

**City**

Mr. Steve Coker, Vice President  
TC Construction Company  
10540 Prospect Avenue

**0**

CONTRACTOR'S NAME: \_\_\_\_\_  
ADDRESS: \_\_\_\_\_  
TELEPHONE NO.: \_\_\_\_\_  
CITY CONTACT: Claudia Abarca - Contract Specialist, Email: cabarca@sandiego.gov  
Phone No. (619) 533-3439 - Fax No. (619) 533-3633  
MNINH / BDORINGO / LS

**COPY**



**CONTRACT  
DOCUMENTS**

**FOR**

**SEWER AND WATER GROUP 820**

VOLUME 1 OF 2

BID NO.: \_\_\_\_\_ **K-14-5403-DBB-3**  
SAP NO. (WBS/IO/CC): \_\_\_\_\_ **B-00382 / B-00110**  
CLIENT DEPARTMENT: \_\_\_\_\_ **2011 / 2013**  
COUNCIL DISTRICT: \_\_\_\_\_ **1**  
PROJECT TYPE: \_\_\_\_\_ **JA/KB**

**THIS CONTRACT IS SUBJECT TO THE FOLLOWING:**

- > PHASED-FUNDING
- > THE CITY'S SUBCONTRACTING PARTICIPATION REQUIREMENTS FOR SLBE PROGRAM.

**BID DUE DATE:**

**2:00 PM  
AUGUST 7, 2013  
CITY OF SAN DIEGO  
PUBLIC WORKS DEPARTMENT  
1010 SECOND AVENUE, SUITE 1400, MS 614C  
SAN DIEGO, CA 92101**

# ENGINEER OF WORK

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

  
\_\_\_\_\_  
For City Engineer

5/1/13  
\_\_\_\_\_  
Date

Seal



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# CITY OF SAN DIEGO, CALIFORNIA

## NOTICE INVITING BIDS

1. **RECEIPT AND OPENING OF BIDS:** Bids will be received at the Public Works Contracting Group at the location, time, and date shown on the cover of these specifications for performing work on **SEWER AND WATER GROUP 820** (Project).
2. **DESCRIPTION OF WORK:** The Work involves furnishing all labor, materials, equipment, services, and other incidental works and appurtenances for the construction of the Project as described below:

Construction consists of the installation of 8", 10" and 12" Sewer Main, Rehab ex sewer main, sewer laterals, replumbs and manholes; installation of 12" and 16" water main, water services, and pressure regulating station. Abandonment of existing sewer main, curb ramps, resurfacing, and traffic control.

2.1. The Work shall be performed in accordance with:

2.1.1. This Notice Inviting Bids and Plans numbered **35408-1-D** through **35408-48-D** and Traffic Control Plans **35408-T01-D** through **35408-T14-D**, inclusive.

3. **EQUAL OPPORTUNITY.**

3.1. To The WHITEBOOK, Chapter 10, Sections D and E, DELETE in their entirety and SUBSTITUTE with the following:

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

**1. Nondiscrimination in Contracting Ordinance.**

1. The Contractor, Subcontractors and Suppliers shall comply with requirements of the City's Nondiscrimination in Contracting Ordinance, San Diego Municipal Code §§22.3501 through 22.3517.

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

The Contractor shall include the foregoing clause in all contracts between the Contractor and Subcontractors and Suppliers.

2. Disclosure of Discrimination Complaints. As part of its Bid or Proposal, 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 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.

3. Upon the City's request, the Contractor agrees to provide to the City, within 60 days, a truthful and complete list of the names of all Subcontractors and Suppliers that the Contractor has used in the past 5 years on any of its contracts that were undertaken within San Diego County, including the total dollar amount paid by the Contractor for each subcontract or supply contract.
4. The Contractor further agrees 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. The Contractor understands and agrees that violation of this clause shall be considered a material breach of the Contract and may result in remedies being ordered against the Contractor up to and including contract termination, debarment and other sanctions for violation of the provisions of the Nondiscrimination in Contracting Ordinance. The Contractor further understands and agrees 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. The Contractor, Subcontractors and Suppliers shall comply with the City's Equal Employment Opportunity Outreach Program, San Diego Municipal Code §§22.2701 through 22.2707.

The Contractor shall not discriminate against any employee or applicant for employment on any basis prohibited by law. Contractor shall provide equal opportunity in all employment practices. Prime Contractor shall ensure their subcontractors comply with this program. Nothing in this section shall be interpreted to hold a prime contractor liable for any discriminatory practice of its subcontractors.

The Contractor shall include the foregoing clause in all contracts between the Contractor and 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 of Contract forms to the City for approval as specified in the Notice of Intent to Award letter from the City.
3. If a Work Force Report is submitted, and the City determines there are under-representations when compared to County Labor Force Availability data, the selected Bidder shall submit an Equal Employment Opportunity Plan.

4. If the selected Bidder submits an Equal Employment Opportunity Plan, it shall include the following assurances:
  1. The Contractor shall maintain a working environment free of discrimination, harassment, intimidation and coercion at all sites and in all facilities at which the Contractor's employees are assigned to work.
  2. The Contractor reviews its EEO Policy, at least annually, with all on-site supervisors involved in employment decisions.
  3. The Contractor disseminates and reviews its EEO Policy with all employees at least once a year, posts the policy statement and EEO posters on all company bulletin boards and job sites, and documents every dissemination, review and posting with a written record to identify the time, place, employees present, subject matter, and disposition of meetings.
  4. The Contractor reviews, at least annually, all supervisors' adherence to and performance under the EEO Policy and maintains written documentation of these reviews.
  5. The Contractor discusses its EEO Policy Statement with subcontractors with whom it anticipates doing business, includes the EEO Policy Statement in its subcontracts, and provides such documentation to the City upon request.
  6. The Contractor documents and maintains a record of all bid solicitations and outreach efforts to and from subcontractors, contractor associations and other business associations.
  7. The Contractor disseminates its EEO Policy externally through various media, including the media of people of color and women, in advertisements to recruit, maintains files documenting these efforts, and provides copies of these advertisements to the City upon request.
  8. The Contractor disseminates its EEO Policy to union and community organizations.
  9. The Contractor provides immediate written notification to the City when any union referral process has impeded the Contractor's efforts to maintain its EEO Policy.
  10. The Contractor maintains a current list of recruitment sources, including those outreaching to people of color and women, and provides written notification of employment opportunities to these recruitment sources with a record of the organizations' responses.
  11. The Contractor maintains 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.

12. The Contractor encourages all present employees, including people of color and women employees, to recruit others.
13. The Contractor maintains all employment selection process information with records of all tests and other selection criteria.
14. The Contractor develops and maintains documentation for on-the-job training opportunities, participates in training programs, or both for all of its employees, including people of color and women, and establishes apprenticeship, trainee, and upgrade programs relevant to the Contractor's employment needs.
15. The Contractor conducts, at least annually, an inventory and evaluation of all employees for promotional opportunities and encourages all employees to seek and prepare appropriately for such opportunities.
16. The Contractor ensures 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.

#### **4. SUBCONTRACTING PARTICIPATION PERCENTAGES.**

- 4.1.** 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>7.3%</b>
2. ELBE participation	<b>15.0%</b>
3. Total mandatory participation	<b>22.3%</b>

- 4.2.** The Bidders are strongly encouraged to attend the Pre-Bid Meeting to better understand the Good Faith Effort requirements of this contract. See the City's document titled "SLBE Program, Instructions For Bidders Completing The Good Faith Effort Submittal" available at: <http://www.sandiego.gov/eoc/>

- 4.3.** The Bid will be declared non-responsive if the Bidder fails the following mandatory conditions:

- 4.3.1.** Bidder's inclusion of SLBE-ELBE certified subcontractors at the overall mandatory participation percentage identified in this document; OR.

4.3.2. Bidder's submission of Good Faith Effort documentation demonstrating the Bidder made a good faith effort to outreach to and include SLBE-ELBE Subcontractors required in this document within 3 Working Day of the Bid opening if the overall mandatory participation percentage is not met.

**5. PRE-BID MEETING:**

5.1. There will be a Pre-Bid Meeting to discuss the scope of the Project, bidding requirements, pre-qualification process, and Equal Opportunity Contracting Program requirements and reporting procedures in the Public Works Contracting Group, Conference Room at 1010 Second Avenue, Suite 1400, San Diego, CA 92101 at **10:00 A.M., on July 17<sup>th</sup>, 2013.**

5.2. All potential bidders are encouraged to attend.

5.3. To request a copy of the agenda on an alternative format, or to request a sign language or oral interpreter for this meeting, call the Public Works Contracting Group at (619) 533-3450 at least 5 Working Days prior to the Pre-Bid Meeting to ensure availability.

**6. CONTRACTOR REGISTRATION AND ELECTRONIC REPORTING SYSTEM:**

6.1. **Prior** to the Award of the Contract or each Task Order, you and your Subcontractors and Suppliers **must** register with Prism®, the City's web-based contract compliance portal at:

<https://pro.prismcompliance.com/default.aspx>.

6.2. 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.

7. **CONSTRUCTION COST:** The City's estimated construction cost for this contract is **\$4,095,000.**

**LOCATION OF WORK:** The location of the Work is as follows:

**See Appendix "E" for location map.**

8. **CONTRACT TIME:** The Contract Time for completion of the Work shall be **356 Working Days.**

9. **CONTRACTOR'S LICENSE CLASSIFICATION:** In accordance with the provisions of California Law, the Contractor shall possess valid appropriate license(s) at the time that the Bid is submitted. Failure to possess the specified license(s) shall render the Bid as **non-responsive** and shall act as a bar to award of the Contract to any Bidder not possessing required license(s) at the time of Bid.

9.1. The City has determined the following licensing classifications for this contract:

Option	Classifications
1	CLASS A
2	CLASS C34 and CLASS C42

9.2. The Bidder shall satisfy the licensing requirement by meeting **at least** one of the listed options.

10. **JOINT VENTURE CONTRACTORS.** Provide a copy of the Joint Venture agreement and the Joint Venture license to the City within 10 Working Days after receiving the Contract forms. See 2-1.1.2, “Joint Venture Contractors” in The WHITEBOOK for details.

