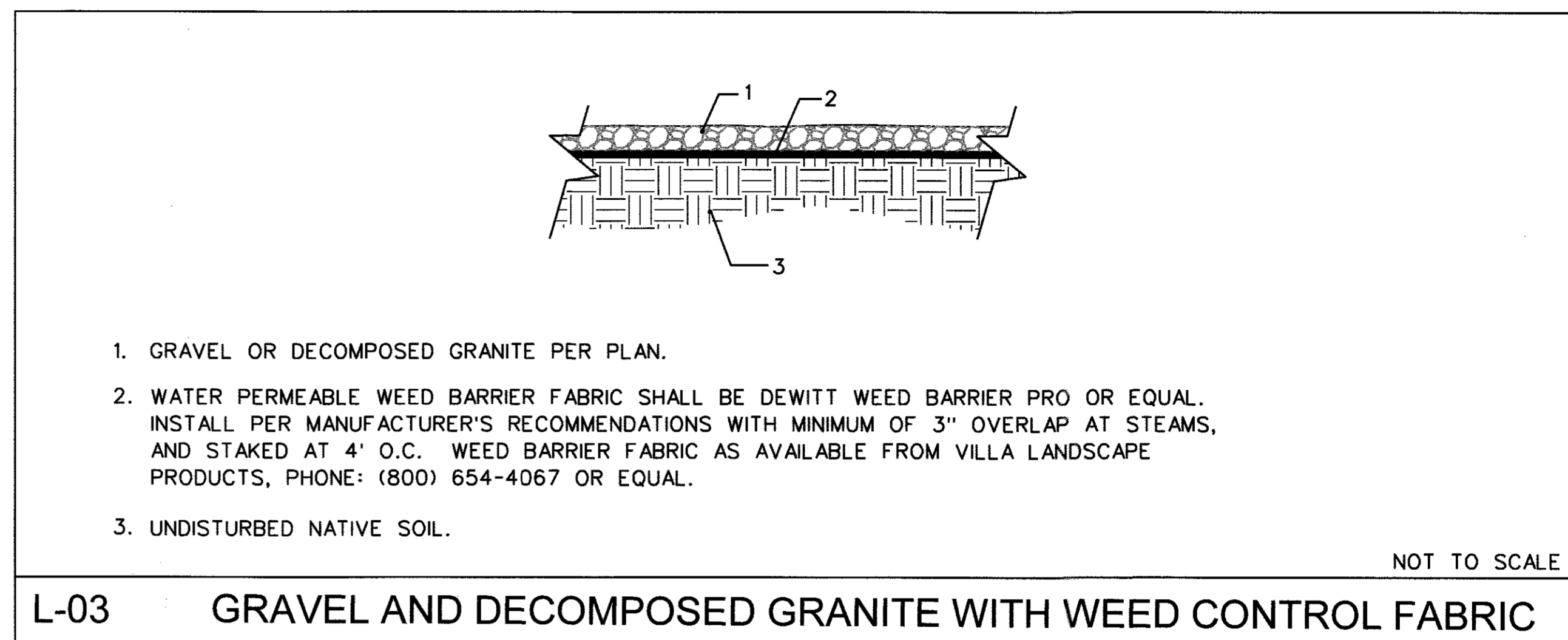
SAN DIEGO REGIONAL STANDARD DRAWING

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*[Signature]* 10/26/2018  
Supersedes R.C.S. 19246 Date

SHRUB PLANTING/GROUND COVER SPACING

DRAWING NUMBER L-02



Revision	By	Approved	Date
ORIGINAL	M. Caro		02/08
Add Metric	T. Stanton		03/23
Date Metric	KA N. Balita		06/11
Reviewed	JM T. Stanton		10/1/15
Reviewed	EW T. Stanton		10/1/18

SAN DIEGO REGIONAL STANDARD DRAWING

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

*[Signature]* 10/26/2018  
Supersedes R.C.S. 19246 Date

ROOT CONTROL BARRIER

DRAWING NUMBER L-06

LM-23

MONTEZUMA PPL / MID-CITY PIPELINE PH 2  
PLANTING DETAILS  
FOR  
LAKE MURRAY BL

CITY OF SAN DIEGO, CALIFORNIA  
PUBLIC WORKS DEPARTMENT  
SHEET 100 OF 104 SHEETS

APPROVED: *[Signature]* DATE 07/28/2022  
FOR CITY ENGINEER: BRIAN VITELLE DATE C73039  
PRINT DCE NAME: RCE

SUBMITTED BY: MARYAM KARGAR PROJECT MANAGER  
CHECKED BY: JACOB RIVERA PROJECT ENGINEER

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	TDG	<i>[Signature]</i>	07/28/2022	

CONTRACTOR: DATE STARTED: 37333-100-D  
INSPECTOR: DATE COMPLETED:

CITY OF LA MESA  
DEPARTMENT OF PUBLIC WORKS/ENGINEERING DIVISION  
SHEET 23 OF 27 SHEETS

APPROVED: *[Signature]* DATE 8-25-2022  
CITY ENGINEER: RCE  
DESCRIPTION: TDG  
APPROVED: TDG  
DATE: 07/28/2022

UTILITIES: H.P.  
TRAFFIC: MKK  
DEVELOPMENT: CAPITAL PROJ.  
C.I.P. NO. 9271.23

TESHIMA DESIGN GROUP  
LANDSCAPE ARCHITECTURE • LAND PLANNING  
3903 BUSINESSPARK AVE. SUITE 101 • SAN DIEGO, CA 92131  
951 699-8982

TDG JOB NO. 13-15  
DATE: 2-4-22

*[Seal]*

*[Seal]*

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HELIUM WATER DISTRICT  
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REVIEWED BY: \_\_\_\_\_ DATE \_\_\_\_\_

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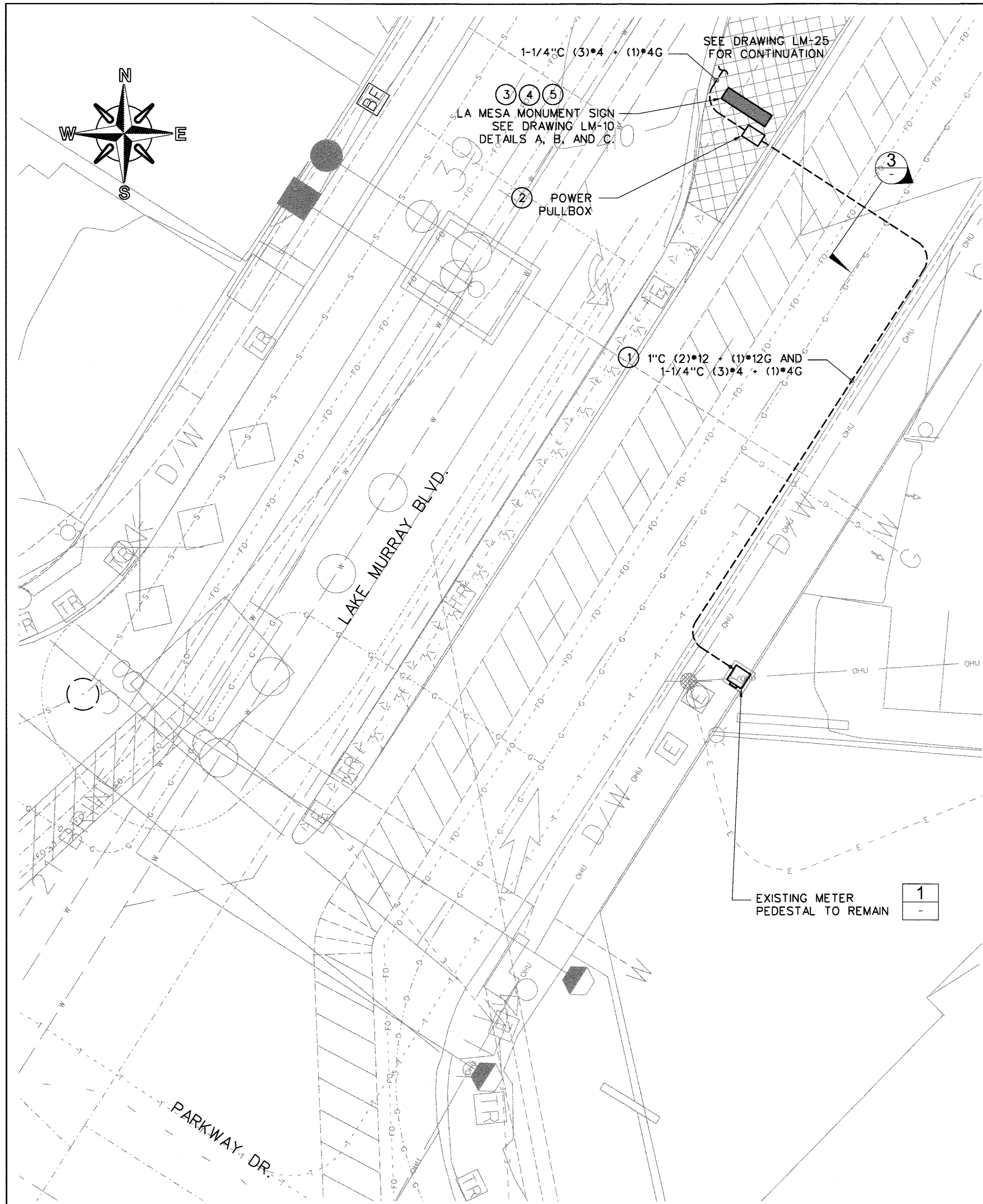
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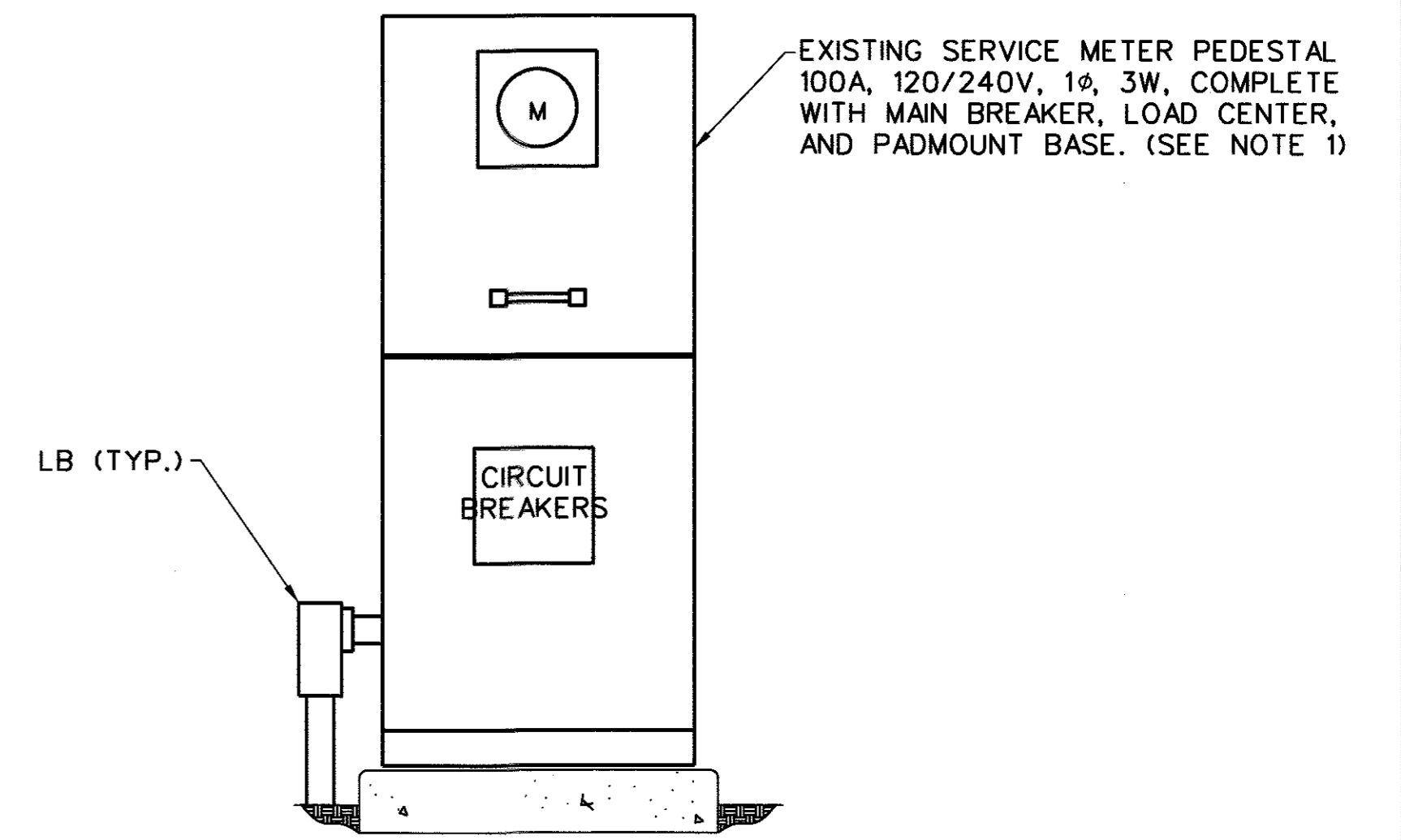
RECORD FROM: \_\_\_\_\_ ELEVATION: \_\_\_\_\_ DATUM: \_\_\_\_\_

CITY OF LA MESA APPROVED CHANGES

NO.	DESCRIPTION	APPROVED	DATE

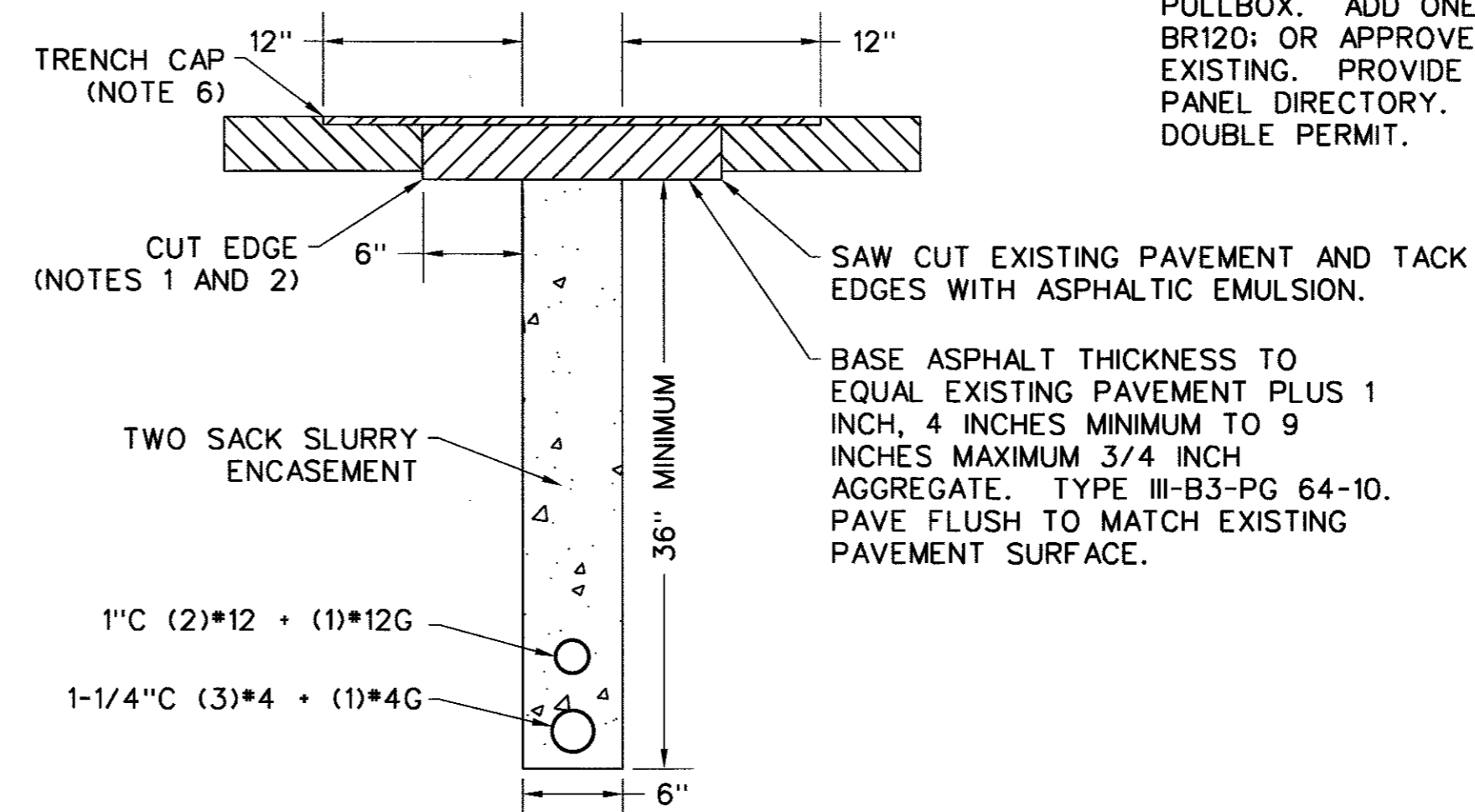


- NOTES TO THE ELECTRICAL CONTRACTOR:**
- 1 PROVIDE A 20 AMP CIRCUIT FOR THE MONUMENT SIGN LIGHTS AND FUTURE IRRIGATION CONTROLLER.
  - 2 FURNISH AND INSTALL CALTRANS STANDARD PLAN NO. 6(T) H/20 TRAFFIC RATED PULL BOX WITH 10" MINIMUM EXTENSION. SPLICES IN THE PULL BOX SHALL BE SUBMERSIBLE TYPE.
  - 3 MONUMENT SIGN CONTRACTOR TO BE SAN DIEGO ELECTRIC SIGN; OR APPROVED EQUAL. SAN DIEGO ELECTRIC SIGN IS AN APPROVED SUPPLIER BY THE CITY OF LA MESA. ALTERNATE SUPPLIERS WILL HAVE TO BE APPROVED BY THE CITY OF LA MESA.
  - 4 THE MONUMENT SIGN CONTRACTOR SHALL MAKE THE ELECTRICAL CONNECTION FROM THE PULL BOX TO THE SPOTLIGHT.
  - 5 LIGHT FIXTURE AND LIGHTING CONTROLS TO BE PER LMSD E-1.



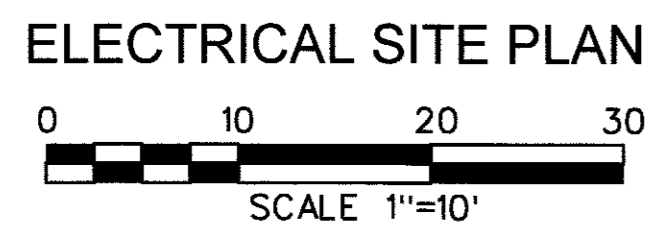
**METER PEDESTAL 1**  
NOT TO SCALE

- NOTES:**
1. PROVIDE A 20 AMP CIRCUIT FROM THE EXISTING LOAD CENTER TO THE POWER PULLBOX. ADD ONE 20A SINGLE POLE CIRCUIT BREAKER (EATON CATALOG NUMBER BR120; OR APPROVED EQUAL) TO SPACE #6 IN THE LOAD CENTER TO MATCH EXISTING. PROVIDE MOUNTING HARDWARE AND BUSS CONNECTIONS. UPDATE THE PANEL DIRECTORY. CONTRACTOR TO ADD THIS CONNECTION AS PART OF A DOUBLE PERMIT.



**"T" TRENCH 3**  
NOT TO SCALE

- NOTES:**
- 1 CUT TO BE STRAIGHT AND FULL DEPTH.
  - 2 TRENCH CAP SHALL BE PER CITY OF LA MESA STANDARD DRAWING G-7. REFERENCE SAN DIEGO REGIONAL STANDARD DRAWING G-33/34 FOR SLURRY REQUIREMENTS.
  - 3 CONDUIT SHALL BE RIGID SCHEDULE 40 PVC WITH TWO SACK SLURRY ENCASEMENT.
  - 4 AC REPAIR TO BE PER LMSD G-7. SIDEWALK REPAIRS TO BE FROM EXPANSION JOINT TO EXPANSION JOINT.
  - 5 SIDEWALK REPAIR SHALL BE JOINT TO JOINT PER LA MESA ENGINEER.
  - 6 TWO WEEKS AFTER BASE PAVING, GRIND SURFACE TO 1/10 FOOT DEPTH. AFTER GRINDING, TACK AND INSTALL 1/10 FOOT THICK TRENCH CAP. FLUSH 12 INCHES TO EITHER SIDE TO MATCH EXISTING. 3/8 INCH AGGREGATE, TYPE III-D-PG 64-10.



**Underground Service Alert**  
of Southern California  
Call: 811

TWO WORKING DAYS BEFORE YOU DIG

**GERRY GREEN INC.**  
Consulting Electrical Engineers  
2734 Lober Ave West, Ste M, Carlsbad, CA 92011 Tel: (619) 940-2338

**REGISTERED PROFESSIONAL ENGINEER**  
No. E15691  
Exp. 6/30/22  
ELECTRICAL  
STATE OF CALIFORNIA

**REFERENCE PLANS:**  
VARIOUS AS-BUILT PLANS  
3031/3031A, 2187, 0353;  
HELIX WATER DISTRICT  
PLANS: 9151, 7382, 240;  
CITY OF SAN DIEGO PLAN  
4097

**BENCHMARK**  
DESCRIPTION: NWBP SARANAC STREET AND 69TH STREET,  
ELEV. 460.779 MSL, BASED ON NGVD 29 FEET  
AS SHOWN IN THE CITY OF SAN DIEGO BENCH  
BOOK.  
RECORD FROM: CITY OF SAN DIEGO, MID-CITY PIPELINE PHASE II,  
WATKINS, 218-1752, WO. S-11026, 7/10/2013  
ELEVATION: 460.779 MSL DATUM: NGVD 29

**RECORD DRAWING**

BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
APPROVED: \_\_\_\_\_ DATE: \_\_\_\_\_

CITY OF LA MESA APPROVED CHANGES			
NO.	DESCRIPTION	APPROVED	DATE

**LM-24**

**MONTEZUMA PPL / MID-CITY PIPELINE PH2**  
CITY OF LA MESA  
MONUMENT SIGN METER PEDESTAL

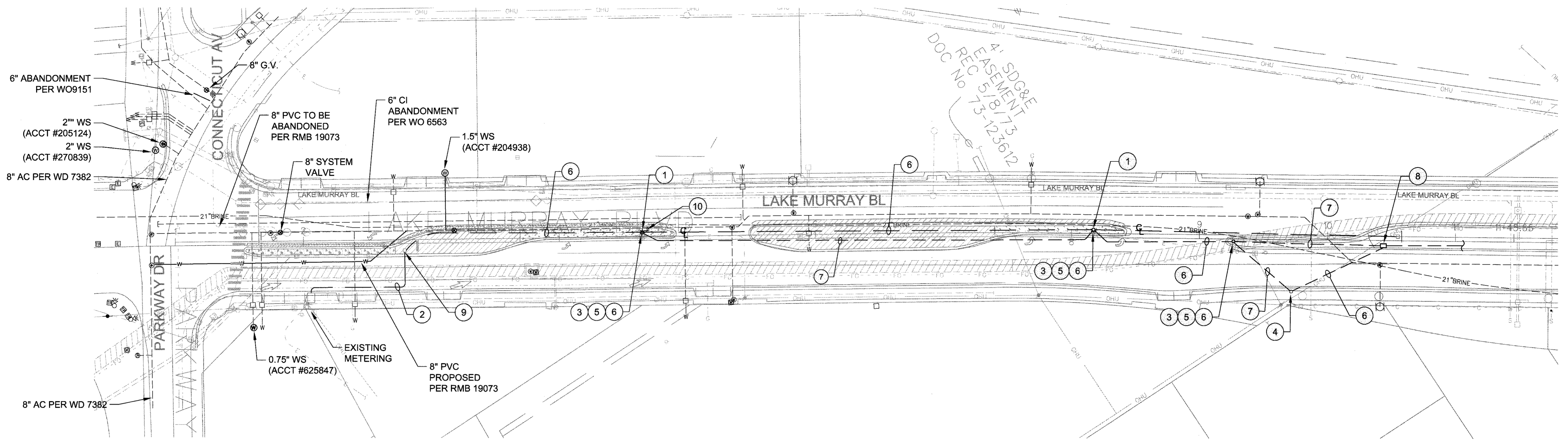
CITY OF SAN DIEGO, CALIFORNIA PUBLIC WORKS DEPARTMENT SHEET 101 OF 104 SHEETS	WATER WBS S-11026 SEWER WBS N/A
APPROVED: <i>[Signature]</i> FOR CITY ENGINEER BRIAN VITELLE PRINT DCE NAME	DATE: 07/28/2022 C73039 RCE #
SUBMITTED BY: MARYAM KARGAR PROJECT MANAGER	
CHECKED BY: JACOB RIVERA PROJECT ENGINEER	
DESCRIPTION: ORIGINAL	BY: GGI
APPROVED DATE: 07/28/2022	FILED
222-1755 CCS27 COORDINATE	
1862444, 6316407 CCS83 COORDINATE	
CONTRACTOR #INSPECTOR	DATE STARTED / DATE COMPLETED
	37333-101-D

**LAKE MURRAY CI SEWER REPLACEMENT**  
CITY OF LA MESA  
MONUMENT SIGN METER PEDESTAL

CITY OF LA MESA, CALIFORNIA ENGINEERING DEPARTMENT SHEET 24 OF 27 SHEETS	W.O. NO.
APPROVED: <i>[Signature]</i> CITY ENGINEER	8-25-2022 DATE
DIVISION HEAD	
GERRY GREEN DESIGN ENGINEER	
CONTROL CERTIFICATION	
SEE SHEETS LAMBERT COORDINATES	
UTILITIES: <i>[Signature]</i>	DEVELOPMENT: <i>[Signature]</i>
TRAFFIC: <i>[Signature]</i>	CAPITAL PROJ:
	9721.24

HWD - RMB 19073 (W.O. 4515)

ORIGINAL SCALE: 1"=10' BID NO. 19-03 LAKE MURRAY CI SEWER REPLACEMENT/STREET RESURFACING

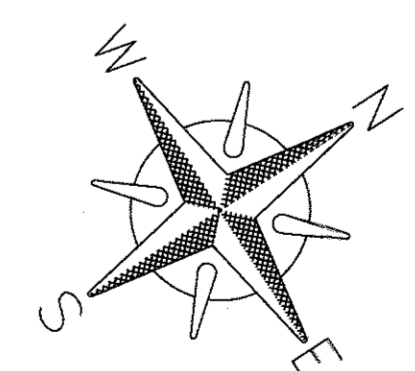


**1 ELECTRICAL SITE PLAN**  
1" = 40'-0"

ELECTRICAL LEGEND		ABBREVIATIONS	
GENERAL		ABBREVIATIONS	
	DETAIL NUMBER DESIGNATION	A	AMPERE
	SHEET DETAIL APPEARS ILLUSTRATED ON)	AC	ALTERNATING CURRENT
	NOTE REFERENCE	AF	AMP FRAME
<b>RACEWAYS</b>		AFF	ABOVE FINISHED FLOOR
	CONDUIT TERMINATED AND CAPPED	AIC	AMPERE INTERRUPTING CAPACITY
	WIRING OR CONDUIT UNDERGROUND.	AL	ALUMINUM
	UNDERGROUND CONDUIT.	AS	AMP SWITCH
		C	CONDUCTOR, CONDUIT
		CKT	CIRCUIT
		CU	COPPER
		DET.	DETAIL
		E	EXISTING
		ELEC	ELECTRICAL
		GALV	GALVANIZED
		GFI	GROUND FAULT INTERRUPTER
		GND, G	GROUND
		KVA	KILOVOLT-AMPERE
		KW	KILOWATT
		LTG	LIGHTING
		MTD	MOUNTED
		MCA	MINIMUM CIRCUIT AMPS
		NTS	NOT TO SCALE
		NFPA	NATIONAL FIRE PROTECTION
		NEC	NATIONAL ELECTRIC CODE
		PROVIDE	FURNISH, INSTALL, CONNECT AND TEST
		TYP	TYPICAL
		UL	UNDERWRITER'S LABORATORY
		UON	UNLESS OTHERWISE NOTED
		V	VOLTAGE
		W	WIRE
		WP	WEATHERPROOF
		W/	WITH
		XFMR	TRANSFORMER

- KEY NOTES:**
- DISCONNECT AND REMOVE EXISTING DUAL MAST ARM STREET LIGHT PULLBOX, ASSOCIATED POLE AND CONCRETE BASE.
  - PROPOSED CONDUIT PER LM-24.
  - PROVIDE DUAL MAST ARM STREET LIGHT COMPLETE WITH CONCRETE BASE #3 PULLBOX AND POLE. LOCATE CONCRETE BASE AT CENTER OF THE MEDIAN. COORDINATE EXACT LOCATION PRIOR TO ROUGH-IN, WITH CITY OF LA MESA.
  - APPROXIMATE LOCATION OF EXISTING UTILITY POWER POLE WITH 30A/2P ENCLOSED CIRCUIT BREAKER SERVING THE EXISTING STREET LIGHTS.
  - REFER TO SHEET LM-26 FOR MANUFACTURER AND MODEL OF DUAL MAST ARM STREET LIGHT FIXTURE, POLE AND CONCRETE BASE DETAIL.
  - PROVIDE 1-1/4" C, 3#4, 1/4 GND. SEE TRENCH DETAIL IN DRAWING LM-26.
  - PULL WIRES AND ABANDON CONDUIT.
  - INTERCEPT EXISTING CONDUIT AND CONDUCTORS AND PROVIDE #3 PULLBOX. SPLICE CABLES.
  - NEW PULLBOX PER LM-24.
  - PROPOSED 5.8' SEPARATION FROM WATER.

- SHEET NOTES:**
- ALL EXTERIOR ELECTRICAL DEVICES SHALL BE UL LISTED IN WET LOCATIONS (NEMA 3R ENCLOSURES).



LM-25

**MONTEZUMA PPL / MID-CITY PIPELINE PH 2 STREET LIGHT RELOCATION FOR LAKE MURRAY BL**

CITY OF SAN DIEGO, CALIFORNIA  
PUBLIC WORKS DEPARTMENT  
SHEET 102 OF 104 SHEETS

APPROVED: *[Signature]* DATE: 07/28/2022  
FOR CITY ENGINEER: BRIAN VITELLE  
PRINT DCE NAME: RCE#

WATER WBS: S-11026  
SEWER WBS:  
SUBMITTED BY: MARYAM KARGAR  
PROJECT MANAGER  
CHECKED BY: JOEY FLORES  
PROJECT ENGINEER

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	NF	<i>[Signature]</i>	07/28/2022	

222-1755  
CCS27 COORDINATE  
1862444-6316407  
CCS83 COORDINATE

CONTRACTOR: \_\_\_\_\_ DATE STARTED: \_\_\_\_\_  
INSPECTOR: \_\_\_\_\_ DATE COMPLETED: \_\_\_\_\_ 37333-102-D

ENCROACHMENT PERMIT: \_\_\_\_\_ ISSUED: \_\_\_\_\_

**MONTEZUMA PPL/MID-CITY PIPELINE PH2 STREET LIGHT RELOCATION FOR LAKE MURRAY BL**

CITY OF LA MESA, CALIFORNIA  
DEPARTMENT OF PUBLIC WORKS/ENGINEERING DIVISION  
SHEET 25 OF 27 SHEETS

*[Signature]* R.C.E. # 96489 DATE: 8-25-2021  
CITY ENGINEER  
C.I.P. NO. \_\_\_\_\_  
DIVISION HEAD  
MAINTENANCE ZONE

UTILITIES: *[Signature]* DEVELOPMENT: *[Signature]*  
TRAFFIC: *[Signature]* CAPITAL PROJ: \_\_\_\_\_

**EPI** THE ENGINEERING PARTNERS, INC.  
CONSULTING ENGINEERS  
5565 WAILES STREET, SUITE 100  
SAN DIEGO, CA 92121  
(619) 624-1700 FAX (619) 524-1768  
Proj No. 25-12E

REGISTERED PROFESSIONAL ENGINEER  
MATTHEW S. 1990  
No. 13441  
Exp. 9-22  
STATE OF CALIFORNIA

**UNDERGROUND SERVICE ALERT**  
SECTION 4216 & 4217 OF THE GOVERNMENT CODE REQUIRES A DIG ALERT IDENTIFICATION NUMBER BE ISSUED BEFORE A "PERMIT TO EXCAVATE" WILL BE VALID. FOR YOUR DIG ALERT I.D. NUMBER CALL UNDERGROUND SERVICE ALERT TOLL FREE @ 1-800-422-4133 TWO (2) WORKING DAYS BEFORE YOU DIG.  
WEB ADDRESS: WWW.DIGALERT.ORG

CALL BEFORE YOU DIG

RECORD DRAWING

BY: \_\_\_\_\_ DATE \_\_\_\_\_  
APPROVED: \_\_\_\_\_ DATE \_\_\_\_\_

HELIX WATER DISTRICT  
S-XX-XXX

REVIEWED BY: \_\_\_\_\_ DATE \_\_\_\_\_

BENCHMARK

DESCRIPTION: SEE EACH SHEET

LOCATION: \_\_\_\_\_

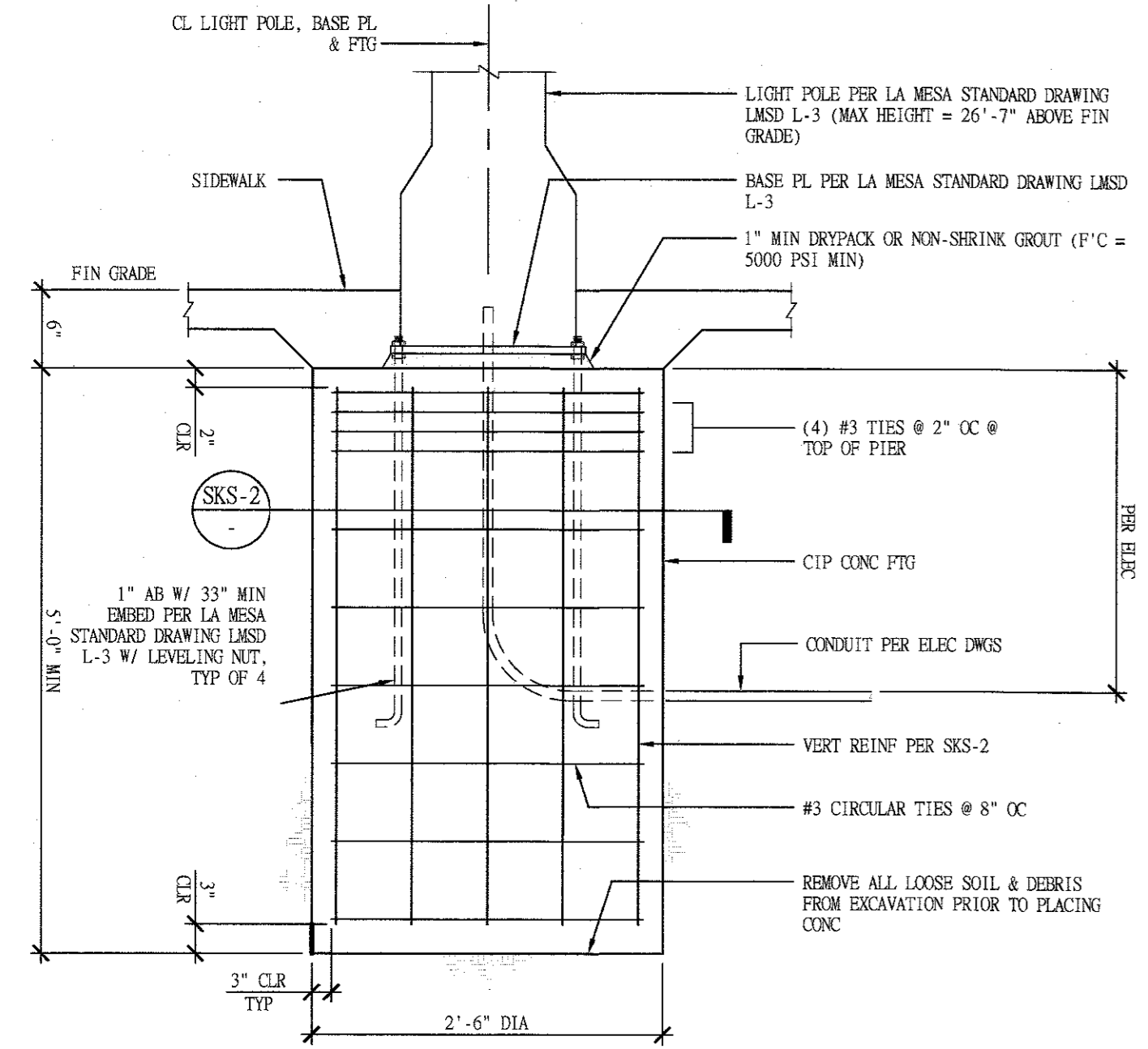
RECORD FROM: \_\_\_\_\_  
ELEVATION: \_\_\_\_\_ DATUM: \_\_\_\_\_

CITY OF LA MESA APPROVED CHANGES

NO.	DESCRIPTION	APPROVED	DATE

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	NF			

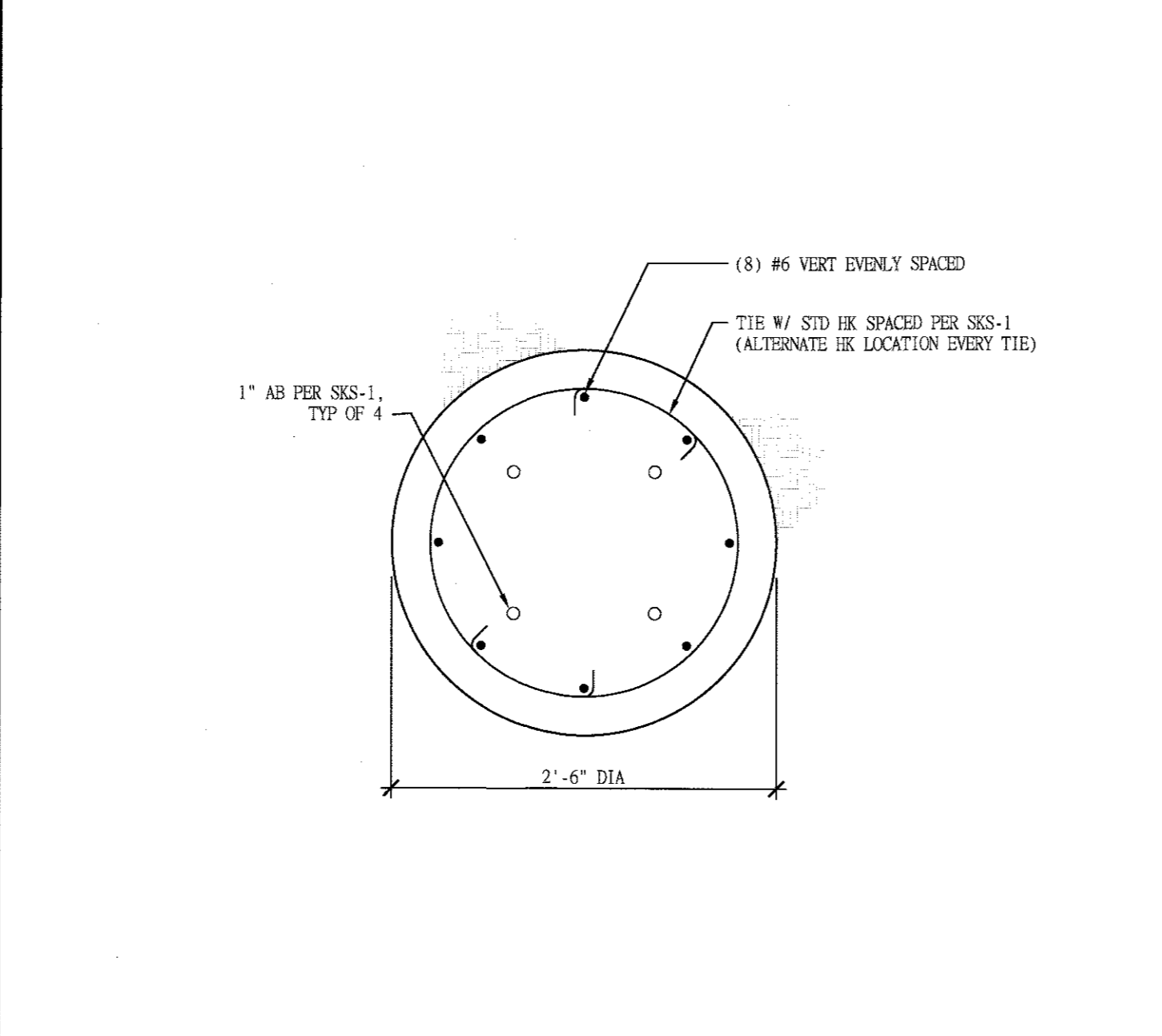
ORIGINAL SCALE: CITY OF LA MESA LAKE MURRAY CI SEWER REPLACEMENT / STREET RESURFACING



**MID-CITY PIPELINE PHASE 2 LIGHT POSTS**  
LAKE MURRAY BLVD, LA MESA, CALIFORNIA

**LIGHT POLE FOUNDATION DETAIL**

DATE: 11/11/2019 SCALE: 3/4" = 1'-0" REFERENCE: N/A  
 DRAWN: Y. LIU PROJ NO: EPI.003  
 CHECKED: M. VAN BIBBER REVISION: SKETCH: SKS-1  
 FILE: E-2



**MID-CITY PIPELINE PHASE 2 LIGHT POSTS**  
LAKE MURRAY BLVD, LA MESA, CALIFORNIA

**LIGHT POLE FOUNDATION PLAN SECTION**

DATE: 11/11/2019 SCALE: 1" = 1'-0" REFERENCE: N/A  
 DRAWN: Y. LIU PROJ NO: EPI.003  
 CHECKED: M. VAN BIBBER REVISION: SKETCH: SKS-2  
 FILE: E-2

**GENERAL**

- THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS PRIOR TO STARTING WORK. THE OWNER SHALL BE NOTIFIED OF ANY DISCREPANCIES FOUND.
- IN NO CASE SHALL WORKING DIMENSIONS BE SCALED FROM PLANS, SECTIONS OR DETAILS ON THE DRAWINGS.
- BEFORE COMMENCING EXCAVATION, THE CONTRACTOR SHALL VERIFY THE LOCATION OF EXISTING UNDERGROUND UTILITIES, VALVE PITS OR VAULTS AND SHALL NOT PERFORM WORK THAT WILL DAMAGE THEM OR INTERFERE WITH THEIR SERVICE.
- STRUCTURAL DIMENSIONS CONTROLLED BY OR RELATED TO ARCHITECTURAL APPURTENANCES OR MECHANICAL OR ELECTRICAL EQUIPMENT SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION.
- THE CONTRACTOR SHALL PROVIDE THE FINISHED STRUCTURE. THEY DO NOT INDICATE METHODS OF CONSTRUCTION. THE CONTRACTOR SHALL PROVIDE ALL MEASURES NECESSARY TO PROTECT EXISTING AND NEW STRUCTURES DURING CONSTRUCTION. SUCH MEASURES SHALL INCLUDE, BUT NOT BE LIMITED TO, BRACING, SHORING, ET CETERA FOR ALL CONSTRUCTION PHASE LOADS.

**REINFORCED CONCRETE**

- CONCRETE SHALL HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH AT 28 DAYS OF 4,000 PSI, UNLESS OTHERWISE NOTED. CEMENT SHALL BE TYPE II/V, WATER CEMENT RATIO SHALL BE 0.50.
- ALL REINFORCING STEEL, ANCHOR BOLTS, DOWELS AND INSERTS SHALL BE WELL SECURED IN POSITION PRIOR TO PLACING CONCRETE.

**REINFORCING STEEL**

- STEEL BAR REINFORCING SHALL CONFORM TO ASTM A615, GRADE 60.
- BAR LAP SPLICE LENGTHS FOR BARS INSTALLED IN CONCRETE SHALL BE 48 BAR DIAMETERS UNLESS OTHERWISE NOTED ON THE DRAWINGS.
- MINIMUM CONCRETE COVER FOR REINFORCING STEEL SHALL BE AS FOLLOWS UNLESS OTHERWISE NOTED ON THE DRAWINGS:

CONCRETE CAST AGAINST EARTH	3"
ALL OTHER	2"

- ALL DETAILING, FABRICATION AND ERECTION OF REINFORCING STEEL SHALL CONFORM TO THE LATEST EDITION OF ACI 315, DETAILS AND DETAILING OF CONCRETE REINFORCEMENT.