11. **WAGE RATES:** Prevailing wages are not applicable to this contract

12. **INSURANCE REQUIREMENTS:**

12.1. 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.

12.2. Refer to sections 7-3, “LIABILITY INSURANCE”, and 7-4, “WORKERS’ COMPENSATION INSURANCE” of the Supplementary Special Provisions (SSP) for the insurance requirements which must be met.

13. **PREQUALIFICATION OF CONTRACTORS:**

13.1. Contractors submitting Bid must be pre-qualified for the total amount proposed, inclusive of 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 will be deemed **non-responsive** and ineligible for award. Complete information and prequalification questionnaires are available at:

<http://www.sandiego.gov/cip/bidopps/prequalification.shtml>

13.2. The completed questionnaire, financial statement, and bond letter or a copy of the contractor’s SLBE-ELBE certification and bond letter, must be submitted no later than 2 weeks prior to the bid opening to the Public Works Department - Engineering & Capital Project, Prequalification Program, 1010 Second Avenue, Suite 1200, San Diego, CA 92101. For additional information or the answer to questions about the prequalification program, contact David Stucky at 619-533-3474 or [dstucky@sandiego.gov](mailto:dstucky@sandiego.gov).

- 14. 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”)	2012	PITS070112-01
City of San Diego Standard Specifications for Public Works Construction (“The WHITEBOOK”)*	2012	PITS070112-02
City of San Diego Standard Drawings*	2012	PITS070112-03
Caltrans Standard Specifications	2010	PITS070112-04
Caltrans Standard Plans	2010	PITS070112-05
California MUTCD	2012	PITS070112-06
City Standard Drawings - Updates Approved For Use (when specified)*	Varies	Varies
Standard Federal Equal Employment Opportunity Construction Contract Specifications and the Equal Opportunity Clause Dated 09-11-84	1984	769023
NOTE: Available online under Engineering Documents and References at: <a href="http://www.sandiego.gov/publicworks/edocref/index.shtml">http://www.sandiego.gov/publicworks/edocref/index.shtml</a>		

- 15. CITY'S RESPONSES AND ADDENDA:** The City at its option, may respond to any or all questions submitted in writing, via letter, or FAX in the form of an addendum. No oral comment shall be of any force or effect with respect to this solicitation. The changes to the Contract Documents through addendum are made effective as though originally issued with the Bid. The Bidders shall acknowledge the receipt of Addenda on the form provided for this purpose in the Bid.
- 16. 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.
- 17. CONTRACT PRICING FORMAT:** This solicitation is for a Lump Sum contract with Unit Price provisions as set forth in the Bid Proposal Form(s), Volume 2.
- 18. SUBMITTAL OF “OR EQUAL” ITEMS:** See Section 4-1.6, “Trade Names or Equals” in The WHITEBOOK and as amended in the SSP.
- 19. AWARD PROCESS:**
- 19.1.** The Award of this contract is contingent upon the Contractor’s compliance with all conditions precedent to Award.
- 19.2.** 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.

- 19.3.** This contract will be deemed executed, and effective, only upon the signing of the Contract by the Mayor or designee of the City.
- 20. SUBCONTRACT LIMITATIONS:** The Bidder's attention is directed to Standard Specifications for Public Works Construction, Section 2-3, "SUBCONTRACTS" in The WHITEBOOK and as amended in the SSP which requires the Contractor to self perform the amount therein stipulated. Failure to comply with these requirements may render the Bid **non-responsive** and ineligible for award.
- 21. 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 Public Works Contracting Group.
- 22. QUESTIONS:**
- 22.1.** The Director (or designee), of the Public Works 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. All questions related to this procurement action shall be addressed to the Public Works Contracting Group, Attention Contract Specialist, 1010 Second Avenue, Suite 1400, San Diego, California, 92101, and Telephone No. (619) 533-3450.
- 22.2.** Questions received less than 14 days prior to the date for opening of Bids may not be answered.
- 22.3.** Interpretations or clarifications considered necessary by the City in response to such questions will be issued by Addenda which will be uploaded to the City's online bidding service.
- 22.4.** Only questions answered by formal written addenda will be binding. Oral and other interpretations or clarifications will be without legal effect. It is the Bidder's responsibility to become informed of any Addenda that have been issued and to include all such information in its Bid.
- 23. ELIGIBLE BIDDERS:** 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.
- 24. 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 with the Notice Inviting Bids and Contract forms.

**25. PROPOSAL FORMS:** Bid shall be made only upon the Bidding Documents i.e., Proposal form attached to and forming a part of the specifications. The signature of each person signing shall be in longhand.

**25.1.** Bidder shall complete and submit all pages in the "Bidding Document" Section (see Volume 2) as their Bid per the schedule given under "Required Documents Schedule," (see Volume 1). Bidder is requested to retain for their reference other portions of the Contract Documents that are not required to be submitted with the Bid. The entire specifications for the bid package do not need to be submitted with the bid.

**25.2.** The City may require any Bidder to furnish a statement of experience, financial responsibility, technical ability, equipment, and references.

**25.3.** Bids and certain other forms and documents as specified in the Volume 2 of 2 of the Contract Documents shall be enclosed in a sealed envelope and shall bear the title of the work and name of the Bidder and the appropriate State Contractors License designation which the Bidder holds.

**25.4.** Bids may be withdrawn by the Bidder prior to, but not after, the time fixed for opening of Bids.

**26. BIDDERS' GUARANTEE OF GOOD FAITH (BID SECURITY):**

**26.1.** With the exception of the contracts valued \$5,000 or less, JOC and Design-Build contracts, and contracts subject to the Small and Local Business Program of \$250,000 or less e.g., ELBE contracts, each Bidder shall accompany its Bid with either a cashier's check upon some responsible bank, or a check upon such bank properly certified or an approved corporate surety bond payable to the City of San Diego, for an amount of not less than 10% of the aggregate sum of the Bid, which check or bond, and the monies represented thereby shall be held by the City as a guarantee that the Bidder, if awarded the contract, will in good faith enter into such contract and furnish the required final bonds.

**26.2.** The Bidder agrees that in case of Bidder's refusal or failure to execute this contract and give required final bonds, the money represented by a cashier's or certified check shall remain the property of the City, and if the Bidder shall fail to execute this contract, the Surety agrees that it will pay to the City damages which the City may suffer by reason of such failure, not exceeding the sum of 10% of the amount of the Bid.

**26.3.** A Bid received without the specified bid security will be rejected as being **non-responsive**.

**27. AWARD OF CONTRACT OR REJECTION OF BIDS:**

**27.1.** This contract may be awarded to the lowest responsible and reliable Bidder.

- 27.2. Bidders shall complete the entire Bid schedule (also referred to as “schedule of prices” or Proposal form). Incomplete price schedules will be rejected as being non-responsive.
- 27.3. The City reserves the right to reject any or all Bids, and to waive any informality or technicality in Bids received and any requirements of these specifications as to bidding procedure.
- 27.4. Bidders will not be released on account of their errors of judgment. Bidders may be released only upon receipt by the City from the Bidder within 3 Working Days, excluding Saturdays, Sundays, and state holidays, after the opening of Bids, of written notice which includes proof of honest, credible, clerical error of material nature, free from fraud or fraudulent intent, and of evidence that reasonable care was observed in the preparation of the Bid.
- 27.5. A non-selected Bidder may protest award of the Contract to the selected Bidder by submitting a written “Notice of Intent to Protest” including supporting documentation which shall be received by Public Works Contracting Group no later than 10 days after the City’s announcement of the selected Bidder or no later than 10 days from the date that the City issues notice of designation of a Bidder as non-responsive in accordance with San Diego Municipal Code Chapter 2, § 22.3029, “Protests of Contract Award.”
- 27.6. The City of San Diego will not discriminate with regard to race, religious creed, color, national origin, ancestry, physical handicap, marital status, sex or age, in the award of contracts.
- 27.7. Each Bid package properly executed as required by these specifications shall constitute a firm offer, which may be accepted by the City within the time specified in the Proposal.
- 27.8. The City reserves the right to evaluate all Bids and determine the lowest Bidder on the basis of any proposed alternates, additive items or options, at its discretion that will be disclosed in the Volume 2 of 2.

**28. BID RESULTS:**

- 28.1. The Bid opening by the City 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 public announcement will be posted in the City’s web page: <http://www.sandiego.gov/cip/index.shtml>, with the name of the newly designated Apparent Low Bidder.
- 28.2. To obtain Bid results, either attend Bid opening, review the results on the City’s web site, or provide a self-addressed, stamped envelope, referencing Bid number, and Bid tabulation will be mailed to you upon verification of extensions. Bid results cannot be given over the telephone.

**29. THE CONTRACT:**

- 29.1.** 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.
- 29.2.** 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.
- 29.3.** 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.
- 29.4.** 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.
- 29.5.** 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. 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.

- 30. 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 2-7, 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.

- 31. CITY STANDARD PROVISIONS.** This contract is subject to the following standard provisions. See The WHITEBOOK for details.
- 31.1.** The City of San Diego Resolution No. R-277952 adopted on May 20, 1991 for a Drug-Free Workplace.
  - 31.2.** The City of San Diego Resolution No. R-282153 adopted on June 14, 1993 related to the Americans with Disabilities Act.
  - 31.3.** The City of San Diego Municipal Code §22.3004 for Pledge of Compliance.
  - 31.4.** The City of San Diego’s Labor Compliance Program and the State of California Labor Code §§1771.5(b) and 1776.
  - 31.5.** 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.
  - 31.6.** The City’s Equal Benefits Ordinance (EBO), Chapter 2, Article 2, Division 43 of The San Diego Municipal Code (SDMC).
  - 31.7.** The City’s Information Security Policy (ISP) as defined in the City’s Administrative Regulation 90.63.
- 32. PRE-AWARD ACTIVITIES:**
- 32.1.** The selected contractor by the City to execute a contract for this Work shall provide the information required within the time specified in “Required Documents,” of this bid package. Failure to provide the information within the time specified may result in the Bid being rejected as **non-responsive**.
  - 32.2.** If the Bid is rejected as non-responsive, the selected contractor by the City to execute a contract for this Work shall forfeit the required Bid. The decision that the selected contractor by the City to execute a contract for this Work is non-responsive for failure to provide the information required within the time specified shall be at the sole discretion of the City.
- 33. SUPPLEMENTAL AGREEMENTS:** Supplemental agreements attached to this contract for the items of Work such as extended re-vegetation maintenance and monitoring and emulsion aggregate slurry shall be signed upon the request from the Engineer and prior to Acceptance. The signed agreements shall be accompanied by the evidence of separate bond (i.e., labor and materials) and insurance as specified in 2-4, “CONTRACT BONDS,” 7-3, “LIABILITY INSURANCE,” and 7-4 WORKERS’ COMPENSATION INSURANCE. Bonds shall be in amount of the Contract Price for the Work included in the supplemental agreements.
- 34. PHASED FUNDING:**
- 34.1.** For phased funded contracts, the City typically secures enough funds for the first 90 days of the contract prior to award. Within 10 Working Days after Bid opening date the Apparent Low Bidder must contact the Project Manager to discuss fund

availability and the duration of the first phase and submit the Pre-Award Schedule to the City for approval and preparation of the first Phased Funding Schedule Agreement.