**FOUNDATION**

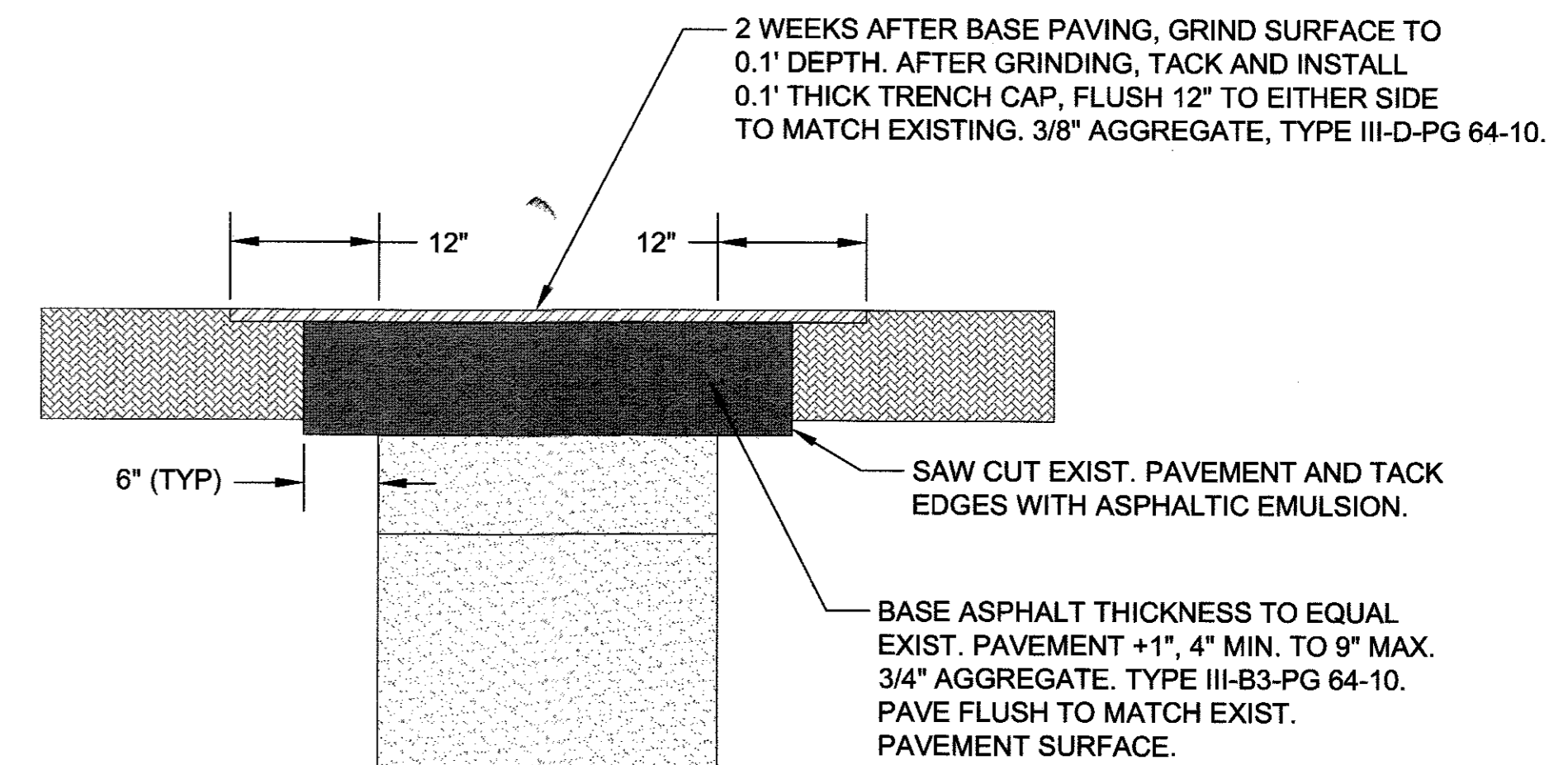
- GEOTECHNICAL INVESTIGATION REPORT PREPARED FOR CITY OF SAN DIEGO'S DESIGN OF MID-CITY PIPELINE - PHASE 2 PROJECT, SAN DIEGO AND LA MESA, CALIFORNIA, BY SOUTHLAND GEOTECHNICAL CONSULTANTS, DATED JUNE 16, 2015.

a. ALLOWABLE SOIL BEARING PRESSURE	2,000 PSF
b. ALLOWABLE SOIL PASSIVE RESISTANCE	350 PSF/FT

**MID-CITY PIPELINE PHASE 2 LIGHT POSTS**  
LAKE MURRAY BLVD, LA MESA, CALIFORNIA

**STRUCTURAL NOTES**

DATE: 11/11/2019 SCALE: NONE REFERENCE: N/A  
 DRAWN: Y. LIU PROJ NO: EPI.003  
 CHECKED: M. VAN BIBBER REVISION: SKETCH: SKS-3  
 FILE: E-2



**LMSD G-7**  
NOT TO SCALE

**DESIGN CRITERIA**

- DESIGN BUILDING CODE: 2016 CALIFORNIA BUILDING CODE
- WIND DESIGN CRITERIA:
 

BASIC WIND SPEED	110 MPH
WIND EXPOSURE	C
- OCCUPANCY CATEGORY: II
- SEISMIC DESIGN CRITERIA:
 

SHORT PERIOD MCE SPECTRAL RESPONSE ACCELERATION, S <sub>s</sub>	0.895
1 SECOND PERIOD MCE SPECTRAL RESPONSE ACCELERATION, S <sub>1</sub>	0.344
SITE CLASS	D
SEISMIC DESIGN CATEGORY	D
DESIGN SHORT PERIOD MCE SPECTRAL RESPONSE ACCELERATION, SDS	0.681
DESIGN 1 SECOND PERIOD MCE SPECTRAL RESPONSE ACCELERATION, SDI	0.393
SEISMIC IMPORTANCE FACTOR, I	1.00

**STATEMENT OF SPECIAL INSPECTIONS**

CBC REF	DESCRIPTION OF TYPE OF INSPECTION REQUIRED, LOCATION, REMARKS, ET CETERA	DESIGN STRENGTH
1705.3	<p><b>CONCRETE CONSTRUCTION.</b></p> <p>CONTINUOUS INSPECTIONS: INSPECT BOLTS TO BE INSTALLED IN CONCRETE PRIOR TO AND DURING PLACEMENT OF CONCRETE; AT THE TIME FRESH CONCRETE IS SAMPLED TO FABRICATE SPECIMENS FOR STRENGTH TESTS, PERFORM SLUMP AND AIR CONTENT TESTS, AND DETERMINE THE TEMPERATURE OF THE CONCRETE; INSPECTION OF CONCRETE FOR PROPER APPLICATION TECHNIQUES.</p> <p>PERIODIC INSPECTIONS: INSPECTION OF REINFORCING STEEL AND PLACEMENT; VERIFICATION OF USE OF REQUIRED DESIGN MIX; INSPECTION FOR MAINTENANCE OF SPECIFIED CURING TEMPERATURE AND TECHNIQUES; INSPECT FORMWORK FOR SHAPE, LOCATION, AND DIMENSIONS OF THE CONCRETE MEMBER BEING FORMED.</p>	f'c = 4000 PSI

**MID-CITY PIPELINE PHASE 2 LIGHT POSTS**  
LAKE MURRAY BLVD, LA MESA, CALIFORNIA

**STRUCTURAL NOTES & STATEMENT OF SPECIAL INSPECTIONS**

DATE: 11/11/2019 SCALE: NONE REFERENCE: N/A  
 DRAWN: Y. LIU PROJ NO: EPI.003  
 CHECKED: M. VAN BIBBER REVISION: SKETCH: SKS-4  
 FILE: E-2

**SPECIAL INSPECTION AND TESTING**

- NOTICE TO THE APPLICANT / OWNER / OWNER'S AGENT / ARCHITECT / ENGINEER OF RECORD: BY USING THESE PERMITTED CONSTRUCTION DRAWINGS FOR CONSTRUCTION / INSTALLATION OF THE WORK SPECIFIED HEREIN, YOU AGREE TO COMPLY WITH THE REQUIREMENTS OF THE CITY OF SAN DIEGO FOR SPECIAL INSPECTIONS, STRUCTURAL OBSERVATIONS, CONSTRUCTION MATERIAL TESTING, AND OFF-SITE FABRICATION OF BUILDING COMPONENTS CONTAINED IN THE STATEMENT OF SPECIAL INSPECTIONS AND AS REQUIRED BY THE CALIFORNIA CONSTRUCTION CODES.
- NOTICE TO THE CONTRACTOR / BUILDER / INSTALLER / SUB-CONTRACTOR / OWNER-BUILDER: BY USING THESE PERMITTED CONSTRUCTION DRAWINGS FOR CONSTRUCTION / INSTALLATION OF THE WORK SPECIFIED HEREIN, YOU ACKNOWLEDGE AND ARE AWARE OF THE REQUIREMENTS CONTAINED IN THE STATEMENT OF SPECIAL INSPECTIONS. YOU AGREE TO COMPLY WITH THE REQUIREMENTS OF THE CITY OF SAN DIEGO FOR SPECIAL INSPECTIONS, STRUCTURAL OBSERVATIONS, CONSTRUCTION MATERIAL TESTING, AND OFF-SITE FABRICATION OF BUILDING COMPONENTS CONTAINED IN THE STATEMENT OF SPECIAL INSPECTIONS AND AS REQUIRED BY THE CALIFORNIA CONSTRUCTION CODES.
- SPECIAL INSPECTION IS REQUIRED PER CHAPTER 17 OF THE 2016 CALIFORNIA BUILDING CODE AND AS SUMMARIZED IN THE STATEMENT. THE OWNER SHALL EMPLOY A SPECIAL INSPECTION AGENCY APPROVED BY THE BUILDING OFFICIAL PRIOR TO THE START OF WORK. COPIES OF ALL INSPECTION REPORTS SHALL BE SUBMITTED TO THE OWNER'S REPRESENTATIVE, ENGINEER OF RECORD AND CITY BUILDING INSPECTOR IN A TIMELY MANNER.
- THE SPECIAL INSPECTIONS IDENTIFIED ON THE PLANS ARE IN ADDITION TO, AND NOT A SUBSTITUTE FOR, THOSE INSPECTIONS REQUIRED TO BE PERFORMED BY A CITY BUILDING INSPECTOR.
- CONTINUOUS INSPECTION SHALL BE PROVIDED DURING THE PERFORMANCE OF WORK REQUIRING SPECIAL INSPECTION, UNLESS OTHERWISE NOTED. WHEN WORK IN MORE THAN ONE CATEGORY OF WORK REQUIRING SPECIAL INSPECTION IS TO BE PERFORMED SIMULTANEOUSLY OR THE GEOGRAPHIC LOCATION OF THE WORK IS SUCH THAT IT CANNOT BE CONTINUOUSLY OBSERVED, IT SHALL BE THE RESPONSIBILITY OF THE AGENT TO EMPLOY A SUFFICIENT NUMBER OF SPECIAL INSPECTORS TO ASSURE THAT ALL WORK IS CONTINUOUSLY INSPECTED IN ACCORDANCE WITH THOSE PROVISIONS.
- THE SPECIAL INSPECTORS SHALL BE CERTIFIED BY THE CITY OF SAN DIEGO, DEVELOPMENT SERVICES DEPARTMENT, TO PERFORM THE CATEGORY OF SPECIAL INSPECTION SPECIFIED.
- THE CONSTRUCTION MATERIALS TESTING LABORATORY SHALL BE APPROVED BY THE CITY OF SAN DIEGO, DEVELOPMENT SERVICES DEPARTMENT, FOR TESTING OF MATERIALS, SYSTEMS, COMPONENTS, AND EQUIPMENT.
- WHERE MATERIALS OR ASSEMBLIES ARE REQUIRED BY THE CALIFORNIA BUILDING CODE TO BE LABELED, SUCH MATERIALS AND ASSEMBLIES SHALL BE LABELED BY AN AGENCY APPROVED BY THE CITY OF SAN DIEGO IN ACCORDANCE WITH SECTION 1703. PRODUCTS AND MATERIALS TO BE LABELED SHALL BE TESTED, INSPECTED AND LABELED IN ACCORDANCE WITH THE PROCEDURES SET FORTH IN SECTIONS 1703.5.1 THROUGH 1703.5.3.
- THE CONTRACTOR SHALL SUBMIT A WRITTEN STATEMENT OF RESPONSIBILITY FOR CONSTRUCTION OF ITEMS LISTED IN THE STATEMENT OF SPECIAL INSPECTIONS PRIOR TO COMMENCEMENT OF WORK. THE CONTRACTOR'S STATEMENT OF RESPONSIBILITY SHALL CONTAIN: (1) ACKNOWLEDGEMENT OF AWARENESS OF THE SPECIAL REQUIREMENTS CONTAINED IN THE STATEMENT OF SPECIAL INSPECTIONS; (2) ACKNOWLEDGEMENT THAT CONTROL WILL BE EXERCISED TO OBTAIN CONFORMANCE WITH THE CONSTRUCTION DOCUMENTS APPROVED BY THE BUILDING OFFICIAL; (3) PROCEDURES FOR EXERCISING CONTROL WITHIN THE CONTRACTOR'S ORGANIZATION; (4) THE METHOD AND FREQUENCY OF REPORTING AND DISTRIBUTION OF THE SPECIAL INSPECTION REPORTS; AND (5) IDENTIFICATION AND QUALIFICATIONS OF THE PERSON OR PERSONS EXERCISING SUCH CONTROL AND THEIR POSITION IN THE ORGANIZATION.
- A PROPERTY OWNER'S FINAL REPORT FORM FOR WORK REQUIRED TO HAVE SPECIAL INSPECTIONS, TESTING AND STRUCTURAL OBSERVATIONS MUST BE COMPLETED BY THE PROPERTY OWNER, PROPERTY OWNER'S AGENT OF RECORD, ARCHITECT OF RECORD OR ENGINEER OF RECORD AND SUBMITTED TO THE INSPECTION SERVICES DIVISION.

**MID-CITY PIPELINE PHASE 2 LIGHT POSTS**  
LAKE MURRAY BLVD, LA MESA, CALIFORNIA

**STRUCTURAL NOTES**

DATE: 11/11/2019 SCALE: NONE REFERENCE: N/A  
 DRAWN: Y. LIU PROJ NO: EPI.003  
 CHECKED: M. VAN BIBBER REVISION: SKETCH: SKS-5  
 FILE: E-2

**ALLADIN ARM**

TYPE	RISE
1APS-SA	35"

**BASEPLATE STYLE - ORDERING INFORMATION**

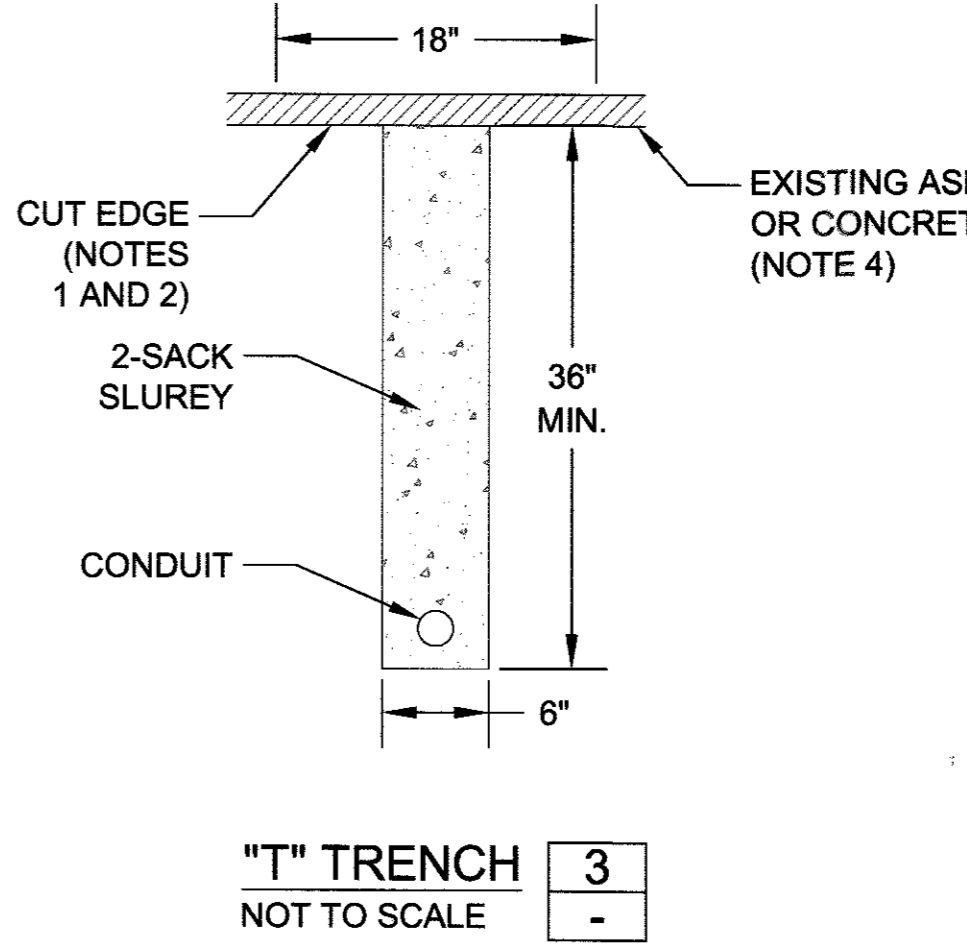
CATALOG NUMBER	POLE HEIGHT "A"	BASE O.D.	ANCHOR BOLT	BOLT CIRCLE (SC)	BASE PLATE (FT.LBS.)	GL. MOMENT (FT.LBS.)	WEIGHT (LBS.)	EPAMPH (SQ.FT.)	MAXIMUM 80 90 100
681.26	28' 7"	18"	1"x36"x4"	21"	20"	21,200	1,475	9	5.5 2.5

**NOTES:**

- SPECIFICATIONS: (AMERON) POLE: 681-26; ARM: 1AS-SA
- COLOR & ANTI-GRAFFITI SPECIFICATIONS: AMERSHIELD 37-1 BLACK/WHITE
- PULLBOX SHALL BE INSTALLED WITHIN 5' OF THE POLE. A 1" SERVICE LOOP SHALL REMAIN INSIDE THE BOX.
- ALL ELECTRICAL SPLICES SHALL BE DONE IN THE PULLBOX LOCATED AT THE POLE BASE, WITH WATER TIGHT NUTS & HEAT SHRINK.
- LUMINAIR: A. LEOTEK-GCM2-40H-MV-NW-2R-GY-575-PCRT-WL-FFA-OR B. LEOTEK-GCM2-40H-MV-NW-SR-GY-950-9CRT-WL-FFA (FOR USE ON FLETCHER PKMY AND TRAFFIC SIGNAL SAFETY LIGHT ONLY).
- PHOTOCELL: REFER TO PLANS AND SPECIFICATIONS.
- A. GENERAL ELECTRIC ADAPTIVE CONTROL NODE, MODEL ELWINDABJ00XAD 120-277 ANSI NODE. B. RIPLEY R08645.

**LEGEND ON PLANS**

Revision: Original, Rev 1, Rev 2, Rev 3, Rev 4. Approved: M. Van Bibber, Date: 12/19/19.



- NOTES:**
- CUT TO BE STRAIGHT AND FULL DEPTH.
  - TRENCH CAP SHALL BE PER LMSD G-7. SLURRY FILL SHALL BE PER G-33/34.
  - CONDUIT SHALL BE RIGID SCHEDULE 40 PVC FOR 2-SACK SLURRY ENCASEMENT.
  - AC REPAIR TO BE PER LMSD G-7.
  - SIDEWALK REPAIR TO BE JOINT TO JOINT PER LA MESA ENGINEER.

**LM-26**

**MONTEZUMA PPL / MID-CITY PIPELINE PH 2**  
**STREET LIGHT RELOCATION**  
**FOR LAKE MURRAY BL**

CITY OF SAN DIEGO, CALIFORNIA  
PUBLIC WORKS DEPARTMENT  
SHEET 103 OF 104 SHEETS

APPROVED: *Brian Vitelle* DATE: 07/28/2022  
FOR CITY ENGINEER: BRIAN VITELLE  
PRINT DCE NAME: RCE# C73039

WATER WBS: S-11026  
SEWER WBS:  
SUBS:

APPROVED BY: MARYAM KARGAR  
PROJECT MANAGER  
CHECKED BY: JOEY FLORES  
PROJECT ENGINEER

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	NF	<i>B. Vitelle</i>	07/28/2022	

222-1755  
CCS27 COORDINATE  
1862444-6316407  
CCS83 COORDINATE

CONTRACTOR: DATE STARTED: 37333-103-D  
INSPECTOR: DATE COMPLETED:

ENCROACHMENT PERMIT: - ISSUED: -

**CITY OF LA MESA**  
JEWEL OF THE HILLS

**MONTEZUMA PPL / MID-CITY PIPELINE PH 2**  
**STREET LIGHT RELOCATION**  
**FOR LAKE MURRAY BL**

CITY OF LA MESA, CALIFORNIA  
DEPARTMENT OF PUBLIC WORKS/ENGINEERING DIVISION  
SHEET 26 OF 27 SHEETS

APPROVED BY: *M. Van Bibber* DATE: 8-25-2022  
R.C.E. # 46469

CITY ENGINEER	BY	APPROVED	DATE	FILMED
ORIGINAL	NF			

UTILITIES: *MK* DEVELOPMENT: *R. Van Bibber*  
TRAFFIC: *MK* CAPITAL PROJ: 9271.26

**EPI THE ENGINEERING PARTNERS, INC.**  
CONSULTING ENGINEERS  
1550 WAILES STREET, SUITE 100  
SAN DIEGO, CA 92121  
(619) 524-1791 FAX: (619) 524-1765  
Proj No. 25-12E

**REGISTERED PROFESSIONAL ENGINEER**  
MATTHEW S. COUG  
No. 13441  
Exp. 9-22  
STATE OF CALIFORNIA

**UNDERGROUND SERVICE ALERT**

SECTION 4216 & 4217 OF THE GOVERNMENT CODE REQUIRES A DIG ALERT IDENTIFICATION NUMBER BE ISSUED BEFORE A "PERMIT TO EXCAVATE" WILL BE VALID. FOR YOUR DIG ALERT I.D. NUMBER CALL UNDERGROUND SERVICE ALERT TOLL FREE @ 1-800-422-4133 TWO (2) WORKING DAYS BEFORE YOU DIG.

WEB ADDRESS: WWW.DIGALERT.ORG

**RECORD DRAWING**

BY: DATE  
APPROVED: DATE

**HELIUM WATER DISTRICT**  
S-XX-XXX

REVIEWED BY: DATE

**BENCHMARK**

DESCRIPTION: SEE EACH SHEET  
LOCATION:  
RECORD FROM:  
ELEVATION: DATUM:

**CITY OF LA MESA APPROVED CHANGES**

NO.	DESCRIPTION	APPROVED	DATE

**CITY ENGINEER** R.C.E. # 46469 DATE: 8-25-2022  
C.I.P. NO.:

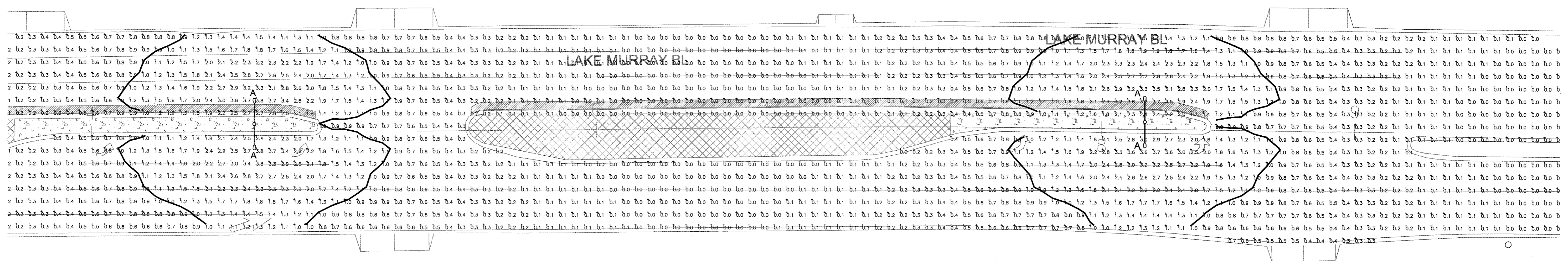
**DIVISION HEAD**

**MAINTENANCE ZONE**

9271.26

ORIGINAL SCALE: CITY OF LA MESA LAKE MURRAY CI SEWER REPLACEMENT / STREET RESURFACING

- SHEET NOTE:**
- AREAS WITHIN BLACK ISOLINES HAVE PHOTOMETRIC LEVELS HIGHER THAN 1 FOOTCANDLE.
  - PHOTOMETRIC CALCULATION IS BASED ON LIGHT LOSS FACTOR (LLF) OF .9.



**1 ENLARGED PHOTOMETRIC PLAN**  
1" = 20'-0"

LM-27

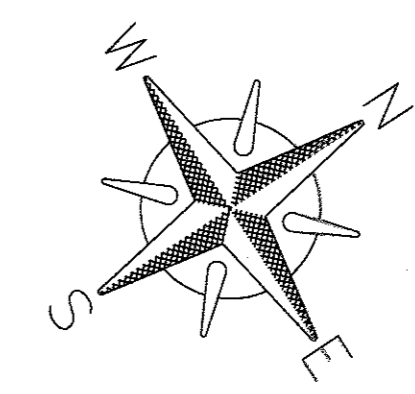
**MONTEZUMA PPL / MID-CITY PIPELINE PH 2  
STREET LIGHT RELOCATION  
FOR  
LAKE MURRAY BL**

CITY OF SAN DIEGO, CALIFORNIA  
PUBLIC WORKS DEPARTMENT  
SHEET 104 OF 104 SHEETS

APPROVED: <i>Brian Vitelle</i> FOR CITY ENGINEER BRIAN VITELLE PRINT DCE NAME	DATE 07/28/2022 C73039 RCE#	DATE FILMED 07/28/2022	WATER WBS S-11026 SEWER WBS
SUBMITTED BY MARYAM KARGAR PROJECT MANAGER			222-1755 CCS27 COORDINATE
CHECKED BY JOEY FLORES PROJECT ENGINEER			1862444-6316407 CCS83 COORDINATE
CONTRACTOR _____ DATE STARTED _____ INSPECTOR _____ DATE COMPLETED _____			37333-104-D

TYPE	SYMBOL	WATT	VOLT	LAMP #	LAMP TYPE	DESCRIPTION	BALLAST #	BALLAST TYPE	MANUFACTURER AND CATALOG NUMBER	MOUNTING
A		122	277	1	14,000 LUMENS 4000K LED	LED ROADWAY LIGHT FIXTURE. BUG RATING B2-UC-G3	1	LED	GENERAL ELECTRIC - EVOLVE LED ERLH_14C340	ROADWAY POLE

MAXIMUM	MINIMUM	AVERAGE	AVG / MIN	MAX / MIN
3.8	0.0	0.52	N/A	N/A



CITY OF LA MESA  
JEWEL OF THE HILLS

**MONTEZUMA PPL/MID-CITY PIPELINE PH2  
STREET LIGHT RELOCATION  
FOR  
LAKE MURRAY BL**

CITY OF LA MESA, CALIFORNIA  
DEPARTMENT OF PUBLIC WORKS/ENGINEERING DIVISION  
SHEET 27 OF 27 SHEETS

CITY ENGINEER <i>Maryam Kargar</i>	R.C.E. # 46469	DATE 8-15-2022	C.I.P. NO.
DESCRIPTION	BY	APPROVED	DATE
ORIGINAL	NF		
UTILITIES: <i>U.U.</i>	DEVELOPMENT: <i>SM</i>	927127	
TRAFFIC: <i>Amk</i>	CAPITAL PROJ.		

**EPI THE ENGINEERING PARTNERS, INC.**  
CONSULTING ENGINEERS  
5563 WAUKES STREET, SUITE 100  
SAN DIEGO, CA 92121  
(619) 524-1791 FAX (619) 524-1796  
Proj No. 25-12E

REGISTERED PROFESSIONAL ENGINEER  
No. 13441  
Exp. 8-22  
STATE OF CALIFORNIA

**UNDERGROUND SERVICE ALERT**  
SECTION 4216 & 4217 OF THE GOVERNMENT CODE REQUIRES A DIG ALERT IDENTIFICATION NUMBER BE ISSUED BEFORE A "PERMIT TO EXCAVATE" WILL BE VALID. FOR YOUR DIG ALERT I.D. NUMBER CALL UNDERGROUND SERVICE ALERT TOLL FREE @ 1-800-422-4133 TWO (2) WORKING DAYS BEFORE YOU DIG.  
WEB ADDRESS: WWW.DIGALERT.ORG

CALL BEFORE YOU DIG

**RECORD DRAWING**  
BY: \_\_\_\_\_ DATE \_\_\_\_\_  
APPROVED: \_\_\_\_\_ DATE \_\_\_\_\_  
HELIUM WATER DISTRICT  
S-XX-XXX  
REVIEWED BY: \_\_\_\_\_ DATE \_\_\_\_\_

**BENCHMARK**  
DESCRIPTION: SEE EACH SHEET  
LOCATION: \_\_\_\_\_  
RECORD FROM: \_\_\_\_\_  
ELEVATION: \_\_\_\_\_ DATUM: \_\_\_\_\_

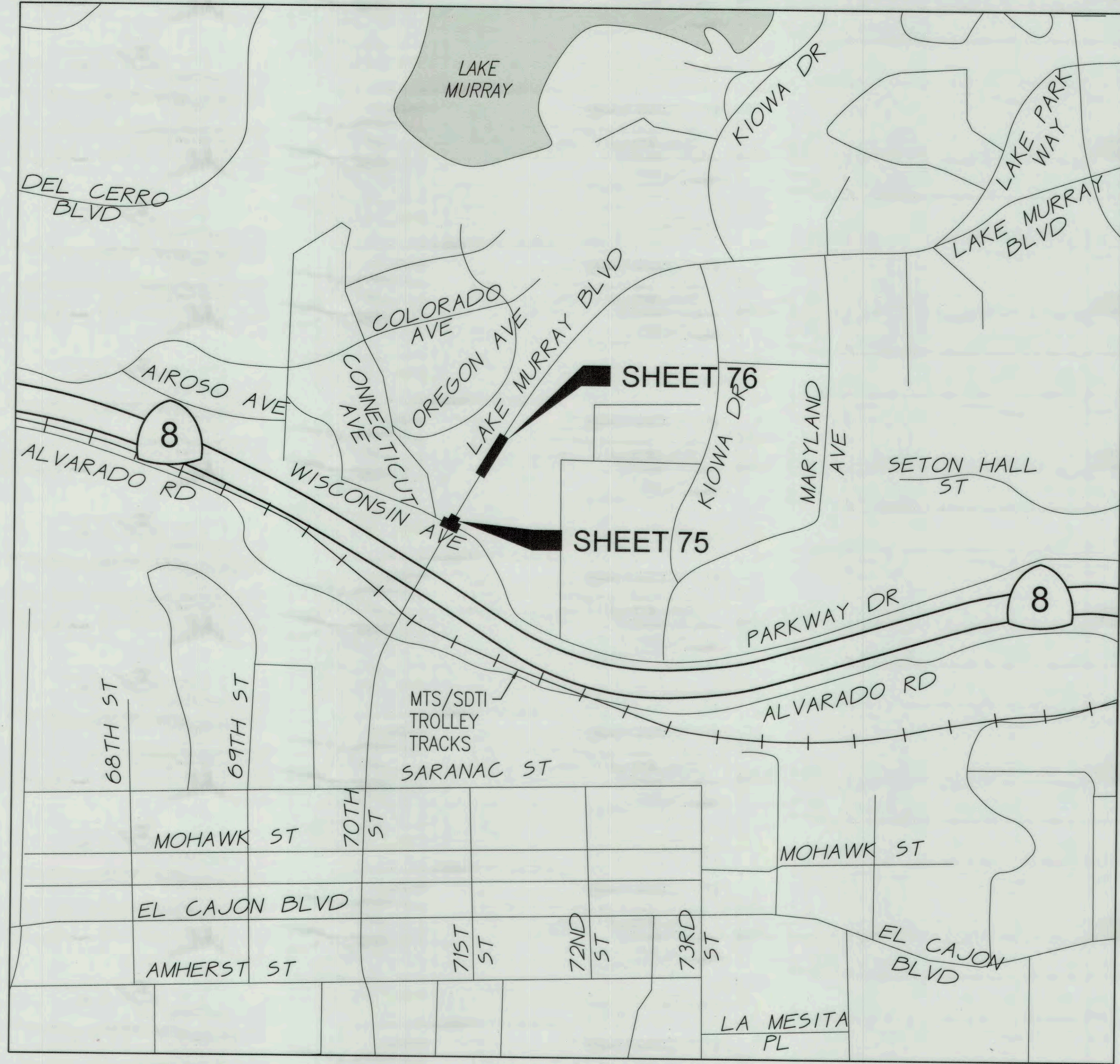
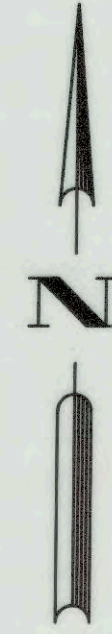
NO.	DESCRIPTION	APPROVED	DATE

**APPENDIX Q**

**APPROVED HELIX WATER DISTRICT RELOCATION PLANS (R SHEETS)**



# RELOCATION OF 8" WATER LAKE MURRAY BL NORTH OF WISCONSIN AV



LOCATION MAP  
NOT TO SCALE

### BASIS OF BEARINGS

THE BASIS OF BEARINGS FOR THIS PROJECT WAS DERIVED FROM A PREVIOUS STATIC GPS SURVEY USING ROS 14492, NAD 83 FEET, ZONE 6 (EPOCH 91.35), UTILIZING RTK/GPS FIELD PROCEDURES WITH A CALVRS BASE STATION BROADCAST 2013 AND CONSTRAINING TO GPS 17, GPS 1108 CHECKING GPS 1105, I.E. S 59°07'28" E.

### BENCH MARK

NWBP SARANAC STREET AND 69th STREET, ELEV. 460.779 MSL, BASED ON NGVD 29 FEET AS SHOWN IN THE CITY OF SAN DIEGO BENCH BOOK.  
DATUM: MEAN SEA LEVEL, NGVD 29FT

### WORK TO BE DONE

CONSTRUCTION OF NEW 8" PVC DISTRIBUTION MAIN, WATER SERVICES AND ALL OTHER WORK SHOWN ON THESE PLANS AND SPECIFICATIONS.

### OWNER/PERMITTEE

NAME: CITY OF SAN DIEGO  
ADDRESS: 525 B STREET  
SAN DIEGO, CA 92101  
PHONE: (619) 533-6673  
CONTACT: MARYAM KARGAR

CITY OF LA MESA  
REVIEWED BY: *[Signature]* DATE 5/13/20  
LEON P. FIRSHT  
RCE 63395  
DIRECTOR OF PUBLIC WORKS/  
CITY ENGINEER

HELIX WATER DISTRICT  
W.O. 4515 (RMB19073)  
ACCEPTED BY: *[Signature]* DATE 1/23/2020  
JAMES A. TOMASULO  
DIRECTOR OF ENGINEERING  
PLATS H-1-13-C, H-1-24-B

### ENGINEER OF WORK DECLARATION

I HEREBY DECLARE THAT I AM THE ENGINEER OF WORK FOR THIS PROJECT, THAT I HAVE EXERCISED RESPONSIBLE CHARGE OVER THE DESIGN OF THE PROJECT AS DEFINED IN SECTION 6703 OF THE BUSINESS AND PROFESSION CODE, AND THAT THE DESIGN IS CONSISTENT WITH THE PREVAILING STANDARDS OF THE ENGINEERING PROFESSION FOR SIMILAR WORK.

I UNDERSTAND THAT THE CHECK OF PROJECT DRAWINGS AND SPECIFICATIONS BY THE CITY OF SAN DIEGO, HELIX WATER DISTRICT AND CITY OF LA MESA ARE CONFINED TO A REVIEW ONLY AND DOES NOT RELIEVE ME, AS ENGINEER OF WORK, OF MY RESPONSIBILITIES FOR THE PROJECT DESIGN.

ENGINEER OF WORK

*Eric B Magee* 1/14/19 64566  
SIGN DATE RE NUMBER

PRIVATE CONTRACT		R-1
MONTEZUMA PPL / MID-CITY PIPELINE PH2 LAKE MURRAY BL WISCONSIN TO 809' NORTH OF WISCONSIN AV		
CITY OF SAN DIEGO, CALIFORNIA PUBLIC WORKS DEPARTMENT SHEET 73 OF 89 SHEETS		WATER WBS S-11026 SEWER WBS N/A
APPROVED BY: <i>[Signature]</i> FOR CITY ENGINEER BRIAN VITELLE PRINT DCE NAME	DATE: 3/30/19 RCE #: C73039	SUBMITTED BY: MARYAM KARGAR PROJECT MANAGER CHECKED BY: JACOB RIVERA PROJECT ENGINEER
DESCRIPTION	BY	APPROVED DATE
ORIGINAL	PSO	
		222-1755 CCS27 COORDINATE
		1862444, 6316407 CCS83 COORDINATE
CONTRACTOR	DATE STARTED	37333-73 -D
INSPECTOR	DATE COMPLETED	
W.O.#: 4515		PLAT(S): H-1-13-C, H-1-24-B
CONTRACTOR:		
PIPELINE DIA/MAT/CLASS: 8" PVC CLASS 305		
INSPECTOR:		
GIS COMPLETED BY:		DATE:
AS CONSTRUCTED BY:		DATE:
REFERENCES: WO 8768 (74), 0240 (06)		
PRESSURE SYSTEM: LM, LG, SV GRAVITY THOMAS GUIDE 1270 F-1		
HELIX WATER DISTRICT		
COVER SHEET		
SURVEYED BY: CITY OF SAN DIEGO	SCALE: AS SHOWN	ACCEPTED BY:
DRAWN BY: M. RAMOS	DATE:	RMB19073
CHECKED BY: E. MAGEE		W.O. 4515
	SHEET 73 OF 86	



**PSOMAS**

401 B Street, Suite 1600  
San Diego, CA 92101  
(619) 961-2800 (619) 961-2392 fax  
www.psomas.com

DWG Name: C:\ADSK\2018\TEMPFILES\TempDWG\Asp\Asp.dwg Plotted by: kolene.gni on Oct 31, 2019 - 16:11:05

HELIX WATER DISTRICT - RELOCATION OF 8" WATER, LAKE MURRAY BLVD NORTH OF WISCONSIN AV RMB19073



HELIX WATER DISTRICT GENERAL NOTES

- CONSTRUCTION OF PUBLIC IMPROVEMENTS SHALL NOT START UNTIL HELIX WATER DISTRICT AND THE DEVELOPER HAVE EXECUTED THE CONSTRUCTION AGREEMENT AND A PRE-CONSTRUCTION MEETING HAS BEEN HELD IN ACCORDANCE WITH WAS SPECIFICATION 01000.
- THE HELIX WATER DISTRICT SHALL RECEIVE A CONSTRUCTION SCHEDULE FROM THE CONTRACTOR PRIOR TO START OF CONSTRUCTION IN ACCORDANCE WITH WAS SPECIFICATION 01000. WORK DONE WITHOUT HELIX WATER DISTRICT INSPECTION SHALL BE SUBJECT TO REMOVAL.
- THE CONTRACTOR SHALL POTHOLE ALL TIE-IN AND POTENTIAL CONFLICT LOCATIONS BEFORE PIPE INSTALLATION IN ACCORDANCE WITH WAS SPECIFICATIONS 01000 AND 15000. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE HELIX WATER DISTRICT'S ENGINEERING DEPARTMENT PRIOR TO PROCEEDING.
- ALL UNDERGROUND UTILITIES AND LATERALS SHALL BE INSTALLED BEFORE CONSTRUCTION OF CURBS, CONCRETE CROSS GUTTERS, OR SURFACING OF STREETS.
- THE CONTRACTOR SHALL BE FINANCIALLY RESPONSIBLE FOR RELOCATION OR ADJUSTMENT OF ANY NEW OR EXISTING WATER SERVICE APPURTENANCES, MANHOLES, GATE VALVE COVERS, OR METER BOXES TO NEW FINISH GRADE BY DISTRICT FORCES.
- THE CONTRACTOR SHALL KEEP AND MAINTAIN A SIGNED SET OF IMPROVEMENT PLANS ON-SITE PER WAS SPECIFICATION 01000. THE CONTRACTOR'S SUPERINTENDENT IS REQUIRED TO UPDATE SAID PLANS WITH 'AS-BUILT' INFORMATION ON A DAILY BASIS AS WORK IS PERFORMED. FAILURE TO MAINTAIN FIELD AS-BUILTS ARE GROUNDS FOR JOB SHUTDOWN OR NO INSPECTIONS BY THE DISTRICT UNTIL AS-BUILTS ARE CURRENT.
- CONSTRUCTION OF WATER FACILITIES SHALL BE CONSTRUCTED IN ACCORDANCE WITH WAS SPECIFICATIONS, DRAWINGS, AND APPROVED MATERIALS LIST. ALL CONTRACTORS WORKING ON WATER PROJECTS WILL BE REQUIRED TO HAVE A CURRENT COPY OF THE WAS. THIS DOCUMENT MAY BE DOWNLOADED AT WWW.SDWAS.COM
- THRUST BLOCK AREAS ARE BASED ON SOIL BEARING VALUES LISTED IN WAS DRAWING WT-01. SHOULD FIELD CONDITIONS INDICATE A LESSER SOIL BEARING CAPACITY THAN LISTED, THE SOILS ENGINEER OR CONTRACTOR SHALL NOTIFY THE HELIX WATER DISTRICT'S ENGINEERING DEPARTMENT BY WRITTEN DOCUMENTATION, PRIOR TO THE INSTALLATION OF THRUST BLOCKS.
- WATER LINES AND APPURTENANCES SHALL BE CONSTRUCTED IN ACCORDANCE WITH THESE PLANS AND THE CURRENT APPROVED WATER AGENCIES' STANDARDS (WAS).
- THE CITY OF SAN DIEGO SHALL PAY A CHARGE PER OCCURRENCE PER HELIX WATER DISTRICT'S RULES AND REGULATIONS IF THEY, THEIR EMPLOYEES, AGENTS, OR ANY INDEPENDENT CONTRACTORS OR SUBCONTRACTORS USE WATER OTHER THAN THROUGH AN AUTHORIZED WATER METER OR CONSTRUCTION METER. THE CITY OF SAN DIEGO SHALL PAY A CHARGE PER OCCURRENCE FOR SAID USE. SAID PAYMENT MAY BE DEDUCTED FROM ANY DEPOSIT THE CITY OF SAN DIEGO HAS WITH HELIX WATER DISTRICT.
- NO PERSON, OTHER THAN AN EMPLOYEE OR AGENT OF THE HELIX WATER DISTRICT, SHALL HAVE A RIGHT TO OPERATE ANY PART OF A HELIX WATER DISTRICT WATER DISTRIBUTION SYSTEM PER WAS SPECIFICATION 01000. ANY PERSON WHO TAMPERS OR INTERFERES WITH ANY PART OR COMPONENT OF SAID SYSTEM, OR CAUSES OR PERMITS ANY ACT OF TAMPERING OR INTERFERING WITH THE SYSTEM, SHALL BE LIABLE FOR ANY INJURY OR DAMAGE CAUSED THEREBY OR RESULTING THERE FROM. A CHARGE PER OCCURRENCE WILL BE IMPOSED ON ANY PERSON OR COMPANY WHO OPERATES ANY PART OF THE HELIX WATER DISTRICT WATER SYSTEM WITHOUT PROPER AUTHORIZATION.
- HELIX WATER DISTRICT WILL BE RESPONSIBLE TO MAKE SERVICE LATERAL AND PIPELINE WET TAPS AND CUT IN TEES AND CROSSES TO 'LIVE' SYSTEMS IN ACCORDANCE WITH WAS SPECIFICATION 15000. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL PHASES OF WORK NOT PERFORMED BY HELIX WATER DISTRICT; PROVIDE ALL THE MATERIALS, HAND AND MACHINE EXCAVATION, REMOVAL OF END CAPS AND THRUST BLOCKS, INSTALL THRUST/ANCHOR BLOCKS, MAKE CONNECTION TO EXISTING STUBS OR NEW PIPELINE, INSTALL GATE WELL CASING, PAINT, AND WRAP FITTINGS, BACKFILL AND COMPACT TRENCH AREA, MAKE NECESSARY PAVING REPAIRS, AND ALL OTHER WORK TO COMPLETE INSTALLATION.
- UNLESS SHOWN ON THESE PLANS, PRIVATE WATER LINES AND OTHER PRIVATE UTILITIES (PROPOSED OR EXISTING) SHALL NOT RUN PARALLEL WITHIN A WATER LINE EASEMENT. PERPENDICULAR CROSSINGS ONLY SHALL BE PLACED IN A CASING AND SHALL BE SHOWN ON RECORD DRAWINGS. THE CASING SHALL BE CENTERED ON THE PUBLIC WATER LINE, 5' ON BOTH SIDE, AND ENCASED CONCRETE (RED COLORED CONCRETE FOR ELECTRICAL CONDUITS) THE FULL LENGTH OF THE CASING. CONTRACTOR SHALL MAINTAIN A MINIMUM 12-INCH VERTICAL SEPARATION BETWEEN THE WATER MAIN AND ALL OTHER UTILITIES AT THE CROSSINGS. IN ADDITION, PRIVATE UTILITIES INSTALLED AFTER THE WATER FACILITIES THAT CROSS OR OTHERWISE DISTURB THE WATER FACILITY'S TRENCH LINE INCLUDING WATER MAINS, SERVICES AND APPURTENANCES, SHALL BE BACKFILLED WITH THE MATERIAL AS APPROVED PER WAS.
- THE CONTRACTOR SHALL INSTALL ANODES AT EACH WATER SERVICE LOCATION IN ACCORDANCE WITH WAS SPECIFICATION 13110 AND DRAWING WC-17. WHERE METER BOXES CANNOT BE INSTALLED PERPENDICULAR TO THE MAIN, TRACER WIRE SHALL BE INSTALLED FROM THE MAIN TO THE METER BOX, AS DIRECTED BY DISTRICT INSPECTOR.
- WHERE FIRE HYDRANTS AND WATER APPURTENANCES ARE INSTALLED AT THE TOE OF A SLOPE, RETAINING WALLS SHALL BE INSTALLED (WAS DRAWING WM-03), AS DIRECTED BY DISTRICT INSPECTOR.
- CONTRACTOR IS TO COORDINATE THE APPROVAL OF THE LOCATION (AFTER STAKING) OF THE PROPOSED FIRE PROTECTION FACILITIES WITH THE FIRE DEPARTMENT OF JURISDICTION, PRIOR TO INSTALLATION OF THE FACILITIES.
- DEVELOPER/CONTRACTOR SHALL INSTALL ONLY HIGH EFFICIENCY WATER APPLIANCES, USE ONLY HIGH EFFICIENCY TECHNOLOGIES, AND LANDSCAPE USING LOW WATER USE PLANTS. DEVELOPER/CONTRACTOR SHALL COORDINATE THE INSTALLATION OF HIGH WATER EFFICIENT APPLIANCES, TECHNOLOGIES, AND LANDSCAPING WITH DISTRICT REPRESENTATIVE. PLEASE CALL MICHELLE CURTIS AT (619) 667-6261 FOR DESIGN, INSPECTION AND COORDINATION.
- FOR WORK OVER EXISTING WATER FACILITIES, HEAVY EQUIPMENT (ABOVE H20 LOADING) SHALL NOT BE USED WHEN COVER OVER THE WATER MAIN IS LESS THAN 36 INCHES THROUGH ALL PHASES OF CONSTRUCTION, INCLUDING THE REMOVAL, OVER EXCAVATION, AND/OR INSTALLATION OF PAVEMENT SECTIONS, WITHOUT THE WRITTEN APPROVAL OF HELIX WATER DISTRICT.
- FINAL STREET SUB-GRADE SHALL BE ESTABLISHED PRIOR TO THE EXCAVATION OF PIPELINE TRENCHES, AND MINIMUM COVER OVER ABOVE PIPE SHALL BE 24-INCHES FOR HYDROTESTING PER WAS SECTION 02223.
- COMMERCIAL/INDUSTRIAL PROPERTIES AND MULTIPLE DWELLING PROPERTIES WITH MORE THAN 5,000 SQUARE FEET OF IRRIGATED LANDSCAPE MUST HAVE A SEPARATE WATER METER FOR LANDSCAPE PURPOSES. THIS POLICY DOES NOT APPLY TO SINGLE-FAMILY RESIDENTIAL CONNECTIONS OR CONNECTIONS USED TO SUPPLY WATER FOR COMMERCIAL PRODUCTION OF AGRICULTURAL CROPS OR LIVESTOCK. IRRIGATION METERS ARE SUBJECT TO ALL DISTRICT REQUIREMENTS AND FESS, UNLESS OTHERWISE APPROVED BY THE DISTRICT.
- ALL EXISTING AND PROPOSED WATER AND FIRE SERVICES SHALL BE REQUIRED TO INSTALL AN APPROVED BACKFLOW PREVENTION ASSEMBLY (BPA). ANY EXISTING WATER SERVICES SERVING THE PROPERTY THAT WILL NOT BE USED SHALL BE ABANDONED BY THE DISTRICT AT THE OWNER'S EXPENSE. COORDINATE APPROVAL OF THE BPA WITH THE DISTRICT'S CROSS CONNECTION CONTROL COORDINATOR AT 619-667-6224. ALL NEW RESIDENTIAL DWELLINGS WITH FIRE PROTECTION SYSTEMS SHALL HAVE A TESTABLE BACKFLOW PREVENTION ASSEMBLY OR A PASSIVE PURGE SYSTEM INSTALLED FOR SYSTEM PROTECTION.
- ALL WATER SERVICE LATERALS, FIRE SERVICE LATERALS, FIRE HYDRANT LATERALS, BLOW-OFF LATERALS AND WATER MAINS THAT CROSS ANY BIO-RETENTION SWALE, MUST BE WITHIN A HARDENED SURFACE (CONCRETE).
- TRENCH REPAIRS TO BE HELIX WATER DISTRICT TRENCH DETAIL OR THE CITY OF JURISDICTION'S TRENCH REPAIR DETAIL, WHICHEVER IS MORE STRINGENT.
- THE CITY AGREES THAT IF THEY, THEIR EMPLOYEES, AGENTS OR ANY INDEPENDENT CONTRACTORS OR SUBCONTRACTORS SHOULD USE WATER OTHER THAN THROUGH AN AUTHORIZED WATER METER, THE CITY SHALL PAY A CHARGE, DETERMINED BY HELIX WATER DISTRICT, PER OCCURRENCE FOR SAID USE. SAID PAYMENT MAY BE DEDUCTED FROM ANY DEPOSIT THE CITY HAS WITH HELIX WATER DISTRICT.
- THE CITY SHALL BE RESPONSIBLE FOR THE COST OF RELOCATING ANY WATER LATERALS, FIRE HYDRANTS OR FACILITIES THAT FALL WITHIN DRIVEWAYS OR OTHERWISE CONFLICT WITH ANY PROPOSED FACILITIES OR IMPROVEMENTS.
- REVIEW AND APPROVAL OF PLANS BY HELIX WATER DISTRICT DOES NOT CONSTITUTE RESPONSIBILITY FOR ACCURACY OF INFORMATION NOR LOCATIONS OF ANY EXISTING UTILITIES.
- CONTRACTOR SHALL PROTECT ALL EXISTING HELIX WATER DISTRICT FACILITIES AND SHALL BE RESPONSIBLE FOR ANY DAMAGE TO HELIX WATER DISTRICT FACILITIES AS A RESULT OF HIS/HER OPERATION, AND SHALL IMMEDIATELY CALL THE HELIX WATER DISTRICT WHO WILL REPAIR ANY DAMAGE AND WILL BILL THE CITY FOR THE COST INCURRED. CONTRACTOR TO PROVIDE CONTINUOUS WATER SERVICE TO ALL WATER ACCOUNTS SHOWN OR NOT SHOWN ON THESE PLANS DURING ALL PHASES OF CONSTRUCTION.
- IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO CONTACT HELIX WATER DISTRICT 48 HOURS PRIOR TO COMMENCING WORK AT (619) 596-3860 AND UNDERGROUND SERVICE ALERT FOR LOCATION OF EXISTING WATER FACILITIES AT 811.
- ANY FINISHED SURFACE IMPROVEMENT OTHER THAN ASPHALT ABOVE THE PIPELINE OR UNDERGROUND FACILITIES WILL REQUIRE AN ENCROACHMENT REMOVAL AGREEMENT. PERMEABLE FINISHED SURFACE IMPROVEMENTS ARE PROHIBITED WITHIN HELIX WATER DISTRICT WATER MAIN EASEMENT.
- THE CONTRACTOR SHALL POTHOLE ALL EXISTING WATER MAINS THAT MAY HAVE A POTENTIAL CONFLICT PRIOR TO START OF CONSTRUCTION IN ACCORDANCE WITH WAS SPECIFICATIONS 01000 AND 15000. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE HELIX WATER DISTRICT'S ENGINEERING DEPARTMENT PRIOR TO PROCEEDING.
- THE CITY SHALL BE SOLELY RESPONSIBLE FOR COMPLIANCE WITH WATER MAIN SEPARATION STANDARDS AS DEFINED BY CALIFORNIA CODE OF REGULATIONS, TITLE 22, CHAPTER 16, CALIFORNIA WATER WORKS STANDARDS.

R-2

MONTEZUMA PPL / MID-CITY PIPELINE PH2				
RELOCATION OF 8" WATER LAKE MURRAY BL NORTH OF WISCONSIN AV				
CITY OF SAN DIEGO, CALIFORNIA PUBLIC WORKS DEPARTMENT SHEET 74 OF 81 SHEETS	WATER WBS S-11026 SEWER WBS N/A			
APPROVED: <i>Brian Vitelle</i> FOR CITY ENGINEER BRIAN VITELLE PRINT DCE NAME	DATE 3/20/2019 DATE 3/20/2019 RCE # C73039			
SUBMITTED BY: MARYAM KARGAR PROJECT MANAGER DESIGNED BY: JACOB RIVERA PROJECT ENGINEER				
DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	PSO			
1862444, 6316407 CCS27 COORDINATE		222-1755		
1862444, 6316407 CCS83 COORDINATE		37333- 74 -D		
CONTRACTOR DATE STARTED				
INSPECTOR DATE COMPLETED				
HELIX WATER DISTRICT				
NOTES				
SURVEYED BY: CITY OF SAN DIEGO	SCALE: AS SHOWN	RMB19073		
DRAWN BY: M. RAMOS	DATE:	W.O. 4515		
CHECKED BY: E. MAGEE	SHEET 74 OF 81			

LEGEND/SYMBOLS

DESCRIPTION	STD DWG	QTY
RECONNECT TO EXISTING WATER SERVICE AND INSTALL SACRIFICIAL ANODE (SIZE SHOWN ON PLANS)	W.A.S. WS-07	5 EA.
NEW WATER MAIN (SIZE, CLASS AND TYPE SHOWN ON DRAWING)	W.A.S. WP-01, 02	560 LF
EXISTING WATER MAIN (SIZE, TYPE, WO, & YEAR SHOWN ON PLANS)		
TEMPORARY HIGHLINE (SIZE SHOWN ON PLANS, HIGHLINE SHALL BE REMOVED FROM JOB SITE AFTER CONSTRUCTION)		550 LF
RECONNECT EXISTING FIRE HYDRANT		1 EA.
RECONNECT EXISTING FIRE SERVICE		1 EA.
ABANDON/REMOVE EXISTING WATER MAIN	W.A.S. WP-03	

FOR ADDITIONAL SYMBOLS, SEE DWG G-2

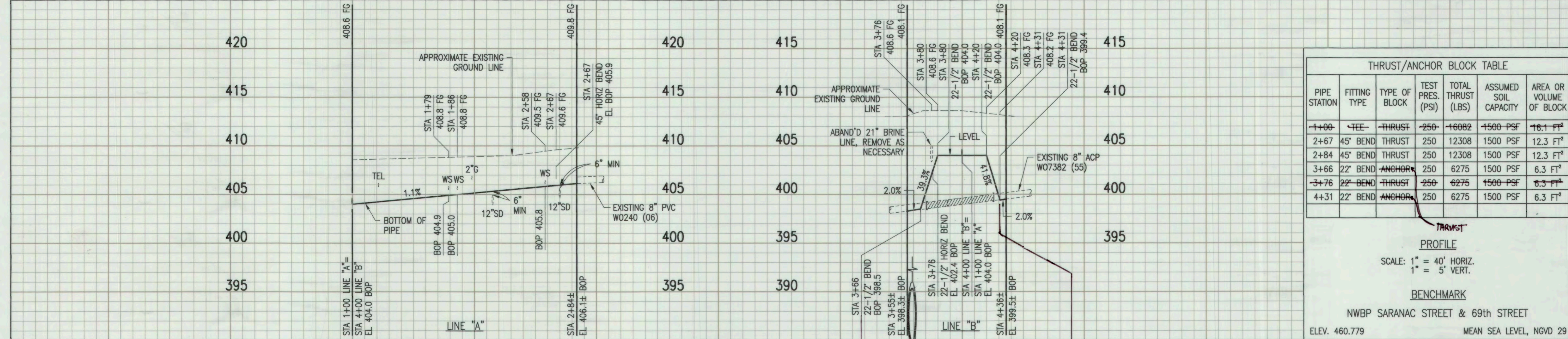


**PSOMAS**

401 B Street, Suite 1600  
San Diego, CA 92101  
(619) 961-2800 (619) 961-2392 fax  
www.psomas.com

DWG Name: S:\SAN020900-Mid-City-PL\WATRES\TASKS\Construction-Plans\SHEETS\11026-MidCity-Ph2-R02.dwg Plotted by: mramos on Jun 11, 2018 - 9:16:18

DWG Name: S:\SAN020900-Mid-City-Pl-WATRES\TASKS\Construction-Pans\SHETS\S11026-MidCity-PH2-803.dwg Plotted by: mjmamos on Jun 11, 2018 - 9:18:16



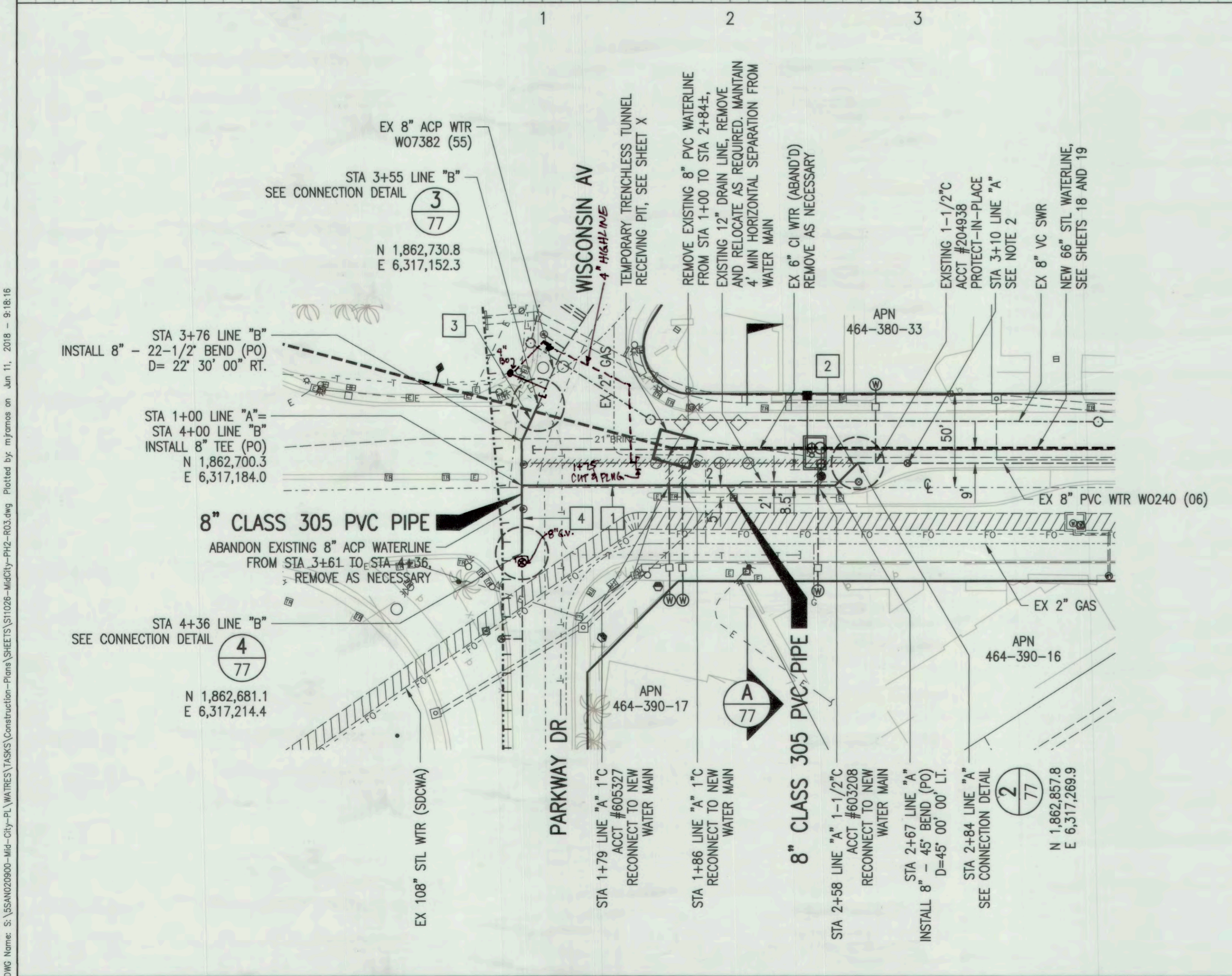
THRUST/ANCHOR BLOCK TABLE						
PIPE STATION	FITTING TYPE	TYPE OF BLOCK	TEST PRES. (PSI)	TOTAL THRUST (LBS)	ASSUMED SOIL CAPACITY	AREA OR VOLUME OF BLOCK
1+00	TEE	THRUST	250	16082	1500 PSF	16.1 FT <sup>2</sup>
2+67	45° BEND	THRUST	250	12308	1500 PSF	12.3 FT <sup>2</sup>
2+84	45° BEND	THRUST	250	12308	1500 PSF	12.3 FT <sup>2</sup>
3+66	22° BEND	ANCHOR	250	6275	1500 PSF	6.3 FT <sup>2</sup>
3+76	22° BEND	THRUST	250	6275	1500 PSF	6.3 FT <sup>2</sup>
4+31	22° BEND	ANCHOR	250	6275	1500 PSF	6.3 FT <sup>2</sup>

THRUST  
PROFILE  
SCALE: 1" = 40' HORIZ.  
1" = 5' VERT.

BENCHMARK

NWBP SARANAC STREET & 69th STREET

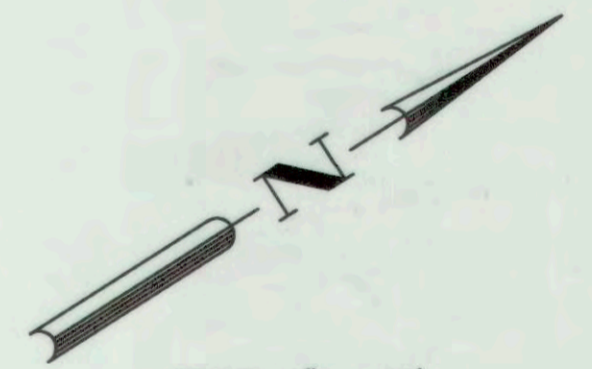
ELEV. 460.779 MEAN SEA LEVEL, NGVD 29



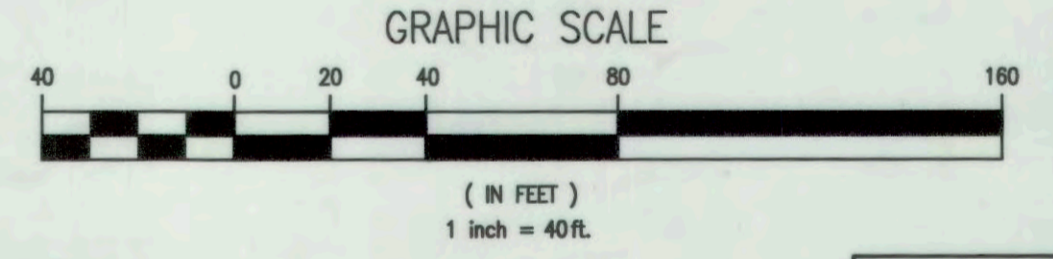
**NOTES:**

- ALL WORK ON HELIX WATER DISTRICT FACILITIES SHALL BE DONE IN ACCORDANCE WITH HWD REQUIREMENTS INCLUDING WAS SPECIFICATIONS AND STANDARD DRAWINGS.
- HELIX WATER DISTRICT TO INSTALL 8" ISOLATION VALVE, BACK FILL AND MAKE TEMPORARY PAVEMENT REPAIRS. CONTRACTOR TO MAKE PERMANENT PAVEMENT REPAIRS.

WATERLINE DATA TABLE				
#	Bearing or Delta	Radius	Length	Comments
1	N32°27'08"E		154'	8" C900 PVC, CL 305
2	N12°32'52"W		18'	" "
3	S33°29'38"E		21'	" "
4	S57°41'15"E		60'	" "



SCALE: 1" = 40'



R-3

MONTEZUMA PPL / MID-CITY PIPELINE PH2  
RELOCATION OF 8" WATER  
LAKE MURRAY BL  
AT OF WISCONSIN AV  
STA 1+00 TO 2+84 AND STA 3+55 TO 4+36

CITY OF SAN DIEGO, CALIFORNIA PUBLIC WORKS DEPARTMENT SHEET 75 OF 81 SHEETS		WATER WBS S-11026 SEWER WBS N/A
APPROVED FOR CITY ENGINEER BRIAN VITELLE PRINT DCE NAME	DATE 9/20/2019 073037 RCE #	SUBMITTED BY MARYAM KARGAR PROJECT MANAGER CHECKED BY JACOB RIVERA PROJECT ENGINEER
DESCRIPTION	BY	APPROVED
ORIGINAL	PSO	
DATE STARTED		DATE COMPLETED
CONTRACTOR		37333-75 -D



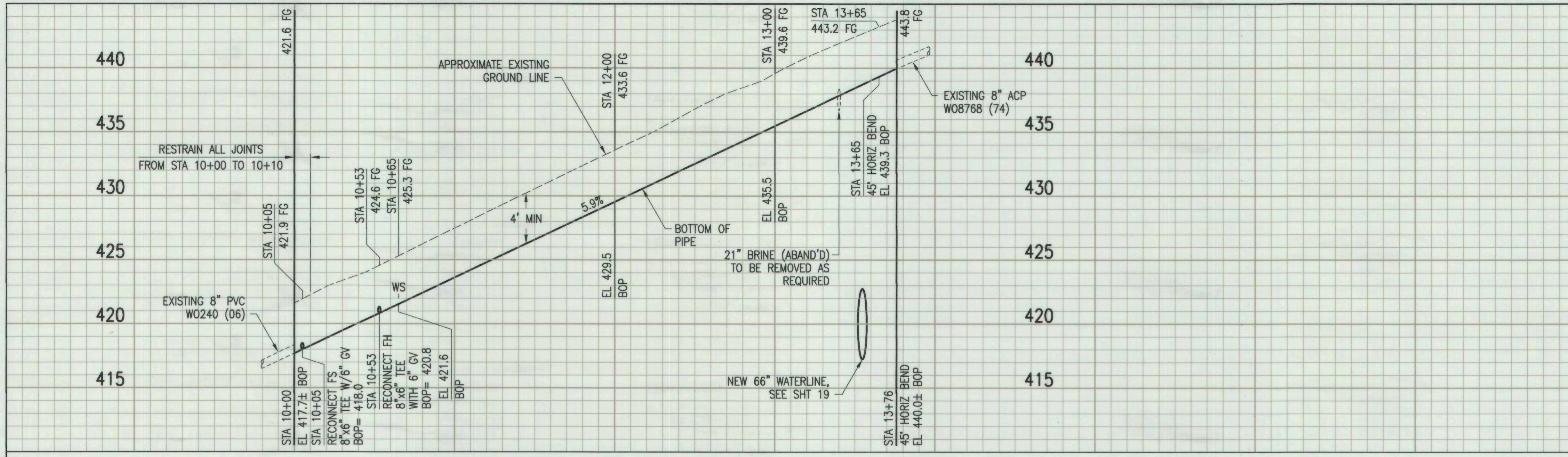
**PSOMAS**

401 B Street, Suite 1600  
San Diego, CA 92101  
(619) 961-2800 (619) 961-2392 fax  
www.psomas.com

HELIUM WATER DISTRICT		
PLAN AND PROFILE		
SURVEYED BY: CITY OF SAN DIEGO	SCALE: AS SHOWN	
DRAWN BY: M. RAMOS	DATE:	RMB19073
CHECKED BY: E. MAGEE	SHEET 75 OF 81	W.O. 4515

HELIUM WATER DISTRICT - RELOCATION OF 8" WATER, LAKE MURRAY BLVD NORTH OF WISCONSIN AV

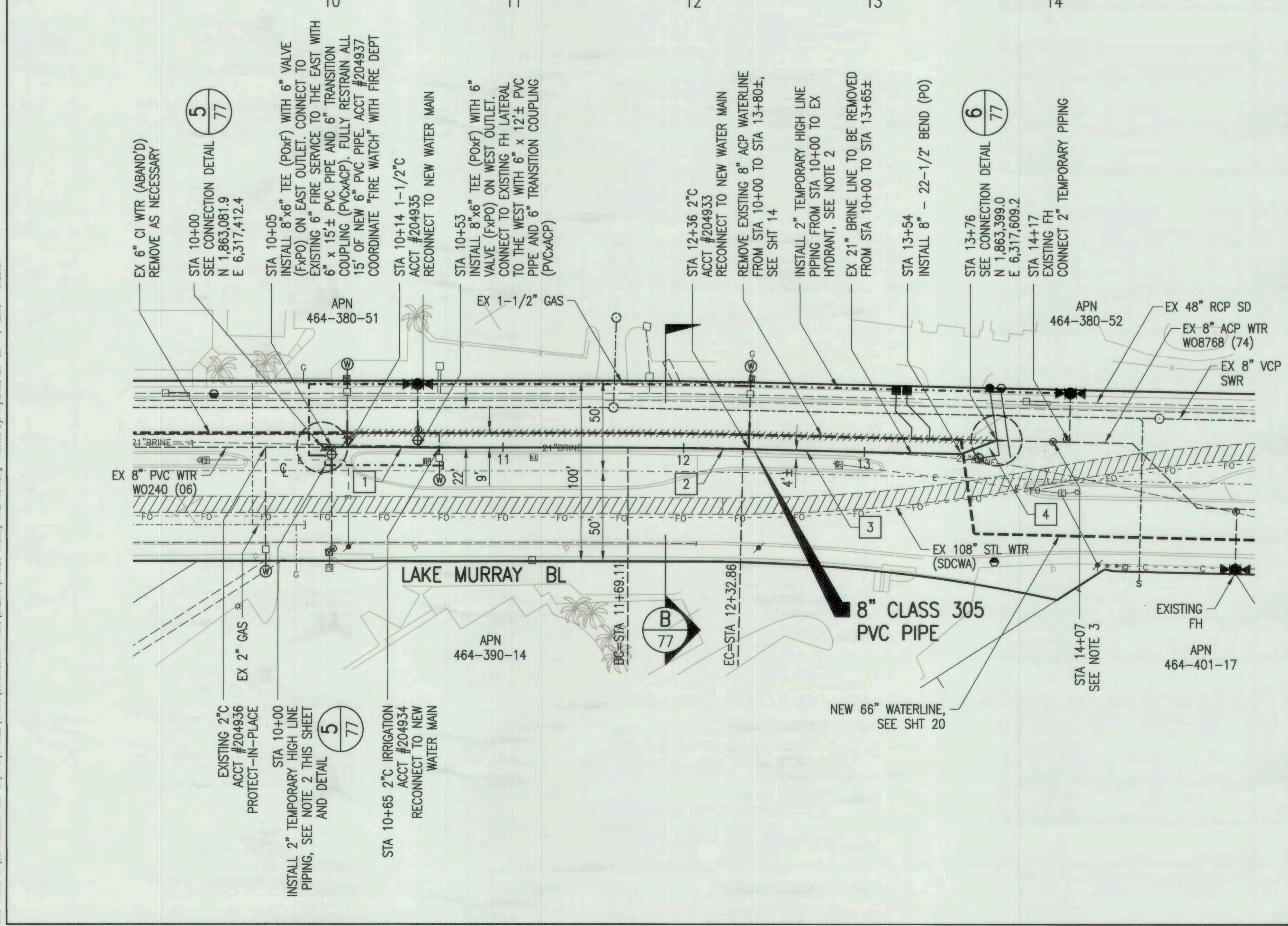
DWG Name: S:\SAN020900-Mid-City-PL-WATRES\TASKS\Construction-Plans\SHEETS\11026-MidCity-PH2-R04.dwg Plotted by: mjmos on Jan 11, 2018 - 9:20:57



PIPE STATION	FITTING TYPE	TYPE OF BLOCK	TEST PRES. (PSI)	TOTAL THRUST (LBS)	ASSUMED SOIL CAPACITY	AREA OR VOLUME OF BLOCK
1+00	45° BEND	THRUST	250	12308	1500 PSF	12.3 FT <sup>2</sup>
10+05	TEE	THRUST	250	16082	1500 PSF	16.1 FT <sup>2</sup>
13+54	22° BEND	THRUST	250	12308	1500 PSF	12.3 FT <sup>2</sup>
13+76	22° BEND	THRUST	250	12308	1500 PSF	12.3 FT <sup>2</sup>

PROFILE  
SCALE: 1" = 40' HORIZ.  
1" = 5' VERT.

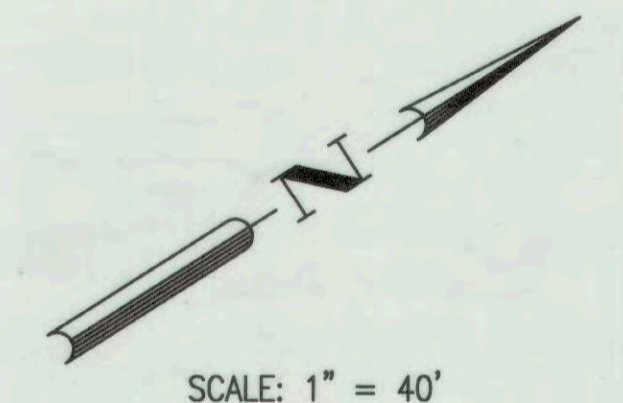
BENCHMARK  
NWBP SARANAC STREET & 69th STREET  
ELEV. 460.779 MEAN SEA LEVEL, NGVD 29



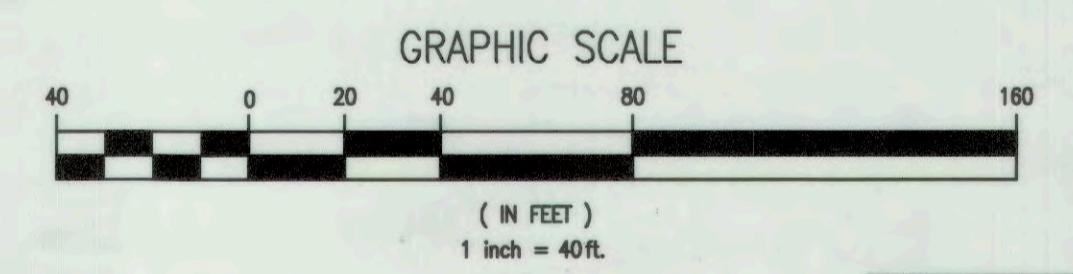
#	Bearing or Delta	Radius	Length	Comments
1	N32°27'08"E		169.1'	8" C900 PVC, CL 305
2	01°17'55"	2813.00'	63.76'	" "
3	N33°45'03"E		132.1'	" "
4	N11°14'57"W		11.3'	" "

NOTES:

- PRIOR TO CONSTRUCTION, INSTALL 2" TEMPORARY PIPING PER WAS ON LAKE MURRAY BOULEVARD FROM STA 14+17 TO STA 10+65. CONNECT 2" PIPING TO ALL SERVICES AND MAINTAIN SERVICE TO CUSTOMERS DURING ALL PHASES OF CONSTRUCTION. CONTRACTOR TO MAINTAIN THE 2" TEMPORARY PIPING TO THE SATISFACTION OF THE DISTRICT.
- ALL WORK ON HELIX WATER DISTRICT FACILITIES SHALL BE DONE IN ACCORDANCE WITH HWD REQUIREMENTS INCLUDING WAS SPECIFICATIONS AND STANDARD DRAWINGS.
- HELIX WATER DISTRICT TO REPLACE 8" ISOLATION VALVE, BACK FILL AND MAKE TEMPORARY PAVEMENT REPAIRS. CONTRACTOR TO MAKE PERMANENT PAVEMENT REPAIRS.



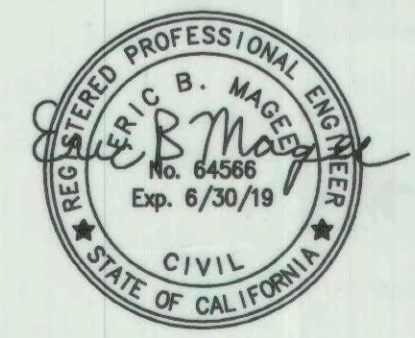
SCALE: 1" = 40'



R-4

MONTEZUMA PPL / MID-CITY PIPELINE PH2  
RELOCATION OF 8" WATER  
LAKE MURRAY BL  
N OF WISCONSIN AV  
STA 10+00 TO 13+76

CITY OF SAN DIEGO, CALIFORNIA PUBLIC WORKS DEPARTMENT SHEET 76 OF 81 SHEETS		WATER WBS S-11026 SEWER WBS N/A			
APPROVED FOR CITY ENGINEER BRIAN VITELLE PRINT DCE NAME	DATE 3/20/2019 RCE # 273029	SUBMITTED BY MARYAM KARGAR PROJECT MANAGER CHECKED BY JACOB RIVERA PROJECT ENGINEER			
DESCRIPTION	BY	APPROVED	DATE	FILMED	
ORIGINAL	PSO				
CONTRACTOR		DATE STARTED	DATE COMPLETED		
INSPECTOR		37333- 76 -D			

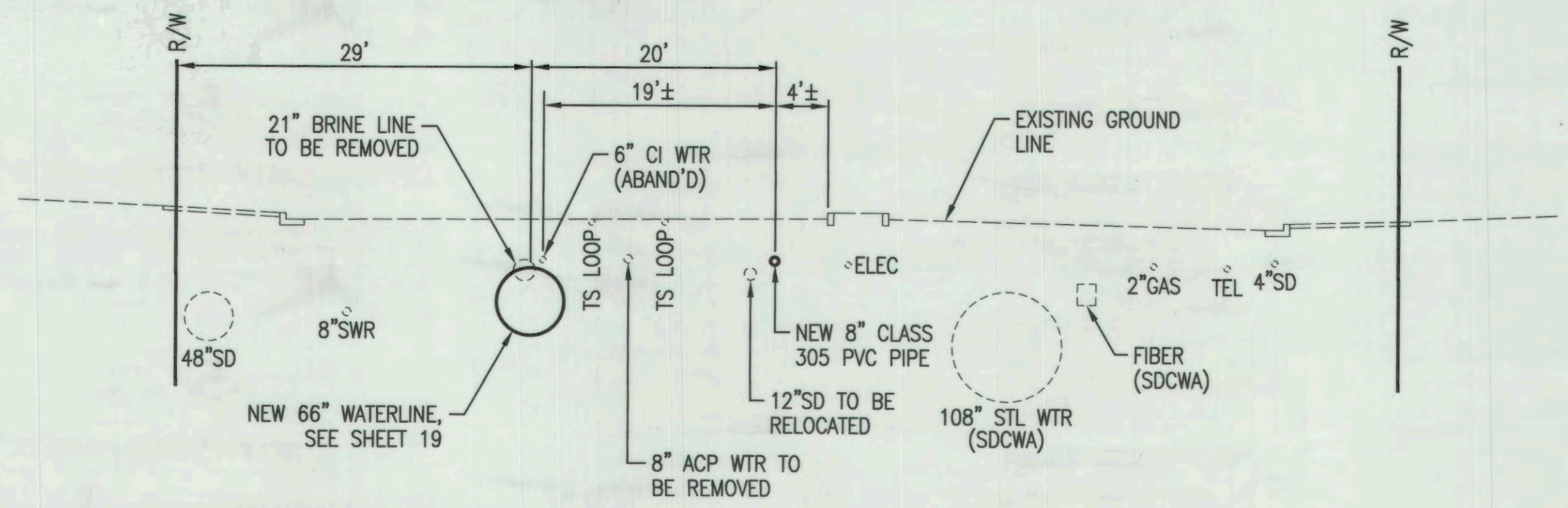


**PSOMAS**

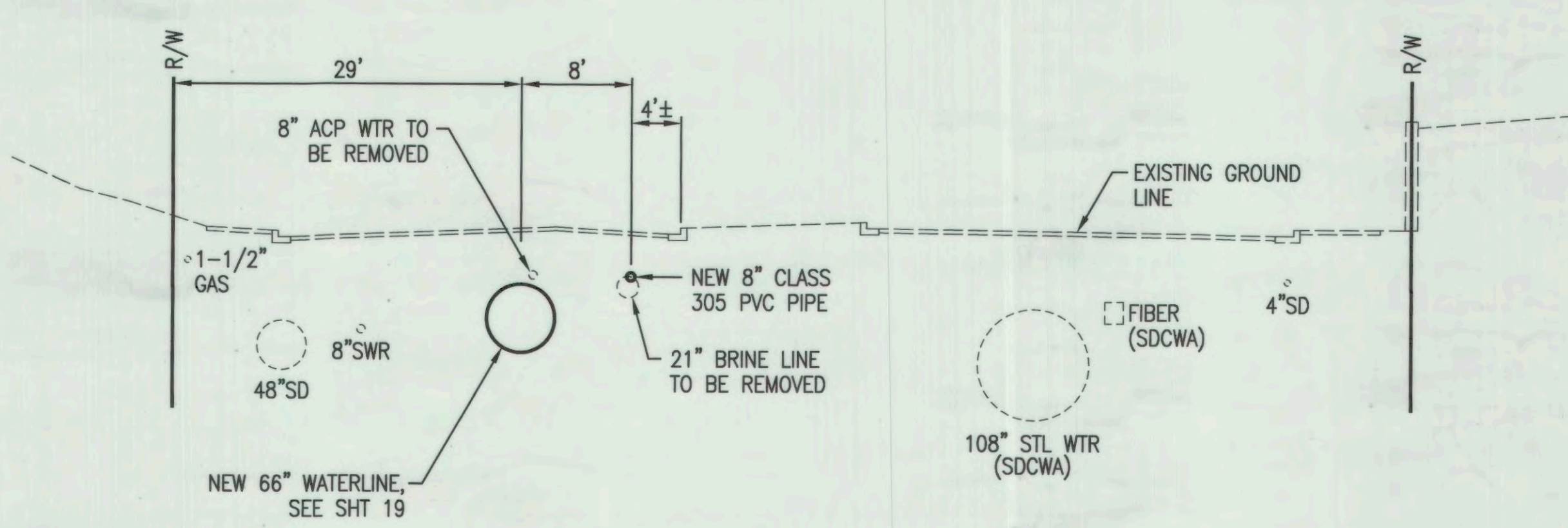
401 B Street, Suite 1600  
San Diego, CA 92101  
(619) 961-2800 (619) 961-2392 fax  
www.psomas.com

HELIIX WATER DISTRICT	
PLAN AND PROFILE	
SURVEYED BY: CITY OF SAN DIEGO	SCALE: AS SHOWN
DRAWN BY: M. RAMOS	DATE: RMB19073
CHECKED BY: E. MAGEE	SHEET 76 OF 81 W.O. 4515

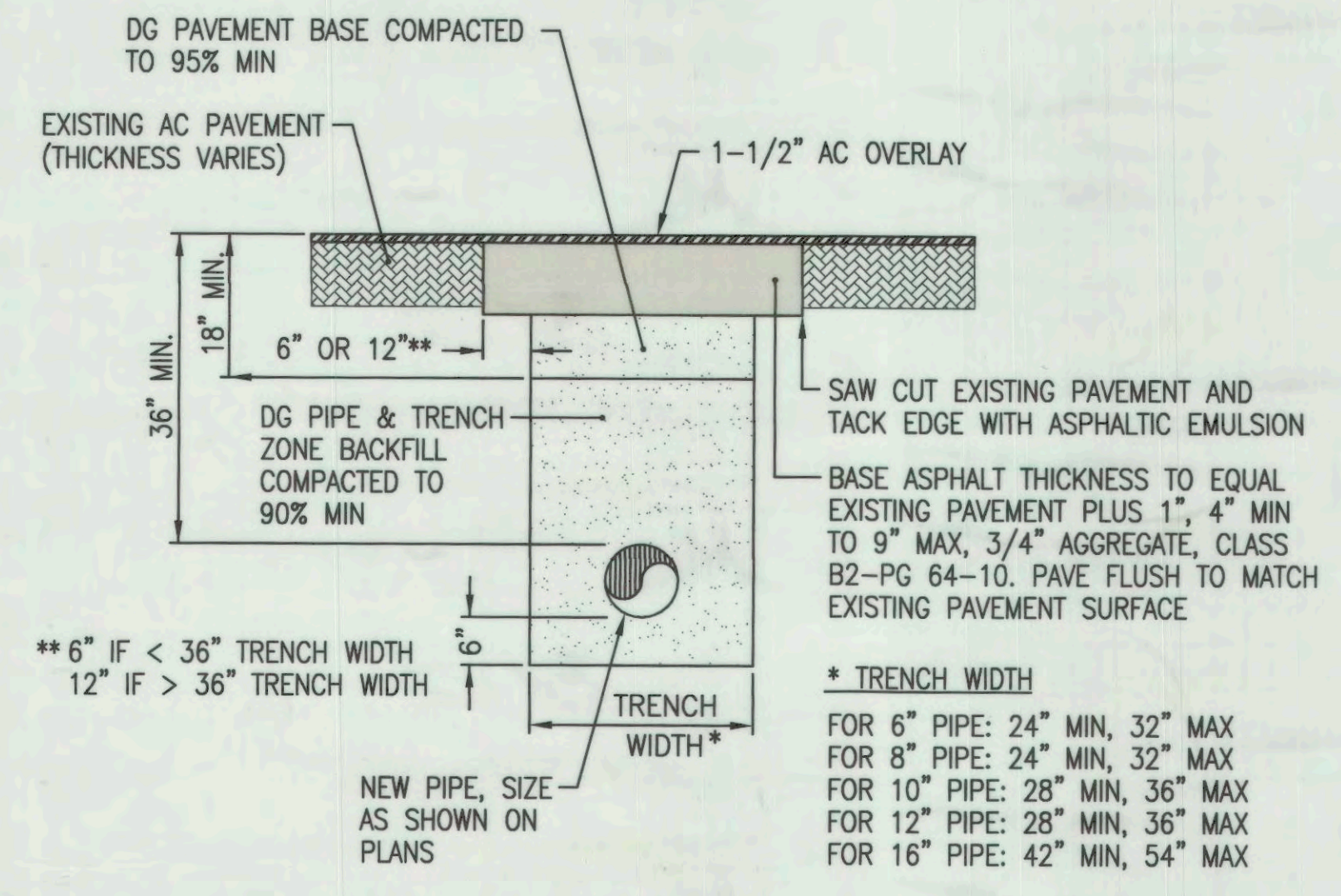
HELIIX WATER DISTRICT - RELOCATION OF 8" WATER, LAKE MURRAY BLVD NORTH OF WISCONSIN AVE



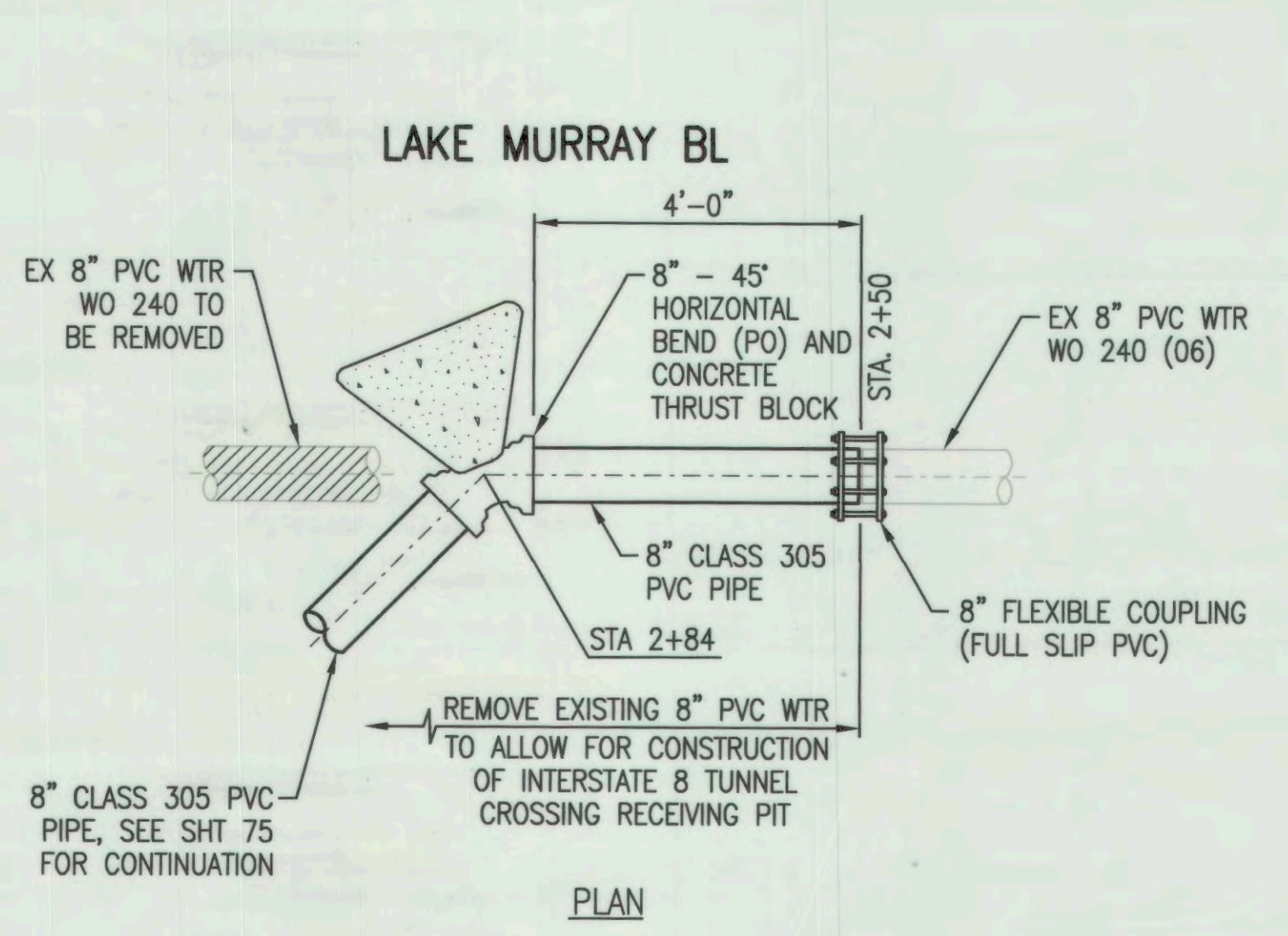
LAKE MURRAY BLVD. LOOKING NORTH  
SECTION AT STA 2+20 (A)  
SCALE: 1" = 10'



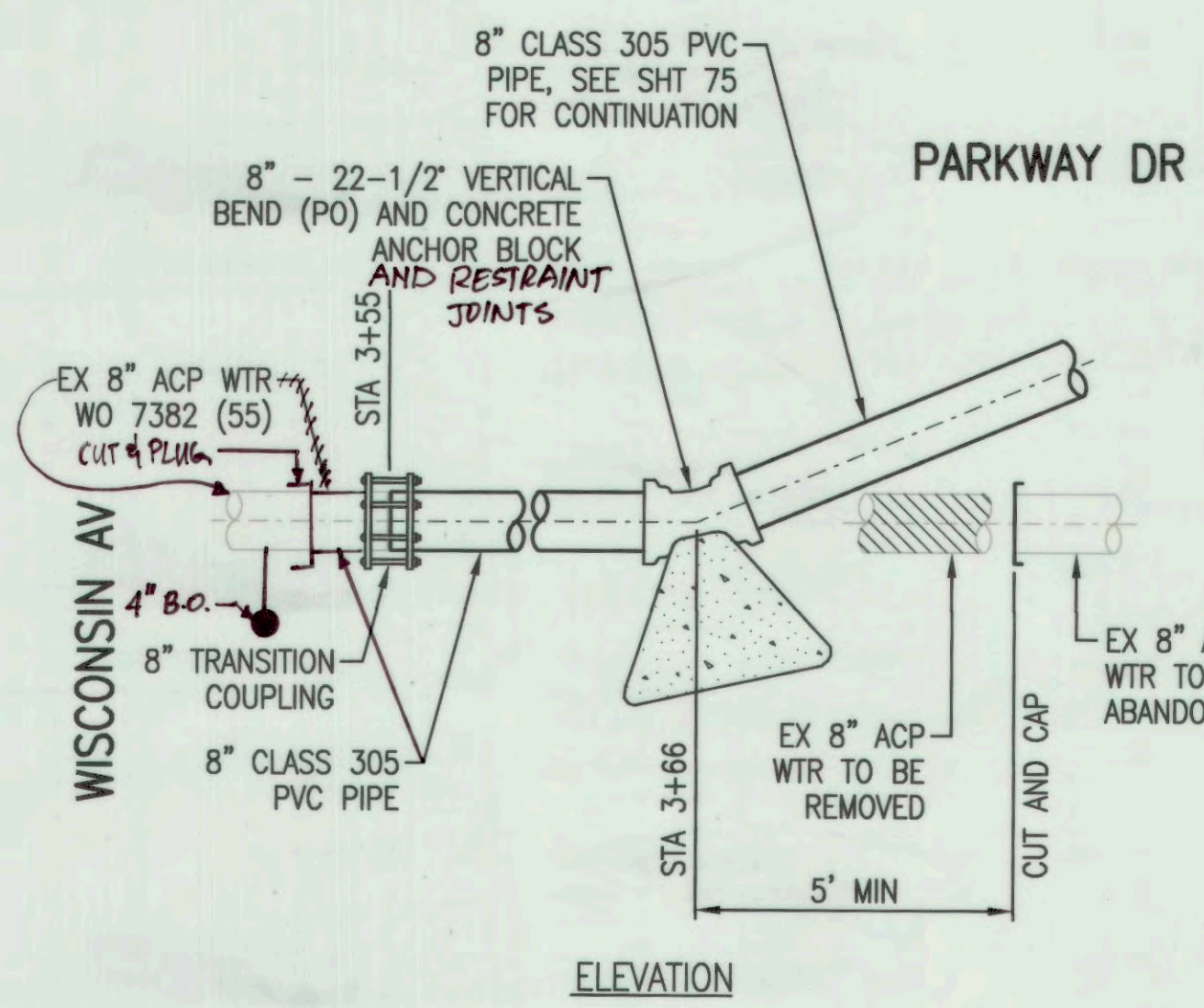
LAKE MURRAY BLVD. LOOKING NORTH  
SECTION AT STA 11+90 (B)  
SCALE: 1" = 10'



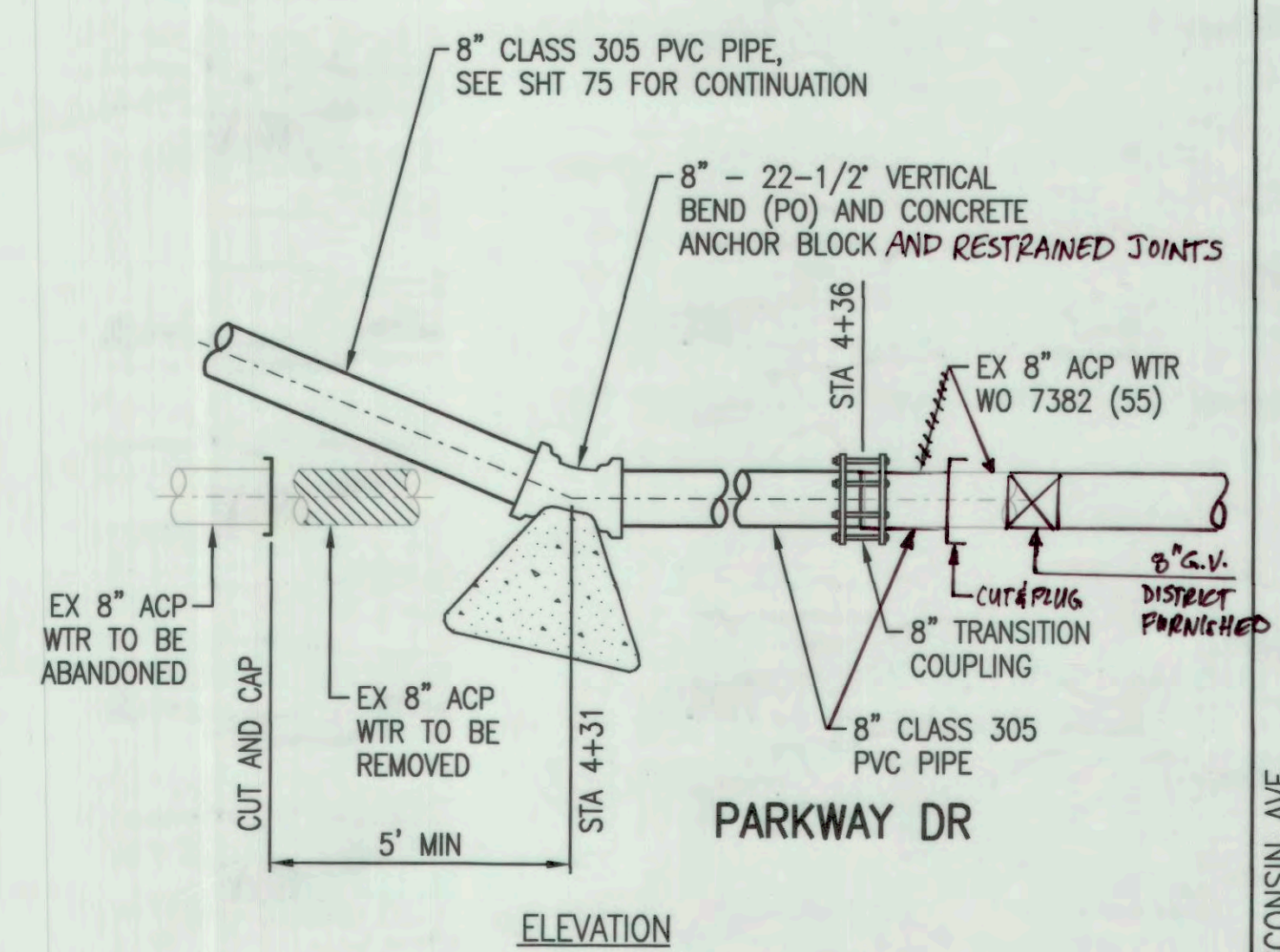
TRENCH REPAIR SECTION (1)  
NOT TO SCALE (VAR)



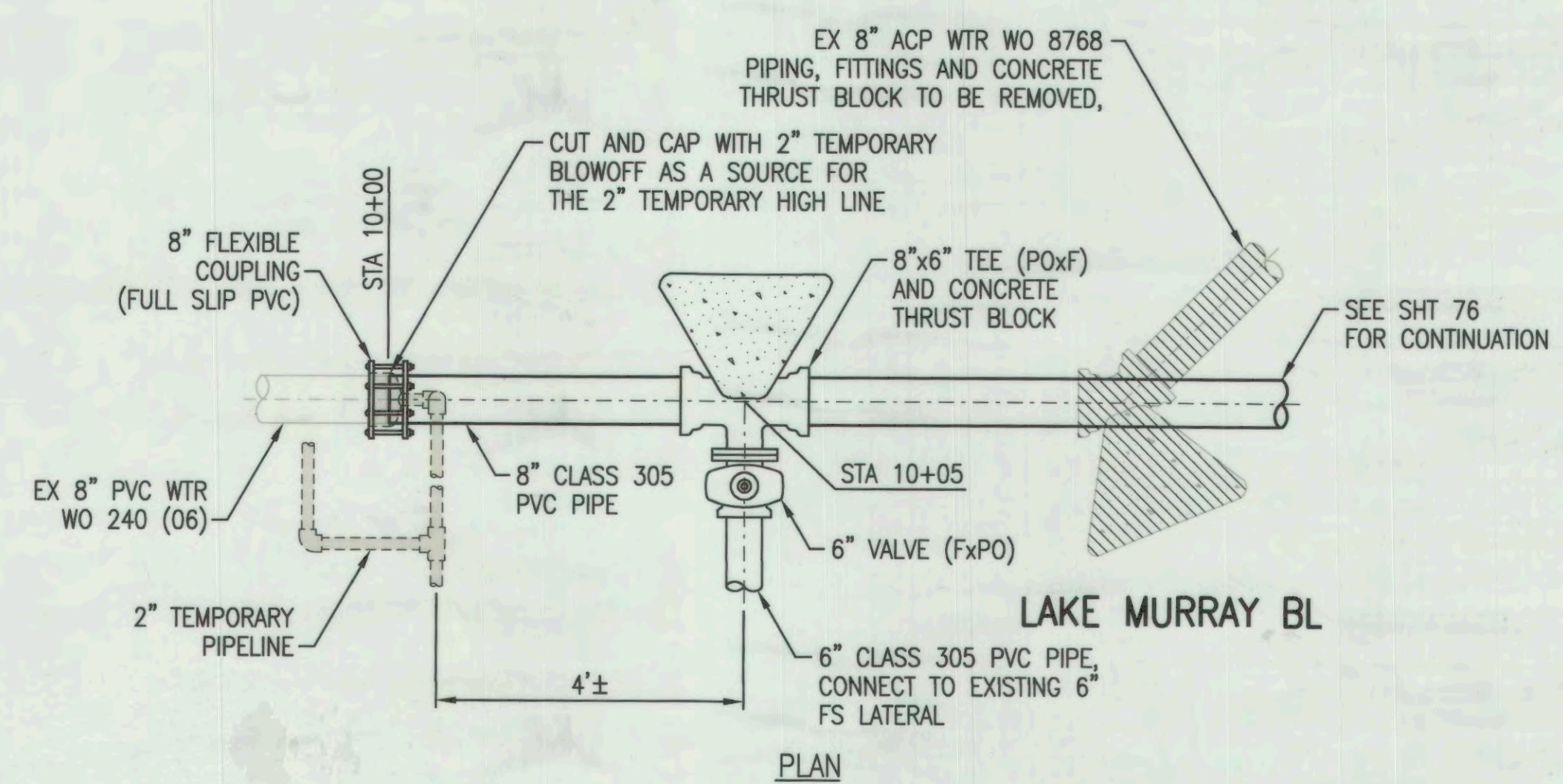
LAKE MURRAY BL  
CONNECTION AT STA 2+84 (2)  
SCALE: 1/2" = 1'-0" (75)



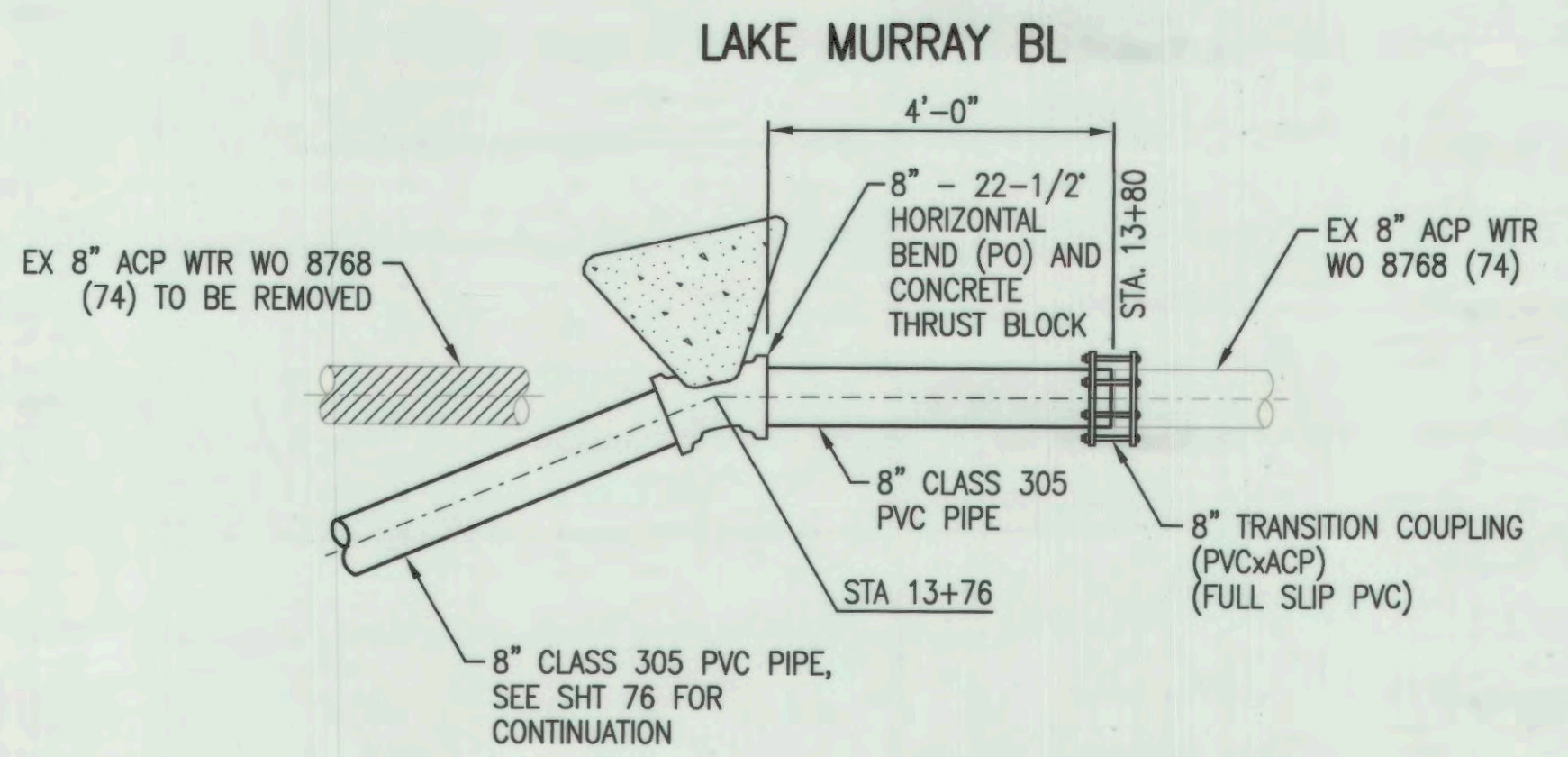
PARKWAY DR  
CONNECTION AT STA 3+55 (3)  
SCALE: 1/2" = 1'-0" (75)



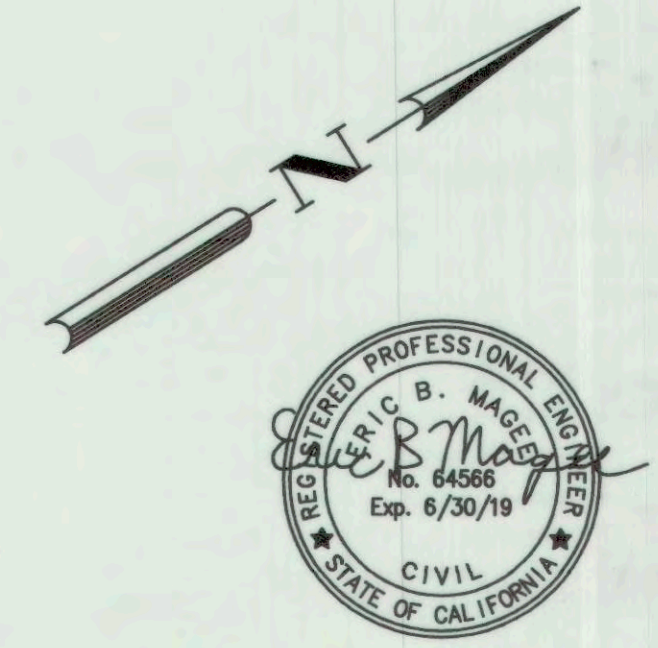
PARKWAY DR  
CONNECTION AT STA 4+36 (4)  
SCALE: 1/2" = 1'-0" (75)



LAKE MURRAY BL  
CONNECTION AT STA 10+05 (5)  
SCALE: 1/2" = 1'-0" (76)



LAKE MURRAY BL  
CONNECTION AT STA 13+76 (6)  
SCALE: 1/2" = 1'-0" (76)



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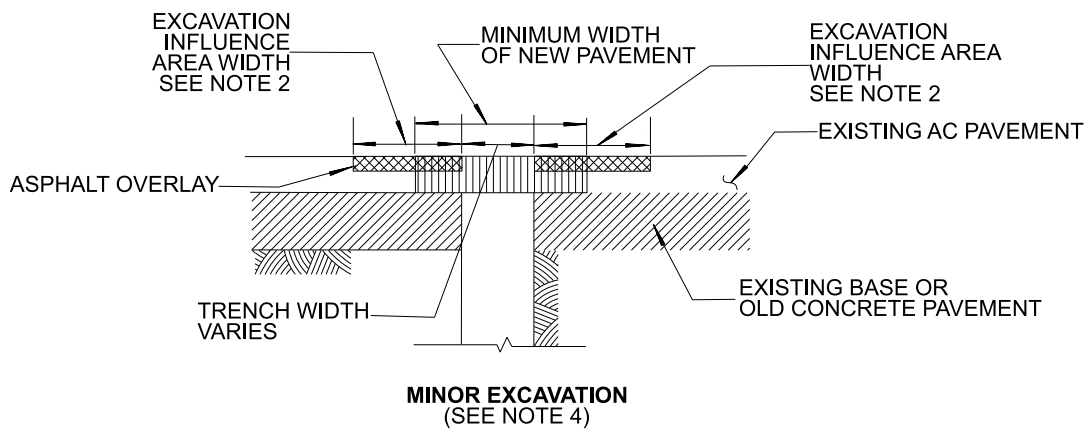
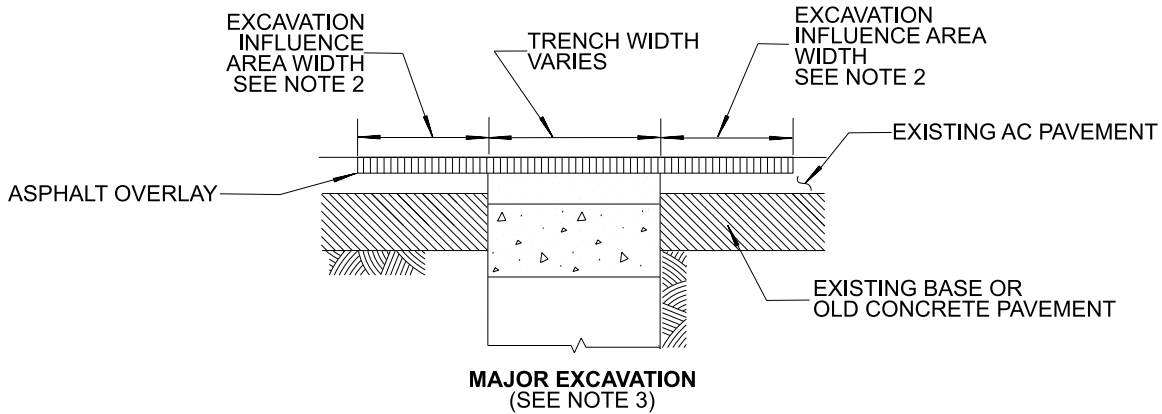
MONTEZUMA PPL / MID-CITY PIPELINE PH2		RELOCATION OF 8" WATER LAKE MURRAY BL NORTH OF WISCONSIN AV	
CITY OF SAN DIEGO, CALIFORNIA PUBLIC WORKS DEPARTMENT SHEET 77 OF 81 SHEETS		WATER WBS S-11026	SEWER WBS N/A
APPROVED: <i>Brian Vitelle</i>	DATE: 3/20/2019	SUBMITTED BY: MARYAM KARGAR	
FOR CITY ENGINEER: BRIAN VITELLE	DATE: 3/20/2019	PROJECT MANAGER: JACOB RIVERA	
PRINT DCE NAME: BRIAN VITELLE	RCE #: C73039	PROJECT ENGINEER: JACOB RIVERA	
DESCRIPTION	BY	APPROVED	DATE
ORIGINAL	PSO		
		222-1755	
		1862444, 6316407	
CONTRACTOR	DATE STARTED	1862444, 6316407	
INSPECTOR	DATE COMPLETED	37333- 77 -D	
<b>HELIX WATER DISTRICT</b>			
DETAILS			
SURVEYED BY: CITY OF SAN DIEGO		SCALE: AS SHOWN	
DRAWN BY: M. RAMOS		DATE:	
CHECKED BY: E. MAGEE		RMB19073	
		SHEET 77 OF 81	
		W.O. 4515	

HELIX WATER DISTRICT - RELOCATION OF 8" WATER, LAKE MURRAY BLVD NORTH OF WISCONSIN AV

DWG Name: S:\55AN020900-Mid-City-PL\WATRES\TASKS\Construction-Plans\SHEETS\11026-MidCity-PIP2-7705.dwg Picked by: mramos on Jun 11, 2018 - 9:22:16

**APPENDIX R**  
**STANDARD DRAWINGS**

# STANDARD DRAWINGS



**NOTES:**

1. EXCAVATION INFLUENCE AREA MEANS THE AREA THAT IS IMPACTED BY THE EXCAVATION AS DETERMINED BY THE ENGINEER AND EXTENDS AROUND THE PERIMETER OF THE EXCAVATION AS SET FORTH IN THE TABLE 62-12A IN SECTION 62.1209 OF SAN DIEGO MUNICIPAL CODE.
2. THE EXCAVATION INFLUENCE AREA EXTENDS AROUND THE PERIMETER OF THE EXCAVATION AS SHOWN IN TABLE 1.