- 34.2. The Apparent Low Bidder will be required to provide a Pre-award Schedule in accordance with 6-1, “CONSTRUCTION SCHEDULE AND COMMENCEMENT OF THE WORK” and 9-3, “PAYMENT” prior to award of Contract.
- 34.3. If the Bid submitted by the Apparent Low Bidder is rejected by the City for any reason, then within 5 Working Days after receiving notice, the next Apparent Low Bidder must provide the Pre-Award Schedule. This process will continue until the City has selected the Apparent Low Bidder or have decided to reject all Bids.
- 34.4. The first Phased Funding Schedule Agreement must show the fund availability for the first phase. Within 22 Working Days from the date of the Bid Opening or notice to the next Apparent Low Bidder (whichever occurs last) and once a Pre-Award Schedule is accepted by the City, the City will present the first Phased Funding Schedule Agreement to you when you are selected as the Apparent Low Bidder as defined in the City’s Municipal Code, §22.3003.
- 34.5. At the City’s request, you must meet with the City’s project manager before execution of the first Phased Funding Schedule Agreement to discuss his or her comments and requests for revision to the Pre-Award Schedule.
- 34.6. Your failure to perform the following may result in the Bid being rejected as **non-responsive**:
  1. meet with the City’s project manager, if requested to do so, to discuss and respond to the City’s comments regarding the Pre-Award Schedule,
  2. revise the Pre-Award Schedule as requested by the City within the specified 22 Working Days timeframe, or
  3. execute the first Phased Funding Schedule Agreement within a day after receipt.

**35. ADDITIVE/DEDUCTIVE ALTERNATES:**

- 35.1. 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 decision 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 the Base Bid plus any combination of Additive and Deductive Alternate(s).
- 35.2. 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.

**36. REQUIRED DOCUMENT SCHEDULE:**

- 36.1. 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.

**36.2.** 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>

<b>ITEM</b>	<b>WHEN DUE</b>	<b>FROM</b>	<b>DOCUMENT TO BE SUBMITTED</b>
1.	BID SUBMITTAL DATE/TIME	ALL BIDDERS	Bid
2.	BID SUBMITTAL DATE/TIME	ALL BIDDERS	Bid Bond
3.	BID SUBMITTAL DATE/TIME	ALL BIDDERS	Non-collusion Affidavit to be Executed By Bidder and Submitted with Bid under 23 USC 112 and PCC 7106
4.	BID SUBMITTAL DATE/TIME	ALL BIDDERS	Contractors Certification of Pending Actions
5.	BID SUBMITTAL DATE/TIME	ALL BIDDERS	Equal Benefits Ordinance Certification of Compliance
6.	BID SUBMITTAL DATE/TIME	ALL BIDDERS	Form AA35 - List of Subcontractors
7.	BID SUBMITTAL DATE/TIME	ALL BIDDERS	Form AA40 - Named Equipment/Material Supplier List
8.	BID SUBMITTAL DATE/TIME	ALL BIDDERS	Form AA45 - Subcontractors Additive/Deductive Alternate
9.	WITHIN 3 WORKING DAYS OF BID OPENING WITH GOOD FAITH EFFORT DOCUMENTATION	ALL BIDDERS	SLBE Good Faith Efforts Documentation
10.	WITHIN 3 WORKING DAYS OF BID OPENING WITH GOOD FAITH EFFORT DOCUMENTATION	ALL BIDDERS	Form AA60 – List of Work Made Available
11.	WITHIN 3 WORKING DAYS OF BID OPENING WITH GOOD FAITH EFFORT DOCUMENTATION	ALL BIDDERS	Proof of Valid DBE-MBE-WBE-DVBE Certification Status e.g., Certs.
12.	PRIOR TO PRE-CONSTRUCTION MEETING	LOW BIDDER	Contractor’s Experience and Past Project Documentation. See Sections 500 and 700
13.	PRIOR TO PRE-CONSTRUCTION MEETING	LOW BIDDER	Manufacturer Certification per Section 500-1.1.2.1

<b>ITEM</b>	<b>WHEN DUE</b>	<b>FROM</b>	<b>DOCUMENT TO BE SUBMITTED</b>
14.	WITHIN 10 WORKING DAYS AFTER RECEIPT BY BIDDER OF CONTRACT FORMS	APPARENT LOW BIDDER	Phased Funding Schedule Agreement (when required)
15.	WITHIN 10 WORKING DAYS AFTER RECEIPT BY BIDDER OF CONTRACT FORMS	APPARENT LOW BIDDER	Pre-Award Schedule (Phased Funded Contracts Only)
16.	WITHIN 10 WORKING DAYS AFTER RECEIPT BY BIDDER OF CONTRACT FORMS	APPARENT LOW BIDDER	Names of the principal individual owners of the Apparent Low Bidder
17.	WITHIN 10 WORKING DAYS AFTER RECEIPT BY BIDDER OF CONTRACT FORMS	APPARENT LOW BIDDER	If the Contractor is a Joint Venture: <ul style="list-style-type: none"> <li>• Joint Venture Agreement</li> <li>• Joint Venture License</li> </ul>
18.	WITHIN 10 WORKING DAYS AFTER RECEIPT BY BIDDER OF CONTRACT FORMS	APPARENT LOW BIDDER	Form BB05 - Work Force Report
19.	WITHIN 10 WORKING DAYS AFTER RECEIPT BY BIDDER OF CONTRACT FORMS	APPARENT LOW BIDDER	Contract Forms - Agreement
20.	WITHIN 10 WORKING DAYS AFTER RECEIPT BY BIDDER OF CONTRACT FORMS	APPARENT LOW BIDDER	Contract Forms - Payment and Performance Bond
21.	WITHIN 10 WORKING DAYS AFTER RECEIPT BY BIDDER OF CONTRACT FORMS	APPARENT LOW BIDDER	Certificates of Insurance and Endorsements
22.	WITHIN 10 WORKING DAYS AFTER RECEIPT BY BIDDER OF CONTRACT FORMS	APPARENT LOW BIDDER	Contractor Certification - Drug-Free Workplace
23.	WITHIN 10 WORKING DAYS AFTER RECEIPT BY BIDDER OF CONTRACT FORMS	APPARENT LOW BIDDER	Contractor Certification - American with Disabilities Act
24.	WITHIN 10 WORKING DAYS AFTER RECEIPT BY BIDDER OF CONTRACT FORMS	APPARENT LOW BIDDER	Contractors Standards - Pledge of Compliance

**CONTRACT FORMS**  
**AGREEMENT**

# CONTRACT FORMS AGREEMENT

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## CONSTRUCTION CONTRACT

This contract is made and entered into between THE CITY OF SAN DIEGO, a municipal corporation, herein called "City", and \_\_\_\_\_ TC CONSTRUCTION COMPANY \_\_\_\_\_, herein called "Contractor" for construction of Sewer and Water Group 820; Bid No. K-14-5403-DBB-3, in the amount of FOUR MILLION ONE HUNDRED SEVENTY FOUR THOUSAND TWO HUNDRED ONE DOLLARS AND FIFTY CENTS (\$4,174,201.50), which is comprised of the Base Bid plus Alternates A, B, and C.

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 Notice Inviting Bids and the Supplementary Special Provisions (SSP).
  - (d) Phase Funding Schedule Agreement and Supplemental Agreements.
  - (e) That certain documents entitled Sewer and Water Group 820, on file in the office of the City Clerk as Document No. B-00382 / B-00110, as well as all matters referenced therein.
2. 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 Sewer and Water Group 820, Bid Number, K-14-5403-DBB-3, San Diego, California.
3. 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.
4. 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.
5. This contract is effective as of the date that the Mayor or designee signs the agreement.

**CONTRACT FORMS (continued)**

**AGREEMENT**

IN WITNESS WHEREOF, this Agreement is signed by the City of San Diego, acting by and through its Mayor or designee, pursuant to Municipal Code §22.3102(a)(1) authorizing such execution.

**THE CITY OF SAN DIEGO**

**APPROVED AS TO FORM AND LEGALITY**

Jan I. Goldsmith, City Attorney

By Tony Heinrichs

By Pedro De Lara, Jr.

Print Name: Tony Heinrichs  
Director, Department of Public Works

Print Name: Pedro De Lara, Jr.  
Deputy City Attorney

Date: 9/30/13

Date: 10/1/13

**CONTRACTOR**

By [Signature]

Print Name: Austin Cameron

Title: Secretary

Date: 08/30/2013

City of San Diego License No.: B1987004773

State Contractor's License No.: 402459

**CONTRACT/AGREEMENT  
ATTACHMENTS**

**CONTRACT ATTACHMENT  
PERFORMANCE BOND AND LABOR AND MATERIALMEN'S BOND**

---

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

TC CONSTRUCTION COMPANY, 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 FOUR MILLION ONE HUNDRED SEVENTY FOUR THOUSAND TWO HUNDRED ONE DOLLARS AND FIFTY CENTS (\$4,174,201.50) for the faithful performance of the annexed contract, and in the sum of FOUR MILLION ONE HUNDRED SEVENTY FOUR THOUSAND TWO HUNDRED ONE DOLLARS AND FIFTY CENTS (\$4,174,201.50) for the benefit of laborers and materialmen designated below.