**TABLE 1. EXCAVATION INFLUENCE AREA WIDTH**

STREET CLASSIFICATION	WET UTILITIES	DRY UTILITIES
ARTERIAL STREETS	62 INCHES	51 INCHES
MAJOR STREETS	71 INCHES	55 INCHES
COLLECTOR STREETS	82 INCHES	43 INCHES
RESIDENTIAL STREETS	74 INCHES	46 INCHES

3. MAJOR EXCAVATION MEANS AN EXCAVATION INVOLVING A TRENCH GREATER THAN 6 INCHES IN WIDTH OR GREATER THAN 3 FEET IN DEPTH.
4. MINOR EXCAVATION MEANS AN EXCAVATION INVOLVING A TRENCH 6 INCHES OR LESS IN WIDTH AND 3 FEET OR LESS IN DEPTH.

SHEET 1 OF 2

REVISION	BY	APPROVED	DATE
ORIGINAL		R. AMEN	09/23

CITY OF SAN DIEGO – STANDARD DRAWING

**PAVEMENT RESTORATION GENERAL NOTES**

RECOMMENDED BY THE CITY OF SAN DIEGO  
STANDARDS COMMITTEE

**DRAFT**

COORDINATOR R.C.E. 81047 DATE

---

DRAWING NUMBER **SDG-105**

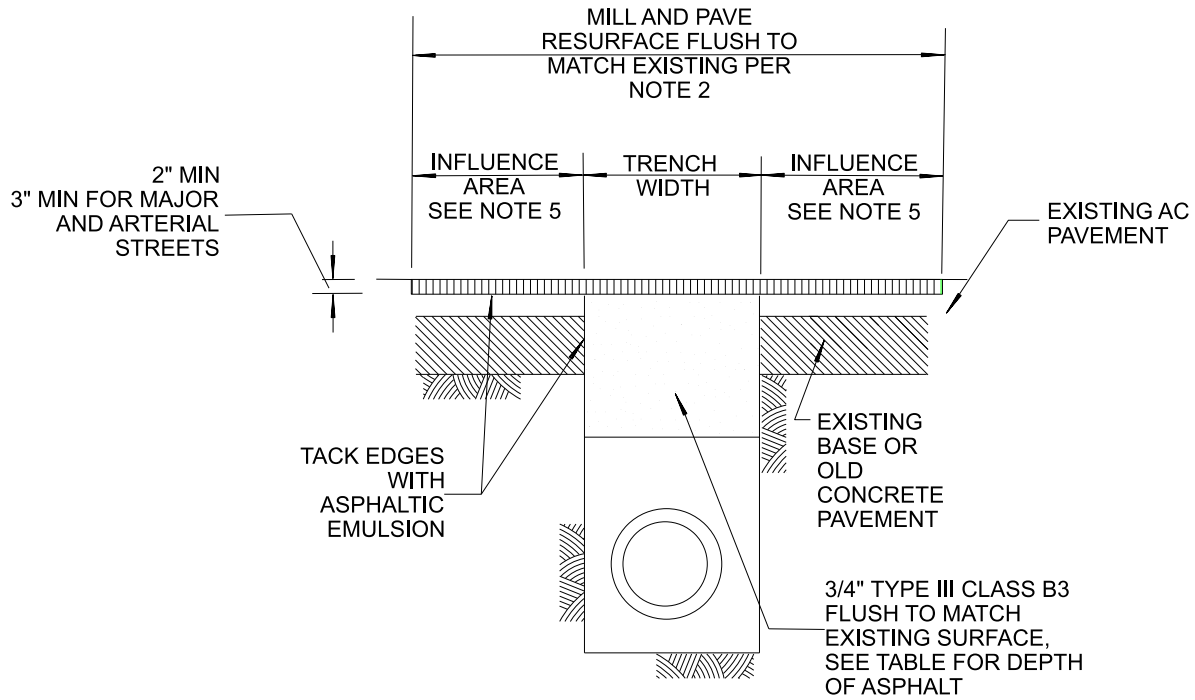
**NOTES (CONTINUED):**

5. ADDITIONAL REPAIRS FOR MAJOR EXCAVATIONS AND MINOR EXCAVATIONS (FOR WET AND DRY UTILITIES): THE PURPOSE OF THE ADDITIONAL PAVEMENT REPAIRS, INCLUDING BUT NOT LIMITED TO BASE AND SUB-BASE REPAIRS, DIG-OUTS, INLAYS, IS TO RESTORE THE SURFACE PAVEMENT TO ITS ORIGINAL CONDITION AND TO ENSURE PUBLIC SAFETY.
6. REPAIRS TO THE EXISTING PAVEMENT WITH OBSERVABLE FAILURES WITHIN THE EXCAVATION INFLUENCE AREA PER TABLE 1 SHALL BE PERFORMED AS DIRECTED BY THE ENGINEER. THE EXCAVATION INFLUENCE AREA IS MEASURED FROM THE OUTER EDGE OF THE TRENCH CUT EXCAVATION AND MUST BE RESURFACED REGARDLESS OF THE EXISTENCE OF OBSERVABLE FAILURE.
7. FOR ALTERNATIVE COMPLIANCE, PAVEMENT RESTORATION (MILL AND PAVE) MAY EXTEND TO THE FULL WIDTH OF OF THE IMPACTED TRAVEL LANE(S) WHERE THE STREET DAMAGE FEE WILL BE WAIVED. FOR UNMARKED TRAVEL LANES, THE CENTERLINE OF THE STREET OR INTERSECTION WILL BE CONSIDERED AS A REFERENCE FOR THE EXTENT OF THE LANE WIDTH TO CURB LINE OR POINT OF CURB RETURN (PCR).

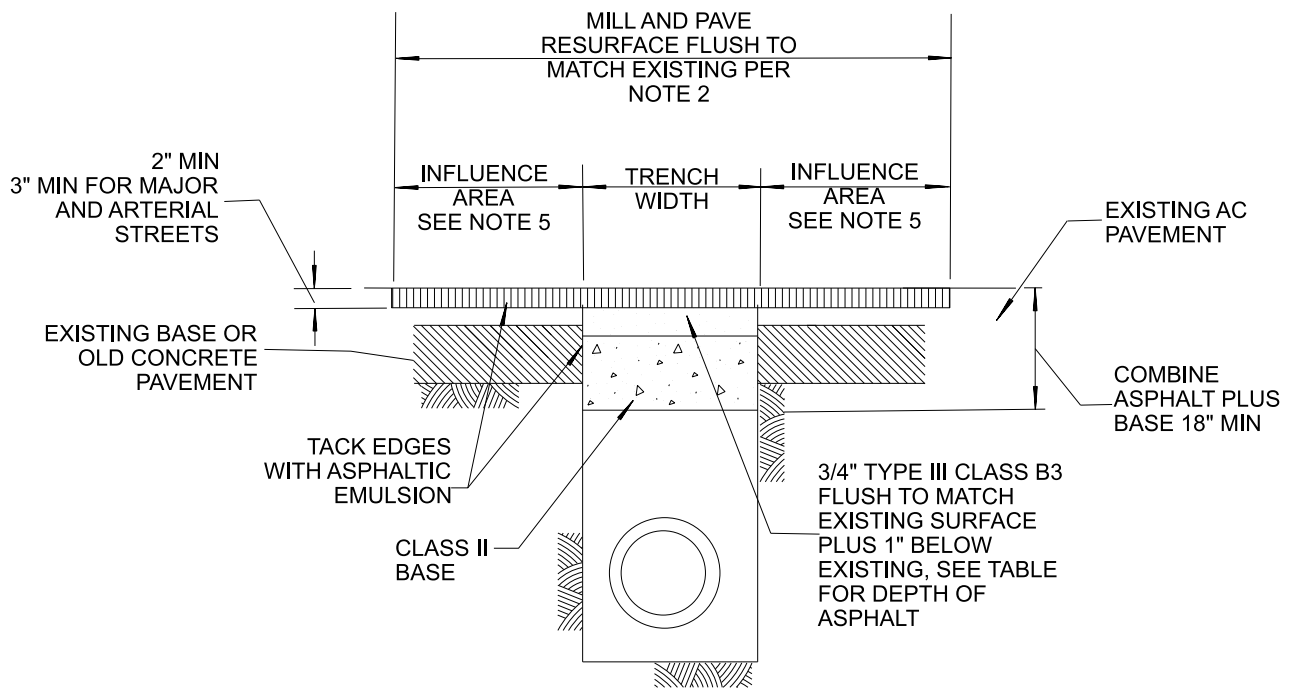
SHEET 2 OF 2

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL		R. AMEN	09/23		<b>DRAFT</b>
				<b>PAVEMENT RESTORATION GENERAL NOTES</b>	COORDINATOR R.C.E. 81047 DATE
					DRAWING NUMBER <b>SDG-105</b>





**TYPE 1**



**TYPE 2**

SHEET 1 OF 2

REVISION	BY	APPROVED	DATE
ORIGINAL		J.P. CASEY	12489
UPDATED	KA	J. NAGELVOORT	4/13
UPDATED	BB	J. NAGELVOORT	1/14
UPDATED	LS	J. NAGELVOORT	02/16
UPDATED	JN	J. NAGELVOORT	11/17
REDRAFTED	CD	J. NAGELVOORT	09/18
UPDATED	ED	R. AMEN	09/23

CITY OF SAN DIEGO - STANDARD DRAWING

**PAVEMENT RESTORATION FOR ASPHALT CONCRETE SURFACED STREETS - MAJOR EXCAVATION**

RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE

**DRAFT**

COORDINATOR R.C.E. 81047 DATE

DRAWING NUMBER

**SDG-107**

**TABLE 1**

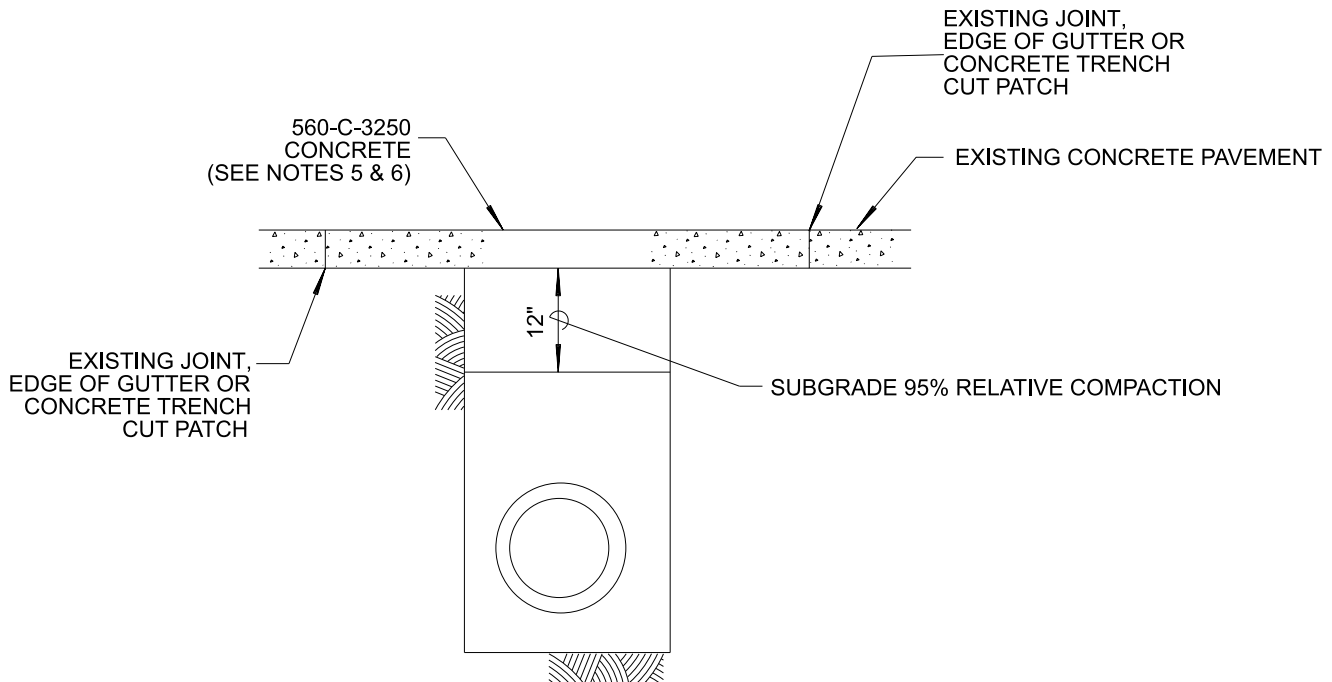
	TYPE 1	TYPE 2
	ASPHALT	ASPHALT PLUS BASE
MIX DESIGN	3/4" TYPE III CLASS B3	3/4" TYPE III CLASS B3 PLUS CLASS II BASE
ALLEYS	8.0"	ASPHALT THICKNESS TO EQUAL
LOCAL THROUGH 4 LANE COLLECTORS	10.0"	EXISTING PLUS 1", MIN 4" TO MAX. 9".
MAJOR	12.0"	COMBINED ASPHALT PLUS BASE 18" MIN.

**NOTES:**

1. ANY STREET TRENCH 7 FEET IN WIDTH OR GREATER AND LONGER THAN 100 FEET IN OVERALL LENGTH SHALL BE RECONSTRUCTED WITH THE PAVEMENT SECTION FOR THE STREET CLASSIFICATION PER SCHEDULE "J" (SDG-113).
2. IN STREETS NOT RECEIVING A FULL WIDTH OVERLAY PRIOR TO ACCEPTANCE, ASPHALT TRENCH CAPS SHALL BE MILLED AS SHOWN AND RESURFACED WITH 1/2" TYPE III CLASS C2 ASPHALT NO LESS THAN 30 CALENDAR DAYS AFTER INITIAL ASPHALT PLACEMENT.
3. IF THE STREET IS NOT SUBJECT TO CURB TO CURB ASPHALT OVERLAY, IT MUST COMPLETE FINAL STREET RESTORATION WITHIN 180 CALENDAR DAYS OF THE TRENCH CAP.
4. WHEN DIRECTED BY CITY ENGINEER OR SHOWN ON THE PLANS, CONCRETE PER SDG-108 (NOTE #5) MAY BE PLACED; A 1/8" - 1/4" WEARING SURFACING OF TYPE III CLASS F ASPHALT CONCRETE WILL BE REQUIRED.
5. ASPHALT OVERLAY THE ENTIRE LENGTH OF THE TRENCH INCLUDING THE INFLUENCE AREA AROUND THE PERIMETER OF THE EXCAVATION PER TABLE 1 IN SDG-105.
  - A. IF THE TRENCH OR EXCAVATION INFLUENCE AREA ENTERS A BICYCLE LANE, THE ENTIRE WIDTH OF THE BICYCLE SHALL BE ASPHALT OVERLAYED AND RESTRIPEDED FOR THE LENGTH OF THE TRENCH INCLUDING EXCAVATION INFLUENCE AREA. REPLACE IN KIND ANY EXISTING DELINEATORS.
6. EXCAVATOR SHALL ASPHALT OVERLAY IN MORATORIUM STREETS UNDER MORATORIUM DUE TO NEW CONSTRUCTION, RECONSTRUCTION, OR ASPHALT OVERLAY WITHIN 180 WORKING DAYS AFTER THE ENGINEER APPROVES THE TRENCH REPAIR.

SHEET 2 OF 2

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE	
ORIGINAL		J.P. CASEY	12489			
UPDATED	KA	J. NAGELVOORT	4/13	<b>PAVEMENT RESTORATION FOR ASPHALT CONCRETE SURFACED STREETS - MAJOR EXCAVATION</b>	<b>DRAFT</b>	
UPDATED	BB	J. NAGELVOORT	1/14			COORDINATOR R.C.E. 81047 DATE
UPDATED	LS	J. NAGELVOORT	02/16		DRAWING	<b>SDG-107</b>
UPDATED	JN	J. NAGELVOORT	11/17		NUMBER	
REDRAFTED	CD	J. NAGELVOORT	09/18			
UPDATED	ED	R. AMEN	10/23			



**NOTES:**

1. CONCRETE PAVEMENT RESTORATION SHALL EXTEND BEYOND THE EDGE OF THE TRENCH CUT TO THE NEAREST JOINT (FULL WIDTH OF CONCRETE PANEL, JOINT TO JOINT AROUND THE PERIMETER OF THE EXCAVATION) OR TO THE EDGE OF THE GUTTER. IF NO GUTTER IS PRESENT, EXTEND THE RESTORATION TO THE NEAREST CURB.
  - A. FOR CONCRETE PAVEMENT WITH EXISTING TRENCH CUT PATCHES THAT ARE 4'-0" OR LESS FROM THE EDGE OF THE EXCAVATION, CONCRETE PAVEMENT RESTORATION SHALL INCLUDE REMOVING THE EXISTING TRENCH CUT PATCHES AND REPLACING IT WITHIN THE NEW PCC CONSTRUCTION FOR THE NEW PANEL.
  - B. IF TRENCH CUT IS IN ALLEY APRON, CONCRETE RESTORATION SHALL BE TO THE NEAREST JOINT OR REPLACE ENTIRE ALLEY APRON IF NO JOINT. FOR NON-STANDARD ALLEY, INSTALL NEW CONCRETE PAVEMENT AS NEW JOINTS CAN BE INSTALLED TO THE EXTENTS OF THE RIGHT-OF-WAY.
2. PRIOR TO PLACING CONCRETE, PAVEMENT EDGES SHALL BE TRIMMED TO NEAT HORIZONTAL AND VERTICAL LINES.
3. UNLESS OTHERWISE SPECIFIED, CONCRETE TRENCH COVER SHALL BE A MINIMUM OF 5 1/2" FOR ALLEYS, 7" FOR LOCAL THROUGH FOUR LANE COLLECTOR STREETS AND 9" THICK FOR ALL MAJOR OR GREATER STREET CLASSIFICATIONS.
4. ANY STREET TRENCH 7'-0" IN WIDTH OR GREATER AND LONGER THAN 100'-0" IN LENGTH SHALL BE RECONSTRUCTED WITH THE PAVEMENT SECTION FOR THE STREET CLASSIFICATION **PER SCHEDULE "J" (SDG-113)**. STREET TRENCH SECTIONS 7'-0" IN WIDTH OR GREATER BUT LESS THAN 100'-0" IN OVERALL LENGTH SHALL BE RESURFACED TO A THICKNESS OF 1" GREATER THAN REQUIRED BY NOTE 3 ABOVE.
5. 560-C-3250 CONCRETE TREATED WITH A MINIMUM 2% CALCIUM CHLORIDE SOLUTION IN ACCORDANCE WITH 201-1 OR 650-CW-4000 (W/O CC) CONCRETE MAY BE OPENED TO TRAFFIC 3 DAYS AFTER IT IS PLACED. 650-CW-4000 CONCRETE TREATED IN SAME MANNER (W/CC) MAY BE OPENED TO TRAFFIC 24 HOURS AFTER IT IS PLACED. CONCRETE SPECIFIED BY ALTERNATE CLASS OR OTHERWISE CONTAINING FLY ASH IS NOT ALLOWED.
6. IN FOUR-LANE MAJOR OR GREATER STREETS, AN APPROVED SET ACCELERATING ADMIXTURE SUCH AS CALCIUM CHLORIDE, SHALL BE USED IN THE CONCRETE.
7. FINAL STREET RESTORATION SHALL BE COMPLETED WITHIN 180 CALENDAR DAYS AFTER COMPLETION OF THE TRENCH WORK WITHIN A STREET SEGMENT.

REVISION	BY	APPROVED	DATE
ORIGINAL		J.CASEY	01/89
UPDATED	KA	J. NAGELVOORT	01/12
UPDATED	BB	J. NAGELVOORT	01/14
UPDATED	BB	J. NAGELVOORT	03/15
REDRAFTED	CD	J. NAGELVOORT	09/18
UPDATED	FM	R. AMEN	09/23

CITY OF SAN DIEGO – STANDARD DRAWING

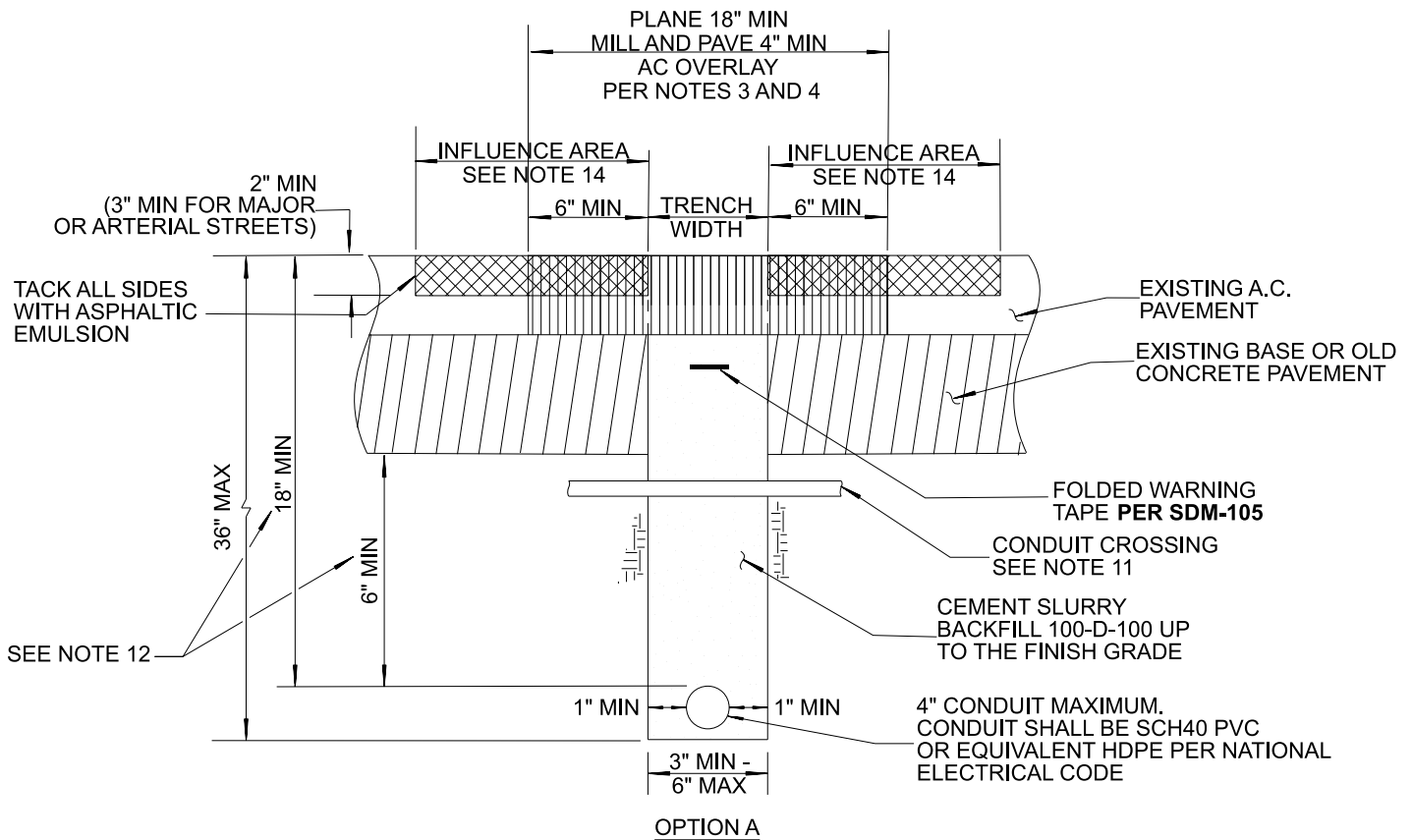
**PAVEMENT RESTORATION FOR CONCRETE SURFACED STREETS AND ALLEYS - MAJOR EXCAVATION**

RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE

**DRAFT**

COORDINATOR R.C.E. 81047 DATE

DRAWING NUMBER **SDG-108**



**NOTES (OPTION A):**

1. NEW TRENCH LOCATION SHALL BE 36 INCHES MINIMUM AND 72 INCHES MAXIMUM FROM LIP OF GUTTER, AND AT LEAST 36 INCHES CLEAR FROM ANY CITY UNDERGROUND FACILITIES.
  - A. THE CONTRACTOR SHALL CONTACT THE ENGINEER TO INSPECT AND APPROVE THE TRAFFIC CONTROL PLAN PRIOR TO START OF EXCAVATION IN A BICYCLE LANE. ENSURE ADEQUATE PROVISIONS HAVE BEEN INCLUDED FOR BICYCLE TRAFFIC INCLUDING BICYCLE DETOURS, IF APPLICABLE.
  - B. WHEN THE TRENCH AND/OR INFLUENCE AREA IS LOCATED WITHIN THE BICYCLE LANE, THE CONTRACTOR MUST PAVE THE FULL WIDTH OF THE BICYCLE LANE TO THE FACE OF CURB (I.E. GRIND AND OVERLAY) WITHIN SEVEN (7) CALENDAR DAYS OF AFTER THE INITIAL EXCAVATION. AT NO TIME SHALL A PARALLEL CUT OR SEAM EXIST IN THE BICYCLE LANE AS A FINAL RESTORATION.
  - C. THE CONTRACTOR SHALL PERFORM TRENCHING IN THE BICYCLE LANE IN ROAD SEGMENTS NOT TO EXCEED 500 LINEAR FEET PER SEGMENT. THE CONTRACTOR SHALL FULLY COMPLETE THE WORK ON EACH SEGMENT PRIOR TO STARTING THE NEXT SEGMENT.
2. CEMENT SLURRY BACKFILL SHALL BE THOROUGHLY CONSOLIDATED, HAVE A MAXIMUM SLUMP OF 4 INCHES. FLY ASH MEETING THE REQUIREMENTS OF 201-1.2.5.3 MAY BE ADDED (NOT AS A SUBSTITUTE) TO THE MINIMUM CEMENT REQUIREMENTS. SLURRY COMBINED GRADING SHALL MEET REQUIREMENTS OF 201-1.3.2 (A) GRADING D.
3. BALL DROP TEST PER ASTM D6024 SHALL BE PERFORMED ON SLURRY AND ACHIEVE A MAXIMUM INDENTATION DIAMETER OF 3 INCHES PRIOR TO PLACEMENT OF ASPHALT CONCRETE. SLURRY PLACED IN NARROW TRENCHES WHERE BALL DROP TEST CANNOT BE PERFORMED SHALL BE CURED A MINIMUM OF 48 HOURS PRIOR TO PLACEMENT OF ASPHALT CONCRETE. PERMANENT RESURFACING SHALL BE COMPLETED IN NO MORE THAN 7 DAYS AFTER PLACEMENT OF CEMENT SLURRY.

SEE ADDITIONAL NOTES ON SHEET 2

SHEET 1 OF 6

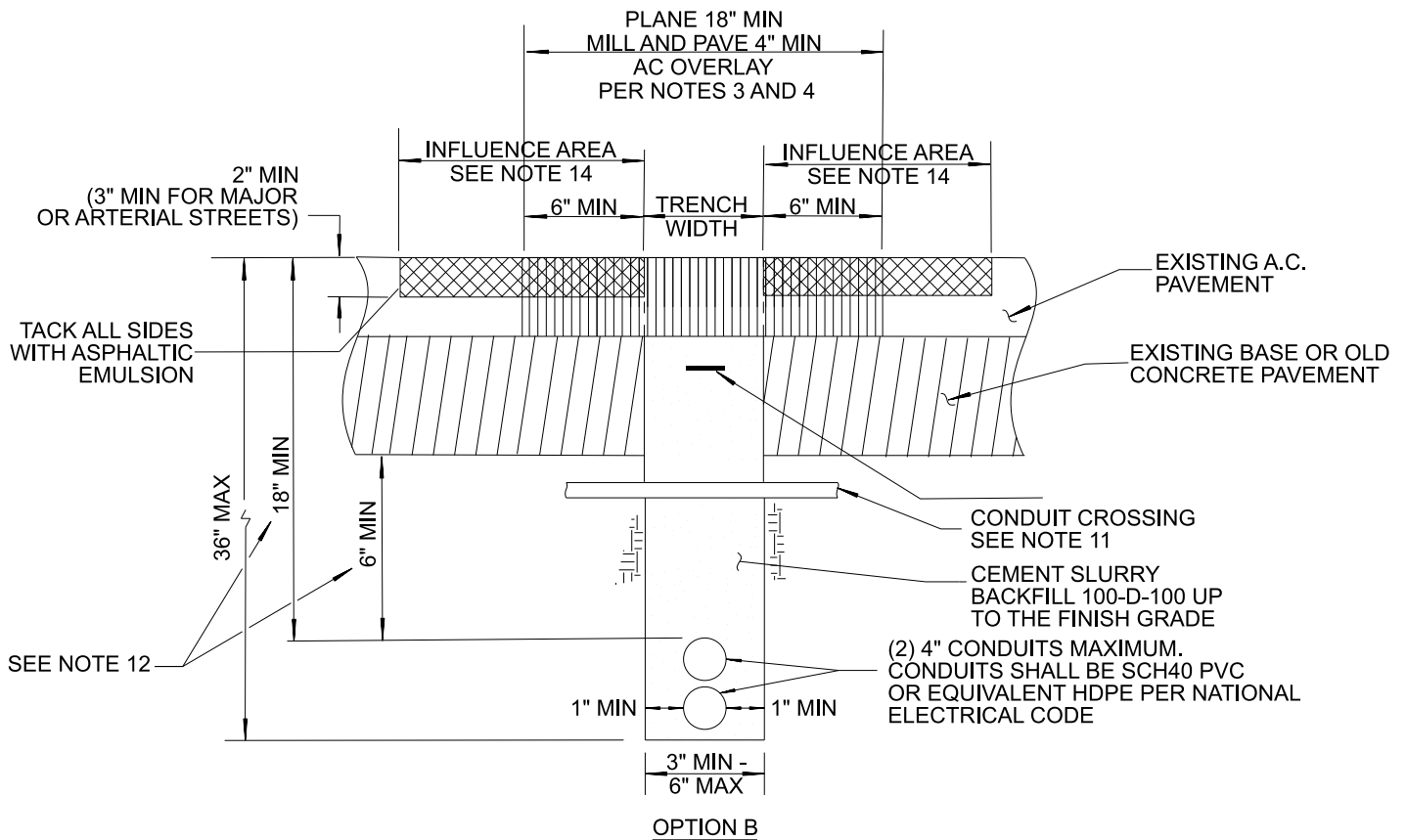
REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO - STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL		BAHMANIAN	04/86		
UPDATED	AA	J. NAGELVOORT	02/16		
UPDATED	LS	M. GIBSON	05/17		
REDRAFTED	CD	J. NAGELVOORT	09/18		
UPDATED	LS	J. NAGELVOORT	04/21		
UPDATED	RC	R. AMEN	10/23	DRAWING NUMBER <b>SDG-117A</b>	

**NOTES (CONTINUED FOR OPTION A):**

4. DURING PLACEMENT, CONCAVE SLURRY SURFACE WITH A SHOVEL TO 1/2 INCH - 1 INCH DEPTH.
5. MINIMUM SPECIFIED SEPARATIONS MUST BE MAINTAINED UNTIL SLURRY HAS FULLY CURED. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ENSURE THE CONDUIT DOES NOT SHIFT HORIZONTALLY OR FLOAT VERTICALLY IN THE TRENCH DURING THE APPLICATION OF THE SLURRY. SPOT POUR ONE SACK SLURRY OVER CONDUIT AT 25 FOOT INTERVALS TO PREVENT CONDUIT FROM FLOATING.
6. CUTS SHALL BE STRAIGHT. EXISTING A.C. PAVEMENT WILL NOT REQUIRE SAW CUTTING WHEN USING ROCKWHEEL FOR EXCAVATION PROVIDED THAT A SMOOTH SURFACE IS PRODUCED.
7. TRENCH SHALL BE MILLED TO A DEPTH OF 4 INCHES A MINIMUM OF 18 INCHES WIDE OR 12 INCHES WIDER THAN TRENCH WIDTH, WHICHEVER IS GREATER, AND RESURFACED WITH 1/2 INCH TYPE III CLASS C2 ASPHALT.
8. WHEN PCC TRENCH RESURFACING IS DIRECTED BY CITY ENGINEER, SHOWN ON THE PLANS, OR REQUIRED FOR A PCC SURFACED STREET, FOR ASPHALT STREETS SEE SDG-107 (NOTE #3) AND FOR CONCRETE SURFACED STREETS SEE SDG-108.
9. SDG-117A SHALL BE USED FOR THE PLACEMENT OF ONE CONDUIT. FOR THE PLACEMENT OF TWO CONDUITS USE SDG-117B AND FOR PLACEMENT OF THREE OR MORE CONDUITS USE SDG-117C OR SDG-119.
10. ALLOW THREE HOURS MINIMUM FOR ONE SACK SLURRY TRENCH BACKFILL CURE TIME FOR TRENCHES PARALLEL TO THE STREET BEFORE OPENING TO TRAFFIC.
11. SLEEVE EXISTING CONDUITS AT CROSSING.
12. TOP OF CONDUIT SHALL BE 18 INCHES MINIMUM FROM TOP OF PAVEMENT OR 6 INCHES MINIMUM FROM BOTTOM OF PAVEMENT SECTION, WHICHEVER IS GREATER.
13. CLEARANCE SEPARATIONS BETWEEN DRY AND WET UTILITIES PER CALIFORNIA PUBLIC UTILITY CODE GENERAL ORDER 128 SHALL BE MAINTAINED.
14. ASPHALT OVERLAY THE ENTIRE LENGTH OF THE TRENCH INCLUDING THE INFLUENCE AREA AROUND THE PERIMETER OF THE EXCAVATION PER TABLE 1 IN SDG-105.
  - A. IF THE TRENCH OR EXCAVATION INFLUENCE AREA ENTERS A BICYCLE LANE, THE ENTIRE WIDTH OF THE BICYCLE SHALL BE ASPHALT OVERLAYED AND RESTRIPEDED FOR THE LENGTH OF THE TRENCH INCLUDING EXCAVATION INFLUENCE AREA. REPLACE IN KIND ANY EXISTING DELINEATORS.

SHEET 2 OF 6

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING  <b>PAVEMENT RESTORATION FOR ASPHALT CONCRETE SURFACED STREETS - MINOR EXCAVATION OPTION A - ONE CONDUIT</b>	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE  <b>DRAFT</b> _____ COORDINATOR R.C.E. 81047 DATE
ORIGINAL		BAHMANIAN	04/86		
UPDATED	AA	J. NAGELVOORT	02/16		
UPDATED	LS	M. GIBSON	05/17		
REDRAFTED	CD	J. NAGELVOORT	09/18		
UPDATED	LS	J. NAGELVOORT	04/21		
UPDATED	RC	R. AMEN	10/23	DRAWING NUMBER	<b>SDG-117A</b>



**NOTES (OPTION B):**

1. NEW TRENCH LOCATION SHALL BE 36 INCHES MINIMUM AND 72 INCHES MAXIMUM FROM LIP OF GUTTER, AND AT LEAST 36 INCHES CLEAR FROM ANY CITY UNDERGROUND FACILITIES.
  - A. THE CONTRACTOR SHALL CONTACT THE ENGINEER TO INSPECT AND APPROVE THE TRAFFIC CONTROL PLAN PRIOR TO START OF EXCAVATION IN A BICYCLE LANE. ENSURE ADEQUATE PROVISIONS HAVE BEEN INCLUDED FOR BICYCLE TRAFFIC INCLUDING BICYCLE DETOURS, IF APPLICABLE.
  - B. WHEN THE TRENCH AND/OR INFLUENCE AREA IS LOCATED WITHIN THE BICYCLE LANE, THE CONTRACTOR MUST PAVE THE FULL WIDTH OF THE BICYCLE LANE TO THE FACE OF CURB (I.E. GRIND AND OVERLAY) WITHIN SEVEN (7) CALENDAR DAYS OF AFTER THE INITIAL EXCAVATION. AT NO TIME SHALL A PARALLEL CUT OR SEAM EXIST IN THE BICYCLE LANE AS A FINAL RESTORATION.
  - C. THE CONTRACTOR SHALL PERFORM TRENCHING IN THE BICYCLE LANE IN ROAD SEGMENTS NOT TO EXCEED 500 LINEAR FEET PER SEGMENT. THE CONTRACTOR SHALL FULLY COMPLETE THE WORK ON EACH SEGMENT PRIOR TO STARTING THE NEXT SEGMENT.
2. CEMENT SLURRY BACKFILL SHALL BE THOROUGHLY CONSOLIDATED, HAVE A MAXIMUM SLUMP OF 4 INCHES. FLY ASH MEETING THE REQUIREMENTS OF 201-1.2.5.3 MAY BE ADDED (NOT AS A SUBSTITUTE) TO THE MINIMUM CEMENT REQUIREMENTS. SLURRY COMBINED GRADING SHALL MEET REQUIREMENTS OF 201-1.3.2 (A) GRADING D.
3. BALL DROP TEST PER ASTM D6024 SHALL BE PERFORMED ON SLURRY AND ACHIEVE A MAXIMUM INDENTATION DIAMETER OF 3 INCHES PRIOR TO PLACEMENT OF ASPHALT CONCRETE. SLURRY PLACED IN NARROW TRENCHES WHERE BALL DROP TEST CANNOT BE PERFORMED SHALL BE CURED A MINIMUM OF 48 HOURS PRIOR TO PLACEMENT OF ASPHALT CONCRETE. PERMANENT RESURFACING SHALL BE COMPLETED IN NO MORE THAN 7 DAYS AFTER PLACEMENT OF CEMENT SLURRY.

SEE ADDITIONAL NOTES ON SHEET 4

SHEET 3 OF 6

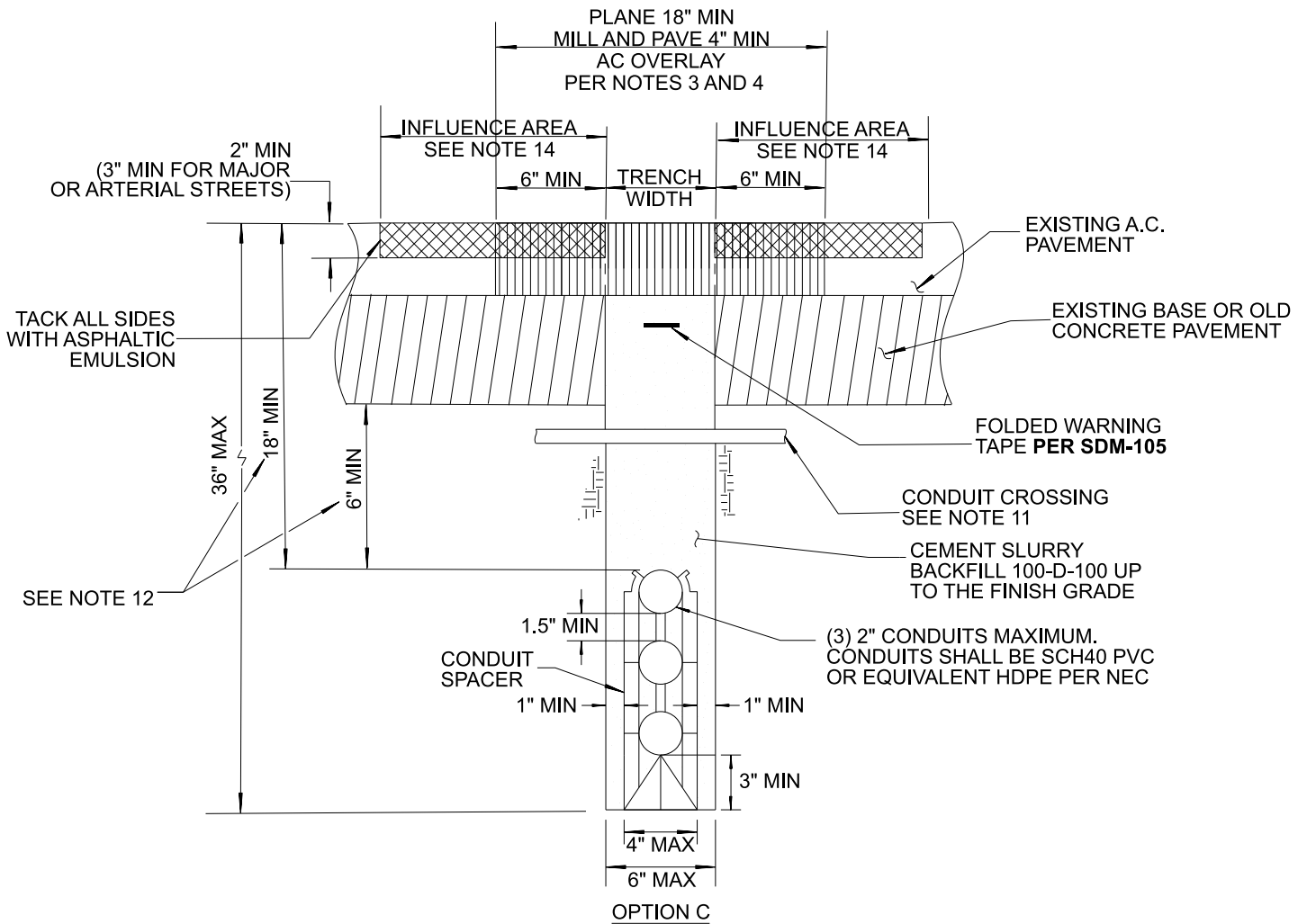
REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO - STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL		BAHMANIAN	04/86		
UPDATED	AA	J. NAGELVOORT	02/16		
UPDATED	LS	M. GIBSON	05/17		
REDRAFTED	CD	J. NAGELVOORT	09/18		
UPDATED	LS	J. NAGELVOORT	04/21		
UPDATED	RC	R. AMEN	10/23		
				DRAWING NUMBER	<b>SDG-117B</b>

**NOTES (CONTINUED FOR OPTION B):**

4. DURING PLACEMENT, CONCAVE SLURRY SURFACE WITH A SHOVEL TO 1/2 INCH - 1 INCH DEPTH.
5. MINIMUM SPECIFIED SEPARATIONS MUST BE MAINTAINED UNTIL SLURRY HAS FULLY CURED. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ENSURE THE CONDUIT DOES NOT SHIFT HORIZONTALLY OR FLOAT VERTICALLY IN THE TRENCH DURING THE APPLICATION OF THE SLURRY. SPOT POUR ONE SACK SLURRY OVER CONDUIT AT 25 FOOT INTERVALS TO PREVENT CONDUIT FROM FLOATING.
6. CUTS SHALL BE STRAIGHT. EXISTING A.C. PAVEMENT WILL NOT REQUIRE SAW CUTTING WHEN USING ROCKWHEEL FOR EXCAVATION PROVIDED THAT A SMOOTH SURFACE IS PRODUCED.
7. TRENCH SHALL BE MILLED TO A DEPTH OF 4 INCHES AND A MINIMUM OF 18 INCHES WIDE OR 12 INCHES WIDER THAN TRENCH WIDTH, WHICHEVER IS GREATER, AND RESURFACED WITH 1/2 INCH TYPE III CLASS C2 ASPHALT.
8. WHEN PCC PAVEMENT RESTORATION IS DIRECTED BY CITY ENGINEER, SHOWN ON THE PLANS, OR REQUIRED FOR A PCC SURFACED STREET, FOR ASPHALT STREETS SEE SDG-107 (NOTE #3) AND FOR CONCRETE SURFACED STREETS SEE SDG-108.
9. SDG-117A SHALL BE USED FOR THE PLACEMENT OF ONE CONDUIT. FOR THE PLACEMENT OF TWO CONDUITS USE SDG-117B AND FOR PLACEMENT OF THREE OR MORE CONDUITS USE SDG-117C OR SDG-119.
10. ALLOW THREE HOURS MINIMUM FOR ONE SACK SLURRY TRENCH BACKFILL CURE TIME FOR TRENCHES PARALLEL TO THE STREET BEFORE OPENING TO TRAFFIC.
11. SLEEVE EXISTING CONDUITS AT CROSSING.
12. TOP OF CONDUIT SHALL BE 18 INCHES MINIMUM FROM TOP OF PAVEMENT OR 6 INCHES MINIMUM FROM BOTTOM OF PAVEMENT SECTION, WHICHEVER IS GREATER.
13. CLEARANCE SEPARATIONS BETWEEN DRY AND WET UTILITIES PER CALIFORNIA PUBLIC UTILITY CODE GENERAL ORDER 128 SHALL BE MAINTAINED.
14. ASPHALT OVERLAY THE ENTIRE LENGTH OF THE TRENCH INCLUDING THE INFLUENCE AREA AROUND THE PERIMETER OF THE EXCAVATION PER TABLE 1 IN SDG-105.
  - A. IF THE TRENCH OR EXCAVATION INFLUENCE AREA ENTERS A BICYCLE LANE, THE ENTIRE WIDTH OF THE BICYCLE SHALL BE ASPHALT OVERLAYED AND RESTRIPEDED FOR THE LENGTH OF THE TRENCH INCLUDING EXCAVATION INFLUENCE AREA. REPLACE IN KIND ANY EXISTING DELINEATORS.

SHEET 4 OF 6

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING  <b>PAVEMENT RESTORATION FOR ASPHALT CONCRETE SURFACE STREETS - MINOR EXCAVATION OPTION B - TWO CONDUITS</b>	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE  <b>DRAFT</b>  COORDINATOR R.C.E. 81047 DATE
ORIGINAL		BAHMANIAN	0486		
UPDATED	AA	J. NAGELVOORT	02/16		
UPDATED	LS	M. GIBSON	05/17		
REDRAFTED	CD	J. NAGELVOORT	09/18		
UPDATED	LS	J. NAGELVOORT	04/21		
UPDATED	RC	R. AMEN	10/23	DRAWING NUMBER	<b>SDG-117B</b>



**NOTES (OPTION C):**

1. NEW TRENCH LOCATION SHALL BE 36 INCHES MINIMUM AND 72 INCHES MAXIMUM FROM LIP OF GUTTER, AND AT LEAST 36 INCHES CLEAR FROM ANY CITY UNDERGROUND FACILITIES.
  - A. THE CONTRACTOR SHALL CONTACT THE ENGINEER TO INSPECT AND APPROVE THE TRAFFIC CONTROL PLAN PRIOR TO START OF EXCAVATION IN A BICYCLE LANE. ENSURE ADEQUATE PROVISIONS HAVE BEEN INCLUDED FOR BICYCLE TRAFFIC INCLUDING BICYCLE DETOURS, IF APPLICABLE.
  - B. WHEN THE TRENCH AND/OR INFLUENCE AREA IS LOCATED WITHIN THE BICYCLE LANE, THE CONTRACTOR MUST PAVE THE FULL WIDTH OF THE BICYCLE LANE TO THE FACE OF CURB (I.E. GRIND AND OVERLAY) WITHIN SEVEN (7) CALENDAR DAYS OF AFTER THE INITIAL EXCAVATION. AT NO TIME SHALL A PARALLEL CUT OR SEAM EXIST IN THE BICYCLE LANE AS A FINAL RESTORATION.
  - D. THE CONTRACTOR SHALL PERFORM TRENCHING IN THE BICYCLE LANE IN ROAD SEGMENTS NOT TO EXCEED 500 LINEAR FEET PER SEGMENT. THE CONTRACTOR SHALL FULLY COMPLETE THE WORK ON EACH SEGMENT PRIOR TO STARTING THE NEXT SEGMENT.
2. CEMENT SLURRY BACKFILL SHALL BE THOROUGHLY CONSOLIDATED, HAVE A MAXIMUM SLUMP OF 4 INCHES. FLY ASH MEETING THE REQUIREMENTS OF 201-1.2.5.3 MAY BE ADDED (NOT AS A SUBSTITUTE) TO THE MINIMUM CEMENT REQUIREMENTS. SLURRY COMBINED GRADING SHALL MEET REQUIREMENTS OF 201-1.3.2 (A) GRADING D.

SEE ADDITIONAL NOTES ON SHEET 6

SHEET 5 OF 6

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO - STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE	
ORIGINAL		BAHMANIAN	04/86		<b>PAVEMENT RESTORATION FOR ASPHALT CONCRETE SURFACED STREETS - MINOR EXCAVATION OPTION C - THREE CONDUITS</b>	<b>DRAFT</b>
UPDATED	AA	J. NAGELVOORT	02/16	COORDINATOR R.C.E. 81047		DATE
UPDATED	LS	M. GIBSON	05/17	DRAWING		<b>SDG-117C</b>
REDRAFTED	CD	J. NAGELVOORT	09/18	NUMBER		
UPDATED	LS	J. NAGELVOORT	04/21			
UPDATED	RC	R. AMEN	10/23			

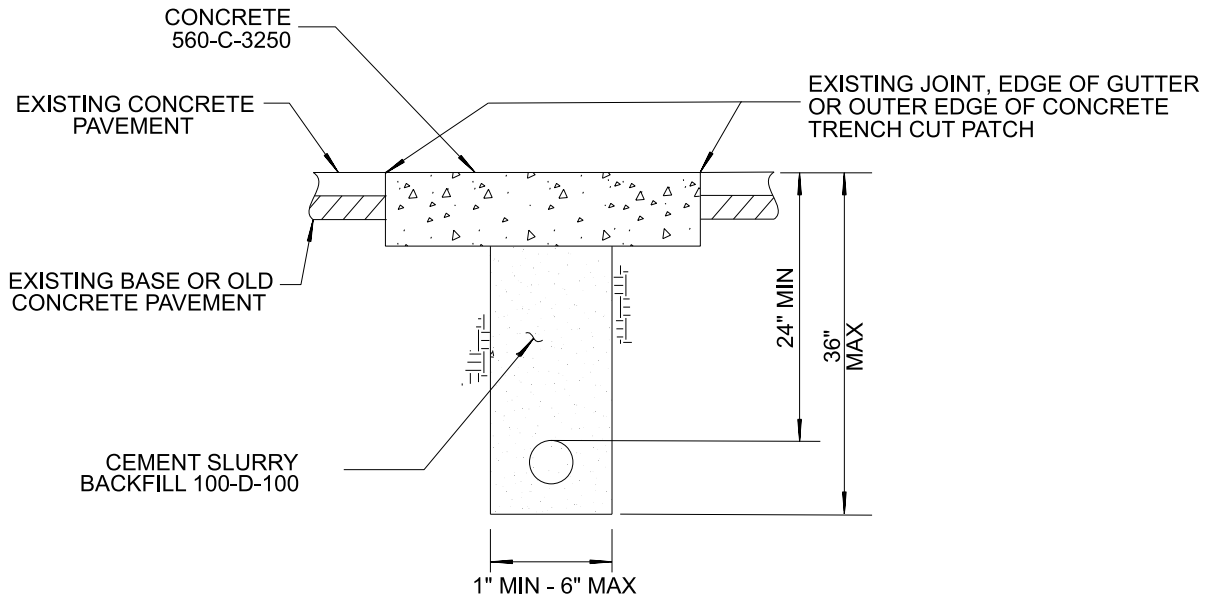


**NOTES (CONTINUED FOR OPTION C):**

3. BALL DROP TEST PER ASTM D6024 SHALL BE PERFORMED ON SLURRY AND ACHIEVE A MAXIMUM INDENTATION DIAMETER OF 3 INCHES PRIOR TO PLACEMENT OF ASPHALT CONCRETE. SLURRY PLACED IN NARROW TRENCHES WHERE BALL DROP TEST CANNOT BE PERFORMED SHALL BE CURED A MINIMUM OF 48 HOURS PRIOR TO PLACEMENT OF ASPHALT CONCRETE. PERMANENT RESURFACING SHALL BE COMPLETED IN NO MORE THAN 7 DAYS AFTER PLACEMENT OF CEMENT SLURRY.
4. DURING PLACEMENT, CONCAVE SLURRY SURFACE WITH A SHOVEL TO 1/2 INCH - 1 INCH DEPTH.
5. MINIMUM SPECIFIED SEPARATIONS MUST BE MAINTAINED UNTIL SLURRY HAS FULLY CURED. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ENSURE THE CONDUIT DOES NOT SHIFT HORIZONTALLY OR FLOAT VERTICALLY IN THE TRENCH DURING THE APPLICATION OF THE SLURRY. SPOT POUR ONE SACK SLURRY OVER CONDUIT AT 25 FOOT INTERVALS TO PREVENT CONDUIT FROM FLOATING.
6. CUTS SHALL BE STRAIGHT. EXISTING A.C. PAVEMENT WILL NOT REQUIRE SAW CUTTING WHEN USING ROCKWHEEL FOR EXCAVATION PROVIDED THAT A SMOOTH SURFACE IS PRODUCED.
7. TRENCH SHALL BE MILLED TO A DEPTH OF 4 INCHES AND A MINIMUM OF 18 INCHES WIDE OR 12 INCHES WIDER THAN TRENCH WIDTH, WHICHEVER IS GREATER, AND RESURFACED WITH 1/2 INCH TYPE III CLASS C2 ASPHALT.
8. WHEN PCC TRENCH RESURFACING IS DIRECTED BY CITY ENGINEER, SHOWN ON THE PLANS, OR REQUIRED FOR A PCC SURFACED STREET, FOR ASPHALT STREETS **SEE SDG-107** (NOTE #3) AND FOR CONCRETE SURFACED STREETS **SEE SDG-108**.
9. FOR PLACEMENT OF ADDITIONAL CONDUITS THAT EXCEED THE MAXIMUM ALLOWABLE TRENCH DIMENSIONS IN **SDG-117C** USE **SDG-119**.
10. ALLOW THREE HOURS MINIMUM FOR ONE SACK SLURRY TRENCH BACKFILL CURE TIME FOR TRENCHES PARALLEL TO THE STREET BEFORE OPENING TO TRAFFIC.
11. SLEEVE EXISTING CONDUITS AT CROSSING.
12. TOP OF CONDUIT SHALL BE 18" MINIMUM FROM TOP OF PAVEMENT OR 6" MINIMUM FROM BOTTOM OF PAVEMENT SECTION, WHICHEVER IS GREATER.
13. CONDUIT DUCT SPACERS SHALL BE USED TO MAINTAIN A 3 INCH MINIMUM SEPARATION FROM THE BOTTOM OF THE TRENCH AND 1 INCH SEPARATIONS FROM THE SIDES OF THE TRENCH TO INSURE SLURRY ENCAPSULATION OF THE CONDUIT PACKAGE.
14. SPACERS SHALL BE PLACED EVERY 6 FEET ON CENTER ALONG THE ALIGNMENT OF THE CONDUIT.
15. CLEARANCE SEPARATIONS BETWEEN DRY AND WET UTILITIES PER CALIFORNIA PUBLIC UTILITY CODE GENERAL ORDER 128 SHALL BE MAINTAINED.
16. ASPHALT OVERLAY THE ENTIRE LENGTH OF THE TRENCH INCLUDING THE INFLUENCE AREA AROUND THE PERIMETER OF THE EXCAVATION PER TABLE 1 IN SDG-105.
  - A. IF THE TRENCH OR EXCAVATION INFLUENCE AREA ENTERS A BICYCLE LANE, THE ENTIRE WIDTH OF THE BICYCLE SHALL BE ASPHALT OVERLAYED AND RESTRIPEDED FOR THE LENGTH OF THE TRENCH INCLUDING EXCAVATION INFLUENCE AREA. REPLACE IN KIND ANY EXISTING DELINEATORS.

SHEET 6 OF 6

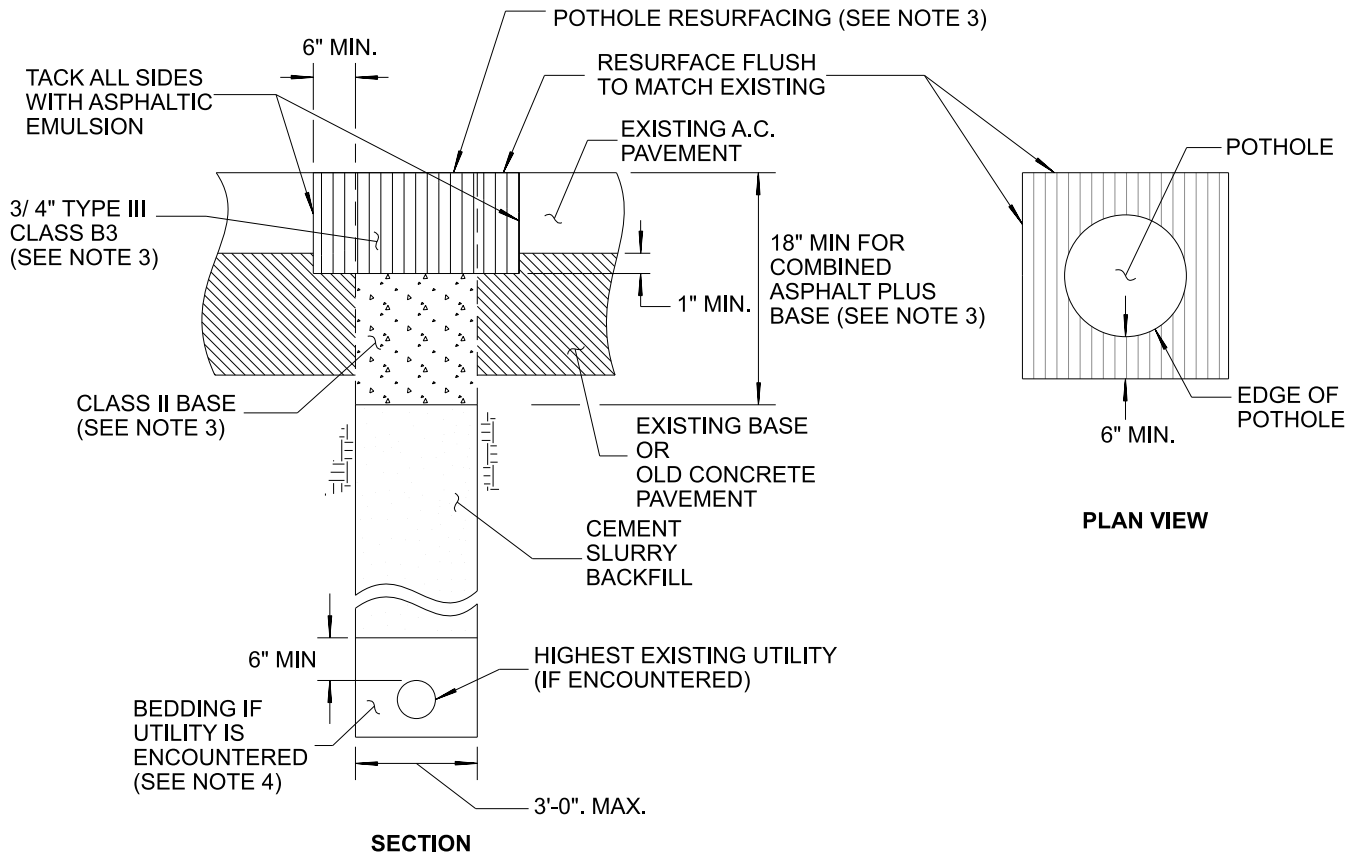
REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE	
ORIGINAL		BAHMANIAN	0486			
UPDATED	AA	J. NAGELVOORT	0216	<b>PAVEMENT RESTORATION FOR ASPHALT CONCRETE SURFACED STREETS - MINOR EXCAVATION OPTION C - THREE CONDUITS</b>	<b>DRAFT</b>	
UPDATED	LS	M. GIBSON	0517			COORDINATOR R.C.E. 81047 DATE
REDRAFTED	CD	J. NAGELVOORT	0918		DRAWING	<b>SDG-117C</b>
UPDATED	LS	J. NAGELVOORT	0421		NUMBER	
UPDATED	RC	R. AMEN	1023			



**NOTES:**

1. CEMENT SLURRY BACKFILL SHALL BE THOROUGHLY CONSOLIDATED, HAVE A MAXIMUM SLUMP OF 4 INCHES, AND MAY CONTAIN 30% MAXIMUM 3/8" ROCK.
2. CONCRETE SHALL BE PLACED AND FINISHED IN ACCORDANCE WITH 306-6. CONCRETE MAY BE PLACED IMMEDIATELY FOLLOWING SLURRY BACKFILL
3. CONCRETE TRENCH COVER SHALL BE A MINIMUM OF 5 1/2" THICK IN ALLEY OR LOCAL RESIDENTIAL STREETS AND 7" THICK IN ALL OTHER STREETS. **SEE NOTE #5 IN SDG-108** FOR CONCRETE CLASS OPTIONS AND CURING REQUIREMENTS.
4. EXISTING CONCRETE PAVEMENT WILL REQUIRE SAW CUTTING.
5. FOR ELECTRICAL SUPPLY CABLES, SEE CALIFORNIA PUBLIC UTILITY COMMISSION GENERAL ORDER NO. 128, RULE 33.4 CLEARANCES AND DEPTHS.
6. FOR DRY UTILITIES (ELECTRICAL, COMMUNICATION, GAS, ETC.) **SEE SDG-119**.
7. CONCRETE PAVEMENT RESTORATION SHALL EXTEND BEYOND THE EDGE OF THE TRENCH CUT TO THE NEAREST JOINT (FULL WIDTH OF CONCRETE PANEL, JOINT TO JOINT AROUND THE PERIMETER OF THE EXCAVATION).
  - A. FOR CONCRETE PAVEMENT WITH EXISTING TRENCH CUT PATCHES, CONCRETE PAVEMENT RESTORATION SHALL INCLUDE THE EXISTING TRENCH CUT PATCHES, IF THOSE PATCHES ARE WITHIN 4'-0" OF THE PROPOSED CONCRETE PANEL.
  - B. IF THE TRENCH CUT IS IN ALLEY APRON, CONCRETE RESTORATION SHALL BE TO THE NEAREST JOINT OR REPLACE ENTIRE ALLEY APRON IF NO JOINT. FOR NON-STANDARD ALLEY, INSTALL NEW CONCRETE PAVEMENT AS NEW JOINT CAN BE INSTALLED TO THE EXTEND OF THE RIGHT-OF-WAY.
8. FINAL STREET RESTORATION SHALL BE COMPLETED WITHIN 180 CALENDAR DAYS AFTER COMPLETION OF TRENCH WORK WITHIN A STREET SEGMENT.

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE	
ORIGINAL		BAHMANIAN	04/86		<b>PAVEMENT RESTORATION FOR CONCRETE SURFACED STREETS AND ALLEYS - MINOR EXCAVATION</b>	<b>DRAFT</b>
UPDATED	KA	J. NAGELVOORT	08/13	COORDINATOR		R.C.E. 81047
UPDATED	AB	J. NAGELVOORT	02/16	DATE		
REDRAFTED	CD	J. NAGELVOORT	09/18	DRAWING		<b>SDG-118</b>
UPDATED	HE	R. AMEN	10/23	NUMBER		



**NOTES:**

1. CEMENT SLURRY BACKFILL SHALL BE THOROUGHLY CONSOLIDATED, AND HAVE A MAXIMUM SLUMP OF 4 INCHES. FLY ASH MEETING THE REQUIREMENTS OF 201-1.2.5.3 MAY BE ADDED (NOT AS A SUBSTITUTE) TO THE MINIMUM CEMENT REQUIREMENTS. SLURRY COMBINED GRADING SHALL MEET REQUIREMENTS OF 201-1.3.2 GRADING D. CEMENT SLURRY BACKFILL SHALL BE 100-D-100.
2. SLURRY SHALL BE CURED A MINIMUM OF 48 HOURS PRIOR TO PLACEMENT OF CLASS II BASE AND ASPHALT CONCRETE. RESURFACING SHALL BE COMPLETED IN NO MORE THAN 7 DAYS AFTER PLACEMENT OF CEMENT SLURRY.
3. ALL ASPHALT STREET RESURFACING SHALL EXTEND A MINIMUM OF 6 INCHES BEYOND EDGE OF POTHOLE OR EXPLORATORY EXCAVATION, AS SHOWN. ASPHALT THICKNESS TO EQUAL EXISTING AC PAVEMENT PLUS 1 INCH (4 INCHES MINIMUM TO 9 INCHES MAXIMUM). COMBINED ASPHALT PLUS BASE SHALL BE 18 INCHES MINIMUM.
4. IF UTILITY IS ENCOUNTERED, AS LISTED BELOW, PLACE BEDDING A MINIMUM OF 6 INCHES ABOVE UTILITY.
  - A. WATER UTILITY: SE 50 SAND
  - B. SEWER UTILITY: 3/ 8" MAXIMUM AGGREGATE
  - C. DRY UTILITY: SE 50 SAND
5. FOR PCC SURFACED STREETS, **SEE SDG-108** FOR RESURFACING. FOR POTHOLE AND EXPLORATORY EXCAVATION LARGER THAN 3'-0" ON ASPHALT CONCRETE SURFACED STREETS, SEE SDG-107 FOR RESURFACING.
6. POTHOLE OR EXPLORATORY EXCAVATION IN BIKE LANES SHALL BE APPROVED BY THE CITY. IF APPROVED, THE ENTIRE WIDTH OF THE BIKE LANE SHALL BE RESURFACED, AT A MINIMUM LENGTH OF 6 FEET.
7. TEMPORARY RESURFACING IS ALLOWED IF CONSTRUCTION WILL BE PERFORMED WITHIN 60 DAYS AFTER POTHOLING WORK, IF POTHOLE OR EXPLORATORY EXCAVATION IS WITHIN THE NEW TRENCH LIMITS, AND **IF APPROVED BY THE CITY**. MATERIAL FOR TEMPORARY RESURFACING **SHALL BE APPROVED BY THE CITY**. SEE NOTE 3 FOR LIMITS AND DEPTH.
8. PAVEMENT CORES SHALL NOT BE GREATER THAN 3'-0" IN DIAMETER, AND SHALL NOT BE SPACED CLOSER THAN 3 FEET BETWEEN CORES, EDGE TO EDGE.
9. SEE SHEET 2 FOR TYPE B - KEYHOLE METHOD.

SHEET 1 OF 2

REVISION	BY	APPROVED	DATE
ORIGINAL	CD	J. NAGELVOORT	11/17
UPDATED	CD	J. NAGELVOORT	09/18
UPDATED	FM	R. AMEN	09/23

CITY OF SAN DIEGO – STANDARD DRAWING

**36" AND SMALLER POTHOLE AND EXPLORATORY EXCAVATION - TYPE A PAVEMENT REPAIR**

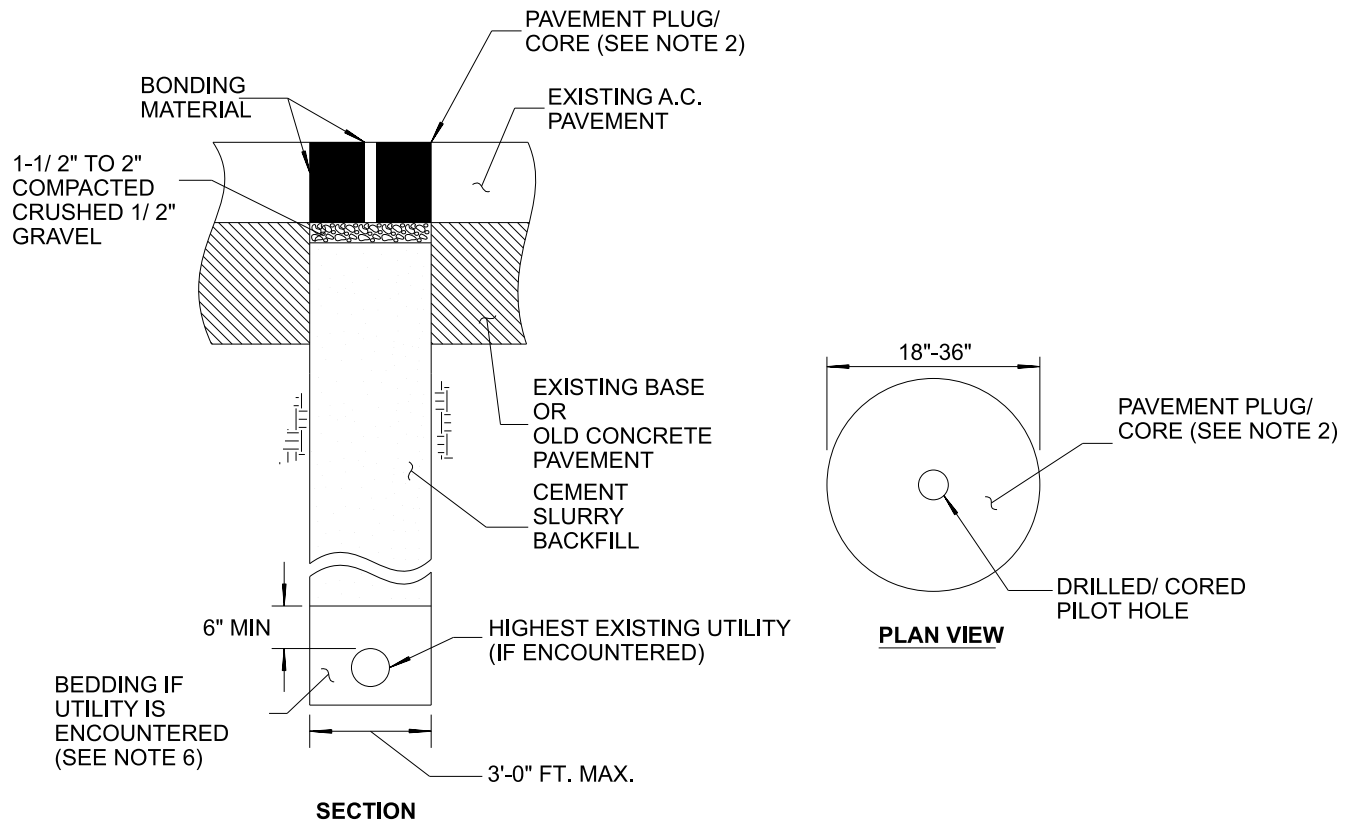
RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE

**DRAFT**

COORDINATOR R.C.E. 81047 DATE

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DRAWING NUMBER **SDG-123**



**NOTES:**

1. PAVEMENT CORE TO BE REINSTATED SHALL BE A MINIMUM OF 4 INCHES THICK AND SHALL NOT CONTAIN JOINTS OR CRACKS WHICH MAY CAUSE IT TO BREAK AND SPALL. OTHERWISE, TYPE "A" PER SHEET 1 SHALL BE USED **AS DIRECTED BY CITY ENGINEER.**
2. CUT, REMOVE, AND REINSTATE PAVEMENT CORE, FLUSH WITH EXISTING PAVEMENT. THE REMOVED PAVEMENT CORE/ PLUG WITH ASPHALT AND CONCRETE BASE SHALL BE UTILIZED AND REINSTALLED IN GOOD CONDITION.
3. BONDING MATERIAL SHALL BE AS SPECIFIED **PER CITY APPROVED MATERIALS LIST.**
4. CEMENT SLURRY BACKFILL SHALL BE THOROUGHLY CONSOLIDATED, AND HAVE A MAXIMUM SLUMP OF 4 INCHES. FLY ASH MEETING THE REQUIREMENTS OF 201-1.2.5.3 MAY BE ADDED (NOT AS A SUBSTITUTE) TO THE MINIMUM CEMENT REQUIREMENTS. SLURRY COMBINED GRADING SHALL MEET REQUIREMENTS OF 201-1.3.2 GRADING D. CEMENT SLURRY BACKFILL SHALL BE 100-D-100.
5. SLURRY SHALL BE CURED A MINIMUM OF 48 HOURS PRIOR TO PLACEMENT OF CLASS II BASE AND ASPHALT CONCRETE. RESURFACING SHALL BE COMPLETED IN NO MORE THAN 7 DAYS AFTER PLACEMENT OF CEMENT SLURRY.
6. IF UTILITY IS ENCOUNTERED, AS LISTED BELOW, PLACE BEDDING A MINIMUM OF 6 INCHES ABOVE UTILITY.
  - A. WATER UTILITY: SE 50 SAND
  - B. SEWER UTILITY: 3/ 8" MAXIMUM AGGREGATE
  - C. DRY UTILITY: SE 50 SAND
7. FOR CONCRETE SURFACED STREETS, **SEE SDG-108** FOR RESURFACING. FOR POTHOLE AND EXPLORATORY EXCAVATION LARGER THAN 3'-0" ON ASPHALT CONCRETE SURFACED STREETS, SEE SDG-107 FOR RESURFACING.
8. POTHOLE OR EXPLORATORY EXCAVATION IN BIKE LANES **SHALL BE APPROVED BY THE CITY.**
9. PAVEMENT CORES SHALL NOT BE GREATER THAN 3'-0" INCHES IN DIAMETER, AND SHALL NOT BE SPACED CLOSER THAN 3 FEET BETWEEN CORES, EDGE TO EDGE.

SHEET 2 OF 2

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE	
ORIGINAL	CD	J. NAGELVOORT	11/17		<b>36" AND SMALLER EXPLORATORY EXCAVATION POTHOLE - TYPE B KEYHOLE METHOD</b>	<b>DRAFT</b>
UPDATED	CD	J. NAGELVOORT	0918	COORDINATOR R.C.E. 81047 DATE		
UPDATED	FM	R. AMEN	0923	DRAWING NUMBER		<b>SDG-123</b>

**NOTES:**

1. CLEARANCE SEPARATIONS BETWEEN DRY AND WET UTILITIES SHALL BE MAINTAINED PER WATER, SEWER, AND DRAINAGE DESIGN GUIDELINES, VARIANCES WILL REQUIRE DEVIATION FROM STANDARDS.
2. **PERMITTING REQUIREMENTS:** ALL MICROTRENCH PERMITS REQUIRE A DEVELOPMENT SERVICES DEPARTMENT DIGITAL SUBMISSION WITH A GEOSPATIAL ALIGNMENT PER DEVELOPMENT SERVICES DEPARTMENT FORMAT REQUIREMENTS.
3. **CONDUIT ANCHORING:** CONTRACTOR MUST PROVIDE THEIR METHOD OF WEIGHING / ANCHORING DOWN CONDUITS IN THEIR PERMIT. TO PREVENT CONDUITS FROM FLOATING, AND TO MAINTAIN REQUIRED DEPTH FOR TOP OF CONDUIT.
4. **MICROTRENCHING USAGE:** MICROTRENCHING PER SDG-165A AND / OR SDG-165B SHALL BE ON ASPHALT STREETS ONLY. MICROTRENCHING SHALL NOT BE PERMITTED IN OR THROUGH EXISTING CONCRETE PAVED STREETS, PARKWAYS, CURB, GUTTER, CROSS GUTTER, BUS PAD, SIDEWALK, FLOATING CURB EXTENSION, BUS BULB, TRUCK PILLOW, RAISED CROSSWALK, ISLAND, MINI- ROUNDABOUT, OR SIMILAR ELEMENTS. MICROTRENCHING MAY BE PERMITTED, AT THE CITY'S DISCRETION, IN OR THROUGH EXISTING IMPROVEMENTS AND SPECIAL PAVEMENTS (SUCH AS DECORATIVE ASPHALT PAVING, AND PERPENDICULAR TO SPEED BUMPS). EXISTING IMPROVEMENTS AND SPECIAL PAVEMENTS SHALL BE RESTORED IN KIND AS APPROVED BY THE CITY.
5. **DAMAGE TO EXISTING IMPROVEMENTS:** CONNECTION TO SERVICE LATERALS, JUNCTION BOXES, ETC. SHALL BE DONE SUCH THAT EXISTING IMPROVEMENTS ARE NOT DISTURBED, SETTLED, OR DAMAGED. ANY DAMAGE TO EXISTING IMPROVEMENTS BY PARALLEL OR PERPENDICULAR MICROTRENCHING ACTIVITIES SHALL BE RESTORED IN KIND AS APPROVED BY THE CITY. DAMAGE TO CONCRETE CURB, GUTTER, SIDEWALK, AND PAVEMENT SHALL BE REMOVED AND RESTORED IN ACCORDANCE WITH **SDG-156**.
6. **TRENCH CUTS:** CONTRACTOR SHALL MAKE ALL REASONABLE EFFORTS TO ACHIEVE STRAIGHT AND UNIFORM CUTS WITH NEAT EDGES. SELECTION OF CUTTING WHEEL SHALL BE SUCH THAT IT MINIMIZES DAMAGE TO THE ADJACENT AC SURFACE. RADII TRENCH CUTS SHALL HAVE NO MORE THAN 3 CUTS.
7. **MICROTRENCH WIDTH:** MICROTRENCH WIDTH SHALL BE A MINIMUM OF 1 INCH AND A MAXIMUM OF 2 ½ INCHES. TRENCHES WITH WIDTH GREATER THAN 2 ½ INCHES MUST FOLLOW **SDG-117** (NARROW TRENCH RESURFACING FOR ASPHALT CONCRETE SURFACE STREETS), WHICH REQUIRES A DIFFERENT BACKFILL MATERIAL. THE CITY MAY CHANGE THE PERMIT TO **SDG-117** BY AN AS-BUILT CHANGE IF THE TRENCH EXCEEDS 2 ½ INCHES IN CONSTRUCTION.
8. **MICROTRENCH ALIGNMENT OFFSET TO AN ADJACENT MICROTRENCH:** NO MICROTRENCHING SHALL BE LESS THAN 2 FEET FROM ADJACENT MICROTRENCHES (EDGE TO EDGE). THIS MAY REQUIRE THE CONTRACTOR TO POTHOLE TO VERIFY PARALLEL UTILITIES SIZE AND TRENCH WIDTH TO ENSURE PROPER SEPARATION.
9. **CONDUIT PLACEMENT IN TRENCH:** THE TOP OF HIGHEST CONDUIT SHALL BE 12 INCHES MINIMUM FROM TOP OF PAVEMENT OR 4 INCHES FROM BOTTOM OF PAVEMENT SECTION TO INCLUDE ASPHALT, BASE AND CTB, WHICHEVER IS GREATER.
10. **CONDUIT SIZE:** 2 INCH MAXIMUM CONDUIT SIZE SCH 40 PVC OR EQUIVALENT HDPE PER NATIONAL ELECTRICAL CODE.
11. **TRENCH IDENTIFICATION:** INSTALL FOLDED WARNING / IDENTIFICATION TAPE WARNING TAPE **PER SDM-105**. EACH TRENCH SHALL BE IDENTIFIED WITH A CALLOUT ON THE PULLBOX / VAULT / JUNCTION BOX LID WITH THE NAME OF THE OWNER OF THE MICROTRENCH.
12. **MICROTRENCH BACKFILL AND REQUIREMENTS TO OPEN THE STREET TO TRAFFIC:** ALL MICROTRENCHES SHALL BE COMPLETELY BACKFILLED WITH A CEMENT SAND SLURRY 2000 PSI MINIMUM AND 2% CALCIUM CHLORIDE TO FINISH GRADE. THIS IS AN INTERIM CONDITION AND CONTRACTOR SHALL FOLLOW CURING TIME REQUIREMENTS (PER NOTE 14) TO OPEN THE STREET TO TRAFFIC PRIOR TO COMPLETING PAVING REQUIREMENTS FOR FINAL RESTORATION.
13. **SLURRY VOID REDUCTION:** CONTRACTOR SHALL USE A VIBRATOR TO ENSURE SLURRY FILL WITHOUT VOIDS.
14. **SLURRY CURE TIME:** ALLOW A MINIMUM OF THREE HOURS FOR SLURRY TRENCH BACKFILL CURE TIME FOR TRENCHES PARALLEL TO THE STREET BEFORE OPENING TO TRAFFIC.

SEE ADDITIONAL NOTES ON SHEET 2

SHEET 1 OF 4

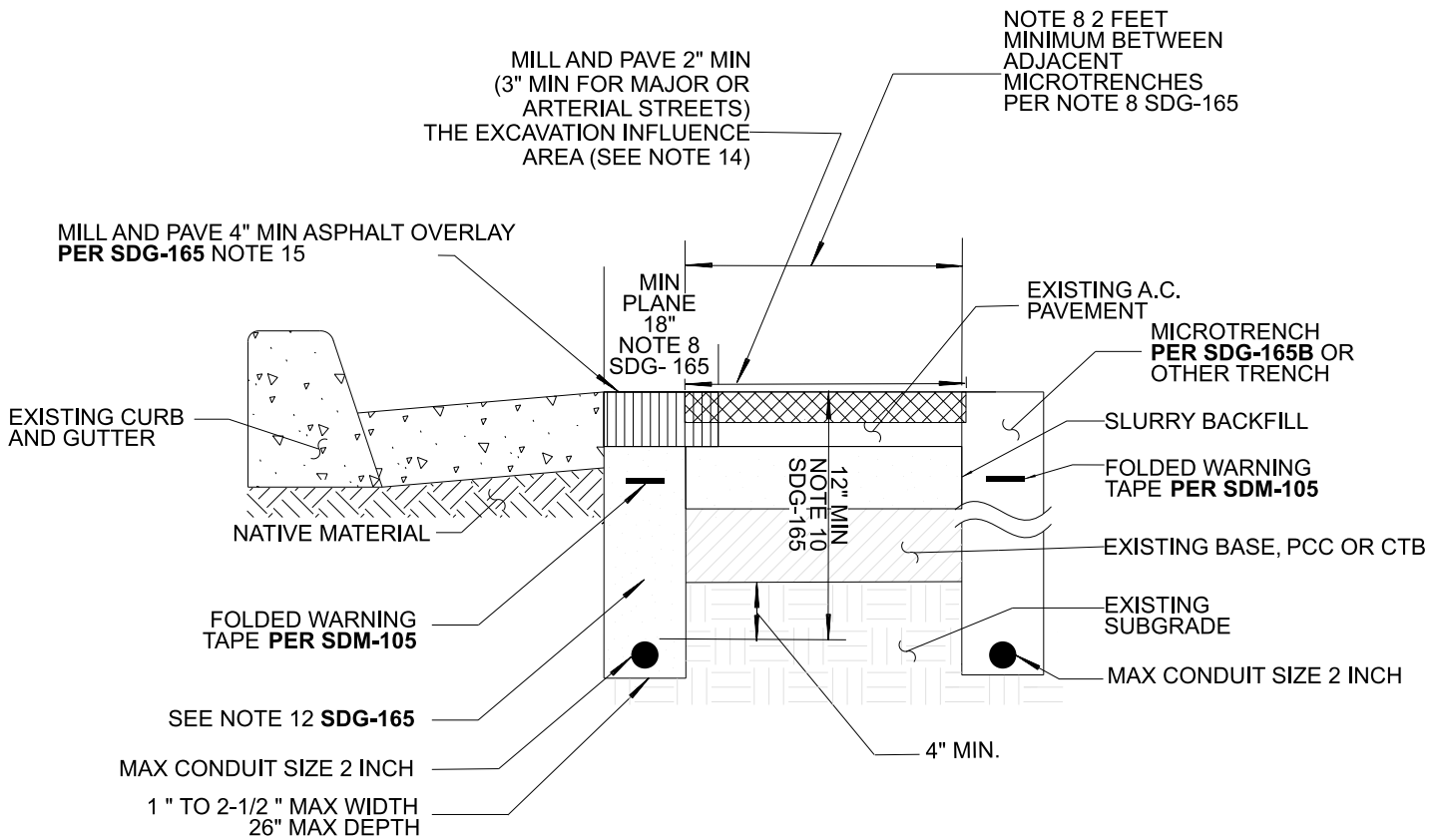
REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING  <b>GENERAL MICROTRENCH NOTES</b>	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE  <b>DRAFT</b>
ORIGINAL	HY	M. GIBSON	05/17		
REDRAFTED	CD	J. NAGELVOORT	09/18		
UPDATED	RC	R. AMEN	10/22		
UPDATED	FM	R. AMEN	09/23		
					COORDINATOR R.C.E. 81047 DATE
					DRAWING NUMBER <b>SDG-165</b>

**NOTES (CONTINUED):**

- 15. **FINAL MICROTRENCH RESTORATION:** WITHIN 7 DAYS OF PLACING THE SLURRY BACKFILL TO GRADE, MILL THE SLURRY BACKFILL AND EXISTING PAVEMENT A MINIMUM WIDTH OF 18 INCHES INCLUDING THE EXCAVATION INFLUENCE AREA PER TABLE 1 IN SDG-105 TO A DEPTH OF 4 INCHES AND RESURFACE WITH 1/2 INCH TYPE III CLASS C2 ASPHALT. TACK ALL EDGES OF THE MILLED AREA WITH ASPHALTIC EMULSION.
- 16. **FINAL MICROTRENCH RESTORATION WHEN ADJACENT TO ANOTHER MICROTRENCH:** WHEN RESTORING A MICROTRENCH SEPARATED BY 2 FEET (EDGE TO EDGE) FROM ANY ADJACENT MICROTRENCH THE MICROTRENCH RESTORATION SHALL FOLLOW NOTE 15 FOR TRENCH RESTORATION AND **SDG-107** FOR FULL LIMITS OF THE PERMITTED ALIGNMENT TO MAINTAIN INFLUENCE AREA INTEGRITY.
- 17. **MICROTRENCHING IN BIKE LANES:** FOR THE WORK IN THE BIKE LANE, CONTRACTOR SHALL PROVIDE A POTHOLING PLAN FOR REVIEW WITH THE ENGINEER FOLLOWING PRE-CONSTRUCTION MEETING. THE BIKE LANE SHALL BE FULLY CLOSED AND APPROPRIATE TRAFFIC CONTROL PLAN AND SIGNAGE USED. MICROTRENCHING IN THE BIKE LANE REQUIRES THAT SLURRY BACKFILL BE COMPLETED BEFORE END OF APPROVED WORKDAY WITH CURING TIME PER NOTE 14. RESTORATION TO THE TRENCH SHALL BE PER NOTE 15.
- 18. **FINAL MICROTRENCH RESTORATION IN BIKE LANES:** THE CONTRACTOR SHALL RESTORE FULL WIDTH OF BIKE LANE TO THE FACE OF CURB AND PLACE 2 INCHES MIN OR 3 INCHES MIN (MAJOR OR ARTERIAL STREETS) THICKNESS OF ASPHALT PER **SDG-107**.

SHEET 2 OF 4

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING  <b>GENERAL MICROTRENCH NOTES</b>	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE  <b>DRAFT</b> _____ COORDINATOR R.C.E. 81047 DATE
ORIGINAL	HY	M. GIBSON	05/17		
REDRAFTED	CD	J. NAGELVOORT	09/18		
UPDATED	RC	R. AMEN	10/22		
UPDATED	FM	R. AMEN	09/23		
					DRAWING NUMBER <b>SDG-165</b>



LEGEND ON PLANS:  
 — MTC — MICROTRENCH CONDUIT (MTC)

**NOTES:**

1. APPLICABLE WHERE CONCRETE GUTTER IS VISIBLE OR EXPOSED.
2. SHALL NOT BE APPLICABLE AT STREET INTERSECTIONS OR ALONG MEDIAN CURBS.
3. TRENCH LOCATION SHALL BE AT THE EDGE OF CURB.

SHEET 3 OF 4

REVISION	BY	APPROVED	DATE
ORIGINAL	HY	M. GIBSON	05/17
REDRAFTED	CD	J. NAGELVOORT	09/18
UPDATED	ED	R. AMEN	10/22
UPDATED	FM	R. AMEN	09/23

CITY OF SAN DIEGO – STANDARD DRAWING

**MICROTRENCH FOR DRY UTILITIES  
AT EDGE OF CURB AND GUTTER**

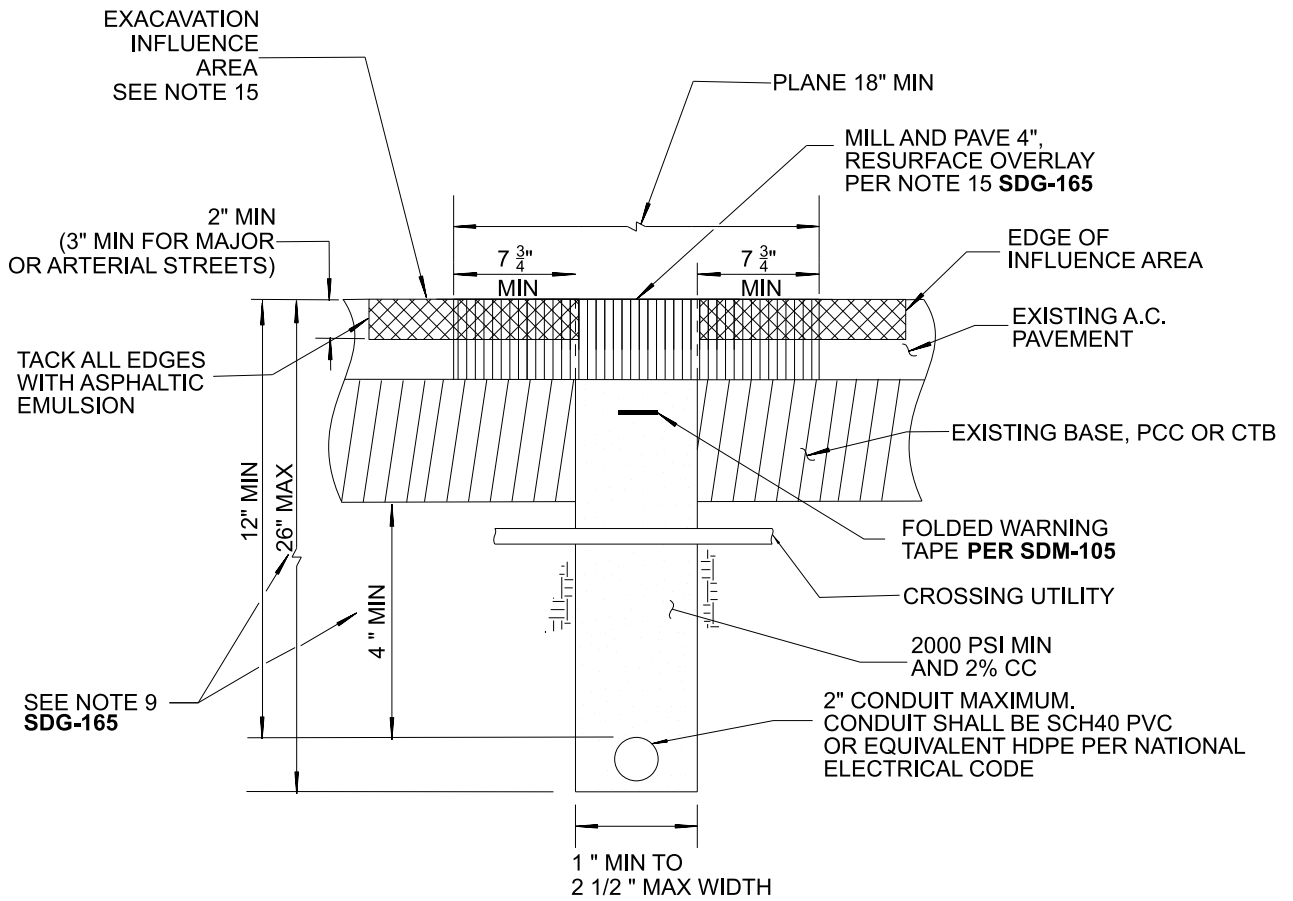
RECOMMENDED BY THE CITY  
OF SAN DIEGO STANDARDS COMMITTEE

**DRAFT**

COORDINATOR R.C.E. 81047 DATE

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DRAWING NUMBER **SDG-165A**



**NOTES:**

1. SHALL APPLY TO ALL MICROTRENCHING AT STREET INTERSECTIONS.
2. TRENCH LOCATION SHALL BE AT LEAST 9 INCHES FROM LIP OF GUTTER.
3. TRENCH SHALL BE AT LEAST 12 INCHES FROM ANY EXISTING CONCRETE STRUCTURE.

SHEET 4 OF 4

REVISION	BY	APPROVED	DATE
ORIGINAL	HY	M. GIBSON	05/17
REDRAFTED	CD	J. NAGELVOORT	0918
UPDATED	RC	R. AMEN	1022
UPDATED	FM	R. AMEN	0923

CITY OF SAN DIEGO – STANDARD DRAWING

**MICROTRENCH FOR DRY UTILITIES  
AWAY FROM EDGE OF CURB AND GUTTER**

RECOMMENDED BY THE CITY  
OF SAN DIEGO STANDARDS COMMITTEE

**DRAFT**

COORDINATOR R.C.E. 81047 DATE

DRAWING NUMBER **SDG-165B**



**ATTACHMENT F**

**RESERVED**

**ATTACHMENT G**  
**CONTRACT AGREEMENT**

**ATTACHMENT G**  
**CONTRACT AGREEMENT**

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**CONSTRUCTION CONTRACT**

This Phase-Funded contract is made and entered into between THE CITY OF SAN DIEGO, a municipal corporation, herein called "City", and W.A. Rasic Construction Company, Inc., herein called "Contractor" for construction of **Montezuma/Mid-City Pipeline Phase 2 and 70th Alvarado to Saranac Sidewalk**; Bid No. **K-24-1821-DBB-3-D-C**; in the total amount of **Forty Million One Hundred Twenty Five Thousand Dollars and Zero Cents(\$40,125,000.00)**, which is comprised of the Base Bid plus Alternates A, B, C, and D, consisting of an amount not to exceed \$13,250,000.00 for Phase 1 and \$26,875,000.00 for Phase 2.

IN CONSIDERATION of the payments to be made hereunder and the mutual undertakings of the parties hereto, City and Contractor agree as follows:

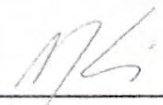
1. The following are incorporated into this contract as though fully set forth herein:
  - (a) The attached Faithful Performance and Payment Bonds.
  - (b) The attached Proposal included in the Bid documents by the Contractor.
  - (c) Reference Standards listed in the Instruction to Bidders and the Supplementary Special Provisions (SSP).
  - (d) Phased Funding Schedule Agreement
  - (e) That certain documents entitled **Montezuma/Mid-City Pipeline Phase 2 and 70th Alvarado to Saranac Sidewalk**, on file in the office of the City Clerks as Document No. **S-11026, B-17065, B-24001** 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 **Montezuma/Mid-City Pipeline Phase 2 and 70th Alvarado to Saranac Sidewalk**, Bid Number **K-24-1821-DBB-3-D-C**, 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).