**Conditions:**

If the Principal shall faithfully perform the annexed contract Sewer and Water Group 820, Bid Number: K-14-5403-DBB-3, 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 Chapter 3 of Division 5 of Title I of the Government Code of the State of California or under the provisions of Section 3082 et seq. 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.

**CONTRACT ATTACHMENT (continued)**  
**PERFORMANCE BOND AND LABOR AND MATERIALMEN'S BOND**

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

Dated August 28, 2013

Approved as to Form and Legality

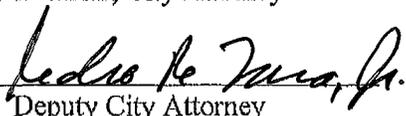
TC Construction Company, Inc.

Principal

By 

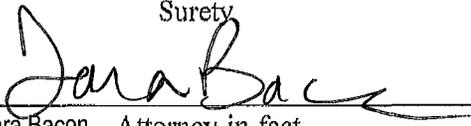
Austin Cameron, Secretary  
Printed Name of Person Signing for Principal

Jan I. Goldsmith, City Attorney

By   
Deputy City Attorney

Liberty Mutual Insurance Company

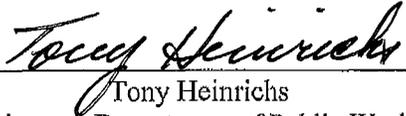
Surety

By   
Tara Bacon, Attorney-in-fact

Approved:

790 The City Drive, Suite 200

Local Address of Surety

By   
Tony Heinrichs  
Director, Department of Public Works

Orange, CA 92868

Local Address (City, State) of Surety

(800) 763-9268

Local Telephone No. of Surety

Premium \$29,803.00

Bond No. 024046091

**CALIFORNIA ALL-PURPOSE ACKNOWLEDGMENT**

CIVIL CODE § 1189

State of California

County of San Diego }

On 8/30/13 before me, T. SPARKS Notary Public  
Date Here Insert Name and Title of the Officer

personally appeared Austin Cameron  
Name(s) of Signer(s)

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



I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Signature: T. SPARKS  
Signature of Notary Public

Place Notary Seal Above

**OPTIONAL**

*Though the information below is not required by law, it may prove valuable to persons relying on the document and could prevent fraudulent removal and reattachment of this form to another document.*

**Description of Attached Document**

Title or Type of Document: \_\_\_\_\_

Document Date: \_\_\_\_\_ Number of Pages: \_\_\_\_\_

Signer(s) Other Than Named Above: \_\_\_\_\_

**Capacity(ies) Claimed by Signer(s)**

Signer's Name: \_\_\_\_\_

Corporate Officer — Title(s): \_\_\_\_\_

Individual

Partner —  Limited  General

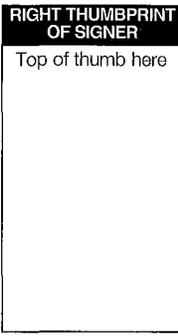
Attorney in Fact

Trustee

Guardian or Conservator

Other: \_\_\_\_\_

\_\_\_\_\_  
Signer Is Representing: \_\_\_\_\_



Signer's Name: \_\_\_\_\_

Corporate Officer — Title(s): \_\_\_\_\_

Individual

Partner —  Limited  General

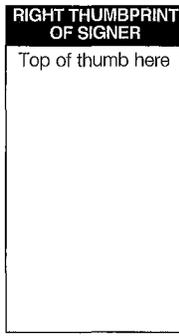
Attorney in Fact

Trustee

Guardian or Conservator

Other: \_\_\_\_\_

\_\_\_\_\_  
Signer Is Representing: \_\_\_\_\_



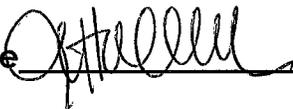
**ACKNOWLEDGMENT**

State of California  
County of San Diego

On August 28, 2013 before me, Maria Hallmark, Notary Public, personally appeared Tara Bacon, who proved to me on the basis of satisfactory evidence to be the person whose name is subscribed to the within instrument and acknowledged to me that she executed the same in her authorized capacity, and that by her signature on the instrument the person, or the entity upon behalf of which the person acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Signature 



(Seal)

**THIS POWER OF ATTORNEY IS NOT VALID UNLESS IT IS PRINTED ON RED BACKGROUND.**

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.

5441340

Certificate No. \_\_\_\_\_

American Fire and Casualty Company  
The Ohio Casualty Insurance Company  
West American Insurance Company

Liberty Mutual Insurance Company  
Peerless Insurance Company

**POWER OF ATTORNEY**

KNOWN ALL PERSONS BY THESE PRESENTS: That American Fire & Casualty Company and The Ohio Casualty Insurance Company are corporations duly organized under the laws of the State of Ohio, that Liberty Mutual Insurance Company is a corporation duly organized under the laws of the State of Massachusetts, that Peerless Insurance Company is a corporation duly organized under the laws of the State of New Hampshire, 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, **BRADLEY R. ORR; DALE G. HARSHAW; GEOFFREY SHELTON; KYLE KING; TARA BACON** .....

all of the city of SAN DIEGO, state of CA each individually if there be more than one named, its true and lawful attorney-in-fact to make, execute, seal, acknowledge and deliver, for and on its behalf as surety and as its act and deed, any and all undertakings, bonds, recognizances and other surety obligations, in pursuance of these presents and shall be as binding upon the Companies as if they have been duly signed by the president and attested by the secretary of the Companies in their own proper persons.

IN WITNESS WHEREOF, this Power of Attorney has been subscribed by an authorized officer or official of the Companies and the corporate seals of the Companies have been affixed thereto this 21st day of June, 2012.



American Fire and Casualty Company  
The Ohio Casualty Insurance Company  
Liberty Mutual Insurance Company  
Peerless Insurance Company  
West American Insurance Company

By: *Gregory W. Davenport*  
Gregory W. Davenport, Assistant Secretary

STATE OF WASHINGTON ss  
COUNTY OF KING

On this 21st day of June, 2012, before me personally appeared Gregory W. Davenport, who acknowledged himself to be the Assistant Secretary of American Fire and Casualty Company, Liberty Mutual Insurance Company, The Ohio Casualty Company, Peerless Insurance 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 Seattle, Washington, on the day and year first above written.



By: *KD Riley*  
KD Riley, Notary Public

This Power of Attorney is made and executed pursuant to and by authority of the following By-laws and Authorizations of American Fire and Casualty Company, The Ohio Casualty Insurance Company, Liberty Mutual Insurance Company, West American Insurance Company and Peerless 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 Gregory W. Davenport, Assistant Secretary to appoint such attorney-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, David M. Carey, the undersigned, Assistant Secretary, of American Fire and Casualty Company, The Ohio Casualty Insurance Company, Liberty Mutual Insurance Company, West American Insurance Company and Peerless 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 28th day of August, 20 13.



By: *David M. Carey*  
David M. Carey, Assistant Secretary

Not valid for mortgage, note, loan, letter of credit, bank deposit, currency rate, interest rate or residual value guarantees.

To confirm the validity of this Power of Attorney call 1-610-832-8240 between 9:00 am and 4:30 pm EST on any business day.

# CONTRACTOR CERTIFICATION

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## DRUG-FREE WORKPLACE

PROJECT TITLE: SEWER AND WATER GROUP 820

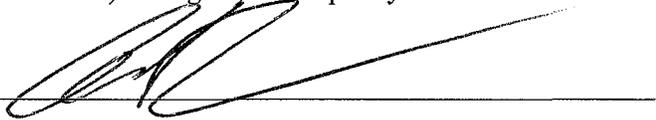
I hereby certify that I am familiar with the requirements of San Diego City Council Policy No. 100-17 regarding Drug-Free Workplace as outlined in the WHITEBOOK, Section 7-13.3, "Drug-Free Workplace", of the project specifications, and that;

TC Construction Co, Inc.

(Name under which business is conducted)

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.

Signed



Printed Name

Austin Cameron

Title

Secretary

# CONTRACTOR CERTIFICATION

---

## AMERICAN WITH DISABILITIES ACT (ADA) COMPLIANCE CERTIFICATION

PROJECT TITLE: SEWER AND WATER GROUP 820

I hereby certify that I am familiar with the requirements of San Diego City Council Policy No. 100-4 regarding the American With Disabilities Act (ADA) outlined in the WHITEBOOK, Section 7-13.2, "American With Disabilities Act", of the project specifications, and that;

TC Construction Co, Inc

(Name under which business is conducted)

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.

Signed



Printed Name

Austin Cameron

Title

Secretary

# CONTRACTOR CERTIFICATION

---

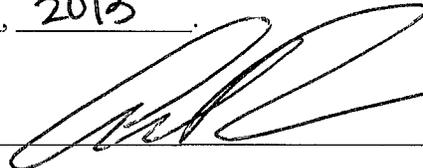
## CONTRACTOR STANDARDS – PLEDGE OF COMPLIANCE

PROJECT TITLE: SEWER AND WATER GROUP 820

I declare under penalty of perjury that I am authorized to make this certification on behalf of TC Construction Co, Inc., as Contractor, that I am familiar with the requirements of City of San Diego Municipal Code § 22.3224 regarding Contractor Standards as outlined in the WHITEBOOK, Section 7-13.4, ("Contractor Standards"), of the project specifications, and that Contractor has complied with those requirements.

I further certify that each of the Contractor's subcontractors whose subcontracts are greater than \$50,000 in value has completed a Pledge of Compliance attesting under penalty of perjury of having complied with City of San Diego Municipal Code § 22.3224.

Dated this 30<sup>th</sup> Day of August, 2013.

Signed  \_\_\_\_\_

Printed Name Austin Cameron \_\_\_\_\_

Title Secretary \_\_\_\_\_

**AFFIDAVIT OF DISPOSAL**

**WHEREAS**, on the \_\_\_\_\_ DAY OF \_\_\_\_\_, \_\_\_\_\_, the undersigned entered into and executed a contract with the City of San Diego, a municipal corporation, for:

**SEWER AND WATER GROUP 820**  
(Name of Project)

as particularly described in said contract and identified as Bid No.:**K-14-5403-DBB-3**; SAP No. (WBS/IO/CC) **B-00382/B-00110** 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 \_\_\_\_\_, \_\_\_\_\_.