**CONTRACT AGREEMENT (continued)**

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.

**IN WITNESS WHEREOF**, this Agreement is signed by the City of San Diego, acting by and through its Mayor or designee, pursuant to Resolution No. R-312459 authorizing such execution.

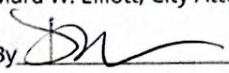
**THE CITY OF SAN DIEGO**

By 

Print Name: Alia Khouri  
Deputy Chief Operating Officer

Date: 05/07/2024

**APPROVED AS TO FORM**

Mara W. Elliott, City Attorney  
By 

Print Name: Bonny Hsu  
Deputy City Attorney

Date: 5/20/24

**CONTRACTOR**

By 

Print Name: Peter L. Rasic

Title: President

Date: 20 April 2024  
RFC 2024-12 24 PC49

City of San Diego License No.: B2017016336

State Contractor's License No.: 368761

DEPARTMENT OF INDUSTRIAL RELATIONS (DIR) REGISTRATION NUMBER: 100000649

## **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**

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### **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**

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### **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.

## **CONTRACTOR CERTIFICATION**

---

### **PRODUCT ENDORSEMENT**

I declare under penalty of perjury that I acknowledge and agree to comply with the provisions of City of San Diego Administrative Regulation 95.65, concerning product endorsement. Any advertisement identifying or referring to the City as the user of a product or service requires the prior written approval of the City.

**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:

**Montezuma/Mid-City Pipeline Phase 2 and 70th Alvarado to Saranac Sidewalk**  
\_\_\_\_\_  
(Project Title)

as particularly described in said contract and identified as Bid No. **K-24-1821-DBB-3-D-C**; SAP No. (WBS) **S-11026, B-17065, B-24001**; 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

COMPANY LETTERHEAD

**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.

<b>CONTRACT ITEM NO. (Bid Item)</b>	<b>KIND OF MATERIAL (Category)</b>	<b>NAME AND ADDRESS WHERE MATERIAL CAN BE INSPECTED (At Source)</b>

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



**LIST OF SUBCONTRACTORS**

**\*\*\* PROVIDED FOR ILLUSTRATIVE PURPOSES ONLY \*\*\* TO BE SUBMITTED IN ELECTRONIC FORMAT ONLY\*\*\* SEE INSTRUCTIONS TO BIDDERS, FOR FURTHER INFORMATION**

In accordance with the requirements of the "Subletting and Subcontracting Fair Practices Act", Section 4100, of the California Public Contract Code (PCC), the Bidder is to list below the name, address and license number of each Subcontractor who will perform work, labor, render services or specially fabricate and install a portion [type] of the work or improvement, in an amount of or in excess of 0.5% of the Contractor's total Bid. Failure to comply with this requirement may result in the Bid being rejected as non-responsive. The Contractor is to list only one Subcontractor for each portion of the Work. The Bidder's attention is directed to the Special Provisions – General; Paragraph 2-3 Subcontracts, which stipulates the percentage of the Work to be performed with the Bidder's own forces. The Bidder is to also list all SLBE, ELBE, DBE, DVBE, MBE, WBE, OBE, SDB, WoSB, HUBZone, and SDVOSB Subcontractors for which the Bidders are seeking recognition towards achieving any mandatory, voluntary, or both subcontracting participation percentages.

NAME, ADDRESS AND TELEPHONE NUMBER OF SUBCONTRACTOR	CONSTRUCTOR OR DESIGNER	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
Name: _____ Address: _____ City: _____ State: _____ Zip: _____ Phone: _____ Email: _____							
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        | 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 Subcontractor 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.**

**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 <sup>①</sup>	WHERE CERTIFIED <sup>②</sup>
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**

**BID BOND**

**See Instructions to Bidders, Bidder Guarantee of Good Faith  
(Bid Security)**

KNOW ALL MEN BY THESE PRESENTS,

That W.A. Rasic 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

Montezuma/Mid-City Pipeline Phase 2 and 70th Alvarado to Saranac Sidewalk

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 27th day of December, 2023

W.A. Rasic Construction Company, Inc. (SEAL)  
(Principal)

Liberty Mutual Insurance Company (SEAL)  
(Surety)

By: [Signature]  
(Signature)  
Walter A. Rasic, Jr., V.P./Sec.

By: [Signature]  
(Signature)  
Daniel Huckabay, Attorney-in-Fact (Signature)

(SEAL AND NOTARIAL ACKNOWLEDGEMENT OF SURETY)

## 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.

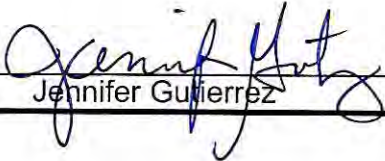
State of California  
County of Los Angeles )

On 01/23/2024 before me, Jennifer Gutierrez, Notary Public  
(insert name and title of the officer)

personally appeared Walter A. Rasic, Jr.,  
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)  
Jennifer Gutierrez



## 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 Orange )

On 12/27/2023 before me, Melissa Ann Vaccaro, Notary Public  
(insert name and title of the officer)

personally appeared Daniel Huckabay  
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 Melissa Ann Vaccaro (Seal)  
Melissa Ann Vaccaro





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: 8209029-969561

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, Arturo Ayala; Daniel Huckabay; Adrian Langrell; Chelsea Liberatore; Frank Morones; R. Nappi; Dwight Reilly; Shauna Rozelle Ostrom; Ben Stong; Michael D. Stong; Benjamin Wolfe

all of the city of Orange 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 21st day of November, 2023



Liberty Mutual Insurance Company
The Ohio Casualty Insurance Company
West American Insurance Company

By: [Signature]
David M. Carey, Assistant Secretary

State of PENNSYLVANIA ss
County of MONTGOMERY

On this 21st day of November, 2023, 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 Plymouth Meeting, Pennsylvania, on the day and year first above written



Commonwealth of Pennsylvania - Notary Seal
Teresa Pastella, Notary Public
Montgomery County
My commission expires March 28, 2025
Commission number: 1125244
Member: Pennsylvania Association of Notaries

By: [Signature]
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 27th day of December, 2023



By: [Signature]
Renee C. Llewellyn, Assistant Secretary

Not valid for mortgage, note, loan, letter of credit, currency rate, interest rate or residual value guarantees.

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.

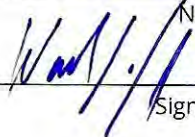
- The undersigned certifies that within the past 10 years the Bidder has NOT been the subject of a complaint or pending action in a legal administrative proceeding alleging that Bidder discriminated against its employees, subcontractors, vendors or suppliers.
- The undersigned certifies that within the 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
		Please see attached.			

Contractor Name: W. A. Rasic Construction Company, Inc.

Certified By Walter A. Rasic, Jr.

Title Vice President/Secretary

  
 \_\_\_\_\_  
 Name  
 \_\_\_\_\_  
 Signature

Date January 23, 2024

**USE ADDITIONAL FORMS AS NECESSARY**



## Contractor's Certification of Pending Actions

**Summons Filed:** 6/16/2023  
**Description of Complaint:** Plaintiff alleges discrimination, harassment and hostile work environment.  
**Complaint:**  

1. Discrimination on the basis of National Origin
2. Harassment on the basis of National Origin
3. FEHA Hostile work environment
4. Failure to prevent/remedy harassment
5. Violation of labor code 510-515, 1194 & 1198
6. Violation of labor code 226
7. Violation of labor code 200-204

**Plaintiff:** Derreck Smith  
**Defendant:** W.A. Rasic Construction Co., Inc., Jeremiah Banuelos, Luis Vasquez  
**Court Location:** Los Angeles, Stanely Mosk Courthouse, 111 North Hill Street, Los Angeles, CA 90012  
**Case #:** 23STCV13977  
**Current Status:** Settled

**Summons Filed:** 07/09/2020  
**Description of Complaint:** Plaintiff alleges defendants were in violation of the California Fair Employment and Housing Act and the California Labor code.  
**Complaint:**  

1. Disability discrimination
2. Failure to accommodate disability
3. Failure to engage in the interactive process
4. Violation of California family rights act
5. Retaliation
6. Failure to prevent discrimination and retaliation
7. Wrongful termination in violation of public policy
8. Violation of CA Labor code 1102.5
9. Violation of CA Labor code 98.6
10. Private attorney general act
11. Defamation

**Plaintiff:** Martin Toscano Jr.  
**Defendant:** W.A. Rasic Construction  
**Court Location:** Superior Court, 111 N. Hill St., Los Angeles, CA 90012  
**Case #:** 20STCV25932  
**Current Status:** Dismissed

**Summons Filed:** 05/26/2020  
**Description of Complaint:** Claimant believes he was discriminated and retaliated against based upon his age, real or perceived disability, real or perceived medical condition, engagement in protected activities, denied accommodation, denied an interactive process, and was wrongfully terminated.  
**Complaint:**  

1. Discrimination
2. Retaliation
3. Failure to prevent discrimination and retaliation
4. Failure to provide reasonable accommodations
5. failure to engage in good faith interactive process
6. Wrongful termination
7. Declaratory Judgement
8. Failure to pay wages
9. Failure to provide rest periods
10. Failure to provide itemized wage and hour statements
11. Waiting time penalties
12. Unfair competition

**Plaintiff:** Juan Valdovinos  
**Defendant:** W.A. Rasic Construction Co., Inc.  
**Court Location:** Los Angeles Superior Court, 111 N. Hill Street, Los Angeles, CA 90012  
**Case #:** 20STCV20134  
**Current Status:** Dismissed

## Contractor's Certification of Pending Actions

**Summons Filed:** 11/18/2016  
**Description of Complaint:** Plaintiff alleges the defendant failed to provide reasonable accommodation for his disability and was terminated on account of his disability.  
**Complaint:**  
**Complaint:**  
1. Disability Discrimination  
2. Failure to accommodate in violation of the FEHA  
3. Failure to engage in the interactive process in violation of the FEHA  
4. Retaliation in violation of FEHA  
5. Failure to prevent in violation of FEHA  
6. Violation of CRFA Rights  
7. Wrongful termination  
8. Injunctive relief  
9. Declaration relief  
10. Violation of CA Labor code 226

**Plaintiff:** David Diaz  
**Defendant:** W.A. Rasic Construction Co., Inc.  
**Court Location:** Superior Court, 111 N. Hill St., Los Angeles, CA 90012  
**Case #:** BC640514  
**Current Status:** Settled  
**Resolution/Remedial Action Taken:** These alleged claims/lawsuits were brought on by former disgruntled employees, W.A. Rasic does not admit fault and settled for nuisance value to avoid further legal costs.

**Summons Filed:** 02/10/2016  
**Description of Complaint:** Plaintiff alleges the defendant wrongfully terminated him and denied him reasonable accommodation.  
**Complaint:**  
**Complaint:**  
1. Discrimination  
2. Harassment  
3. Retaliation  
4. Denied a good faith interactive process  
5. Denied a work environment free of discrimination and / or retaliation  
6. Denied family care of medical leave  
7. Denied reasonable accommodation  
8. Terminated

**Plaintiff:** Jessie Scales  
**Defendant:** W.A. Rasic Construction Co., Inc.  
**Court Location:** County of Los Angeles, 275 Magnolia, Long Beach, CA 90802  
**Case #:** NC060483  
**Current Status:** Settled  
**Resolution/Remedial Action Taken:** These alleged claims/lawsuits were brought on by former disgruntled employees, W.A. Rasic does not admit fault and settled for nuisance value to avoid further legal costs.

**Summons Filed:** 11/21/2014  
**Description of Complaint:** Plaintiff alleges the defendant wrongfully terminated her due to disability and denied her reasonable accommodation.  
**Complaint:**  
**Complaint:**  
1. Disability Discrimination  
2. Failure to accommodate and failure to enter into the interactive process  
3. Statutory retaliation for reporting illegal activities  
4. Intentional infliction of emotional distress  
5. Failure to reimburse from employer expense  
6. Violation of public policy: disability discrimination  
7. Violation of public policy: retaliation for reporting illegal activities (whistleblowing)  
8. Violation of public policy: wrongful termination

**Plaintiff:** Kimberly Fogleman  
**Defendant:** W.A. Rasic Construction Co., Inc.  
**Court Location:** County of Solano, 580 Texas Street, Fairfield, CA 94533  
**Case #:** FCS044520  
**Current Status:** Settled  
**Resolution/Remedial Action Taken:** These alleged claims/lawsuits were brought on by former disgruntled employees, W.A. Rasic does not admit fault and settled for nuisance value to avoid further legal costs.

## SUBCONTRACTORS FOR ALTERNATES

\*\*\* FOR USE WHEN LISTING SUBCONTRACTORS FOR ALTERNATES ONLY \*\*\*  
(Use Additional Sheets As Needed)

IDENTIFY ALTERNATE <small>(example: Deductive Alternate B) Only one Alternate and Sub per line</small>	SUBCONTRACTOR NAME, LOCATION, PHONE & EMAIL	SUBCONTRACTOR'S CA LICENSE NUMBER	SUBCONTRACTOR'S DIR REGISTRATION NUMBER	IS SUBCONTRACTOR CONSTRUCTOR, DESIGNER, OR SUPPLIER	TYPE OF WORK	DOLLAR VALUE OF THE ALTERNATE SUBCONTRACT <small>(Negative if Deductive)</small>
Add Alt A	Name: <u>Brino Builders Inc.</u> Address: <u>1490 Kostner Dr.</u> City: <u>San Diego</u> State: <u>CA</u> Zip: <u>92154</u> Phone: <u>619 504 2363</u> Email: <u>falvarez@brinobuilders.com</u>	1021086	1000550020	Constructor	Minor Concrete	\$88,644.00
Add Alt A	Name: <u>Southwest Signal Service</u> Address: <u>1297 P.O. Box</u> City: <u>El Cajon</u> State: <u>CA</u> Zip: <u>92022</u> Phone: <u>619 442 3743</u> Email: <u>mmichel@southwestsignal.com</u>	451115	1000004265	Constructor	Traffic Signal	2064.75
Add Alt C (B3)	Name: <u>Sealright Paving Inc.</u> Address: <u>9053 Olive <del>St</del> Dr.</u> City: <u>Spring Valley</u> State: <u>CA</u> Zip: <u>91977</u> Phone: <u>619 465 7411</u> Email: <u>estimating@sealrightpavinginc.com</u>	364113	1000039542	Constructor	Asphalt Paving	\$220,683.00
Add Alt D	Name: <u>Sealright Paving Inc.</u> Address: <u>9053 Olive Dr.</u> City: <u>Spring Valley</u> State: <u>CA</u> Zip: <u>91977</u> Phone: <u>619 465 7411</u> Email: <u>estimating@sealrightpaving.com</u>	364113	100039542	Constructor	Asphalt Paving	\$118,316.80

**SUBCONTRACTORS FOR ALTERNATE ITEMS ARE NOT CONSIDERED IN THE CALCULATION TOWARD  
ACHIEVING SLBE/ELBE PARTICIPATION GOALS**

## Mandatory Disclosure of Business Interests Form

### BIDDER/PROPOSER INFORMATION

<b>Legal Name</b>		<b>DBA</b>	
W. A. Rasic Construction Company, Inc		N/A	
<b>Street Address</b>	<b>City</b>	<b>State</b>	<b>Zip</b>
4150 Long Beach Blvd.	Long Beach	California	90807
<b>Contact Person, Title</b>		<b>Phone</b>	<b>Fax</b>
Walter A. Rasic, Jr., V.P./Sec.		562-928-6111	562-928-7339

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.

<b>Name</b>	<b>Title/Position</b>
Peter L. Rasic	President/Owner
<b>City and State of Residence</b>	<b>Employer (if different than Bidder/Proposer)</b>
Huntington Beach, CA	
<b>Interest in the transaction</b>	
33.3% owner of W. A. Rasic Construction Company, Inc.	

<b>Name</b>	<b>Title/Position</b>
Franky A. Rasic	Vice President/Owner
<b>City and State of Residence</b>	<b>Employer (if different than Bidder/Proposer)</b>
Laguna Beach, CA	
<b>Interest in the transaction</b>	
33.3% owner of W. A. Rasic Construction Company, Inc.	

### \* 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.

Walter A. Rasic, Jr., V.P/Secretary

Print Name, Title



Signature

January 23, 2024

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

<b>Legal Name</b>		<b>DBA</b>	
W. A. Rasic Construction Company, Inc		N/A	
<b>Street Address</b>	<b>City</b>	<b>State</b>	<b>Zip</b>
4150 Long Beach Blvd.	Long Beach	California	90807
<b>Contact Person, Title</b>		<b>Phone</b>	<b>Fax</b>
Walter A. Rasic, Jr., V.P./Sec.		562-928-6111	562-928-7339

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.

<b>Name</b>	<b>Title/Position</b>
Walter A. Rasic, Jr.	Vice President / Owner
<b>City and State of Residence</b>	<b>Employer (if different than Bidder/Proposer)</b>
Newport Coast, CA	
<b>Interest in the transaction</b>	
33.3% owner of W. A. Rasic Construction Company, Inc.	


<b>Name</b>	<b>Title/Position</b>
<b>City and State of Residence</b>	<b>Employer (if different than Bidder/Proposer)</b>
<b>Interest in the transaction</b>	

### \* 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.

Walter A. Rasic, Jr., V.P./Secretary

Print Name, Title



Signature

January 23, 2024

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 and 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
Peter L. Rasic	President
Franky A. Rasic	Vice President
Walter A. Rasic, Jr.	Vice President/Secretary

**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: W. A. Rasic Construction Company, Inc.

Certified By Walter A. Rasic, Jr. Title Vice President/Secretary

  
 Name \_\_\_\_\_  
 Signature \_\_\_\_\_ Date January 23, 2024

**NOTE:** Providing false information may result in criminal prosecution or administrative sanctions.

**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
Soclaris Contracting	
Sonny Rosenal	President

SUBCONTRACTOR                       SUPPLIER                       MANUFACTURER

NAME	TITLE
Southwest Signal	
Ryan Clark	President

SUBCONTRACTOR                       SUPPLIER                       MANUFACTURER

NAME	TITLE
Golden State Boring & Pipe Jacking, Inc.	
Jeffrey Johnson	President

SUBCONTRACTOR                       SUPPLIER                       MANUFACTURER

NAME	TITLE
James W. Fowler Co.	
John B. Fowler	President

Contractor Name: W.A. Rasic Construction Company, Inc.

Certified By Walter A. Rasic, Jr. Title Vice President/Secretary

  
 Name \_\_\_\_\_  
 Signature \_\_\_\_\_ Date January 25, 2024

**\*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)

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
Big Sky Electric	
Larry Strohm	President
Chris Livingston	Vice President

SUBCONTRACTOR                       SUPPLIER                       MANUFACTURER

NAME	TITLE
Coast Landscaping, Inc.	
Holland Mason	President
Tyler Mason	Controller

SUBCONTRACTOR                       SUPPLIER                       MANUFACTURER

NAME	TITLE
Seal Right Paving, Inc.	
Frank Vasquez	President
Monique Vasquez	Vice President

SUBCONTRACTOR                       SUPPLIER                       MANUFACTURER

NAME	TITLE
Loveless Linton, Inc.	
Rebekah Loveless	Vice President
Brandon Linton	President

Contractor Name: W.A. Rasic Construction Company, Inc.

Certified By Walter A. Rasic, Jr. Title Vice President/Secretary


  
 \_\_\_\_\_ Name  
 \_\_\_\_\_ Date January 25, 2024  
 \_\_\_\_\_ 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)

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
Brino Builders	
Fernando Alvarez	President

SUBCONTRACTOR                       SUPPLIER                       MANUFACTURER

NAME	TITLE
Osmun Construction	
Jess Osmun	President

SUBCONTRACTOR                       SUPPLIER                       MANUFACTURER

NAME	TITLE
Geo Instruments	
Paul Thurlow	Vice President

SUBCONTRACTOR                       SUPPLIER                       MANUFACTURER

NAME	TITLE
Busby Biological Services	
Melissa Busby	Owner/Principal Biologist

Contractor Name: W.A. Rasic Construction Company, Inc.

Certified By Walter A. Rasic, Jr. Title Vice President/Secretary

  
 Name  
 Signature  
 Date January 25, 2024

**\*\*USE ADDITIONAL FORMS AS NECESSARY\*\***

# City of San Diego

CITY CONTACT: Rosa I. Riego, Senior Contract Specialist, Email: [RRiego@sandiego.gov](mailto:RRiego@sandiego.gov)  
Phone No. (619) 533-3426

## ADDENDUM A



## FOR

## MONTEZUMA/MID-CITY PIPELINE PHASE 2 AND 70TH ALVARADO TO SARANAC SIDEWALK

BID NO.: K-24-1821-DBB-3-D-C  
SAP NO. (WBS/IO/CC): S-11026, B-17065, B-24001  
CLIENT DEPARTMENT: 2013, 2116  
COUNCIL DISTRICT: 7, 9  
PROJECT TYPE: KA, IK

### **BID DUE DATE:**

**2:00 PM  
JANUARY 4, 2024**

**CITY OF SAN DIEGO'S ELECTRONIC BIDDING SITE, PLANETBIDS**

<http://www.sandiego.gov/cip/bidopps/index.shtml>

## 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. CLARIFICATIONS

1. For Encouraged Online Pre- Bid Meeting that will be held on Wednesday, December 13, 2023, at 10:00 AM (PDT) use the following Teams information:

Microsoft Teams meeting

**Join on your computer, mobile app or room device**

[Click here to join the meeting](#)

Meeting ID: 225 191 294 610

Passcode: aYx4Dy

[Download Teams](#) | [Join on the web](#)

**Or call in (audio only)**

[+1 323-813-7079,,928275664#](#) United States, Los Angeles

Phone Conference ID: 928 275 664#

[Find a local number](#) | [Reset PIN](#)

[Learn More](#) | [Meeting options](#)

Rania Amen, Director  
Engineering & Capital Projects Department

Dated: *December 6, 2023*  
San Diego, California

RA/MJN/na

# City of San Diego

CITY CONTACT: Rosa I. Riego, Senior Contract Specialist, Email: [RRiego@sandiego.gov](mailto:RRiego@sandiego.gov)  
Phone No. (619) 533-3426

## ADDENDUM B



## FOR

## MONTEZUMA/MID-CITY PIPELINE PHASE 2 AND 70TH ALVARADO TO SARANAC SIDEWALK

BID NO.:	<u>K-24-1821-DBB-3-D-C</u>
SAP NO. (WBS/IO/CC):	<u>S-11026, B-17065, B-24001</u>
CLIENT DEPARTMENT:	<u>2013, 2116</u>
COUNCIL DISTRICT:	<u>7, 9</u>
PROJECT TYPE:	<u>KA, IK</u>

### **BID DUE DATE:**

**2:00 PM**  
**JANUARY 25, 2024**

**CITY OF SAN DIEGO'S ELECTRONIC BIDDING SITE, PLANETBIDS**

<http://www.sandiego.gov/cip/bidopps/index.shtml>

## **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. Which alternate items are required for the security provider and their subcontractor?

A1. Bid as shown.

Q2. Are there requirements for the security provider found in the solicitation? (I had not found any, and noticed that security guard service is only listed as a line item)

A2. For the hours and duration of security guard at Denny's parking lot, please refer to Attachment E, Supplementary Special Provision, Section 1, GENERAL, TERMS, DEFINITIONS, ABBREVIATIONS, UNITS OF MEASURE, AND SYMBOLS, subsection 1-2, TERMS AND DEFINITIONS, Item a), page 57 of the Solicitation Document.

Q3. What is the total length of the contract, and the security coverage requirements (guards per shift, days/wk, hrs/day)?

A3. For the hours and duration of security guard at Denny's parking lot, please refer to Attachment E, Supplementary Special Provision, Section 1, GENERAL, TERMS, DEFINITIONS, ABBREVIATIONS, UNITS OF MEASURE, AND SYMBOLS, subsection 1-2, TERMS AND DEFINITIONS, Item a), page 57 of the Solicitation Document.

Q4. Is pricing negotiable, if lesser than the line item cost?

A4. The bid item for security guard is an "Allowance". Please refer to Whitebook for reference.

- Q5. Please confirm that the SLBE list to be used for outreach is the SLBE list uploaded to Planet Bids per Section 8.2, and that the bidders are not required to use the link on page 50 to search for and utilize any subsequent or updated lists.
- A5. Confirmed, the SLBE list uploaded to PlantBids is to be utilized for completing the GFE submittal. The SLBE list can also be found by following the link posted on page 50 of the solicitation.

Rania Amen, Director  
Engineering & Capital Projects Department

Dated: *December 28, 2023*  
San Diego, California

RA/MJN/na

# City of San Diego

CITY CONTACT: Rosa I. Riego, Senior Contract Specialist, Email: [RRiego@sandiego.gov](mailto:RRiego@sandiego.gov)  
Phone No. (619) 533-3426

## ADDENDUM C



## FOR

## MONTEZUMA/MID-CITY PIPELINE PHASE 2 AND 70TH ALVARADO TO SARANAC SIDEWALK

BID NO.: K-24-1821-DBB-3-D-C  
SAP NO. (WBS/IO/CC): S-11026, B-17065, B-24001  
CLIENT DEPARTMENT: 2013, 2116  
COUNCIL DISTRICT: 7, 9  
PROJECT TYPE: KA, IK

### **BID DUE DATE:**

**2:00 PM**  
**JANUARY 25, 2024**

**CITY OF SAN DIEGO'S ELECTRONIC BIDDING SITE, PLANETBIDS**

<http://www.sandiego.gov/cip/bidopps/index.shtml>

**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. REQUIRED DOCUMENTS SCHEDULE**

1. To the **Required Documents Schedule During Bidding and Awarding Table**, page 6, **ADD** the following:

15.	In-Use Off-Road Diesel Fueled Fleet Regulation (OFF-ROAD REGULATION) Compliance	Within 10 working days of receipt by bidder of contract forms and NOI	AWARDED BIDDER
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**C. ATTACHMENTS**

1. To **Attachment F, RESERVED**, page 510, **DELETE** in its entirety and **SUBSTITUTE** with pages 3 through 6 of this Addendum

**D. CERTIFICATIONS AND FORMS**

1. To Certifications and Forms, **ADD IN-USE OFF-ROAD DIESEL FUELED FLEET REGULATION (OFF-ROAD REGULATION) COMPLIANCE**, page 7 of this Addendum.

Rania Amen, Director  
Engineering & Capital Projects Department

Dated: *January 8, 2024*  
San Diego, California

RA/MJN/na



**ATTACHMENT F**  
**IN-USE OFF-ROAD DIESEL FUELED FLEET REGULATION (OFF-ROAD REGULATION)**  
**COMPLIANCE**

## ATTACHMENT F

### IN-USE OFF-ROAD DIESEL FUELED FLEET REGULATION (OFF-ROAD REGULATION) COMPLIANCE

The California Air Resources Board (CARB) approved amendments to the Off-Road Regulations which can be found at 13 California Code of Regulations (CCR) sections 2449, 2449.1, and 2449.2. These amendments apply to any person, business, or government agency who owns or operates within California any vehicles with a diesel-fueled or alternative diesel fueled off-road compression-ignition engine with maximum power (max hp) of 25 horsepower (hp) or greater provided that the vehicle cannot be registered and driven safely on-road or was not designed to be driven on-road, even if it has been modified so that it can be driven safely on-road. See 13 CCR section 2449 (b) for the full list of vehicles covered by these Off-Road Regulations.

Beginning **January 1, 2024**, Contractor shall be subject to the requirements below. No Contractor or public works awarding body, as applicable, shall enter into a contract with a fleet for which it does not have a valid Certificate of Reported Compliance for the fleet and its listed subcontractors, if applicable, prior to entering into a new or renewed contract with that fleet. Contractor shall comply with the following requirements:

- (1) For a project involving the use of vehicles subject to the Off-Road Regulation, Contractor must obtain copies of the valid Certificates of Reported Compliance, as described in 13 CCR section 2449(n), for the fleet selected for this Contract and their listed subcontractors, if applicable, prior to entering into a new or renewed contract with that fleet and provide copies of such Certificates of Reported Compliance to the City within 10 days of issuance of the Notice of Intent to Award letter. Contractor shall enter into a contract with a fleet for which it does not have a valid Certificates of Reported Compliance for the fleet and its listed subcontractors. City shall not enter into a contract with Contractor until all current Certificates of Reported Compliance for the fleet to be used on this Project are provided by Contractor.
- (2) The Certificates of Reported Compliance received by Contractor for this Project must be retained by Contractor for three years after the Project's completion. Upon request by CARB, these records must be provided to CARB within five business days of the request. Additionally, upon request by City, these records must be produced to City within five business days of the request.
- (3) For emergency contracts that meet the definition of "emergency operations" as defined in 13 CCR section 2449(c)(18), they are exempt from the requirements in 13 CCR section 2449(i)(1)-(3) and sections (1) and (2) above, but must still retain records verifying vehicles subject to the regulation that are operating on the "emergency operations" project are actually being operated on the project for "emergency operations" only. These records, as described in more detail below in section (B) must be retained by Contractor for three years after completion of the Project and upon request from either CARB or the City, Contractor shall provide those records to the requesting party within five business days. All other emergency contracts that do not meet the definition of "emergency operations" must comply with the requirements above and 13 CCR section 2449(i)(1) – (3).

- A. "Emergency Operations" is defined as:
1. Any activity for a project conducted during emergency, life threatening situations, where a sudden, unexpected occurrence that poses a clear and imminent danger, requiring immediate action to prevent or mitigate the loss or impairment of life, health, property, or an essential public service; or in conjunction with any officially declared disaster or state of emergency, as declared by an authorized health officer, agricultural commissioner, fire protection officer, or other authorized health officer;
  2. Any activity for a project conducted by essential service utilities to provide electricity, natural gas, telephone, water, or sewer during periods of service outages and emergency; or
  3. Operations including repairing or preventing damage to roads, buildings, terrain, and infrastructure as a result of an earthquake, flood, storm, fire, other infrequent act of nature, or terrorism. Routine maintenance or construction to prevent public health risks does not constitute emergency operations under the Off-Road Regulations.
- B. The records retained by Contractor for "emergency operations" projects must include:
1. A description of the emergency;
  2. The address or a description of the specific location of the emergency;
  3. The dates on which the emergency operations were performed; and
  4. An attestation by the fleet that the vehicles are operated on the Project for "emergency operations" only.

Beginning **January 1, 2024**, Contractor is also subject to the requirements described in 13 CCR section 2449(j).

- (1) Between March 1 and June 1 of each year, Contractor must collect new valid Certificates of Reported Compliance for the current compliance year, as defined in 13 CCR section 2449(n), from all fleets that have an ongoing contract with Contractor as of March 1 of that year. Contractors shall not write contracts to evade this requirement.
- (2) Contractor shall only allow fleets with valid Certificates of Reported Compliance on the Contractor's job sites.
- (3) If Contractor discovers that any fleet intending to operate vehicles subject to this regulation for Contractor does not have a valid Certificate of Reported Compliance, as defined in 13 CCR section 2449(n), or if Contractor observes any noncompliant vehicles subject to the regulation on Contractor's job site, then Contractor must report the that to CARB at <https://calepacomplaints.secure.force.com/complaints/Complaint>, or email [dieselcomplaints@arb.ca.gov](mailto:dieselcomplaints@arb.ca.gov), for each fleet without a valid Certificate of Reported Compliance or each noncompliant vehicle, as applicable, within five business days of such discovery. See 13 CCR 2449(n) for the

information required to be disclosed to CARB when reporting non-compliance.

(4) Upon request by CARB, Contractor must immediately disclose to CARB the name and contact information of each responsible party for all vehicles subject to this regulation operating at the job site or for Contractor.

(5) Contractor shall prominently display signage for any project where vehicles subject to this Off-Road Regulation will operate for 8 calendar days or more. The signage must be posted by the eighth calendar day from which the first vehicle operates. The signage will be in lettering larger than size 14-point type and displayed in a conspicuous place where notices to employees are customarily posted at the job site or where there is employee foot traffic. If one of the above locations is also viewable by the public, it should be posted at that location. An exemption to this posting requirement is permitted if the operational time of a project is 7 calendar days or less. The signage must include the following language, verbatim:

(A) Who does the In-Use Off-Road Regulation Apply to?

The In-Use Off-Road Diesel-Fueled Fleets Regulation (Off-Road Regulation) applies to all self-propelled off-road diesel vehicles 25 horsepower or greater and most two-engine vehicles (except on-road two-engine sweepers) owned or operated in California. This includes vehicles that are rented or leased (rental or leased fleets)."

(B) "In-Use Off-Road Regulation Requirements

Idling Limit: Vehicles cannot idle longer than five minutes. There are exceptions for vehicles that need to idle to perform work.

Labeling: Vehicles must be labeled with a CARB assigned equipment identification number (EIN). The EIN shall be white on a red background, unless the vehicle is part of a captive attainment area fleet, in which case the EIN shall be white on a green background.

The EIN shall be located in clear view on both sides of the outside of the vehicle."

## CONTRACTOR CERTIFICATION

---

### IN-USE OFF-ROAD DIESEL FUELED FLEET REGULATION (OFF-ROAD REGULATION) COMPLIANCE

I hereby certify that Contractor is familiar with the requirements 13 CCR 2449, 2449.1, and 2449.2, as well as Attachment F, CARB, and that Contractor shall comply with these requirements.

I further certify that each of the Contractor's listed subcontractors is familiar with these requirements and shall also comply.

# City of San Diego

CITY CONTACT: Rosa I. Riego, Senior Contract Specialist, Email: [RRiego@sandiego.gov](mailto:RRiego@sandiego.gov)  
Phone No. (619) 533-3426

## ADDENDUM D



## FOR

## MONTEZUMA/MID-CITY PIPELINE PHASE 2 AND 70TH ALVARADO TO SARANAC SIDEWALK

BID NO.: K-24-1821-DBB-3-D-C  
SAP NO. (WBS/IO/CC): S-11026, B-17065, B-24001  
CLIENT DEPARTMENT: 2013, 2116  
COUNCIL DISTRICT: 7, 9  
PROJECT TYPE: KA, IK

### **BID DUE DATE:**

**2:00 PM  
JANUARY 25, 2024**

**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 Engineers:

Marc Weinberger

01/12/2024

Seal:



1) Registered Engineer  
(Montezuma PPL/Mid-City Pipeline Ph 2)

Date

Brian Vitelle

01/12/2024

Seal:



2) For City Engineer  
(Montezuma PPL/Mid-City Pipeline Ph 2)

Date

## **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. Pay items 27 and 28 are provided for Class 2 Aggregate Base and Crushed Aggregate Base respectively. Please confirm that these items include payment for base materials associated with trench paving or clarify what these items are for.
- A1. Class 2 Aggregate Base shall be used, as needed, for areas identified outside the trench zone. Crushed Aggregate Base shall be used for 71<sup>st</sup> street paving.
- Q2. In regards to Traffic Control Plans, I know it says to plate everything at the end of every shift to allow all travel lanes to reopen during non-working hours. Will we be able to leave any of the daily set up during off hours, this is a very extensive traffic plan and it will take 2-3 hours to set up every day and another 2 hours to take down. This will leave only about 2 -3 hours per day to install any pipe. Please clarify this.
- A2. Certain traffic phases allow for 24 hour set up. Bid as shown.
- Q3. Bid Item 49 is for freight from Texas that is in Thompson's Yard which has already been purchased by the City. Who is responsible for the loading of the pipe in Thompson's yard? I understand we have to pay for the freight to San Diego but who is loading it?
- A3. Thompson is responsible for loading pipe.
- Q4. Section 4-3.4 2d calls for 3rd party inspections of existing pipe that is in Thompson's yard, who is paying for any defects that need to be corrected as a result of these inspections? This is a number that can be anywhere from nothing to tens of thousands of dollars.
- A4. Pipe defects shall be corrected by Thompson Pipe.
- Q5. The Montezuma project will be constructed in both the City of San Diego and the City of La Mesa. About 50-50. The sales tax in SD is 7.75% and



La Mesa is 8.5%. Do you know what sales tax we should use for the project? Do you know how we determine the sales tax on a project that is being built in 2 different cities? Since the City of San Diego is the owner, would the sales tax be based on San Diego, only?

- A5. It is the contractor's responsibility to provide a bid according to various requirements.
- Q6. Detail 1 on C-21 states that all joint connections for steel casing must be full penetration welds, however Table 1-5-6 on C-22 states that the joints are interlocking. Please confirm if mechanical interlocking joints are acceptable for the microtunnel casing.
- A6. No interlocking is allowed on the joint connection welds. Full penetration welds are required.
- Q7. For the Interstate 8 tunnel crossing, may the 96" steel casing be substituted with RCP?
- A7. Bid as shown.
- Q8. For the Interstate 8 launching shaft, may any portion of the temporary shoring extending beyond the 25' permanent easement be permitted to remain in place?
- A8. Bid as shown.
- Q9. For the Interstate 8 tunnel crossing, will the contractor be permitted to extend, realign or otherwise relocate the shafts and/or tunnel?
- A9. Bid as shown.

### C. PLANS

1. To Drawing numbers **37333-1-D**, **37333-2-D**, and **37333-36-D**, **DELETE** in their entirety and **REPLACE** with pages 5 through 7 of this Addendum.

Rania Amen, Director  
Engineering & Capital Projects Department

Dated: *January 12, 2024*  
San Diego, California

RA/MJN/na

**CONTRACTOR'S RESPONSIBILITIES**

- PURSUANT TO SECTION 4216 OF THE CALIFORNIA 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 5-UTILITIES.
- EXISTING UTILITY CROSSINGS 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 (AMI) 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.
- NO JOINTS SHALL BE WITHIN 8' OF CROSSING UTILITIES CONVEYING LIQUIDS OR PARALLEL UTILITIES CONVEYING LIQUIDS THAT ARE 4' OR CLOSER (OUTSIDE PIPE WALL TO OUTSIDE PIPE WALL).
- PROVIDE HOLIDAY FREE LININGS AND COATING FOR VALVES PER AWWA C550. HOLIDAYS CANNOT BE FIELD REPAIRED AND MUST BE REPAIRED IN A FACILITY APPROVED BY THE MANUFACTURER. IF HOLIDAYS EXIST ONLY ON THE EXTERIOR SURFACE, THE CONTRACTOR HAS THE OPTION OF APPLYING WAX TAPE TO THE ENTIRE VALVE PER AWWA C217.
- PROVIDE HOLIDAY FREE COATINGS FOR DI FITTINGS WITH THE REQUIRED 24 MIL DFT PER WHITEBOOK 209-1.1.2, OTHERWISE THE FITTINGS WILL HAVE TO BE WAX TAPED PER AWWA C217.
- FOR COORDINATION OF THE SHUTDOWN OF TRANSMISSION MAINS (16-INCHES AND LARGER), CONTACT THE CITY'S SENIOR WATER DISTRIBUTION OPERATIONS SUPERVISOR AT (619) 527-7438. FOR COORDINATION OF THE SHUTDOWN OF DISTRIBUTION MAINS (LESS THAN 16-INCHES), CONTACT THE CITY'S WATER OPERATIONS MANAGER AT (619) 527-3945.

**CONSTRUCTION STORM WATER PROTECTION NOTES**

- TOTAL SITE DISTURBANCE AREA (ACRES) 1.11 AC  
HYDROLOGIC UNIT/WATERSHED PUEBLO SAN DIEGO & SAN DIEGO  
HYDROLOGIC SUBAREA NAME & NO CHOLLAS/908.22 & MISSION SAN DIEGO/907.11
- THE CONTRACTOR SHALL COMPLY WITH THE REQUIREMENTS OF THE  
 MINOR WPCP  
THE PROJECT IS SUBJECT TO MUNICIPAL SEPARATE STORM SEWER SYSTEM (MS4) PERMIT NO. R9-2013-0001 AS AMENDED BY R9-2015-0001 AND R9-2015-0100  
 WPCP  
THE PROJECT IS SUBJECT TO MUNICIPAL SEPARATE STORM SEWER SYSTEM (MS4) PERMIT NO. R9-2013-0001 AS AMENDED BY R9-2015-0001 AND R9-2015-0100  
 SWPPP  
THE PROJECT IS SUBJECT TO MUNICIPAL SEPARATE STORM SEWER SYSTEM (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 AMND 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

**MONUMENTATION/SURVEY NOTES**

THE CONTRACTOR SHALL BE RESPONSIBLE FOR SURVEY MONUMENTS AND/OR VERTICAL CONTROL BENCHMARKS WHICH ARE DISTURBED OR DESTROYED BY CONSTRUCTION. A LICENSED LAND SURVEYOR OR LICENSED CIVIL ENGINEER AUTHORIZED TO PRACTICE LAND SURVEYING IN THE STATE OF CALIFORNIA SHALL FIELD LOCATE, REFERENCE, AND/OR PRESERVE ALL HISTORICAL OR CONTROLLING MONUMENTS PRIOR TO ANY EARTHWORK, DEMOLITION OR SURFACE IMPROVEMENTS. IF DESTROYED, A LICENSED LAND SURVEYOR SHALL REPLACE SUCH MONUMENT(S) WITH APPROPRIATE MONUMENTS. WHEN SETTING SURVEY MONUMENTS USE FOR RE-ESTABLISHMENT OF THE DISTURBED CONTROLLING SURVEY MONUMENTS AS REQUIRED BY SECTIONS 6730.2 AND 8771 OF THE BUSINESS AND PROFESSIONS CODE OF THE STATE OF CALIFORNIA. A CORNER RECORD OR RECORD OF SURVEY, AS APPROPRIATE, SHALL BE FILED WITH THE COUNTY SURVEYOR. IF ANY VERTICAL CONTROL IS TO BE DISTURBED OR DESTROYED, THE CITY OF SAN DIEGO FIELD SURVEY SECTION SHALL BE NOTIFIED IN WRITING AT LEAST 7 DAYS PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COST OF REPLACING ANY VERTICAL CONTROL BENCHMARKS DESTROYED BY THE CONSTRUCTION.

**WORK TO BE DONE**

- CONSTRUCTION OF NEW 66" CMLC&TC TRANSMISSION MAIN WITH CATHODIC PROTECTION, NEW 8" PVC DISTRIBUTION MAIN, WATER SERVICES, 2-4" FIBER OPTIC CONDUITS, EXISTING 16" WATER MAIN ABANDONMENT, STREET RESURFACING, CURB RAMPS AND ALL OTHER WORK SHOWN ON THESE PLANS AND SPECIFICATIONS.

# MONTEZUMA PPL / MID-CITY PIPELINE PH2

**ABBREVIATIONS**

ABAND	ABANDON	IJTS	INSULATING JOINT TEST STATION
ABAND'D	ABANDONED	IRR	IRRIGATION
ACP	ASBESTOS CEMENT (PIPE)	LT	LEFT
AC	ASPHALTIC CONCRETE	MJ	MECHANICAL JOINT
AHD	AHEAD	MPBX	MULTI-POINT BOREHOLE EXTENSOMETER
AWTP	ALVARADO WATER TREATMENT PLANT	MTD	MULTIPLE TELEPHONE DUCT
ASSY	ASSEMBLY	MTBM	MICROTUNNEL BORING MACHINE
AVAR	AIR VACUUM & AIR RELEASE	MTS	METROPOLITAN TRANSIT SYSTEM
AWWA	AMERICAN WATER WORKS ASSOC	N.I.C.	NOT IN CONTRACT
BFV	BUTTERFLY VALVE	N/O	NORTH OF
BK	BACK	OVHD	OVERHEAD
BO	BLOWOFF	PE	PLAIN END
BOP	BOTTOM OF PIPE	PH	POTHOLE
BTWN	BETWEEN	PROP	PROPOSED
BW	BACK OF WALK	PVC	POLYVINYL CHLORIDE (PIPE)
CATV	CABLE TV	PVMT	PAVEMENT
CC	CALCIUM CHLORIDE	RCB	REINFORCED CONCRETE BOX
CI	CAST IRON	RCCP	REINFORCED CONCRETE CYLINDER PIPE
CICL	CAST IRON CEMENT LINED	RCP	REINFORCED CONCRETE PIPE
CML&C	CEMENT MORTAR LINED STEEL PIPE WITH CEMENT MORTAR OVERCOAT	R CSC	REINFORCED CONCRETE STEEL CYLINDER
		RED	REDUCER
CML&TC	CEMENT MORTAR LINED AND TAPE COATED STEEL PIPE WITH CEMENT MORTAR OVERCOAT	R.O.S.	RECORD-OF-SURVEY
		RT	RIGHT
COND	CONDUIT	SD	STORM DRAIN
CONT	CONTINUED	SDCWA	SAN DIEGO COUNTY WATER AUTHORITY
CONTR	CONTRACTOR	SDSD	SAN DIEGO STANDARD DRAWINGS
CPTS	CATHODIC PROTECTION TEST STATION	SHT	SHEET
		SL	SEWER LATERAL
DB	DIRECT BURIED	SO	STUB OUT
DI	DUCTILE IRON	S/O	SOUTH OF
EB	ENCASED BURIED	SS	STAINLESS STEEL
ECC	ECCENTRIC	SSMH	SANITARY SEWER MANHOLE
EG	EXISTING GRADE	STL	STEEL
EL, ELEV	ELEVATION	SWR	SEWER
ELEC	ELECTRIC	TC	TOP OF CURB
ESMT	EASEMENT	TEL	TELEPHONE
EX, EXIST	EXISTING	TP	TOP OF PIPE
E/O	EAST OF	TYP	TYPICAL
F	FLANGE	UNK	UNKNOWN
FCF	FLOW CONTROL FACILITY	VC	VITRIFIED CLAY (PIPE)
FH	FIRE HYDRANT	VERT	VERTICAL
FL	FLOW LINE	WAS	WATER AGENCY STANDARDS
FS	FINISHED SURFACE	WD	WATER DISTRICT
GV	GATE VALVE	WS	WATER SERVICE
HDPE	HIGH DENSITY POLYETHYLENE	WTR	WATER
HP	HIGH PRESSURE	WWM	WELDED WIRE MESH
HSS	HEAT SHRINK SLEEVE	W/O	WEST OF
HWD	HELIX WATER DISTRICT		
IE	INVERT ELEVATION		

**DECLARATION OF RESPONSIBLE CHARGE**

I HEREBY DECLARE THAT I AM THE ENGINEER OF WORK FOR THIS PROJECT THAT I HAVE EXERCISED RESPONSIBLE CHARGE OVER THE DESIGN OF THE PROJECT AS DEFINED IN SECTION 6703 OF THE BUSINESS AND PROFESSIONS CODE AND THAT THE DESIGN IS CONSISTENT WITH CURRENT STANDARDS. I UNDERSTAND THAT THE CHECK OF PROJECT DRAWINGS AND SPECIFICATIONS BY THE CITY OF SAN DIEGO, SAN DIEGO COUNTY WATER AUTHORITY AND HELIX WATER DISTRICT ARE CONFINED TO A REVIEW ONLY AND DOES NOT RELIEVE ME, AS ENGINEER OF WORK, OF MY RESPONSIBILITIES FOR PROJECT DESIGN.

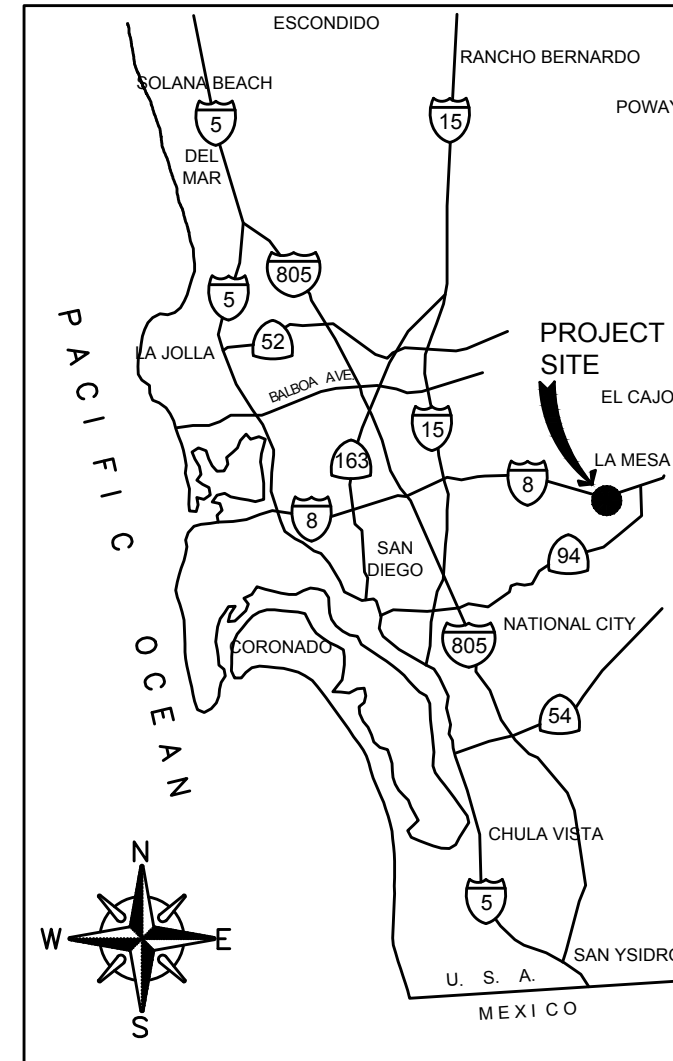
*Marc Weinberger*  
MARC R. WEINBERGER

05/13/2022

R.C.E. 26441

AS-BUILT INFORMATION		CONSULTANT	
MATERIALS	MANUFACTURER	<b>PSOMAS</b> 401 B Street, Suite 1600 San Diego, CA 92101 (619) 961-2800 (619) 961-2392 fax www.psomos.com	
PIPE WELDED STEEL (WATER)	-		
PIPE CL 235 PVC (WATER)	-		
PIPE SDR 35 PVC (SEWER)	-		
BUTTERFLY VALVES	-		
GATE VALVES	-	DATE STARTED _____ DATE COMPLETED _____ CONTRACTOR _____ INSPECTOR _____	

CONSTRUCTION CHANGE / ADDENDUM				WARNING	
CHANGE	DATE	AFFECTED OR ADDED SHEET NUMBERS	APPROVAL NO.	0 1	
△	01/11/24	36		IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE.	



VICINITY MAP NOT TO SCALE

**FIELD DATA**

**BENCHMARK:**

NWBP SARANAC STREET AND 69TH STREET, ELEV. 460.779 MSL, BASED ON NGVD 29 FEET AS SHOWN IN THE CITY OF SAN DIEGO BENCH BOOK.