\_\_\_\_\_  
Contractor  
by

**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  
Public Works Department, Field Division**

**NOTICE OF MATERIALS TO BE USED**

To: \_\_\_\_\_ Date: \_\_\_\_\_, 20\_\_\_\_  
Resident Engineer

You are hereby notified that the materials required for use under Contract No. \_\_\_\_\_  
for construction of \_\_\_\_\_  
\_\_\_\_\_ ,  
in the City of San Diego, will be obtained from sources herein designated.

CONTRACT ITEM NO. (Bid Item)	KIND OF MATERIAL (Category)	NAME AND ADDRESS WHERE MATERIAL CAN BE INSPECTED (At Source)

It is requested that you arrange for a sampling, testing, and inspection of the materials prior to delivery, in accordance with Section 4-1.11 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

Yours truly,

\_\_\_\_\_  
Signature of Supplier

\_\_\_\_\_  
Address

Phone Number: \_\_\_\_\_

## PHASED FUNDING SCHEDULE AGREEMENT

Check one:

- First Phased Funding Schedule Agreement  
 Final Phased Funding Schedule Agreement

**NOTE: THIS IS A SAMPLE PHASE FUNDING SCHEDULE AGREEMENT FORM.** Particulars left blank in this sample, the total number of phases, and the amounts assigned to each phase will be filled with funding specific information as the result of the Pre-Award Schedule, and subsequent Schedules, required by these Bid Documents and approved by the City.

**BID NUMBER:** K-14-5403-DBB-3  
**CONTRACT OR TASK TITLE:** SEWER + WATER GROUP 820  
**CONTRACTOR:** TC CONSTRUCTION CO., INC.

Funding Phase	Phase Description	Phase Start	Phase Finish	Not-to-Exceed Amount
1	SEWER + WATER GROUP 820	NOTICE TO PROCEED	CONTRACT COMPLETION	\$ 4,174,201.50
	Additional phases to be added to this form as necessary.			
Total				\$ 4,174,201.50

Notes:

- (1) City Supplements 9-3.6, "PHASE 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 PHASE FUNDING SCHEDULE AGREEMENT will be incorporated into the CONTRACT and shall only be revised by a written modification to the CONTRACT.

CITY OF SAN DIEGO

By: [Signature]

Name: MICHAEL NIJH  
Project Manager

Department Name: PUBLIC WORKS DEPT

Date: 10/3/2013

CONTRACTOR

By: [Signature]

Name: Austin Cameron

Title: VP

Date: 10/3/13

-END OF PHASE FUNDING SCHEDULE AGREEMENT-

**SUPPLEMENTARY SPECIAL PROVISIONS (SSP)**

## **SUPPLEMENTARY SPECIAL PROVISIONS**

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

- 1) Standard Specifications for Public Works Construction (The GREENBOOK) currently in effect.
  - 2) The City of San Diego Standard Specifications for Public Works Construction (The WHITEBOOK).
- 

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

#### **1-2 TERMS AND DEFINITIONS.**

**Normal Working Hours.** To the City Supplements, ADD the following:

The Normal Working Hours are 8:30 AM to 3:30 PM, unless otherwise noted on the plans.

### **SECTION 2 - SCOPE AND CONTROL OF WORK**

#### **2-3.2 Self Performance.** DELETE in its entirety and SUBSTITUTE with the following:

1. You must perform, with your own organization, Contract work amounting to at least 50% of the base bid alone or base bid and any additive or deductive alternate(s) that together when added or deducted form the basis of award.
2. The self performance percentage requirement will be waived for contracts when a “B” License is required or allowed.

#### **2-5.3.2 Working Drawings.** TABLE 2-5.3.2(A), ADD the following:

<b>Item</b>	<b>Section No.</b>	<b>Title</b>	<b>Subject</b>
17	306-1.6	Water Valve Bypass for Mainlines 16” and Larger	SDW-154 *

\* Note: The distance dimensions shown between the bypass pipes and between bypass pipes and the mainlines are subject to change to field conditions.

#### **2-7 SUBSURFACE DATA.** ADD the following:

1. In preparation of the Contract Documents, the designer has relied upon the following reports of explorations and tests of subsurface conditions at the Work Site:

1. Geotechnical Investigation dated February 4, 2011 by Southern California Soil & Testing, Inc.
2. The report listed above is available for review by contacting the City Contract Specialist.

**2-14.3 Coordination.** To the City Supplements, ADD the following:

Other adjacent City projects are scheduled for construction for the same time period in the vicinity of Torrey Pines Road. See Appendix "F" for approximate location. Coordinate the Work with the adjacent project(s) as listed below:

- a) Torrey Pines Roadway Improvements, Project Manager:  
David Li (619) 533-5164
- b) La Jolla Cove Lifeguard Station, Project Manager:  
Jihad Sleiman (619) 533-7532
- c) La Jolla Children's Pool Lifeguard Station, Project Manager:  
Jihad Sleiman (619) 533-7532

#### **SECTION 4 - CONTROL OF MATERIALS**

**4-1.6 Trade Names or Equals.** ADD the following:

You must submit your list of proposed substitutions for "an equal" ("or equal") item(s) **no less than 15 Working Days prior to Bid due date** and on a City form when provided by the City.

#### **SECTION 6 - PROSECUTION, PROGRESS AND ACCEPTANCE OF WORK**

**6-2.1 Moratoriums.** To the City Supplements, ADD the following:

Do not work in the areas where there is currently a moratorium issued by the City. The areas subject to moratorium are listed here:

- a) No work during the Summer Moratorium from Memorial Day to Labor Day (inclusive), except within Exchange Place between Torrey Pines Road and Olivet Lane.
- b) No work during the Holiday Moratorium from Thanksgiving to New Years (inclusive) on Prospect Street, Prospect Place, Ivanhoe Avenue from Cave Street to Wall Street, and Torrey Pines Road.
- c) No work shall be allowed in the areas of the entire project from December 24, 2013 to January 2, 2014 (inclusive)

**6-7.1 General.** To the City Supplement, ADD the following:

5. For Water projects where shutdowns of 16 inch and larger pipes are required, there is a shutdown moratorium from May until October. Contractor shall plan and schedule working accordingly. No additional payment or working days will be granted for delays due to this moratorium.

## **SECTION 7 - RESPONSIBILITIES OF THE CONTRACTOR**

**7-3 LIABILITY INSURANCE.** DELETE in its entirety and SUBSTITUTE with the following:

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

**7-3.1 Policies and Procedures.**

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

**7-3.2 Types of Insurance.**

**7-3.2.1 Commercial General Liability Insurance.**

1. Commercial General Liability Insurance must 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 must 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 must be no endorsement or modification limiting the scope of coverage for either “insured vs. insured” claims or contractual liability. You must maintain the same or equivalent insurance for at least 10 years following completion of the Work.
4. All costs of defense must be outside the policy limits. Policy coverage must be in liability limits of not less than the following:

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

**7-3.2.2 Commercial Automobile Liability Insurance.**

1. You must 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 must be outside the limits of the policy.

**7-3.2.3 Contractors Pollution Liability Insurance.**

1. You must procure and maintain at your expense or require Subcontractor, as described below to procure and maintain, the Contractors Pollution Liability Insurance including contractual liability coverage to cover liability arising out of cleanup, removal, storage, or handling of hazardous or toxic chemicals, materials, substances, or any other pollutants by you or any Subcontractor in an amount not less than \$2,000,000 limit for bodily injury and property damage.

2. All costs of defense must be outside the limits of the policy. Any such insurance provided by Subcontractor instead of you must be approved separately in writing by the City.
3. For approval of a substitution of Subcontractor's insurance, you must 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 must not exceed \$25,000 per claim.
4. Contractual liability must include coverage of tort liability of another party to pay for bodily injury or property damage to a third person or organization. There must be no endorsement or modification of the coverage limiting the scope of coverage for either "insured vs. insured" claims or contractual liability.
5. Occurrence based policies must be procured before the Work commences and must be maintained for the Contract Time. Claims Made policies must be procured before the Work commences, must be maintained for the Contract Time, and must include a 12 month extended Claims Discovery Period applicable to this contract or the existing policy or policies must continue to be maintained for 12 months after the completion of the Work without advancing the retroactive date.
6. Except as provided for under California law, the policy or policies must provide that the City is entitled to 30 days prior written notice (10 days for cancellation due to non-payment of premium) of cancellation or non-renewal of the policy or policies.

**7-3.3 Rating Requirements.** Except for the State Compensation Insurance Fund, all insurance required by this contract as described herein must be carried only by responsible insurance companies with a rating of, or equivalent to, at least "A-, VI" by A.M. Best Company, that are authorized by the California Insurance Commissioner to do business in the State, and that have been approved by the City.

**7-3.3.1 Non-Admitted Carriers.** The City will accept insurance provided by non-admitted, "surplus lines" carriers only if the carrier is authorized to do business in the State and is included on the List of Approved Surplus Lines Insurers (LASLI list).

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

**7-3.4 Evidence of Insurance.** Furnish to the City documents e.g., certificates of insurance and endorsements evidencing the insurance required herein, and furnish renewal documentation prior to expiration of this insurance. Each required document must be signed by the insurer or a person authorized by the insurer to bind coverage on its behalf. We reserve the right to require complete, certified copies of all insurance policies required herein.

## **7-3.5 Policy Endorsements.**

### **7-3.5.1 Commercial General Liability Insurance**

#### **7-3.5.1.1 Additional Insured.**

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

**7-3.5.1.2 Primary and Non-Contributory Coverage.** The policy must 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 must provide that any insurance maintained by the City and its elected officials, officers, employees, agents and representatives must be in excess of your insurance and must not contribute to it.

#### **7-3.5.1.3 Project General Aggregate Limit.**

The policy or policies must 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 must reduce the Designated Construction Project General Aggregate Limit. The Designated Construction Project General Aggregate Limit must be in addition to the aggregate limit provided for the products-completed operations hazard.

### **7-3.5.2 Commercial Automobile Liability Insurance.**

**7-3.5.2.1 Additional Insured.** Unless the policy or policies of Commercial Auto Liability Insurance are written on an ISO form CA 00 01 12 90 or a later version of this form or equivalent form providing coverage at least as broad, the policy must be endorsed to include the City and its respective elected officials, officers, employees, agents, and representatives as additional insured, with respect to liability arising out of automobiles owned, leased, hired or borrowed by you or on your behalf. This

endorsement is limited to the obligations permitted by California Insurance Code §11580.04.

### **7-3.5.3 Contractors Pollution Liability Insurance Endorsements.**

#### **7-3.5.3.1 Additional Insured.**

- a) The policy or policies must be endorsed to include as an Insured the City and its respective elected officials, officers, employees, agents, and representatives, with respect to liability arising out of: (a) Ongoing operations performed by you or on your behalf, (b) your products, (c) your work, e.g., your completed operations performed by you or on your behalf, or (d) premises owned, leased, controlled, or used by you; except that in connection with, collateral to, or affecting any construction contract to which the provisions of subdivision (b) of § 2782 of the California Civil Code apply, this endorsement must not provide any duty of indemnity coverage for the active negligence of the City and its respective elected officials, officers, employees, agents, and representatives in any case where an agreement to indemnify the City and its respective elected officials, officers, employees, agents, and representatives would be invalid under subdivision (b) of §2782 of the California Civil Code.
- b) In any case where a claim or loss encompasses the negligence of the Insured and the active negligence of the City and its respective elected officials, officers, employees, agents, and representatives that is not covered because of California Insurance Code §11580.04, the insurer's obligation to the City and its respective elected officials, officers, employees, agents, and representatives must be limited to obligations permitted by California Insurance Code §11580.04.

**7-3.5.3.2 Primary and Non-Contributory Coverage.** The policy or policies must 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 must be in excess of your insurance and must not contribute to it.

**7-3.5.3.3 Severability of Interest.** For Contractors Pollution Liability Insurance, the policy or policies must provide that your insurance must 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 must provide cross-liability coverage.

**7-3.6 Deductibles and Self-Insured Retentions.** You must pay for all deductibles and self-insured retentions. You must disclose deductibles and self-insured retentions to the City at the time the evidence of insurance is provided.

**7-3.7 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.

**7-3.8 Notice of Changes to Insurance.** You must notify the City 30 days prior to any material change to the policies of insurance provided under this contract.

**7-3.9 Excess Insurance.** Policies providing excess coverage must follow the form of the primary policy or policies e.g., all endorsements.

**7-4 WORKERS' COMPENSATION INSURANCE.** DELETE in its entirety and SUBSTITUTE with the following:

**7-4.1 Workers' Compensation Insurance and Employers Liability Insurance.**

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

<u>Workers' Compensation</u>	<u>Statutory Employers Liability</u>
Bodily Injury by Accident	\$1,000,000 each accident
Bodily Injury by Disease	\$1,000,000 each employee
Bodily Injury by Disease	\$1,000,000 policy limit

3. By signing and returning the Contract you certify that you are aware of the provisions of §3700 of the Labor Code which require every employer to be insured against liability for worker's compensation or to undertake self-insurance in accordance with the provisions of that code and you must comply with such provisions before commencing the Work as required by §1861 of the California Labor Code.

**7-4.1.1 Waiver of Subrogation.**

The policy or policies must 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.

**7-10.5.3 Steel Plate Covers.** Table 7-10.5.3(A), REVISE the plate thickness for 5'-3" trench width to read 1 3/4".

**7-15 INDEMNIFICATION AND HOLD HARMLESS AGREEMENT.** To the City Supplements, fourth paragraph, last sentence, DELETE in its entirety and SUBSTITUTE with the following:

Your duty to indemnify and hold harmless does not include any claims or liability arising from the established active or sole negligence, or willful misconduct of the City, its officers, or employees.

## SECTION 8 - FACILITIES FOR AGENCY PERSONNEL

**8-2** **FIELD OFFICE FACILITIES.** To the City Supplement, DELETE in its entirety.

## SECTION 9 - MEASUREMENT AND PAYMENT

**9-3.2.5** **Withholding of Payment.** To the City Supplement, item i), DELETE in its entirety and SUBSTITUTE with the following:

- i) Your failure to comply with 7-2.3, "PAYROLL RECORDS" and 2-16, "CONTRACTOR REGISTRATION AND ELECTRONIC REPORTING SYSTEM."

**ADD:**

**9-3.7**

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

## SECTION 203 – BITUMINOUS MATERIALS

**203-15** **RUBBER POLYMER MODIFIED SLURRY (RPMS).** RPMS shall be used on this contract.

## SECTION 300 – EARTHWORK

**300-1.4** **Payment.** To the City Supplements, paragraph (2), DELETE in its entirety and SUBSTITUTE with the following:

2. Payment for existing pavement removal and disposal of up to 12" thick, within the excavation e.g., trench limits, shall be included in the Bid item for installation of the mains or the Work item that requires pavement removal.

## SECTION 302 – ROADWAY SURFACING

**302-3** **Preparatory Repair Work.** To the City Supplement, DELETE in its entirety and SUBSTITUTE with the following:

**302-3** **Preparatory Repair Work.**

1. Prior to roadway resurfacing or the application of slurry, the Contractor shall complete all necessary preparation and repair work to the road segment e.g., tree trimming, weed spray, weed abatement, crack sealing, asphalt repair, hump removal, miscellaneous asphalt patching, removal of raised pavement markers, removal of pavement markings, etc. and as specified in the Special Provisions.
2. Preparatory work shall include, but not be limited to, tree trimming, weed spray, weed abatement, crack sealing, asphalt repair i.e., mill and pave, hump

removal, miscellaneous asphalt patching, removal of raised pavement markers, removal of pavement markings, etc.

3. The Contractor shall repair areas of distressed asphalt concrete pavement by milling or removing damaged areas of pavement to a minimum depth of 2” for Residential streets, and a minimum depth of 3” for all others to expose firm and unyielding pavement. The Contractor shall prepare subgrade as needed and install a minimum of 2” for residential streets, and a minimum of 3” for all others, of compacted asphalt concrete pavement over compacted native material as directed by the Engineer.
4. If, in order to achieve the minimum specified depth, the base material is exposed, the material shall be compacted to 95% relative compaction to a depth 10” below the finished grade (dig out). Compaction tests shall be made to ensure compliance with the specifications. The Engineer will determine when and where the test will occur. The City will pay for the soils testing required by the Engineer, which meets the required compaction. The Contractor shall reimburse the City for the cost of retesting failing compaction tests. If additional base material is required, the Contractor shall use Class 2 Aggregate Base in accordance with 200-2.2, “Crushed Aggregate Base.”
5. Recycled base material shall conform to Crushed Miscellaneous Base Material in accordance with 200-2.4, “Crushed Miscellaneous Aggregate Base.”
6. Prior to replacing asphalt, the area shall be cleaned by removing all loose and damaged material, moisture, dirt, and other foreign matter and shall be tack coated in accordance with 302-5.4 “Tack Coat.”
7. The Contractor shall install new asphalt within the repair area or for patches in accordance with 302-5, “ASPHALT CONCRETE PAVEMENT.” Asphalt concrete shall be C2-PG 64-10 in compliance with 400-4, “ASPHALT CONCRETE.”
8. No preparatory asphalt work shall be done when the atmospheric temperature is below 50 °F or during unsuitable weather.
9. Following the asphalt placement, the Contractor shall roll the entire area of new asphalt in both directions at least twice. The finished patch shall be level and smooth in compliance with 302-5.6.2 “Density and Smoothness.” After placement and compaction of the asphalt patch, the Contractor shall seal all finished edges with a 4” wide continuous band of SS-1H.
10. The minimum dimension for each individual repair shall be 4’ x 4’ and shall be subject to the following conditions:
  - a) If the base material is exposed to achieve the required minimum removal thickness, the base material shall be prepared conforming to 301-1, “SUBGRADE PREPARATION.”
  - b) When additional base material is required, then the contractor shall use Class 2 Aggregate Base in accordance with 200-2.2, “Crushed Aggregate

Base.” Recycled base material shall conform to Crushed Miscellaneous Base Material in accordance with 200-2.4, “Crushed Miscellaneous Base.”

- c) The Contractor may use grinding as a method for removal of deteriorated pavement when the areas indicated for removal are large enough (a minimum of the machine drum width) and when approved by the Engineer.
- d) For both scheduled and unscheduled base repairs, failed areas may be removed by milling or by excavation provided that the edges are cut cleanly with a saw. The areas shall be cleaned and tack coated in accordance with 302-5.4, “Tack Coat” before replacing the asphalt. The areas for scheduled repairs have been marked on the street.

### **302-3.1 Asphalt Patching.**

- 1. Asphalt patching shall consist of patching potholes, gutter-line erosion, and other low spots in the pavement that are deeper than ½” per 302-5.6.2, “Density and Smoothness.” These areas are generally smaller and more isolated than those areas in need of mill and pave.
- 2. The areas requiring patching have been identified in the Contract Documents, marked on the streets, or as directed by the Engineer. The Contractor shall identify any new areas that may require patching prior to slurry work to ensure the smoothness and quality of the finished product.
- 3. The Contractor shall identify and repair any areas that may require patching, prior to the placement of slurry seal for smooth finished product.
- 4. Asphalt overlay shall not be applied over deteriorated pavement. Preparatory asphalt work shall be completed and approved by the Engineer before proceeding with asphalt overlay.
- 5. The Contractor shall remove distressed asphalt pavement either by saw cutting or milling, to expose firm and unyielding pavement; prepare subgrade (as needed); and install compacted asphalt concrete pavement over compacted native material as directed by the Engineer.
- 6. Prior to replacing asphalt, the area shall be cleaned and tack coated per 302-5.4, “Tack Coat”.
- 7. Following the asphalt placement, the Contractor shall roll the entire patch in both directions covering the patch at least twice.
- 8. After placement and compaction of the asphalt patch, the Contractor shall seal all finished edges with a 4” wide continuous band of SS-1H.
- 9. Base repairs shall not exceed 20% RAP in content.