**CITY OF SAN DIEGO PRELIMINARY SURVEY FIELD NOTES:**

MID-CITY PIPELINE PHASE II, WATKINS, 218-1752, WO. S-11026, 7/10/2013

**DATE:** MEAN SEA LEVEL, NGVD 29

**BASIS OF BEARINGS:**

THE BASIS OF BEARINGS FOR THIS PROJECT WAS DERIVED FROM A PREVIOUS STATIC GPS SURVEY USING ROS 14492, NAD 83 FEET, ZONE 6 (EPOCH 91.35), UTILIZING RTK/GPS FIELD PROCEDURES WITH A CALVRS BASE STATION BROADCAST 2013 AND CONSTRAINING TO GPS 17, GPS 1108 CHECKING GPS 1105, I.E. S 59°07'28" E.

**IMPROVEMENTS**

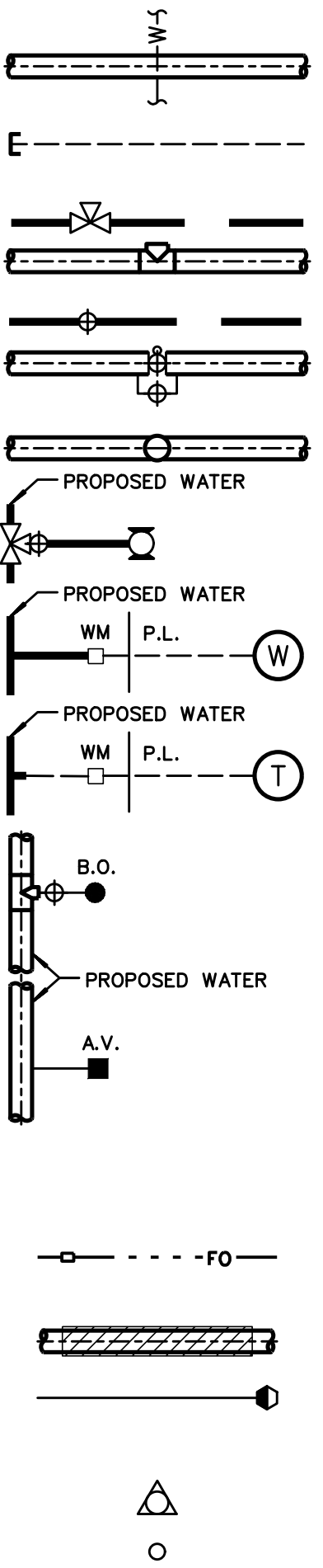
- TRENCH RESURFACING
- PIPE SUPPORT FOR UNDERCUT AC WATER MAIN
- CUTTING AND PLUGGING ABANDONED WATER MAIN
- WATER MAIN & APPURTENANCES
- VALVES WITH CAPS AND WELLS
- ACCESS MANWAY IN CONCRETE STRUCTURE
- 6" FIRE HYDRANT ASSEMBLY & MARKER 2-PORT UNLESS SPECIFIED AS 3-PORT
- 1" WATER SERVICE UNLESS OTHERWISE SPECIFIED
- WATER SERVICE TRANSFER
- BLOWOFF ASSEMBLY
- AIR VACUUM & AIR RELEASE VALVE
- HIGHLINING BY CONTRACTOR AND PULLBOX
- WATER MAIN STEEL CASING
- CATHODIC PROTECTION TEST STATION
- SURVEY WELL MONUMENT
- SURVEY MONUMENT
- FOR ADDITIONAL SYMBOLS SEE RESURFACING, CURB RAMP, AND TRAFFIC CONTROL SHEETS.

**LEGEND**

**REFERENCE**

- (SEE DETAILS ON SHT 27)
- SDW-162
- WP-03
- SDM-105, SDW-101, SDW-103, SDW-108, SDW-110, SDW-111, SDW-139, SDW-151 (1500 PSF, 225 PSI)
- SDW-109, SDW-152, SDW-153, SDW-154, WV-05
- D-9, M-3, SDD-114, SDM-113, SDW-103
- 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
- SDW-149, SDW-150
- SDM-105, SDW-106, SDW-143, SDW-144, SDW-145, SDW-146, WB-05
- SDM-105, SDW-117, SDW-160
- SDW-170, SDW-171, SDW-172, SDW-173
- SDM-105
- SDM-105, SDW-121, SDW-128, SDW-129, SDW-130, SDW-131, SDW-132, SDW-133
- M-10A, M-10B, M-10C

**SYMBOL**



**EXISTING STRUCTURES**

WATER MAIN & VALVES		FENCE	
WATER METER/SERVICE LINE		RIGHT-OF-WAY	
FIRE HYDRANT		CALTRANS RIGHT-OF-WAY	
SEWER MAIN & MANHOLES		ELECTRIC VAULT/PEDESTAL	
STORM DRAINS		LIGHT FIXTURE	
AC PAVEMENT (PROFILE)		IRRIGATION CONTROL BOX	
GROUND LINE (PROFILE)		WATER VAULT/MANHOLE	
CONCRETE SURFACE (PROFILE)		POWER POLE	
TRAFFIC SIGNAL		GAS VALVE	
STREET LIGHT		MONITORING WELL	
GAS MAIN		TRAFFIC SIGNAL PULLBOX	
ELEC, TEL, OR CATV CONDUIT		TELEPHONE VAULT/PEDESTAL	
SEWER FORCE MAIN		BACKFLOW DEVICE	
RAILROAD, TROLLEY TRACKS			

G-1

**PLANS FOR THE CONSTRUCTION OF MONTEZUMA PPL / MID-CITY PIPELINE PH2**

**COVER SHEET**

SPEC NO. 1821D	CITY OF SAN DIEGO, CALIFORNIA PUBLIC WORKS DEPARTMENT SHEET 1 OF 104 SHEETS	WATER WBS S-11026 SEWER WBS N/A
APPROVED: <i>Brian Vitelle</i> FOR CITY ENGINEER DATE 07/28/2022 DATE C73039 PRINT DCE NAME RCE #	PROJECT MANAGER MARIAM KARGAR PROJECT ENGINEER JOEY FLORES	
DESCRIPTION BY APPROVED DATE FILMED	ORIGINAL PSO <i>Brian Vitelle</i> 07/28/2022 ADDENDUM D <i>Brian Vitelle</i> 01/11/2024	SEE EACH SHEET CCS27 COORDINATE SEE EACH SHEET CCS83 COORDINATE
CONTRACTOR	DATE STARTED	37333-01-D
INSPECTOR	DATE COMPLETED	

△ : UPDATED SHEET

**ADDENDUM D**

MONTEZUMA PPL / MID-CITY PIPELINE PH2

SHEET INDEX

SHEET NO.	DISCIPLINE CODE	TITLE	LIMITS	PIPE		LENGTH (FT)
				SIZE (IN)	MATERIAL	
1	G-1	COVER SHEET				
2	G-2	SHEET INDEX				
3	G-3	KEY MAP AND ENVIRONMENTAL/MITIGATION REQUIREMENTS				
4	G-4	NOTES - CITY OF LA MESA				
5	G-5	NOTES - SAN DIEGO COUNTY WATER AUTHORITY				
6	G-6	NOTES - METROPOLITAN TRANSIT SYSTEM				
7	G-7	NOTES - METROPOLITAN TRANSIT SYSTEM				
8	G-8	NOTES - HELIX WATER DISTRICT				
9	G-9	GEOTECHNICAL BORING KEY MAP				
10	G-10	GEOTECHNICAL BORING LOGS				
11	G-11	GEOTECHNICAL BORING LOGS				
12	G-12	GEOTECHNICAL BORING LOGS				
13	AB-1	<del>ABANDONMENT PLAN</del> NOT PART OF THIS CONTRACT				
14	AB-2	ABANDONMENT PLAN				
15	C-1	MOHAWK ST	69th ST TO S/O SARANAC ST	66	CML&TC	880.00
16	C-2	70th ST	SARANAC ST TO ALVARADO RD	66	CML&TC	700.00
17	C-3	70th ST	ALVARADO RD	66	CML&TC	500.00
18	C-4	I-8 CROSSING	ALVARADO RD TO LAKE MURRAY BL	66	CML&TC	850.00
19	C-5	LAKE MURRAY BL	WISCONSIN AV TO STA 46+50.00	66	CML&TC	800.00
20	C-6	LAKE MURRAY BL	STA 46+50.00 TO STA 52+00.00	66	CML&TC	550.00
21	C-7	LAKE MURRAY BL	STA 52+00.00 TO VALVE VAULT *3	66	CML&TC	595.00
22	C-8	<del>MOHAWK ST AT 71st ST</del> NOT PART OF THIS CONTRACT				
23	C-9	HORIZONTAL ALIGNMENT REPORT & COORDINATE INDEX REPORT				TOTAL WATER: 4875.00
24	C-10	CONNECTION DETAILS				
25	C-11	CIVIL DETAILS				
26	C-12	CIVIL DETAILS				
27	C-13	TRENCH DETAILS				
28	C-14	STEEL PIPE DETAILS				
29	C-15	STEEL PIPE DETAILS				
30	C-16	STEEL PIPE DETAILS				
31	C-17	SITE PLAN I-8 CROSSING LAUNCHING PIT				
32	C-18	SITE PLAN I-8 CROSSING RECEIVING PIT				
33	C-19	NOT USED				
34	C-20	GEOTECHNICAL INSTRUMENTATION DETAILS				
35	C-21	<del>PIPE CROSSING AND CROSSING DETAILS</del>				
36	C-22	MTS CROSSING				
37	C-23	<del>CALTRANS CROSSING</del>				
38	C-24	FIBER OPTIC CONDUIT SINGLE LINE DIAGRAM				
39	C-25	STREET RESURFACING	MOHAWK ST / 70th ST			
40	C-26	STREET RESURFACING	70th ST / ALVARADO RD			
41	C-27	STREET RESURFACING	LAKE MURRAY BL			
42	C-28	STREET RESURFACING	LAKE MURRAY BL			
43	C-29	CURB RAMP LOCATIONS				
44	C-30	CURB RAMP IMPROVEMENTS				
45	C-31	CURB RAMP IMPROVEMENTS				
46	C-32	CURB RAMP IMPROVEMENTS				
47	C-33	CURB RAMP IMPROVEMENTS				
48	C-34	CURB RAMP IMPROVEMENT				
49	C-35	WORK BY CITY FORCES AND BATCH DISCHARGE PLAN				
50	C-36	WATER POLLUTION CONTROL SITE PLAN				
51	L-1	IRRIGATION PLAN				
52	L-2	IRRIGATION LEGEND				
53	L-3	IRRIGATION DETAILS				
54	L-4	IRRIGATION NOTES				
55	L-5	PLANTING PLAN				
56	L-6	PLANTING LEGEND AND NOTES				
57	M-1	ALVARADO RD BFV VALVE MECHANICAL PLAN				
58	M-2	ALVARADO RD BFV VAULT MECHANICAL SECTIONS				
59	M-3	LAKE MURRAY BL BFV VAULT MECHANICAL PLAN				
60	M-4	LAKE MURRAY BL BFV VAULT MECHANICAL SECTIONS				
61	M-5	MECHANICAL DETAILS				
62	S-1	ALVARADO RD BFV VAULT STRUCTURAL PLAN & SECTION				
63	S-2	LAKE MURRAY BL BFV VAULT STRUCTURAL PLAN & SECTION				
64	S-3	STRUCTURAL DETAILS				

DISCIPLINE CODE

- G GENERAL
- AB ABANDONMENT
- C CIVIL
- L LANDSCAPE
- M MECHANICAL
- S STRUCTURAL
- E ELECTRICAL
- CP CATHODIC PROTECTION
- R HWD WATER RELOCATION
- LM CITY OF LA MESA SEWER
- T TRAFFIC CONTROL



SHEET INDEX

SHEET NO.	DISCIPLINE CODE	TITLE	LIMITS
65	E-1	ELECTRICAL SYMBOLS AND ABBREVIATIONS	
66	E-2	ELECTRICAL SITE PLAN - VAULT NO. 3 AND FLOW METER MANHOLE	
67	E-3	ELECTRICAL SITE PLAN - LAKE MURRAY BL METER PEDESTAL	
68	E-4	CONDUIT SCHEDULE	
69	E-5	ELECTRICAL DETAILS	
70	CP-1	CATHODIC PROTECTION SYSTEM DETAILS	
71	CP-2	CATHODIC PROTECTION SYSTEM DETAILS	
72	CP-3	CATHODIC PROTECTION SYSTEM DETAILS	
73	R-1	LAKE MURRAY BL	WISCONSIN TO 809' NORTH OF WISCONSIN AV
74	R-2	RELOCATION OF 8" WATER	LAKE MURRAY BL NORTH OF WISCONSIN AV
75	R-3	RELOCATION OF 8" WATER	LAKE MURRAY BL AT WISCONSIN AV STA 1+00 TO 2+84 AND STA 3+55 TO 4+36
76	R-4	RELOCATION OF 8" WATER	LAKE MURRAY BL N OF WISCONSIN AV STA 10+00 TO 13+89
77	R-5	RELOCATION OF 8" WATER	LAKE MURRAY BL NORTH OF WISCONSIN AV
78	LM-1	LAKE MURRAY BL WISCONSIN TO 250' NORTH OF WISCONSIN AV	
79	LM-2	8" SEWER REPLACEMENT LAKE MURRAY BL NORTH OF WISCONSIN AV	
80	LM-3	8" SEWER REPLACEMENT LAKE MURRAY BL NORTH OF WISCONSIN AVE STA 10+00.00 TO 13+87.73	
81	LM-4	8" SEWER REPLACEMENT LAKE MURRAY BL NORTH OF WISCONSIN AV	
82	LM-5	STREET RESURFACING 70th ST / ALVARADO RD	
83	LM-6	70TH STREET EL CAJON BL TO ALVARADO RD	
84	LM-7	70TH STREET EL CAJON BL TO ALVARADO RD	
85	LM-8	LAKE MURRAY BL AT KIOWA DR	
86	LM-9	LAKE MURRAY BL AT CONNECTICUT AVE/PARKWAY DR	
87	LM-10	STRIPING AND SIGNAGE PLAN FOR LAKE MURRAY BL	
88	LM-11	IMPROVEMENTS MEDIAN PLAN FOR LAKE MURRAY BL	
89	LM-12	IMPROVEMENTS MEDIAN PLAN FOR LAKE MURRAY BL	
90	LM-13	IRRIGATION PLAN FOR LAKE MURRAY BL	
91	LM-14	IRRIGATION PLAN FOR LAKE MURRAY BL	
92	LM-15	IRRIGATION LEGEND FOR LAKE MURRAY BL	
93	LM-16	IRRIGATION NOTES FOR LAKE MURRAY BL	
94	LM-17	IRRIGATION DETAILS FOR LAKE MURRAY BL	
95	LM-18	IRRIGATION DETAILS FOR LAKE MURRAY BL	
96	LM-19	PLANTING PLAN FOR LAKE MURRAY BL	
97	LM-20	PLANTING PLAN FOR LAKE MURRAY BL	
98	LM-21	PLANT LIST AND DG/GRAVEL LEGEND FOR LAKE MURRAY BL	
99	LM-22	PLANTING NOTES FOR LAKE MURRAY BL	
100	LM-23	PLANTING DETAILS FOR LAKE MURRAY BL	
101	LM-24	CITY OF LA MESA MONUMENT SIGN METER PEDESTAL	
102	LM-25	CITY TO PROVIDE SHEET TITLE INFORMATION	
103	LM-26	CITY TO PROVIDE SHEET TITLE INFORMATION	
104	LM-27	CITY TO PROVIDE SHEET TITLE INFORMATION	
T01-T62	T01-T62	66" PIPELINE TRAFFIC CONTROL PLANS	
T63-T77	T63-T77	HELIX WATER DISTRICT TRAFFIC CONTROL PLANS	
T78-T84	T78-T84	CITY OF LA MESA TRAFFIC CONTROL PLANS	

SHEET INDEX

G-2

MONTEZUMA PPL / MID-CITY PIPELINE PH2  
SHEET INDEX

CITY OF SAN DIEGO, CALIFORNIA  
PUBLIC WORKS DEPARTMENT  
SHEET 2 OF 104 SHEETS

WATER WBS S-11026  
SEWER WBS N/A

APPROVED: *Brian Vitelle* 07/28/2022  
FOR CITY ENGINEER DATE  
BRIAN VITELLE C73039  
PRINT DCE NAME RCE #

SUBMITTED BY: MARYAM KARGAR  
PROJECT MANAGER  
CHECKED BY: JOEY FLORES  
PROJECT ENGINEER

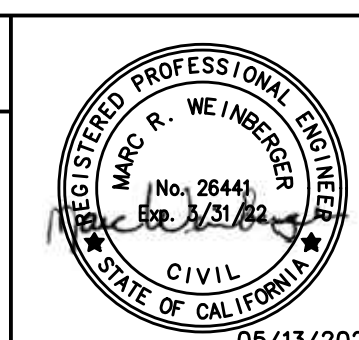
DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	PSO	<i>Brian Vitelle</i>	07/28/2022	
ADDENDUM D		<i>Brian Vitelle</i>	01/11/2024	

SEE SHEETS  
CCS27 COORDINATE  
SEE SHEETS  
CCS83 COORDINATE

CONSULTANT

**PSOMAS**

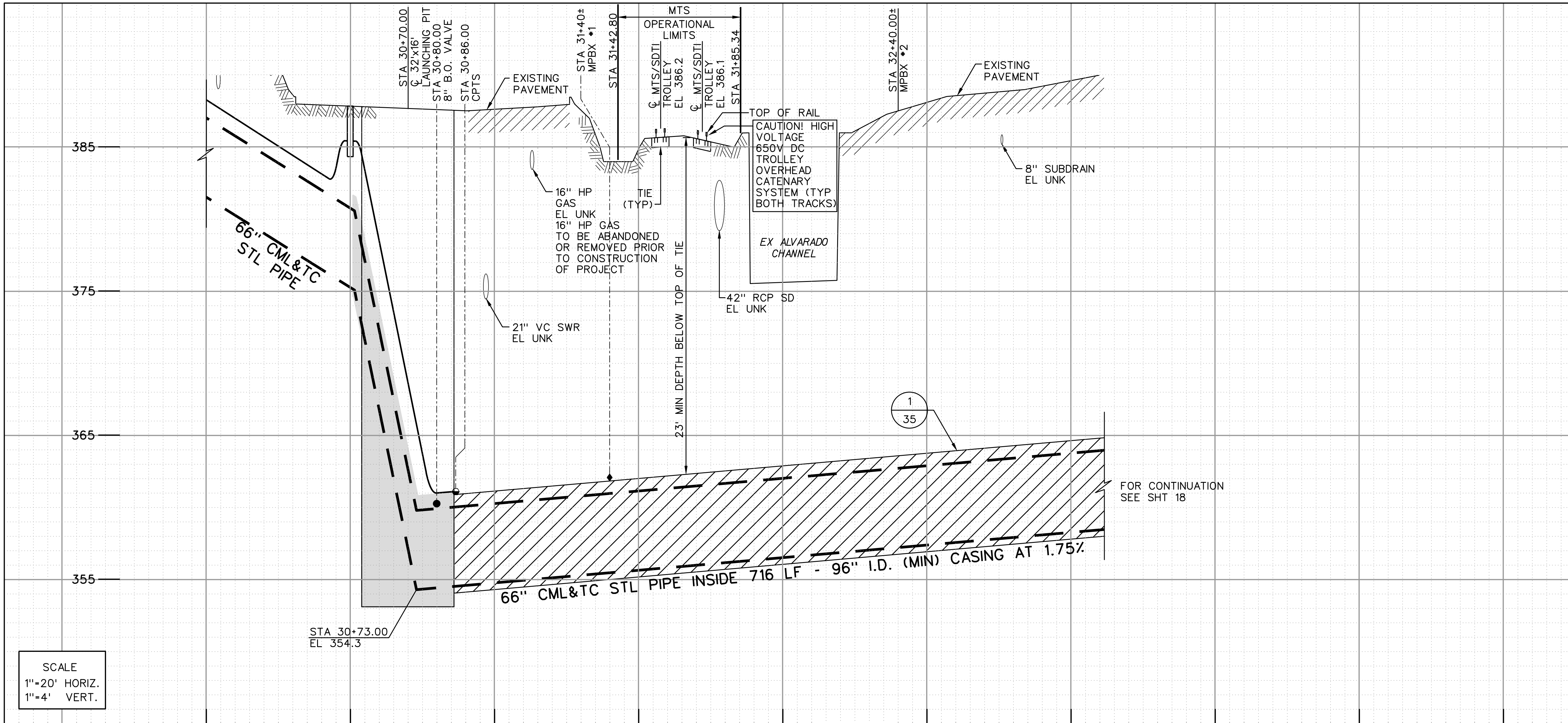
401 B Street, Suite 1600  
San Diego, CA 92101  
(619) 961-2800 (619) 961-2392 fax  
www.psomas.com



CONTRACTOR INSPECTOR

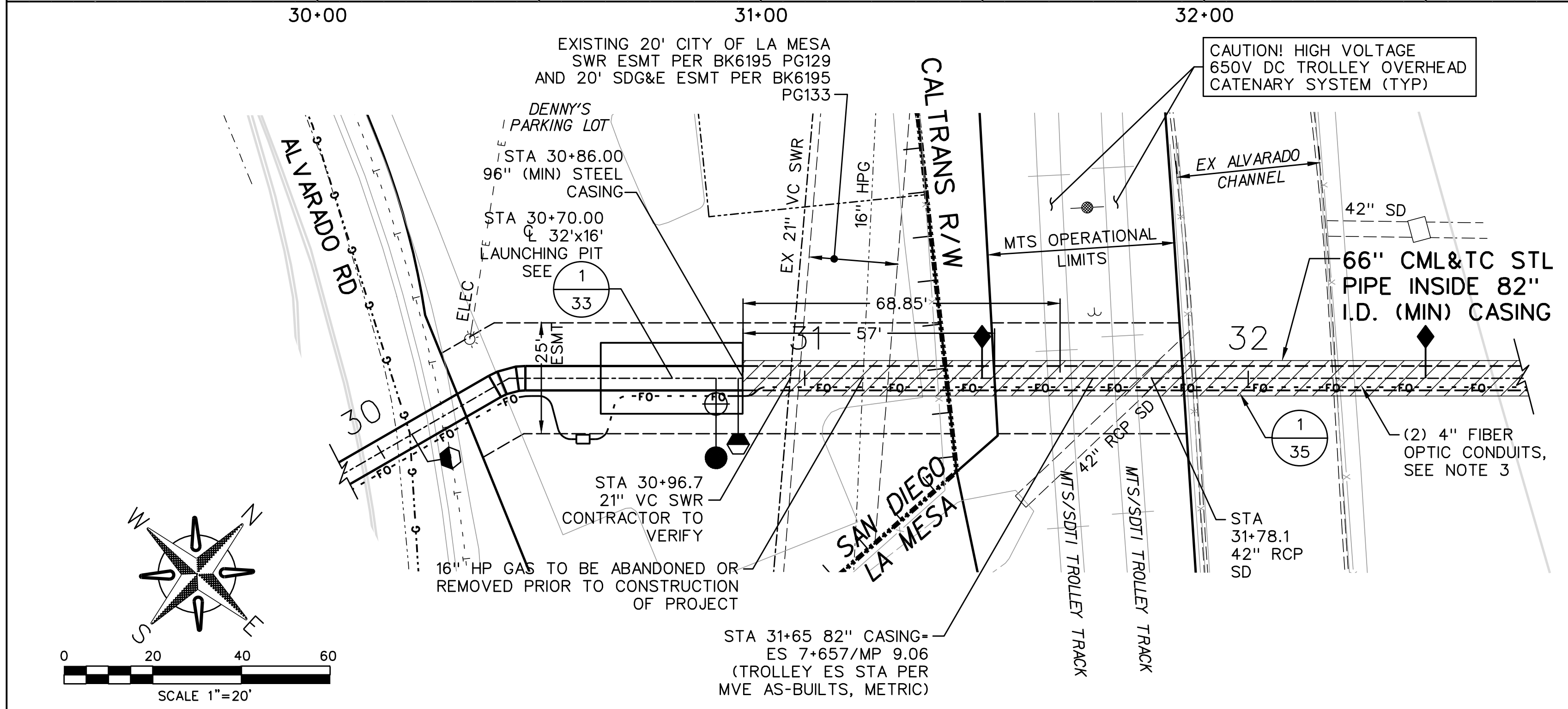
DATE STARTED  
DATE COMPLETED

37333-02-D



SCALE  
1"=20' HORIZ.  
1"=4' VERT.

FOR CONTINUATION  
SEE SHT 18



33+00  
TABLE 1-5-6. PLAN DATA FROM AREMA MANUAL FOR RAILWAY ENGINEERING

CONTENT TO BE HANDLED	DISTRIBUTION CIRCUIT 161	
	CARRIER PIPE	CASING PIPE
OUTSIDE DIAMETER	71.0**	96" MIN
PIPE MATERIALS	STEEL	STEEL
SPECIFICATION AND GRADE	ASTM A139 GRADE C	ASTM A136
WALL THICKNESS	7/8"	1"
ACTUAL WORKING PRESSURE	85 PSI	N/A
TYPE OF JOINT	WELDED LAP JOINT	COMPLETE JOINT PENETRATION EROXY
COATING	TC W/ CM	
METHOD OF INSTALLATION	MICROTUNNELING	MICROTUNNELING
SEALS: Y BOTH ENDS: Y TYPE: MOLDED RUBBER		
BURY: BASE OF RAIL TO TOP OF CASING (MIN.) 22.75'		
BURY: (NOT BENEATH TRACKS - MIN.) 21.5'		
BURY: (ROADWAY DITCHES - MIN.) 13'		
TYPE, SIZE AND SPACING OF INSULATORS OR SUPPORTS: SS W/PLASTIC RUNNERS/ 66"/ 8'		
DISTANCE OUTSIDE TRACK TO FACE OF JACK/RECEIVING PITS (25 FT MIN): 63'		
BURY: BASE OF RAIL TO BOTTOM JACK/RECEIVING PITS 31.8'		
CATHODIC PROTECTION: IMPRESSED CURRENT FOR 66" PIPE		

- NOTES:
- PRIOR TO CONSTRUCTION OF MTS CROSSING, CONTRACTOR SHALL LOCATE EXISTING UTILITIES.
  - CONTRACTOR SHALL FIELD SURVEY THE EXISTING MTD/SDTI TROLLEY TRACKS BEFORE AND AFTER CONSTRUCTION.
  - (2) 4" SCH 40 THREADED STEEL CONDUITS SHALL BE INSTALLED WITHIN THE CARRIER PIPE CASING FOR FUTURE FIBER OPTIC CABLES.
  - PERFORM THE WORK IN COMPLIANCE WITH REQUIREMENTS ON SHEETS 6, 7 AND TECHNICAL SPECIFICATIONS.

C-22

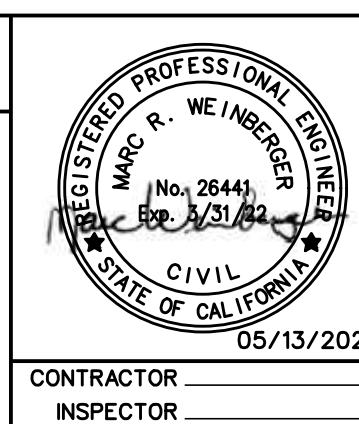
MONTEZUMA PPL / MID-CITY PIPELINE PH2  
MTS CROSSING

CITY OF SAN DIEGO, CALIFORNIA PUBLIC WORKS DEPARTMENT SHEET 36 OF 104 SHEETS		WATER WBS S-11026 SEWER WBS N/A
APPROVED: <i>Brian Vitelle</i> FOR CITY ENGINEER BRIAN VITELLE PRINT DCE NAME	DATE 07/28/2022 C73039 RCE #	SUBMITTED BY: MARYAM KARGAR PROJECT MANAGER JOEY FLORES PROJECT ENGINEER
DESCRIPTION BY: PSO	APPROVED: <i>Brian Vitelle</i>	DATE FILMED: 07/28/2022
ORIGINAL	ADDENDUM D	DATE COMPLETED: 01/11/2024
1858444, 6316407 CCS83 COORDINATE		37333-36-D

CONSULTANT

**PSOMAS**

401 B Street, Suite 1600  
San Diego, CA 92101  
(619) 961-2800 (619) 961-2392 fax  
www.psomas.com



# City of San Diego

CITY CONTACT: Rosa I. Riego, Senior Contract Specialist, Email: [RRiego@sandiego.gov](mailto:RRiego@sandiego.gov)  
Phone No. (619) 533-3426

## ADDENDUM E



## FOR

## MONTEZUMA/MID-CITY PIPELINE PHASE 2 AND 70TH ALVARADO TO SARANAC SIDEWALK

BID NO.:	<u>K-24-1821-DBB-3-D-C</u>
SAP NO. (WBS/IO/CC):	<u>S-11026, B-17065, B-24001</u>
CLIENT DEPARTMENT:	<u>2013, 2116</u>
COUNCIL DISTRICT:	<u>7, 9</u>
PROJECT TYPE:	<u>KA, IK</u>

### **BID DUE DATE:**

**2:00 PM  
JANUARY 25, 2024**

**CITY OF SAN DIEGO'S ELECTRONIC BIDDING SITE, PLANETBIDS**

<http://www.sandiego.gov/cip/bidopps>

**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. Plan view detail on C-22 shows that the 66" CML&TC is inside of 82" ID MIN casing, whereas the profile shows 96" MIN ID casing. Please confirm that the Contractor is permitted to use 82" ID MIN casing in this crossing.

A1. The 66" CML&TC shall be inside a 96" casing per sheet C-4 and Specification section 209-2.1. Please see the updated sheets C-22 and C-23 for clarification.

**C. PLANS**

1. To Drawing numbers **37333-01-D, 37333-02-D, 37333-36-D, and 37333-37-D, DELETE** in their entirety and **REPLACE** with pages 3 through 6 of this Addendum.

Rania Amen, Director  
Engineering & Capital Projects Department

Dated: *January 16, 2024*  
San Diego, California

RA/MJN/na

**CONTRACTOR'S RESPONSIBILITIES**

- PURSUANT TO SECTION 4216 OF THE CALIFORNIA 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 5-UTILITIES.
- EXISTING UTILITY CROSSINGS 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 (AMI) 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.
- NO JOINTS SHALL BE WITHIN 8' OF CROSSING UTILITIES CONVEYING LIQUIDS OR PARALLEL UTILITIES CONVEYING LIQUIDS THAT ARE 4' OR CLOSER (OUTSIDE PIPE WALL TO OUTSIDE PIPE WALL).
- PROVIDE HOLIDAY FREE LININGS AND COATING FOR VALVES PER AWWA C550. HOLIDAYS CANNOT BE FIELD REPAIRED AND MUST BE REPAIRED IN A FACILITY APPROVED BY THE MANUFACTURER. IF HOLIDAYS EXIST ONLY ON THE EXTERIOR SURFACE, THE CONTRACTOR HAS THE OPTION OF APPLYING WAX TAPE TO THE ENTIRE VALVE PER AWWA C217.
- PROVIDE HOLIDAY FREE COATINGS FOR DI FITTINGS WITH THE REQUIRED 24 MIL DFT PER WHITEBOOK 209-1.1.2, OTHERWISE THE FITTINGS WILL HAVE TO BE WAX TAPED PER AWWA C217.
- FOR COORDINATION OF THE SHUTDOWN OF TRANSMISSION MAINS (16-INCHES AND LARGER), CONTACT THE CITY'S SENIOR WATER DISTRIBUTION OPERATIONS SUPERVISOR AT (619) 527-7438. FOR COORDINATION OF THE SHUTDOWN OF DISTRIBUTION MAINS (LESS THAN 16-INCHES), CONTACT THE CITY'S WATER OPERATIONS MANAGER AT (619) 527-3945.

**CONSTRUCTION STORM WATER PROTECTION NOTES**

- TOTAL SITE DISTURBANCE AREA (ACRES) 1.11 AC  
HYDROLOGIC UNIT/WATERSHED PUEBLO SAN DIEGO & SAN DIEGO  
HYDROLOGIC SUBAREA NAME & NO CHOLLAS/908.22 & MISSION SAN DIEGO/907.11
- THE CONTRACTOR SHALL COMPLY WITH THE REQUIREMENTS OF THE  
 MINOR WPCP  
THE PROJECT IS SUBJECT TO MUNICIPAL SEPARATE STORM SEWER SYSTEM (MS4) PERMIT NO. R9-2013-0001 AS AMENDED BY R9-2015-0001 AND R9-2015-0100  
 WPCP  
THE PROJECT IS SUBJECT TO MUNICIPAL SEPARATE STORM SEWER SYSTEM (MS4) PERMIT NO. R9-2013-0001 AS AMENDED BY R9-2015-0001 AND R9-2015-0100  
 SWPPP  
THE PROJECT IS SUBJECT TO MUNICIPAL SEPARATE STORM SEWER SYSTEM (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 AMNDED 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

**MONUMENTATION/SURVEY NOTES**

THE CONTRACTOR SHALL BE RESPONSIBLE FOR SURVEY MONUMENTS AND/OR VERTICAL CONTROL BENCHMARKS WHICH ARE DISTURBED OR DESTROYED BY CONSTRUCTION. A LICENSED LAND SURVEYOR OR LICENSED CIVIL ENGINEER AUTHORIZED TO PRACTICE LAND SURVEYING IN THE STATE OF CALIFORNIA SHALL FIELD LOCATE, REFERENCE, AND/OR PRESERVE ALL HISTORICAL OR CONTROLLING MONUMENTS PRIOR TO ANY EARTHWORK, DEMOLITION OR SURFACE IMPROVEMENTS. IF DESTROYED, A LICENSED LAND SURVEYOR SHALL REPLACE SUCH MONUMENT(S) WITH APPROPRIATE MONUMENTS. WHEN SETTING SURVEY MONUMENTS USE FOR RE-ESTABLISHMENT OF THE DISTURBED CONTROLLING SURVEY MONUMENTS AS REQUIRED BY SECTIONS 6730.2 AND 8771 OF THE BUSINESS AND PROFESSIONS CODE OF THE STATE OF CALIFORNIA. A CORNER RECORD OR RECORD OF SURVEY, AS APPROPRIATE, SHALL BE FILED WITH THE COUNTY SURVEYOR. IF ANY VERTICAL CONTROL IS TO BE DISTURBED OR DESTROYED, THE CITY OF SAN DIEGO FIELD SURVEY SECTION SHALL BE NOTIFIED IN WRITING AT LEAST 7 DAYS PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COST OF REPLACING ANY VERTICAL CONTROL BENCHMARKS DESTROYED BY THE CONSTRUCTION.

**WORK TO BE DONE**

- CONSTRUCTION OF NEW 66" CMLC&TC TRANSMISSION MAIN WITH CATHODIC PROTECTION, NEW 8" PVC DISTRIBUTION MAIN, WATER SERVICES, 2-4" FIBER OPTIC CONDUITS, EXISTING 16" WATER MAIN ABANDONMENT, STREET RESURFACING, CURB RAMPS AND ALL OTHER WORK SHOWN ON THESE PLANS AND SPECIFICATIONS.

CONSTRUCTION CHANGE / ADDENDUM				WARNING	
CHANGE	DATE	AFFECTED OR ADDED SHEET NUMBERS	APPROVAL NO.	0 1	
△	01/11/24	36		IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE.	
△	01/16/24	36, 37			

# MONTEZUMA PPL / MID-CITY PIPELINE PH2

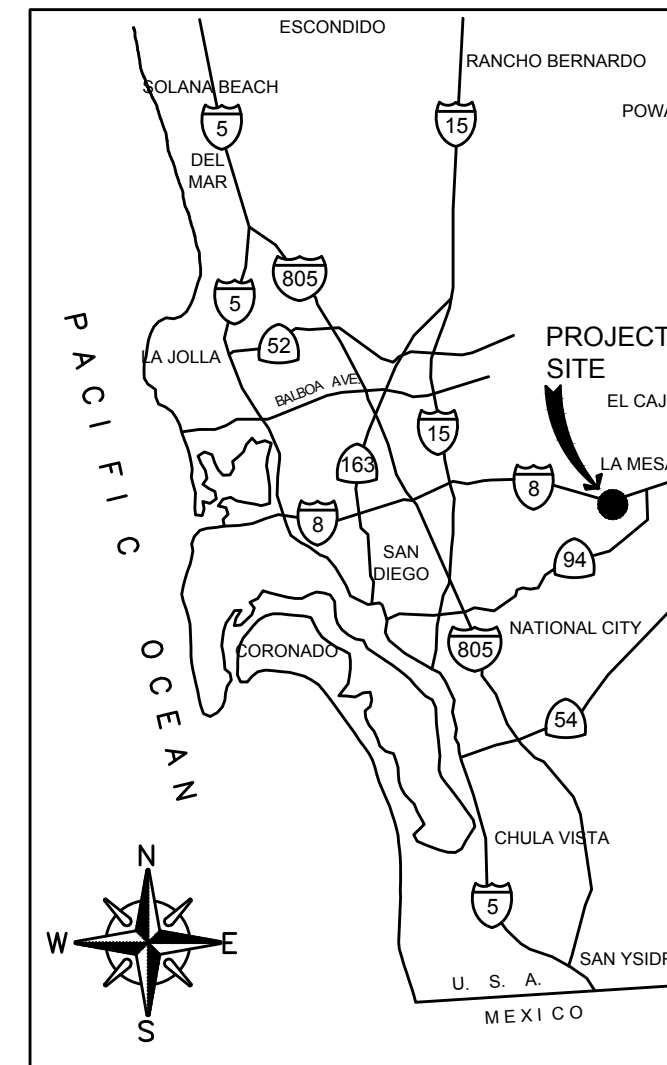
**ABBREVIATIONS**

ABAND	ABANDON	IJS	INSULATING JOINT TEST STATION
ABAND'D	ABANDONED	IRR	IRRIGATION
ACP	ASBESTOS CEMENT (PIPE)	LT	LEFT
AC	ASPHALTIC CONCRETE	MJ	MECHANICAL JOINT
AHD	AHEAD	MPBX	MULTI-POINT BOREHOLE EXTENSOMETER
AWTP	ALVARADO WATER TREATMENT PLANT	MTD	MULTIPLE TELEPHONE DUCT
ASSY	ASSEMBLY	MTBM	MICROTUNNEL BORING MACHINE
AVAR	AIR VACUUM & AIR RELEASE	MTS	METROPOLITAN TRANSIT SYSTEM
AWWA	AMERICAN WATER WORKS ASSOC	N.I.C.	NOT IN CONTRACT
BFV	BUTTERFLY VALVE	N/O	NORTH OF
BK	BACK	OVHD	OVERHEAD
BO	BLOWOFF	PE	PLAIN END
BOP	BOTTOM OF PIPE	PH	POTHOLE
BTWN	BETWEEN	PROP	PROPOSED
BW	BACK OF WALK	PVC	POLYVINYL CHLORIDE (PIPE)
CATV	CABLE TV	PVMT	PAVEMENT
CC	CALCIUM CHLORIDE	RCB	REINFORCED CONCRETE BOX
CI	CAST IRON	RCCP	REINFORCED CONCRETE CYLINDER PIPE
CICL	CAST IRON CEMENT LINED	RCP	REINFORCED CONCRETE PIPE
CML&C	CEMENT MORTAR LINED STEEL PIPE WITH CEMENT MORTAR OVERCOAT	R CSC	REINFORCED CONCRETE STEEL CYLINDER
CML&TC	CEMENT MORTAR LINED AND TAPE COATED STEEL PIPE WITH CEMENT MORTAR OVERCOAT	RED	REDUCER
COND	CONDUIT	R.O.S.	RECORD-OF-SURVEY
CONT	CONTINUED	RT	RIGHT
CONTR	CONTRACTOR	SD	STORM DRAIN
CPTS	CATHODIC PROTECTION TEST STATION	SDCWA	SAN DIEGO COUNTY WATER AUTHORITY
DB	DIRECT BURIED	SDSD	SAN DIEGO STANDARD DRAWINGS
DI	DUCTILE IRON	SHT	SHEET
EB	ENCASED BURIED	SL	SEWER LATERAL
ECC	ECCENTRIC	SO	STUB OUT
EG	EXISTING GRADE	S/O	SOUTH OF
EL, ELEV	ELEVATION	SS	STAINLESS STEEL
ELEC	ELECTRIC	SSMH	SANITARY SEWER MANHOLE
ESMT	EASEMENT	STL	STEEL
EX, EXIST	EXISTING	SWR	SEWER
E/O	EAST OF	TC	TOP OF CURB
F	FLANGE	TEL	TELEPHONE
FCF	FLOW CONTROL FACILITY	TP	TOP OF PIPE
FH	FIRE HYDRANT	TYP	TYPICAL
FL	FLOW LINE	UNK	UNKNOWN
FS	FINISHED SURFACE	VC	VITRIFIED CLAY (PIPE)
GV	GATE VALVE	VERT	VERTICAL
HDPE	HIGH DENSITY POLYETHYLENE	WAS	WATER AGENCY STANDARDS
HP	HIGH PRESSURE	WD	WATER DISTRICT
HSS	HEAT SHRINK SLEEVE	WS	WATER SERVICE
HWD	HELIX WATER DISTRICT	WTR	WATER
IE	INVERT ELEVATION	WWM	WELDED WIRE MESH
		W/O	WEST OF

**DECLARATION OF RESPONSIBLE CHARGE**

I HEREBY DECLARE THAT I AM THE ENGINEER OF WORK FOR THIS PROJECT THAT I HAVE EXERCISED RESPONSIBLE CHARGE OVER THE DESIGN OF THE PROJECT AS DEFINED IN SECTION 6703 OF THE BUSINESS AND PROFESSIONS CODE AND THAT THE DESIGN IS CONSISTENT WITH CURRENT STANDARDS. I UNDERSTAND THAT THE CHECK OF PROJECT DRAWINGS AND SPECIFICATIONS BY THE CITY OF SAN DIEGO, SAN DIEGO COUNTY WATER AUTHORITY AND HELIX WATER DISTRICT ARE CONFINED TO A REVIEW ONLY AND DOES NOT RELIEVE ME, AS ENGINEER OF WORK, OF MY RESPONSIBILITIES FOR PROJECT DESIGN.

*Marc Weinberger*  
MARC R. WEINBERGER  
R.C.E. 26441  
05/13/2022  
DATE



**VICINITY MAP**  
NOT TO SCALE

**FIELD DATA**

**BENCHMARK:**

NWBP SARANAC STREET AND 69TH STREET, ELEV. 460.779 MSL, BASED ON NGVD 29 FEET AS SHOWN IN THE CITY OF SAN DIEGO BENCH BOOK.

**CITY OF SAN DIEGO PRELIMINARY SURVEY FIELD NOTES:**

MID-CITY PIPELINE PHASE II, WATKINS, 218-1752, WO. S-11026, 7/10/2013

**DATE:** MEAN SEA LEVEL, NGVD 29

**BASIS OF BEARINGS:**

THE BASIS OF BEARINGS FOR THIS PROJECT WAS DERIVED FROM A PREVIOUS STATIC GPS SURVEY USING ROS 14492, NAD 83 FEET, ZONE 6 (EPOCH 91.35), UTILIZING RTK/GPS FIELD PROCEDURES WITH A CALVRS BASE STATION BROADCAST 2013 AND CONSTRAINING TO GPS 17, GPS 1108 CHECKING GPS 1105, I.E. S 59°07'28" E.

**IMPROVEMENTS**

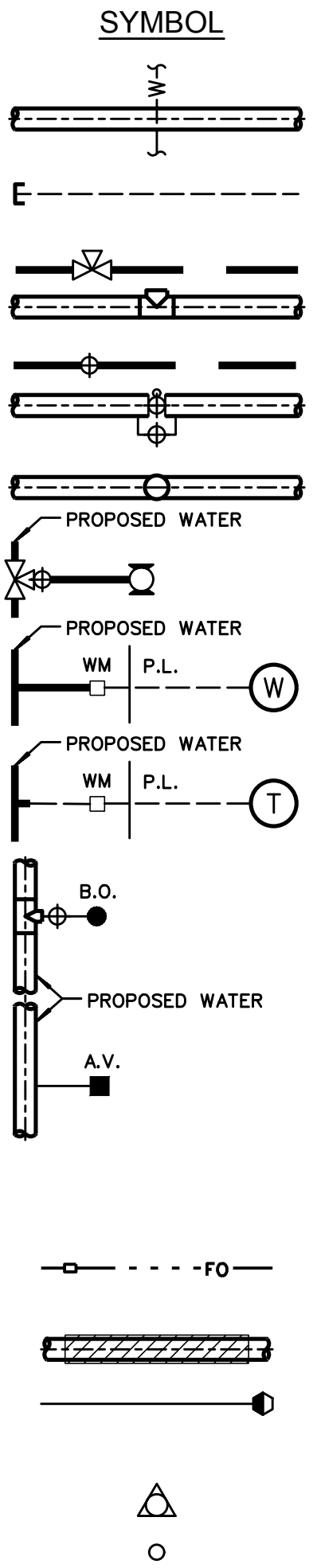
- TRENCH RESURFACING
- PIPE SUPPORT FOR UNDERCUT AC WATER MAIN
- CUTTING AND PLUGGING ABANDONED WATER MAIN
- WATER MAIN & APPURTENANCES
- VALVES WITH CAPS AND WELLS
- ACCESS MANWAY IN CONCRETE STRUCTURE
- 6" FIRE HYDRANT ASSEMBLY & MARKER 2-PORT UNLESS SPECIFIED AS 3-PORT
- 1" WATER SERVICE UNLESS OTHERWISE SPECIFIED
- WATER SERVICE TRANSFER
- BLOWOFF ASSEMBLY
- AIR VACUUM & AIR RELEASE VALVE
- HIGHLINING BY CONTRACTOR
- 2-4" FIBER OPTIC CONDUITS AND PULLBOX
- WATER MAIN STEEL CASING
- CATHODIC PROTECTION TEST STATION
- SURVEY WELL MONUMENT
- SURVEY MONUMENT
- FOR ADDITIONAL SYMBOLS SEE RESURFACING, CURB RAMP, AND TRAFFIC CONTROL SHEETS.