**302-3.2 Payment.**

1. Payment for replacement of existing pavement when required shall be included in the unit bid price for Asphalt Pavement repair for the total area replaced and no additional payment shall be made regardless of the number of replacements completed. No payment shall be made for areas of over excavation or outside trench areas in utility works unless previously approved by the Engineer. No payment for pavement replacement will be made when the damage is due to the Contractor's failure to protect existing improvements. The Contractor shall reimburse the City for the cost of retesting all failing compaction tests.
2. The areas and quantities shown on the road segments and in appendices are given only for the Contractor's aid in planning the Work and preparing Bids. The Engineer will designate the limits to be removed and these designated areas shall be considered to take precedent over the area shown in an Appendix to the Contract Documents. The quantities shown in the appendices are based on a street assessment survey and may vary.
3. At the end of each day, the Contractor shall submit to the Engineer an itemized list of the asphalt pavement repair work completed. The list shall include the location of the work and the exact square footage of the repair.
4. Preparatory repair work and tack coating will be paid at the Contract unit price per ton for Asphalt Pavement Repair. No payment shall be made for areas of over excavation unless previously approved by the Engineer.
5. Milling shall be included in the Bid item for Asphalt Pavement Repair unless separate Bid item has been provided.
6. Payment for miscellaneous asphalt patching shall be included in the Contract unit price for slurry and no additional payment shall be made therefore.

**302-5.1.1 Damaged AC Pavement Replacement.** To the City Supplement, DELETE in its entirety.

**302-5.1.2 Measurement and Payment.** To the City Supplement, DELETE in its entirety.

**SECTION 306 – UNDERGROUND CONDUIT CONSTRUCTION**

**306-1 OPEN TRENCH OPERATIONS.** To the City Supplements, CORRECT certain section numbering as follows:

<b>OLD SECTION NUMBER</b>	<b>TITLE</b>	<b>NEW SECTION NUMBER</b>
<b>306-1.8</b>	<b>House Connection Sewer (Laterals) and Cleanouts</b>	<b>306-1.9</b>
<b>306-1.7.1</b>	<b>Payment</b>	<b>306-1.9.1</b>
<b>306-1.7.2</b>	<b>Sewer Lateral with Private Replumbing</b>	<b>306-1.9.2</b>

<b>OLD SECTION NUMBER</b>	<b>TITLE</b>	<b>NEW SECTION NUMBER</b>
<b>306-1.7.2.1</b>	<b>location</b>	<b>306-1.9.2-1</b>
<b>306-1.7.2.2</b>	<b>Permits</b>	<b>306-1.9.2-2</b>
<b>306-1.7.2.3</b>	<b>Submittals</b>	<b>306-1.9.2-3</b>
<b>306-1.7.2.4</b>	<b>Trenchless Construction</b>	<b>306-1.9.2-4</b>
<b>306-1.7.2.5</b>	<b>Payment</b>	<b>306-1.9.2-5</b>
<b>306-1.7.3.6</b>	<b>Private Pump Installation</b>	<b>306-1.9.2-6</b>
<b>306-1.7.3.7</b>	<b>Payment</b>	<b>306-1.9.2-7</b>

**306-1.1.1 General.** ADD the following:

Build the Project in accordance with the water high lining phasing shown on the Plans and in phases as follows:

1. Phase I: Exchange Place from Prospect Place to Olivet Street
2. Phase II: Ivanhoe Avenue from Cave Street to Ivanhoe East Avenue

When installing pipelines within the City’s streets, for the following streets, the total time allowed for the completion of Work may not exceed 10 Working Days per 236’ of pipeline installation, including any manholes touching these segments:

1. Coast Boulevard from Station 32+56.03 to Station 34+91.11

**306-1.6 Basis of Payment for Open Trench Installations.** ADD the following:

Payment for imported backfill when the Contractor elects to import material from a source outside the project limits and when authorized by the Engineer shall be included in the Bid unit price for Imported Backfill. The price shall include the removal and disposal of unsuitable materials.

**306-1.6 Basis of Payment for Open Trench Installations.** To the City Supplement Item 1, DELETE in its entirety and SUBSTITUTE with the following:

1. The thrust blocks, restrained joints, or a combination of the aforementioned needed for each tee, wye, reducer, horizontal bend, and dead end for 16” mains, shall be included in the payment for the unit bid price of thrust blocks for 16” and larger water mains.

**306-1.9.2.4 Trenchless Construction.** To the City Supplement, ADD the following:

- f) Equipment shall be able to handle cobbles up to 12” in diameter.

**306-5.3 Payment.** To the City Supplement, ADD the following:

Unit bid price for abandonment of existing pressure regulating stations (PRS) shall include all excavation, removal and disposal of existing concrete vault and all

appurtenances within the existing vault to be abandoned. For abandonment of existing PRS, remove top 3' of vault. Use 1 sack slurry to fill the remaining vault.

**306-20.8 Carrier Pipe.** To the City Supplement, DELETE in its entirety and SUBSTITUTE with the following:

Carrier pipe materials shall be approved by the Engineer. The Contractor shall use only HDPE. The Contractor shall furnish and install a structurally sound, leak-proof, fusible high density polyethylene pipe, for all piping identified for installation by horizontal directional drilling. The Contractor shall be responsible for the sizing of the carrier pipe to withstand all installation forces, curvature, and residual forces and final in place loading. The selected material shall have an inside diameter no less than stated on the drawings. Individual pipe lengths shall be assembled by butt-fusion unless otherwise specified.

**ADD:  
306-23**

**PRESSURE REGULATING STATION (PRS).**

Pressure Regulating Station shall include pre-cast concrete vault, vault hatch, pressure reducing valves, all piping, valves and appurtenances, see the Pressure Regulating Station details on Sheet 35408-27-D through Sheet 35408-28-D and Sheet 35408-36-D through Sheet 35408-48-D.

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

STATION	VALVE ELEVATION	DOWNSTREAM HGL	UPSTREAM HGL
3+12.13 to 3+29.43	118	270	370
15+15 to 15+40	172	370	463

The Contractor shall saw-cut existing sidewalk and curb and gutter needed for PRS pit.

See Appendix “L” for additional requirements.

The lump sum price for the Pressure Regulating Station shall include full compensation for all materials and labor needed to complete installation per the Specifications, Standard Drawings, and Construction Plan, 35408-27-D through Sheet 35408-28-D and Sheet 35408-36-D through Sheet 35408-48-D. The PRS unit bid price is inclusive of removal, disposal and replacement of existing sidewalk, landscape and curb and gutter.

**SECTION 500 – PIPELINE**

**500-1.1.1 GENERAL.** To the City Supplement, (1) (a), ADD the following:

The felt and resin system shall be selected from those listed in the City’s approved material list.

**500-1.1.5 Video Inspection.** To the City Supplement, ADD the following:

During the pre-installation video the contractor must identify all existing protruding laterals with the existing main and trim them flush to the main prior to rehabilitation. The cost of trimming the existing laterals will be included in the pipe rehabilitation bid item.

**500-1.1.9 Measurement and Payment.** Third Paragraph, DELETE in its entirety.

**500-1.2.4 Sewer Bypassing and Dewatering.** DELETE in its entirety and SUBSTITUTE with the following:

When required by the Contract Documents or the process, the Contractor shall bypass the sewer flow around the Work and dewater the Site in conformance with 704, "SEWAGE SPILL PREVENTION" and 705-2.1, "General"

**500-1.6 SERVICE LATERALS.** To the City Supplement, DELETE in its entirety and SUBSTITUTE with the following:

**ADD:**  
**500-1.6 SERVICE LATERAL REHABILITATION.**

**500-1.6.1 General.**

- a) The rehabilitation shall be accomplished using a fabric or fiberglass tube of particular length and a thermoset resin with physical and chemical properties appropriate for the application without excavation and disturbing surface improvements. The tube is vacuum impregnated with the resin. Access to an upstream end of the service lateral is made by excavation in the public right of way. Installation of the resin-impregnated tube into the service lateral may be performed either by Type A inversion in accordance with ASTM F1216 or by Type B pull-in in accordance with ASTM F 1743, and may be performed from either the mainline or the excavated end of the lateral.
- b) The cured-in-place liner shall extend the entire length of the lateral from the access point to the mainline. The liner shall be extended sufficiently to create a water tight seal at the main and the liner interface. Once the tube or resin composite is cured, the installation equipment shall be removed and the protruding end in the collector shall be cut using a robotic cutting device. A sewer cleanout in accordance with the Standard Drawing SDS-102 "Sewer Lateral Cleanout (In Driveway, Paved Alley, Sidewalk, or Other Area Subject to Traffic)" or SDS-103 "Sewer Lateral Cleanout Outside Traveled Way" shall be installed at the access point and properly backfilled.
- c) The liner shall be extended sufficiently to create a water tight seal at the main and the liner interface.
- d) If there is a SLC in place, then the cured-in-place lateral liner shall have a minimum overlap of 2" over the previously installed SLC sewer main lateral connection.

**500-1.6.2 Material.**

- a) The tube shall consist of one or more layers of flexible needled felt, or an equivalent material. Where the tube is fabricated from non woven felt, the longitudinal and circumferential joints are made up by seal bonding. The tube shall be capable of conforming to bends, off-set joints, bells, and disfigured pipe sections. The resin and catalyst system as designed for the specific application shall meet the chemical resistance requirements of 210-2.3.3, "Chemical Resistance Test (Pickle Jar Test)."
- b) The composite of the materials above shall, upon installation inside the host pipe, shall exceed the minimum test standards specified in Table 500-1.4.2 (A).

**500-1.6.3 Installation Procedures (ASTM F1216-98 and ASTM F1743).**

- a) The Property Owner of the lateral being reconstructed shall be informed, and the flow stopped, for the period of reconstruction work.
- b) The Contractor shall excavate an access pit at the appropriate upstream point on the service lateral in accordance with the reconstruction length determined by the Engineer.
- c) The Contractor shall always clean and color video the lateral line immediately prior to reconstruction and determine the structural condition of the pipeline. Roots, debris, and protruding service connections shall be removed prior to reconstruction.
- d) The tube shall be inspected for torn or frayed sections. The tube in good condition shall then be vacuum impregnated with the thermoset resin.
- e) No open pans or uncontrolled open-air pouring of resin shall be allowed during tube saturation. Resin shall be contained within the inflation bladder during vacuum impregnation and insertion. The Contractor shall ensure that no public property is exposed to contamination by liquid resin compounds or components.
- f) The saturated tube along with the inflation bladder shall be inserted into the installation equipment and the end closed. The entire installation equipment shall be placed in the pipe access pit and aligned with the exposed end of the pipe.
- g) The resin and tube shall be completely protected during the placement. The resin shall not be contaminated or diluted by exposure to dirt, debris, or water during the placement.
- h) The tube shall be installed from the installation equipment by controlled air, water or steam pressure as in accordance with manufacturer instructions. The installation shall be stopped when the tube extends the entire length of the lateral section to be lined. The tube is held tightly in place against the wall of the host pipe by the pressure until the cure is complete.
- i) When the curing process is complete, the pressure is released and the inflation bladder reverted back into the installation equipment and removed from the pit.