**LEGEND**

**REFERENCE**

- (SEE DETAILS ON SHT 27)
- SDW-162
- WP-03
- SDM-105, SDW-101, SDW-103, SDW-108, SDW-110, SDW-111, SDW-139, SDW-151 (1500 PSF, 225 PSI)
- SDW-109, SDW-152, SDW-153, SDW-154, WV-05
- D-9, M-3, SDD-114, SDM-113, SDW-103
- 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
- SDW-149, SDW-150
- SDM-105, SDW-106, SDW-143, SDW-144, SDW-145, SDW-146, WB-05
- SDM-105, SDW-117, SDW-160
- SDM-170, SDW-171, SDW-172, SDW-173
- SDM-105
- SDM-105, SDW-121, SDW-128, SDW-129, SDW-130, SDW-131, SDW-132, SDW-133
- M-10A, M-10B, M-10C

**SYMBOL**



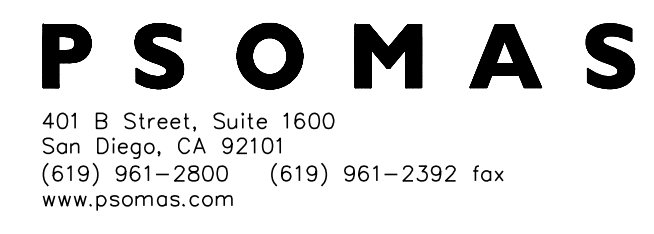
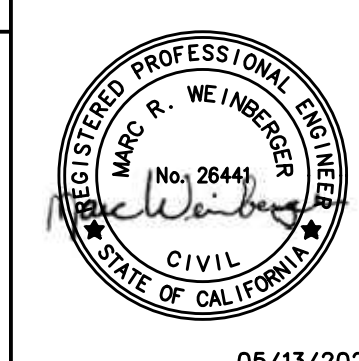
**EXISTING STRUCTURES**

WATER MAIN & VALVES		FENCE	
WATER METER/SERVICE LINE		RIGHT-OF-WAY	
FIRE HYDRANT		CALTRANS RIGHT-OF-WAY	
SEWER MAIN & MANHOLES		ELECTRIC VAULT/PEDESTAL	
STORM DRAINS		LIGHT FIXTURE	
AC PAVEMENT (PROFILE)		IRRIGATION CONTROL BOX	
GROUND LINE (PROFILE)		WATER VAULT/MANHOLE	
CONCRETE SURFACE (PROFILE)		POWER POLE	
TRAFFIC SIGNAL		GAS VALVE	
STREET LIGHT		MONITORING WELL	
GAS MAIN		TRAFFIC SIGNAL PULLBOX	
ELEC, TEL, OR CATV CONDUIT		TELEPHONE VAULT/PEDESTAL	
SEWER FORCE MAIN		BACKFLOW DEVICE	
RAILROAD, TROLLEY TRACKS			

**G-1**

**PLANS FOR THE CONSTRUCTION OF MONTEZUMA PPL / MID-CITY PIPELINE PH2**  
**COVER SHEET**

SPEC NO. 1821D	CITY OF SAN DIEGO, CALIFORNIA PUBLIC WORKS DEPARTMENT SHEET 1 OF 104 SHEETS	WATER WBS S-11026 SEWER WBS N/A
APPROVED: <i>Brian Vitelle</i> FOR CITY ENGINEER DATE 07/28/2022 DATE C73039 PRINT DCE NAME RCE #	DATE 07/28/2022	PROJECT MANAGER MARYAM KARGAR PROJECT ENGINEER JOEY FLORES
DESCRIPTION BY APPROVED DATE FILMED	ORIGINAL PSO <i>Brian Vitelle</i> 07/28/2022	SEE EACH SHEET CCS27 COORDINATE
ADDENDUM D <i>Brian Vitelle</i> 01/11/2024	ADDENDUM E <i>Brian Vitelle</i> 01/11/2024	SEE EACH SHEET CCS83 COORDINATE
CONTRACTOR INSPECTOR	DATE STARTED	DATE COMPLETED
		37333-01-D



**MONTEZUMA PPL / MID-CITY PIPELINE PH2**

SHEET INDEX

SHEET NO.	DISCIPLINE CODE	TITLE	LIMITS	PIPE		LENGTH (FT)
				SIZE (IN)	MATERIAL	
1	G-1	COVER SHEET				
2	G-2	SHEET INDEX				
3	G-3	KEY MAP AND ENVIRONMENTAL/MITIGATION REQUIREMENTS				
4	G-4	NOTES - CITY OF LA MESA				
5	G-5	NOTES - SAN DIEGO COUNTY WATER AUTHORITY				
6	G-6	NOTES - METROPOLITAN TRANSIT SYSTEM				
7	G-7	NOTES - METROPOLITAN TRANSIT SYSTEM				
8	G-8	NOTES - HELIX WATER DISTRICT				
9	G-9	GEOTECHNICAL BORING KEY MAP				
10	G-10	GEOTECHNICAL BORING LOGS				
11	G-11	GEOTECHNICAL BORING LOGS				
12	G-12	GEOTECHNICAL BORING LOGS				
13	AB-1	<del>ABANDONMENT PLAN</del> NOT PART OF THIS CONTRACT				
14	AB-2	ABANDONMENT PLAN				
15	C-1	MOHAWK ST	69th ST TO S/O SARANAC ST	66	CML&TC	880.00
16	C-2	70th ST	SARANAC ST TO ALVARADO RD	66	CML&TC	700.00
17	C-3	70th ST	ALVARADO RD	66	CML&TC	500.00
18	C-4	I-8 CROSSING	ALVARADO RD TO LAKE MURRAY BL	66	CML&TC	850.00
19	C-5	LAKE MURRAY BL	WISCONSIN AV TO STA 46+50.00	66	CML&TC	800.00
20	C-6	LAKE MURRAY BL	STA 46+50.00 TO STA 52+00.00	66	CML&TC	550.00
21	C-7	LAKE MURRAY BL	STA 52+00.00 TO VALVE VAULT *3	66	CML&TC	595.00
22	C-8	<del>MOHAWK ST AT 71st ST</del> NOT PART OF THIS CONTRACT				
23	C-9	HORIZONTAL ALIGNMENT REPORT & COORDINATE INDEX REPORT				TOTAL WATER: 4875.00
24	C-10	CONNECTION DETAILS				
25	C-11	CIVIL DETAILS				
26	C-12	CIVIL DETAILS				
27	C-13	TRENCH DETAILS				
28	C-14	STEEL PIPE DETAILS				
29	C-15	STEEL PIPE DETAILS				
30	C-16	STEEL PIPE DETAILS				
31	C-17	SITE PLAN I-8 CROSSING LAUNCHING PIT				
32	C-18	SITE PLAN I-8 CROSSING RECEIVING PIT				
33	C-19	NOT USED				
34	C-20	GEOTECHNICAL INSTRUMENTATION DETAILS				
35	G-21	<del>PIPE CROSSING AND CROSSING DETAILS</del>				
36	C-22	MTS CROSSING				
37	C-23	CALTRANS CROSSING				
38	C-24	FIBER OPTIC CONDUIT SINGLE LINE DIAGRAM				
39	C-25	STREET RESURFACING	MOHAWK ST / 70th ST			
40	C-26	STREET RESURFACING	70th ST / ALVARADO RD			
41	C-27	STREET RESURFACING	LAKE MURRAY BL			
42	C-28	STREET RESURFACING	LAKE MURRAY BL			
43	C-29	CURB RAMP LOCATIONS				
44	C-30	CURB RAMP IMPROVEMENTS				
45	C-31	CURB RAMP IMPROVEMENTS				
46	C-32	CURB RAMP IMPROVEMENTS				
47	C-33	CURB RAMP IMPROVEMENTS				
48	C-34	CURB RAMP IMPROVEMENT				
49	C-35	WORK BY CITY FORCES AND BATCH DISCHARGE PLAN				
50	C-36	WATER POLLUTION CONTROL SITE PLAN				
51	L-1	IRRIGATION PLAN				
52	L-2	IRRIGATION LEGEND				
53	L-3	IRRIGATION DETAILS				
54	L-4	IRRIGATION NOTES				
55	L-5	PLANTING PLAN				
56	L-6	PLANTING LEGEND AND NOTES				
57	M-1	ALVARADO RD BFV VALVE MECHANICAL PLAN				
58	M-2	ALVARADO RD BFV VAULT MECHANICAL SECTIONS				
59	M-3	LAKE MURRAY BL BFV VAULT MECHANICAL PLAN				
60	M-4	LAKE MURRAY BL BFV VAULT MECHANICAL SECTIONS				
61	M-5	MECHANICAL DETAILS				
62	S-1	ALVARADO RD BFV VAULT STRUCTURAL PLAN & SECTION				
63	S-2	LAKE MURRAY BL BFV VAULT STRUCTURAL PLAN & SECTION				
64	S-3	STRUCTURAL DETAILS				

DISCIPLINE CODE

- G GENERAL
- AB ABANDONMENT
- C CIVIL
- L LANDSCAPE
- M MECHANICAL
- S STRUCTURAL
- E ELECTRICAL
- CP CATHODIC PROTECTION
- R HWD WATER RELOCATION
- LM CITY OF LA MESA SEWER
- T TRAFFIC CONTROL



SHEET INDEX

SHEET NO.	DISCIPLINE CODE	TITLE	LIMITS
65	E-1	ELECTRICAL SYMBOLS AND ABBREVIATIONS	
66	E-2	ELECTRICAL SITE PLAN - VAULT NO. 3 AND FLOW METER MANHOLE	
67	E-3	ELECTRICAL SITE PLAN - LAKE MURRAY BL METER PEDESTAL	
68	E-4	CONDUIT SCHEDULE	
69	E-5	ELECTRICAL DETAILS	
70	CP-1	CATHODIC PROTECTION SYSTEM DETAILS	
71	CP-2	CATHODIC PROTECTION SYSTEM DETAILS	
72	CP-3	CATHODIC PROTECTION SYSTEM DETAILS	
73	R-1	LAKE MURRAY BL	WISCONSIN TO 809' NORTH OF WISCONSIN AV
74	R-2	RELOCATION OF 8" WATER	LAKE MURRAY BL NORTH OF WISCONSIN AV
75	R-3	RELOCATION OF 8" WATER	LAKE MURRAY BL AT WISCONSIN AV STA 1+00 TO 2+84 AND STA 3+55 TO 4+36
76	R-4	RELOCATION OF 8" WATER	LAKE MURRAY BL N OF WISCONSIN AV STA 10+00 TO 13+89
77	R-5	RELOCATION OF 8" WATER	LAKE MURRAY BL NORTH OF WISCONSIN AV
78	LM-1	LAKE MURRAY BL WISCONSIN TO 250' NORTH OF WISCONSIN AV	
79	LM-2	8" SEWER REPLACEMENT LAKE MURRAY BL NORTH OF WISCONSIN AV	
80	LM-3	8" SEWER REPLACEMENT LAKE MURRAY BL NORTH OF WISCONSIN AVE STA 10+00.00 TO 13+87.73	
81	LM-4	8" SEWER REPLACEMENT LAKE MURRAY BL NORTH OF WISCONSIN AV	
82	LM-5	STREET RESURFACING 70th ST / ALVARADO RD	
83	LM-6	70TH STREET EL CAJON BL TO ALVARADO RD	
84	LM-7	70TH STREET EL CAJON BL TO ALVARADO RD	
85	LM-8	LAKE MURRAY BL AT KIOWA DR	
86	LM-9	LAKE MURRAY BL AT CONNECTICUT AVE/PARKWAY DR	
87	LM-10	STRIPING AND SIGNAGE PLAN FOR LAKE MURRAY BL	
88	LM-11	IMPROVEMENTS MEDIAN PLAN FOR LAKE MURRAY BL	
89	LM-12	IMPROVEMENTS MEDIAN PLAN FOR LAKE MURRAY BL	
90	LM-13	IRRIGATION PLAN FOR LAKE MURRAY BL	
91	LM-14	IRRIGATION PLAN FOR LAKE MURRAY BL	
92	LM-15	IRRIGATION LEGEND FOR LAKE MURRAY BL	
93	LM-16	IRRIGATION NOTES FOR LAKE MURRAY BL	
94	LM-17	IRRIGATION DETAILS FOR LAKE MURRAY BL	
95	LM-18	IRRIGATION DETAILS FOR LAKE MURRAY BL	
96	LM-19	PLANTING PLAN FOR LAKE MURRAY BL	
97	LM-20	PLANTING PLAN FOR LAKE MURRAY BL	
98	LM-21	PLANT LIST AND DG/GRAVEL LEGEND FOR LAKE MURRAY BL	
99	LM-22	PLANTING NOTES FOR LAKE MURRAY BL	
100	LM-23	PLANTING DETAILS FOR LAKE MURRAY BL	
101	LM-24	CITY OF LA MESA MONUMENT SIGN METER PEDESTAL	
102	LM-25	CITY TO PROVIDE SHEET TITLE INFORMATION	
103	LM-26	CITY TO PROVIDE SHEET TITLE INFORMATION	
104	LM-27	CITY TO PROVIDE SHEET TITLE INFORMATION	
T01-T62	T01-T62	66" PIPELINE TRAFFIC CONTROL PLANS	
T63-T77	T63-T77	HELIX WATER DISTRICT TRAFFIC CONTROL PLANS	
T78-T84	T78-T84	CITY OF LA MESA TRAFFIC CONTROL PLANS	

SHEET INDEX

G-2

MONTEZUMA PPL / MID-CITY PIPELINE PH2  
SHEET INDEX

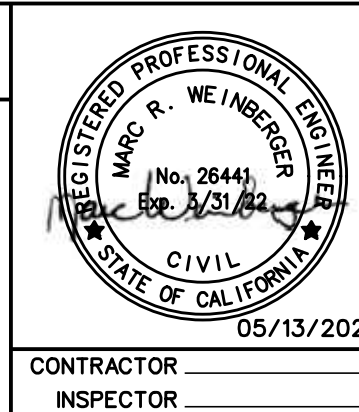
CITY OF SAN DIEGO, CALIFORNIA  
PUBLIC WORKS DEPARTMENT  
SHEET 2 OF 104 SHEETS

WATER WBS S-11026  
SEWER WBS N/A

CONSULTANT

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401 B Street, Suite 1600  
San Diego, CA 92101  
(619) 961-2800 (619) 961-2392 fax  
www.psomas.com

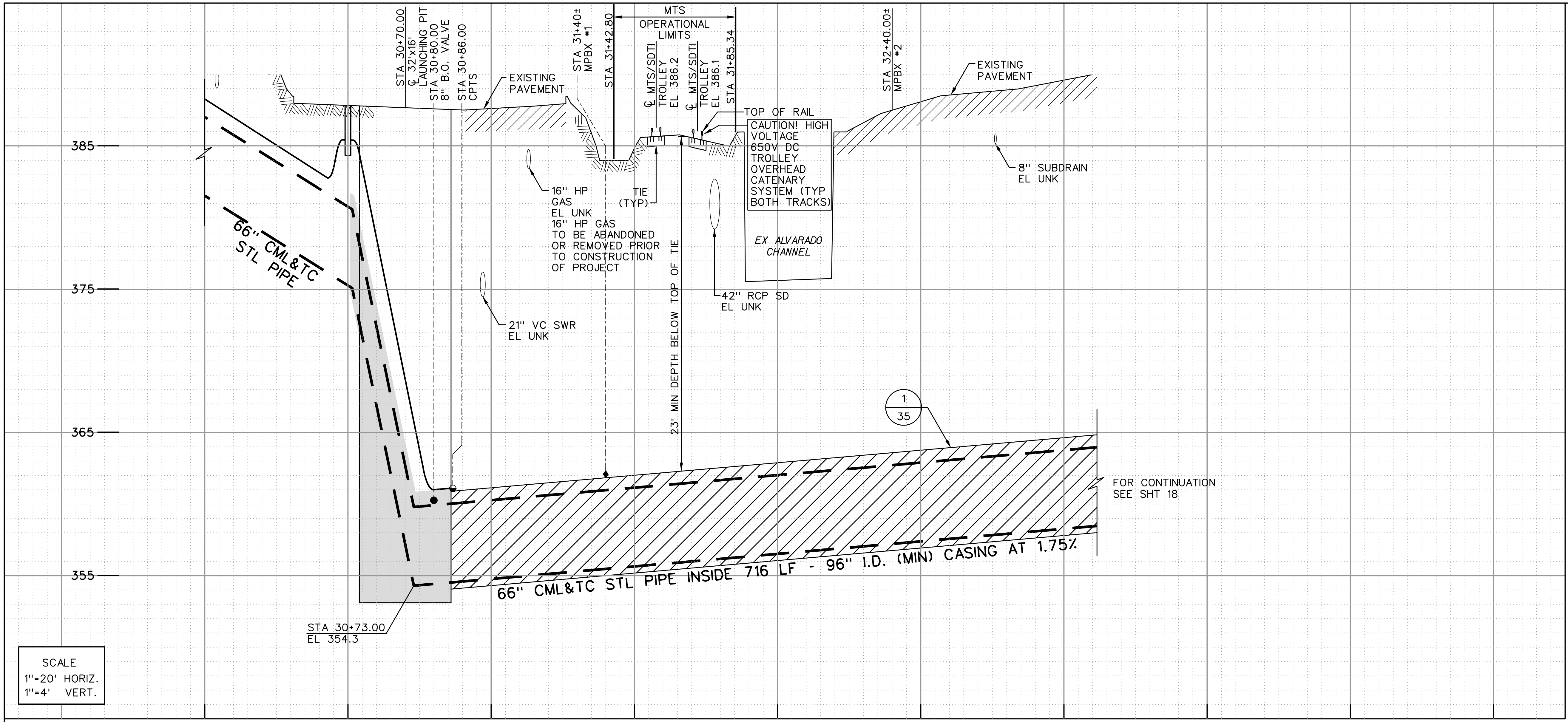


APPROVED FOR CITY ENGINEER BRIAN VITELLE PRINT DCE NAME	DATE 07/28/2022 C73039 RCE #	SUBMITTED BY MARYAM KARGAR PROJECT MANAGER		
DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	PSO	Brian Vitelle	07/28/2022	
ADDENDUM D		Brian Vitelle	01/11/2024	
ADDENDUM E		Brian Vitelle	01/16/2024	

CONTRACTOR INSPECTOR \_\_\_\_\_ DATE STARTED \_\_\_\_\_ DATE COMPLETED \_\_\_\_\_

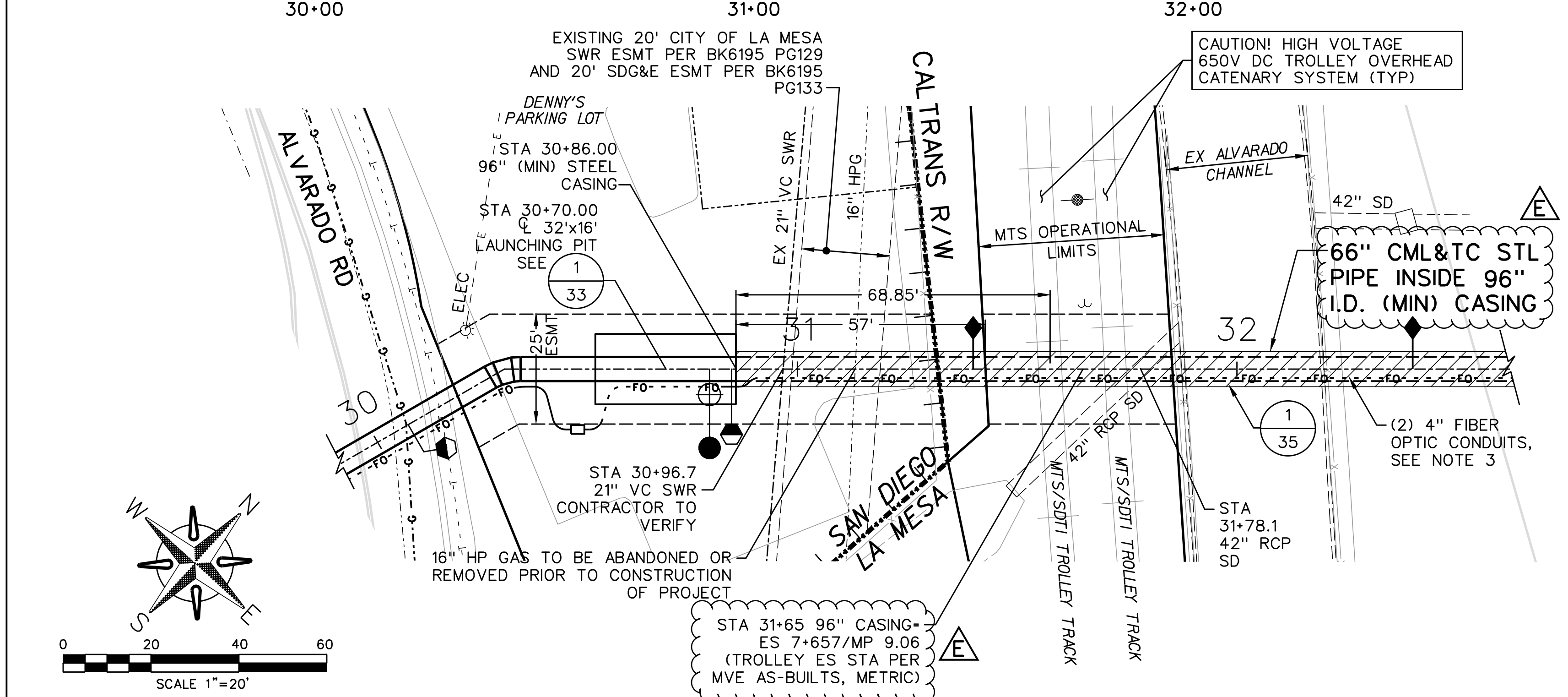
37333-02-D





SCALE  
1"=20' HORIZ.  
1"=4' VERT.

FOR CONTINUATION  
SEE SHT 18



33+00  
TABLE 1-5-6. PLAN DATA FROM AREMA MANUAL FOR RAILWAY ENGINEERING

CONTENT TO BE HANDLED	DISTRIBUTION CIRCUIT 161	
	CARRIER PIPE	CASING PIPE
OUTSIDE DIAMETER	POTABLE WATER	CARRIER PIPE
71.0**	71.0**	96" MIN
PIPE MATERIALS	STEEL	STEEL
SPECIFICATION AND GRADE	ASTM A139 GRADE C	ASTM A136
WALL THICKNESS	7/8"	1"
ACTUAL WORKING PRESSURE	85 PSI	N/A
TYPE OF JOINT	WELDED LAP JOINT	COMPLETE JOINT PENETRATION EROXY
COATING	TC W/ CM	
METHOD OF INSTALLATION	MICROTUNNELING	MICROTUNNELING
SEALS: Y BOTH ENDS: Y TYPE: MOLDED RUBBER		
BURY: BASE OF RAIL TO TOP OF CASING (MIN.) 22.75'		
BURY: (NOT BENEATH TRACKS - MIN.) 21.5'		
BURY: (ROADWAY DITCHES - MIN.) 13'		
TYPE, SIZE AND SPACING OF INSULATORS OR SUPPORTS: SS W/PLASTIC RUNNERS/ 66"/ 8'		
DISTANCE OUTSIDE TRACK TO FACE OF JACK/RECEIVING PITS (25 FT MIN): 63'		
BURY: BASE OF RAIL TO BOTTOM JACK/RECEIVING PITS 31.8'		
CATHODIC PROTECTION: IMPRESSED CURRENT FOR 66" PIPE		

- NOTES:
1. PRIOR TO CONSTRUCTION OF MTS CROSSING, CONTRACTOR SHALL LOCATE EXISTING UTILITIES.
  2. CONTRACTOR SHALL FIELD SURVEY THE EXISTING MTD/SDTI TROLLEY TRACKS BEFORE AND AFTER CONSTRUCTION.
  3. (2) 4" SCH 40 THREADED STEEL CONDUITS SHALL BE INSTALLED WITHIN THE CARRIER PIPE CASING FOR FUTURE FIBER OPTIC CABLES.
  4. PERFORM THE WORK IN COMPLIANCE WITH REQUIREMENTS ON SHEETS 6, 7 AND TECHNICAL SPECIFICATIONS.

C-22

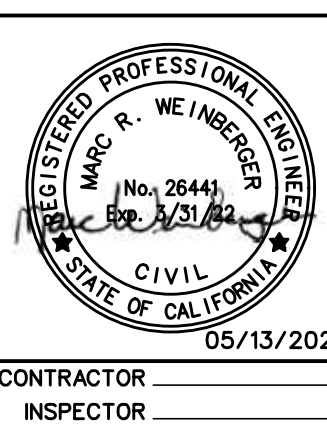
MONTEZUMA PPL / MID-CITY PIPELINE PH2  
MTS CROSSING

CITY OF SAN DIEGO, CALIFORNIA PUBLIC WORKS DEPARTMENT SHEET 36 OF 104 SHEETS		WATER WBS S-11026 SEWER WBS N/A
APPROVED: <i>Brian Vitelle</i> FOR CITY ENGINEER BRIAN VITELLE PRINT DCE NAME	DATE 07/28/2022 C73039 RCE #	SUBMITTED BY: MARYAM KARGAR PROJECT MANAGER JOEY FLORES PROJECT ENGINEER
DESCRIPTION	BY	APPROVED
ORIGINAL	PSO	<i>Brian Vitelle</i>
ADDENDUM D		<i>Brian Vitelle</i>
ADDENDUM E		<i>Brian Vitelle</i>
DATE	DATE FILMED	
01/11/2024	01/11/2024	
1858444, 6316407		
CCS27 COORDINATE		
CCS83 COORDINATE		
37333-36-D		

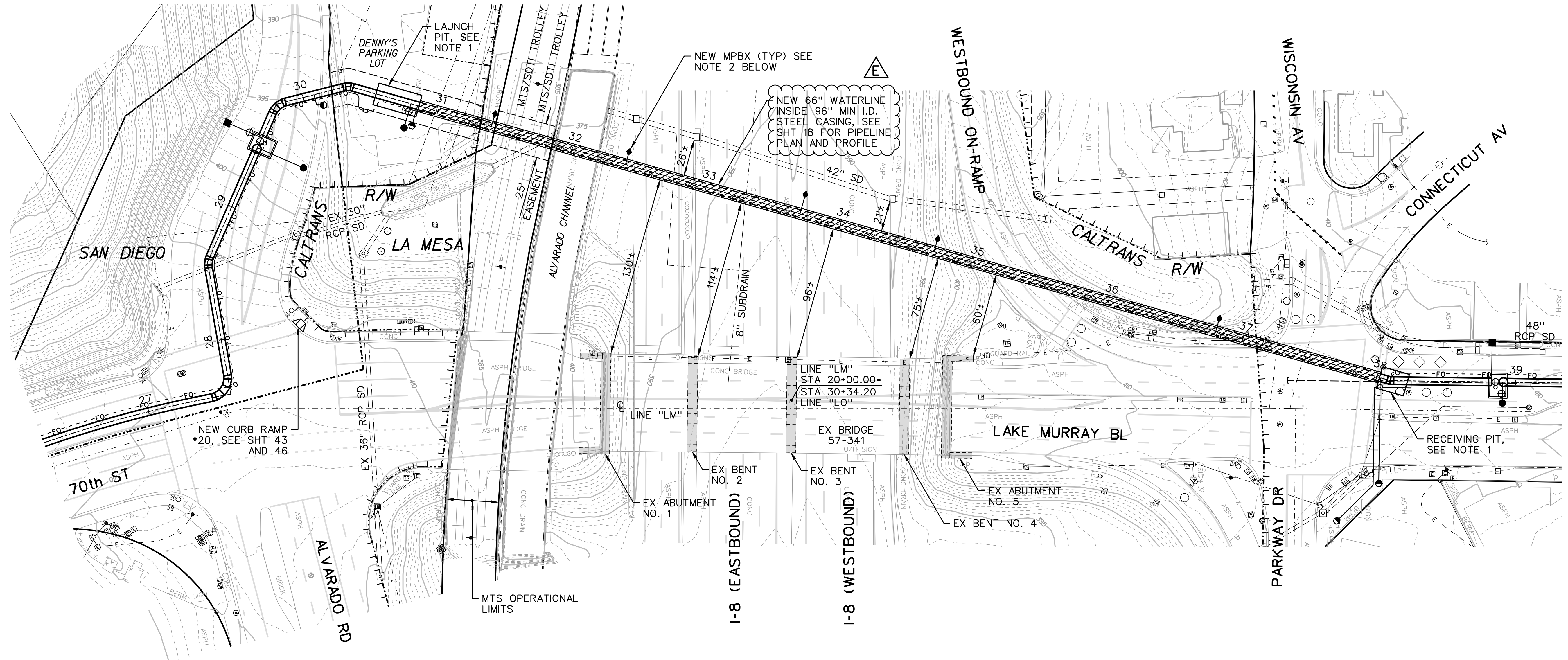
CONSULTANT

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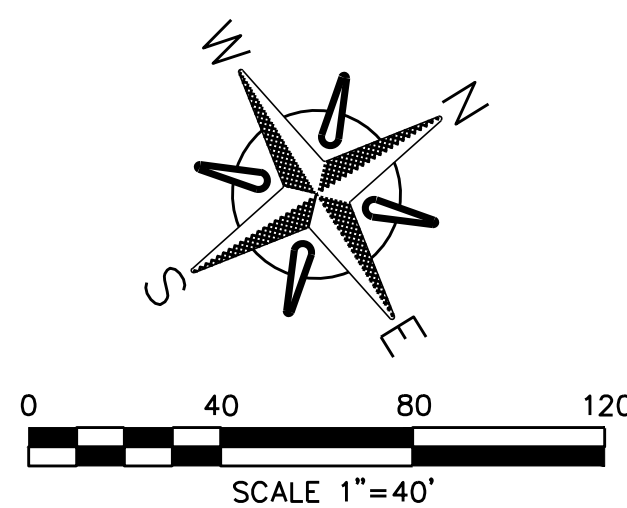


CONTRACTOR INSPECTOR DATE STARTED DATE COMPLETED



NOTES:

1. THE CONTRACTOR IS REQUIRED TO SUBMIT DETAILED DRAWINGS SHOWING THE SIZE, SHAPE AND SHORING FOR LAUNCHING AND RECEIVING SHAFTS FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION.
2. MPBX- MULTI-POINT BOREHOLE EXTENSOMETER TO BE USED DURING CONSTRUCTION AND MEASURES SOIL DISPLACEMENT. UPON COMPLETION OF WORK, MPBX SHALL BE DEMOLISHED. SEE PROJECT SPECIFICATIONS.
3. ALL MPBX'S ARE TO BE INSTALLED ALONG THE CENTERLINE OF THE CROSSING. EXACT LOCATIONS ARE TO BE DETERMINED IN THE FIELD JOINTLY BY THE CONTRACTOR AND THE ENGINEER.



C-23

MONTEZUMA PPL / MID-CITY PIPELINE PH2  
 CALTRANS CROSSING

CITY OF SAN DIEGO, CALIFORNIA  
 PUBLIC WORKS DEPARTMENT  
 SHEET 37 OF 104 SHEETS

WATER WBS S-11026  
 SEWER WBS N/A

APPROVED: *Brian Vitelle* 07/28/2022  
 FOR CITY ENGINEER DATE C73039  
 BRIAN VITELLE PRINT DCE NAME RCE #

SUBMITTED BY: MARYAM KARGAR  
 PROJECT MANAGER  
 CHECKED BY: JOEY FLORES  
 PROJECT ENGINEER

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	PSO	<i>Brian Vitelle</i>	07/28/2022	
ADDENDUM E		<i>Brian Vitelle</i>	01/16/2024	

218-1755, 222-1755  
 CCS27 COORDINATE  
 1858444, 6310407  
 1862444, 6316407  
 CCS83 COORDINATE

CONSULTANT

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 San Diego, CA 92101  
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 www.psomas.com



CONTRACTOR INSPECTOR DATE STARTED DATE COMPLETED  
 37333- 37 -D

CALTRANS CROSSING

## Bid Results

### Bidder Details

**Vendor Name** W. A. Rasic Construction Company, Inc.  
**Address** 4150 Long Beach Blvd.  
 Long Beach, California 90807  
 United States  
**Respondee** Walter A. Rasic, Jr.  
**Respondee Title** Vice President/Secretary  
**Phone** 562-928-6111  
**Email** wrasic@warasic.com  
**Vendor Type** CADIR  
**License #** 368761  
**CADIR** 1000000649

### Bid Detail

**Bid Format** Electronic  
**Submitted** 01/25/2024 1:54 PM (PST)  
**Delivery Method**  
**Bid Responsive**  
**Bid Status** Submitted  
**Confirmation #** 361271

### Respondee Comment

### Buyer Comment

### Attachments

File Title	File Name	File Type
WA_Rasic_Contractor's Certification of Pending Actions.pdf	WA_Rasic_Contractor's Certification of Pending Actions.pdf	Contractor's Certification of Pending Actions
WA_Rasic_Subcontractor Listing for Alternate Items.pdf	WA_Rasic_Subcontractor Listing for Alternate Items.pdf	Subcontractor Listing for Alternate Items
WA_Rasic_Mandatory Disclosure of Business Interests Form.pdf	WA_Rasic_Mandatory Disclosure of Business Interests Form.pdf	Mandatory Disclosure of Business Interests Form
WA_Rasic_Prime Contractor - Debarment and Suspension.pdf	WA_Rasic_Prime Contractor - Debarment and Suspension.pdf	Prime Contractor - Debarment and Suspension Certification
WA_Rasic_Subcontractor - Debarment and Suspension.pdf	WA_Rasic_Subcontractor - Debarment and Suspension.pdf	Subcontractor - Debarment and Suspension Certification
WA_Rasic_Bid Bond.pdf	WA_Rasic_Bid Bond.pdf	Bid Bond

## Subcontractors

Showing 12 Subcontractors

Name & Address	Desc	License Num	CADIR	Amount	Type
<b>BRINO BUILDERS INC</b> 1490 KOSTNER DRIVE SAN DIEGO, California 92154	minor concrete (constructor) (SLBE)	1021086	1000550020	\$489,269.00	ELBE, CADIR, MALE, LAT, DBE
<b>Big Sky Electric Inc.</b> 310 Mc Arthur Way Suite A Upland, California 91786	electrical (constructor)	925689	1000003992	\$248,650.00	
<b>Busby Biological Services, Inc.</b> 4629 Cass Street #192 San Diego, California 92109	Biological Services (consultant)	N/A	1000981623	\$42,000.00	DBE, SDB, WBE, ELBE, FEM, WOSB, CAU, Local
<b>Coast Landscaping Inc.</b> 2230 La Mirada Dr Ste B Vista, California 92081	landscape & irrigation (constructor) (SLBE)	353359	1000004310	\$116,000.00	CADIR, CAU, MALE, ELBE, Local
<b>Geo-Instruments</b> 17461 Derian Ave Suite 106 Irvine, California 92614	geotechnical instrumentation (consultant)	N/A	1000729076	\$515,049.00	
<b>Golden State Boring &amp; Pipe Jacking</b> 7000 Merrill Ave. Box 40 Chino, California 91710	pipe jacking (constructor)	678500	1000005788	\$208,131.00	
<b>James W. Fowler Co.</b> 12775 Westview Drive Dallas, Oregon 97338	microtunnel (constructor)	777391	1000002667	\$4,439,501.83	CADIR
<b>Loveless Linton, Inc. Archaeological</b> 1421 W. Lewis St San Diego, California 92103	Archeology & paleontology services (consultant) (SLBE)	N/A	1000047263	\$105,516.00	DBE, SDB, CADIR, MBE, NAT, MALE, SLBE, Local
<b>Osmun Construction</b> 7430 Redwood Blvd. Suite A Novato, California 94945	permeation grouting (constructor)	1025029	1000520094	\$372,000.00	
<b>SealRight Paving, Inc.</b> 9053 Olive Dr. Spring Valley, California 91977	AC Paving (constructor) (SLBE)	364113	1000039542	\$844,034.00	MBE, CADIR, DBE, MALE, LAT, PQUAL, SLBE, Local
<b>Soclaris Contracting</b> 7437 Lowell Ct. La Mesa, California 91942	Contaminated Soil & Asbestos disposal (constructor) (SLBE)	793838	1000011964	\$38,000.00	DVBE, CADIR, MALE, SDVSB, CAU, ELBE, Local
<b>Southwest Signal Services</b> 397 Raleigh Ave El Cajon, California 92020	traffic signals (constructor) (SLBE)	451115	1000004265	\$206,928.00	Local

## Line Items

Discount Terms No Discount

Item #	Item Code	Type	Item Description	UOM	QTY	Unit Price	Line Total	Response	Comment
Main Bid (Montezuma/Mid-City Pipeline Phase 2)							\$39,267,337.20		
1	524126		Bonds (Payment and Performance)	LS	1	\$300,000.00	\$300,000.00	Yes	
2	561612		Denny's Security Guard (EOC Type I)	AL	1	\$95,000.00	\$95,000.00	Yes	
3			Caltrans Encroachment Permit Submittal (EOC Type II)	AL	1	\$30,000.00	\$30,000.00	Yes	
4	237110		Sewage Bypass and Pumping Plan (Diversion Plan)	LS	1	\$20,000.00	\$20,000.00	Yes	
5	541620		Drinking Water Discharge Monitoring by QSP	LS	1	\$10,000.00	\$10,000.00	Yes	
6			Dewatering Permit and Discharge Fees (EOC Type II)	AL	1	\$450,000.00	\$450,000.00	Yes	
7	238910		Dewatering Non-Hazardous Contaminated Water	LS	1	\$100,000.00	\$100,000.00	Yes	
8	237110		Specialty Inspection Paid For By the Contractor (EOC Type I)	AL	1	\$22,400.00	\$22,400.00	Yes	
9	237110		Specialty Testing Under the Direction of the Engineer (EOC Type I)	AL	1	\$106,400.00	\$106,400.00	Yes	
10	541820		Exclusive Community Liaison Services	LS	1	\$120,000.00	\$120,000.00	Yes	
11	238910		Preparation of Waste Management Form	LS	1	\$2,500.00	\$2,500.00	Yes	
12	238990		Preparation of Hazardous Waste Management Plan and Reporting	LS	1	\$15,000.00	\$15,000.00	Yes	
13	541690		Monitoring of Contaminated Soil	HR	150	\$150.00	\$22,500.00	Yes	
14	238990		Testing, Sampling, Site Storage, and Handling of Petroleum Contaminated Soil	TON	10	\$150.00	\$1,500.00	Yes	
15	238990		Loading, Transportation, and Disposal of Petroleum Contaminated Soil	TON	10	\$200.00	\$2,000.00	Yes	
16	238990		Testing, Sampling, Site Storage, Handling, Transportation, and Disposal of Containerized Non-RCRA Hazardous Waste	55 GAL Dru	10	\$1,000.00	\$10,000.00	Yes	
17	541690		Archaeological and Native American Monitoring Program	LF	4900	\$17.00	\$83,300.00	Yes	
18	541690		Paleontological Monitoring Program	LF	4900	\$8.00	\$39,200.00	Yes	
19	541690		Suspension of Work - Resources	DAY	15	\$2,500.00	\$37,500.00	Yes	
20	541690		Archaeological and Native American Mitigation and Curation (EOC Type I)	AL	1	\$5,600.00	\$5,600.00	Yes	
21	541690		Paleontological Mitigation and Excavation	CY	100	\$30.00	\$3,000.00	Yes	
22	237110		Mobilization	LS	1	\$1,100,000.00	\$1,100,000.00	Yes	
23			Field Orders (EOC Type II)	AL	1	\$3,600,000.00	\$3,600,000.00	Yes	
24	238910		Clearing and Grubbing	LS	1	\$25,000.00	\$25,000.00	Yes	
25	237310		Excavate and Export (Unclassified)	CY	12000	\$50.00	\$600,000.00	Yes	
26	237310		Subgrade Imported Backfill	TON	570	\$30.00	\$17,100.00	Yes	
27	237310		Class 2 Aggregate Base	TON	1500	\$40.00	\$60,000.00	Yes	
28	238910		Crushed Aggregate Base	TON	377	\$35.00	\$13,195.00	Yes	
29	237310		Asphalt Concrete Overlay (2 Inch) - Lake Murray Blvd and Denny's Parking lot	TON	817	\$165.00	\$134,805.00	Yes	
30	237310		Asphalt Concrete Overlay (3 Inch) -Mohawk St, 70th St, 71 St, Alvarado Rd	TON	1127	\$165.00	\$185,955.00	Yes	
31	238910		Concrete Pavement (8 Inch thick)	CY	23	\$1,000.00	\$23,000.00	Yes	
32	237310		Pavement Fabric	SY	27980	\$5.00	\$139,900.00	Yes	
33	237310		Historical and Contractor Date Stamps and Impressions	EA	13	\$500.00	\$6,500.00	Yes	
34	237310		Remove and Replace Existing Sidewalk	SF	200	\$25.00	\$5,000.00	Yes	
35	237310		Additional Curb and Gutter Removal and Replacement	LF	275	\$85.00	\$23,375.00	Yes	
36	237310		Curb and Gutter (6 Inch Curb, Type G)	LF	150	\$85.00	\$12,750.00	Yes	
37	237310		Cross Gutter	SF	1500	\$35.00	\$52,500.00	Yes	
38	237310		Curb Ramp (Type C1) with Stainless Steel Detectable Warning Tiles	EA	5	\$9,000.00	\$45,000.00	Yes	
39	237310		Curb Ramp (Type D) with Stainless Steel Detectable Warning Tiles	EA	3	\$9,000.00	\$27,000.00	Yes	
40	237310		Curb Ramp Modified (Type A/C2, per C-31) with Stainless Steel Detectable Warning Tiles	EA	1	\$12,000.00	\$12,000.00	Yes	
41	237310		Curb Ramp Modified (Type C1, per C-30, C-31, and C-33) with Stainless Steel Detectable Warning Tiles	EA	5	\$12,000.00	\$60,000.00	Yes	
42	237310		Curb Ramp Modified (Type A, per C-30, C-32, and C-33) with Stainless Steel Detectable Warning Tiles	EA	4	\$15,000.00	\$60,000.00	Yes	
43	237310		Curb Ramp Modified (Type C2, C-32) with Stainless Steel Detectable Warning Tiles	EA	1	\$15,000.00	\$15,000.00	Yes	
44	237310		Concrete Raised Median	LS	1	\$250,000.00	\$250,000.00	Yes	
45	237110		Removal or Abandonment of Existing Water Facilities	LF	970	\$35.00	\$33,950.00	Yes	
46	237110		Additional Bedding	CY	720	\$10.00	\$7,200.00	Yes	
47	237110		Water Main (66 Inch, Welded Steel) (Includes Material) (Excluding Trenchless Crossings)	LF	2020	\$3,900.00	\$7,878,000.00	Yes	
48	237110		Water Main (66 Inch, Welded Steel) (Excludes Material Cost of Pipe) (Excluding Trenchless Crossings)	LF	2120	\$1,500.00	\$3,180,000.00	Yes	
49	237110		Freight for 66 inch Welded Steel Pipe	LS	1	\$375,000.00	\$375,000.00	Yes	

Item #	Item Code	Type	Item Description	UOM	QTY	Unit Price	Line Total	Response	Comment
50	238990		Engineered Trench Shoring	LS	1	\$500,000.00	\$500,000.00	Yes	
51	237110		Butterfly Valve (66 Inch, Class 200, Triple Offset)	EA	3	\$60,000.00	\$180,000.00	Yes	
52	237110		Butterfly Valve (72 Inch, Class 200, Triple Offset)	EA	1	\$450,000.00	\$450,000.00	Yes	
53	237110		Butterfly Valve Vault	EA	2	\$500,000.00	\$1,000,000.00	Yes	
54	237110		Gate Valve (8 Inch)	EA	1	\$10,000.00	\$10,000.00	Yes	
55	237110		Water Valve Bypass for Straight Mainline 16 Inch and Larger	EA	3	\$25,000.00	\$75,000.00	Yes	
56	237110		Fire Hydrant Assembly and Marker (6 Inch)	EA	1	\$20,000.00	\$20,000.00	Yes	
57	237110		Fire Service Connection and Assembly (6 Inch)	EA	1	\$20,000.00	\$20,000.00	Yes	
58	237110		Insertion Flow Meter	EA	1	\$85,000.00	\$85,000.00	Yes	
59	237110		Water Service Transfer (1 Inch)	EA	6	\$5,000.00	\$30,000.00	Yes	
60	237110		Blow-Off Valve Assembly (6 Inch)	EA	5	\$35,000.00	\$175,000.00	Yes	
61	237110		Air and Vacuum (Air Release) Valve Assembly (6 Inch, Class 150)	EA	8	\$35,000.00	\$280,000.00	Yes	
62	237310		Temporary Resurfacing	TON	565	\$250.00	\$141,250.00	Yes	
63	237110		Imported Trench Backfill	TON	9700	\$6.00	\$58,200.00	Yes	
64	237110		TUNNEL: 108" SDCWA Pipeline Crossing	LS	1	\$850,000.00	\$850,000.00	Yes	
65	237110		Jacking Pit: 108" SDCWA Pipeline Crossing	LS	1	\$725,000.00	\$725,000.00	Yes	
66	237110		Receiving Pit: 108" SDCWA Pipeline Crossing	LS	1	\$425,000.00	\$425,000.00	Yes	
67	237110		TUNNEL: Interstate 8 Pipeline Crossing	LS	1	\$7,500,000.00	\$7,500,000.00	Yes	
68	237110		Jacking Pit: Interstate 8 Pipeline Crossing	LS	1	\$1,800,000.00	\$1,800,000.00	Yes	
69	237110		Receiving Pit: Interstate 8 Pipeline Crossing	LS	1	\$1,500,000.00	\$1,500,000.00	Yes	
70	237110		Access Manway	EA	3	\$40,000.00	\$120,000.00	Yes	
71	237110		Sewer Lateral and Cleanout	EA	6	\$5,500.00	\$33,000.00	Yes	
72	238990		Survey Monument	EA	8	\$1,000.00	\$8,000.00	Yes	
73	237310		Removal and Replacement of Existing Paint Striping	LS	1	\$30,000.00	\$30,000.00	Yes	
74	237310		Paint Striping	LS	1	\$40,000.00	\$40,000.00	Yes	
75	237310		Continental Crosswalks	SF	700	\$5.00	\$3,500.00	Yes	
76	238990		Video Recording of Existing Conditions	LS	1	\$10,000.00	\$10,000.00	Yes	
77	238910		Tree Removal and Disposal (24 Inch Trunk Diameter and Greater) - Alvarado Rd	EA	3	\$4,000.00	\$12,000.00	Yes	
78	238910		Tree Removal and Disposal (24 Inch Trunk Diameter and Greater) - Lake Murray Blvd	EA	5	\$7,000.00	\$35,000.00	Yes	
79	237310		Adjust Existing Manhole Frame and Cover to Grade	EA	4	\$2,000.00	\$8,000.00	Yes	
80	237310		Adjust Existing Gate Valve Frame and Cover to Grade	EA	9	\$1,500.00	\$13,500.00	Yes	
81	237310		Adjust Existing Survey Monument to Grade	EA	1	\$1,500.00	\$1,500.00	Yes	
82	237310		Traffic Signal Loop and Appurtenance Replacement (Type E)	EA	18	\$900.00	\$16,200.00	Yes	
83	237310		Cold Mill AC Pavement (2 Inch) - Lake Murray Blvd and Denny's Parking Lot	SF	70035	\$0.80	\$56,028.00	Yes	
84	237310		Cold Mill AC Pavement (3 Inch) - Mohawk St, 70th St, 71 St, Alvarado Rd	SF	58352	\$0.80	\$46,681.60	Yes	
85			MTS Right of Entry Permit (EOC Type II)	AL	1	\$16,800.00	\$16,800.00	Yes	
86			Miscellaneous Agency Fees (EOC Type II)	AL	1	\$110,000.00	\$110,000.00	Yes	
87	237310		Traffic Control	LS	1	\$895,817.60	\$895,817.60	Yes	
88	238210		SDG&E Service Orders	LS	1	\$15,000.00	\$15,000.00	Yes	
89	238210		SDG&E Fee Allowance (EOC Type I)	AL	1	\$5,600.00	\$5,600.00	Yes	
90	238210		Remove and Reinstall Existing Light Pole	EA	2	\$10,000.00	\$20,000.00	Yes	
91	238210		Traffic Signal Modification (Lake Murray Blvd/Kiowa Dr and Lake Murray Blvd/Parkway Dr Intersections)	LS	1	\$200,000.00	\$200,000.00	Yes	
92	237310		Protective Railing at Curb Ramps	EA	1	\$4,000.00	\$4,000.00	Yes	
93	237310		Pedestrian Barricade (Type A)	EA	1	\$2,000.00	\$2,000.00	Yes	
94	561730		Irrigation System	LS	1	\$60,000.00	\$60,000.00	Yes	
95	238210		Electrical Work	LS	1	\$350,000.00	\$350,000.00	Yes	
96	238210		Fiber Optic Conduit	LS	1	\$450,000.00	\$450,000.00	Yes	
97	561730		Landscape Work	LS	1	\$90,000.00	\$90,000.00	Yes	
98	237110		High-lining Installation by the Contractor	LF	1817	\$35.00	\$63,595.00	Yes	
99	237110		High-lining Removed by the Contractor	LF	1817	\$15.00	\$27,255.00	Yes	

Item #	Item Code	Type	Item Description	UOM	QTY	Unit Price	Line Total	Response	Comment
100	237110		Connections to The Existing System by Contractor (8 Inch through 12 Inch)	EA	1	\$20,000.00	\$20,000.00	Yes	
101	237110		Connections to The Existing System by Contractor (66 Inch)	EA	1	\$100,000.00	\$100,000.00	Yes	
102	237110		Cathodic Protection System	LS	1	\$340,000.00	\$340,000.00	Yes	
103	541330		SWPPP Development	LS	1	\$10,000.00	\$10,000.00	Yes	
104	237310		SWPPP Implementation	LS	1	\$150,000.00	\$150,000.00	Yes	
105	541330		SWPPP Permit Fee (EOC Type I)	AL	1	\$1,680.00	\$1,680.00	Yes	
106	237110		Helix Water District Waterline Improvements	LS	1	\$350,000.00	\$350,000.00	Yes	
107	238210		New City of La Mesa Gateway Sign	LS	1	\$35,000.00	\$35,000.00	Yes	
108	237110		Connection to Existing Valve Vault No.3	EA	1	\$135,000.00	\$135,000.00	Yes	
109	237110		Handling and Disposal of Non-friable Asbestos Material	LF	470	\$80.00	\$37,600.00	Yes	
110	237100		Potholing Existing Utilities Not Shown on Plans (Depth upto 7 feet)	EA	15	\$1,800.00	\$27,000.00	Yes	
111	541330		Biological Monitoring and Reporting	LS	1	\$75,000.00	\$75,000.00	Yes	
<b>Additive Alternate A (70th Alvarado to Saranac Sidewalk)</b>							<b>\$242,679.00</b>		
112	524126		Bonds (Payment and Performance)	LS	1	\$5,000.00	\$5,000.00	Yes	
113	237310		Mobilization	LS	1	\$5,000.00	\$5,000.00	Yes	
114			Field Orders (EOC Type II)	AL	1	\$15,000.00	\$15,000.00	Yes	
115	238910		Clearing and Grubbing	LS	1	\$15,000.00	\$15,000.00	Yes	
116	237110		Gravity Retaining Wall	SF	235	\$170.00	\$39,950.00	Yes	
117	237310		Curb and Gutter (8 Inch Curb, Type G)	LF	337	\$100.00	\$33,700.00	Yes	
118	237310		Curb Ramp Modified (Type C1, per C-3) with Detectable Warning Tiles	EA	2	\$12,000.00	\$24,000.00	Yes	
119	237310		Sidewalks	SF	3132	\$17.00	\$53,244.00	Yes	
120	237310		Retaining Curb	LF	22	\$80.00	\$1,760.00	Yes	
121	238990		Chain Link Fence (Black Vinyl Coated, H=4')	LF	153	\$175.00	\$26,775.00	Yes	
122	238210		Remove and Reinstall Existing Pull Box	EA	1	\$2,000.00	\$2,000.00	Yes	
123	238210		Remove and Reinstall Traffic Signs	EA	5	\$750.00	\$3,750.00	Yes	
124	238210		Remove Existing Pedestrian Push Button	EA	2	\$1,000.00	\$2,000.00	Yes	
125	238210		Bidirectional Pedestrian Push Button	EA	1	\$1,500.00	\$1,500.00	Yes	
126	238210		Pedestrian Barricade	EA	1	\$2,000.00	\$2,000.00	Yes	
127	561730		Root Barrier	LF	10	\$200.00	\$2,000.00	Yes	
128	237310		Paint Striping	LS	1	\$10,000.00	\$10,000.00	Yes	
<b>Additive Alternate B</b>							<b>\$201,550.00</b>		
129	237110		8-Inch Sewer Main (La Mesa)	LF	374	\$325.00	\$121,550.00	Yes	
130	237110		Manholes (5 ft x 3 ft) (La Mesa)	EA	4	\$20,000.00	\$80,000.00	Yes	
<b>Additive Alternate C</b>							<b>\$279,220.00</b>		
131	237310		Cold Mill AC Pavement (2 inch) (La Mesa)	SF	99900	\$0.80	\$79,920.00	Yes	
132	237310		Adjusting Existing Manhole Frame and Cover to Grade (La Mesa)	EA	6	\$1,000.00	\$6,000.00	Yes	
133	237310		Adjusting Existing Gate Valve Frame and Cover to Grade (La Mesa)	EA	2	\$1,000.00	\$2,000.00	Yes	
134	237310		Adjusting Existing Survey Monument to Grade (La Mesa)	EA	1	\$1,000.00	\$1,000.00	Yes	
135	237310		Paint Striping (70th St and Lake Murray Blvd - La Mesa)	LS	1	\$22,000.00	\$22,000.00	Yes	
136	237310		Asphalt Concrete Overlay (2 Inch)	TON	1020	\$165.00	\$168,300.00	Yes	
<b>Additive Alternate D</b>							<b>\$134,213.80</b>		
137	237310		Asphalt Concrete Overlay (3 Inch) - City of San Diego (Transportation Dept)	TON	637	\$165.00	\$105,105.00	Yes	
138	237310		Cold Mill AC Pavement (3 Inch) - City of San Diego (Transportation Dept)	SF	36386	\$0.80	\$29,108.80	Yes	



## Line Item Subtotals

Section Title	Line Total
Main Bid (Montezuma/Mid-City Pipeline Phase 2)	\$39,267,337.20
Additive Alternate A (70th Alvarado to Saranac Sidewalk)	\$242,679.00
Additive Alternate B	\$201,550.00
Additive Alternate C	\$279,220.00
Additive Alternate D	\$134,213.80
<b>Grand Total</b>	<b>\$40,125,000.00</b>

**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).**

Prime Contractor Name: W. A. Rasic Construction Company, Inc.

NAME, ADDRESS AND TELEPHONE NUMBER OF SUBCONTRACTOR	CONSTRUCTOR OR DESIGNER	DIR REGISTRATION NUMBER	SUBCONTRACTOR LICENSE NUMBER	TYPE OF WORK
Name: _____ Address: _____ City: _____ State: _____ Zip: _____ Phone: _____ Email: _____	N/A			
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 \*\***