- j) No barriers, coatings, or any material other than the cured tube or resin composite specifically designed for desirable physical and chemical resistance properties shall be left in the host pipe. Any materials used in the installation other than the cured tube or resin composite shall be removed.
- k) Any cured tube or resin composite pipe left protruding from the service connection shall be trimmed back using a hydraulic-powered robotic cutting device specifically designed for cutting cured-in-place pipe made from these materials.
- l) A second color video inspection shall be performed to verify the proper cure of the material, the proper trim of service connection, and the integrity of the seamless pipe.
- m) The bypass pumping system shall be removed and the sewer flows restored to normal flow conditions. The service lateral pipes shall be coupled together. The excavation shall be properly backfilled. The property owner of the service connection shall be informed when the Work is complete.

**500-1.6.4**     **Deviations.** If pre-installation inspection reveals conditions in the service lateral to be substantially different than those used in the design of wall thickness, tube construction, tube length, or resin system; then the Contractor shall correct the situation as approved by the Engineer.

**500-1.6.5**     **Acceptance.** Upon completion, the Contractor shall deliver the video records and written reports to the Engineer. The Engineer shall review the documentation and the Site to determine if the Work is complete and the work may be accepted.

**500-1.6.6**     **Payment.**

- a) Payment for the Work covered under 500-1.6, “Service Laterals Rehabilitation” shall be made per each lateral.
- b) The payment for the installation of a sewer cleanout at the access point and televising of the service laterals shall be included in the payment for lateral rehabilitation.
- c) Payment for in-situ point repairs shall be included in the bid price for in-situ point repairs and paid for in accordance with 500-1.1.9, “Measurement and Payment” and 500-1.2.7, “Payment.”

**500-1.7.10**    **Payment.** To the City Supplement, DELETE in its entirety.

**500-1.10.7**   **Payment.** To the City Supplement, DELETE in its entirety.

**500-1.13.10** **Payment.** To the City Supplement, DELETE in its entirety.

**500-4 SERVICE LATERAL CONNECTION SEALING.** DELETE in its entirety and SUBSTITUTE with the following:

**500-4 SERVICE LATERAL CONNECTION (SLC) SEALING.**

**500-4.1 General.**

1. SLC is the interface of the house sewer lateral with the main sewer. SLC to rehabilitated sanitary sewer lines shall be sealed, normally without excavation, by the installation of a resin-impregnated, flexible, felt tube or fiberglass tube installed into the existing service lateral. The tube shall form a “tee” section with a full lap inside the main pipe and shall extend continuously from the sewer main into the lateral for a minimum of 4”. SLC may be a combination of “tees” or “wyes” of varying angle. The resin shall be cured to form the tube into a hard impermeable pipe-within-a-pipe. When cured, the SLC shall seal the connection of the lateral to the mainline in a continuous tight-fitting, watertight pipe-within-a-pipe to eliminate any visible leakage between the lateral and mainline and shall provide a leak-proof seal designed for a minimum 50-year life to prevent root intrusion, infiltration, and exfiltration between a liner and a host pipe.
2. Prior to cleaning and pre-rehab video inspection, the Contractor shall submit a detailed operational plan for the proposed cleaning of all roots inside the pipe and around the service connection for the Engineer’s approval. After cleaning, the Contractor shall proceed with lining of the pipe and reinstating all live service connections. The service connection openings shall conform to the shape and the size of the inside diameter of the existing service connection. Contractor shall use a wire brush or other methods and equipment as recommended by other lining system providers, or other approved means and methods to provide a smooth opening for connecting the lateral to the newly lined pipeline.
3. The Contractor shall trim all protruding laterals which interfere with the lining installation, as flush with the pipe interior as practicable.

**500-4.2 Reference Specification.** This specification references ASTM test methods which are made a part hereof by such reference and shall be the latest edition and revision thereof and shall meet the chemical resistance requirements of section 210-2.3.3, “Chemical Resistance Test (Pickle Jar Test).”

**500-4.3 General Corrosion Requirements.**

- a) The finished SLC product shall be fabricated from materials which when cured shall be chemically resistant to withstand internal exposure to domestic sewage and shall meet the chemical resistance requirements of 210-2.3.3, “Chemical Resistance Test (Pickle Jar Test)” and Table 210-2.4.1 (A).
- b) The SLC product shall be compatible with the lining system materials utilized in the main sewer line.

**500-4.4 SLC Materials.**

- a) A flexible, felt tube shall be fabricated to neatly fit the internal circumference of the conduit specified by the City. Allowance shall be made for circumferential stretching during insertion.
- b) The SLC connection shall extend minimum 4” from the mainline into the lateral.
- c) The Contractor shall furnish a specially designed, unsaturated polyester or vinyl ester resin, and catalyst system compatible with the SLC process that provides cured physical strengths specified herein.

**500-4.5 Physical Properties.**

- a) The cured SLC shall conform to the minimum structural standards as listed in Table 500-1.4.2 (A).
- b) No cured-in-place pipe rehabilitation technology shall be allowed that requires bonding to the existing pipe for any part of its structural strength.
- c) Design methods are to be derived for various loading parameters and modes of failure. Equations shall be modified to include deformation in the shape of an oval as a design parameter. The design method shall be submitted to the Engineer for approval prior to the Pre-construction Meeting.

**500-4.6 Installation Preparation.**

- a) The Contractor shall remove internal debris out of the sewer line.
- b) Inspection of pipelines shall be performed by experienced personnel trained in locating breaks and obstacles by closed circuit television. The interior of the pipeline shall be carefully inspected to determine the location of any conditions which may prevent proper installation of the SLC into the pipelines, and it shall be noted so that these conditions can be corrected. A color video and suitable log shall be kept for later reference by the City.
- c) The Contractor, when required, shall provide for the flow of sewage around the section or sections of mainline pipe where the service lateral designated for SLC is located. The bypass shall be made by plugging the line at an existing upstream manhole and pumping the flow into a downstream manhole or adjacent system. The pump and bypass lines shall be of adequate capacity and size to handle the flow without service interruption. The bypass systems shall be approved in advance by the City.
- d) The service lateral shall be inactive during the time of installation.
- e) The Contractor shall clear the line of obstructions that prevent the insertion of the SLC material. If inspection reveals an obstruction that cannot be removed by conventional sewer cleaning equipment, the Contractor shall make an

external point repair excavation to uncover and remove the obstruction. The Contractor shall inform the Engineer prior to the commencement of the Work.

- f) The mainline pipe opening shall be prepared to accept the SLC and the mainline rehabilitated pipe shall be maximized to obtain the best possible connection.
- g) The transition from the mainline pipe to the service lateral shall be smooth and continuous to provide adequate support for the SLC during installation and cure.

**500-4.7 SLC Installation.**

- a) The resin impregnated tube shall be loaded inside a pressure apparatus. The pressure apparatus, attached to a robotic device, shall be positioned in the mainline pipe at the service connection. The robotic device, together with a television camera, shall be used to align the SLC repair with the service connection opening. Air pressure, supplied to the pressure apparatus through an air hose, shall be used to invert the resin impregnated SLC into the lateral pipe. The inversion pressure shall be adjusted to fully invert the SLC into the lateral pipe and hold the tube tight to the pipe wall. Care shall be taken during the curing process not to over-stress the tube.
- b) The pressure apparatus shall include a bladder which shall inflate in the mainline pipe, effectively seating the SLC repair against the service connection.
- c) After inversion or pull in is completed, recommended pressure is maintained on the impregnated tube for the duration of the curing process. Curing method shall be compatible with the resin selected. An ultraviolet (UV) light cured, heat cured or ambient cured resin system is typically used.
- d) The initial cure shall be deemed to be completed when the SLC has been exposed to the UV light, heat source or held in place for the time period specified by the manufacturer.
- e) The Contractor shall cool the hardened SLC before relieving the pressure in the pressure apparatus. Cool-down may be accomplished by the introduction of cool air into the pressure apparatus. Care shall be taken to maintain proper pressure throughout the cure and cool-down period.
- f) The finished SLC shall be free of dry spots, lifts and delamination. The lateral SLC shall not inhibit the closed circuit television post video inspection of the mainline or service lateral pipes. Frayed ends of the SLC repair shall be removed prior to acceptance.
- g) During the warranty period, any defects which shall affect the integrity of strength of the SLC shall be repaired at the Contractor's expense in a manner mutually agreed upon by the manufacturer, City, and the Contractor.

- h) After the Work is completed, the Contractor shall provide the City with a video disc showing the completed work including the restored conditions.

**500-4.8 Clean-Up.** Upon acceptance of the installation work, the Contractor shall reinstate the Site affected by its operations.

**500-4.9 Payment:** Payment for SLC sealing systems shall be made at the Contract Unit Price or lump sum price in the Bid for each SLC. The Contract Unit Price or lump sum price in the Bid shall include the installation of the SLC sealing system, surface preparation and repairs, preparation and tape submittal of all pre- and post-construction CCTV inspection, bypassing if required, and testing, unless otherwise specified in the Special Provisions.

#### **SECTION 600 – WORK INVOLVING THE CITY FORCES**

**600-1.2.1.2 Transferring Services and Highline Removal by Contractor.** To the City Supplement, DELETE the first paragraph (a), and SUBSTITUTE with the following:

When directed by the Engineer the Contractor shall transfer the water services and remove the high-line materials. The Contractor will pickup and deliver all the City high-line materials to Water Operations Division at: Chollas Station, 2797 Caminito Chollas, San Diego, CA 92105

#### **SECTION 700 – EXTENDED REVEGETATION, MAINTENANCE, AND MONITORING**

**700-1.7.2 Project Biologist.** To the City Supplement, DELETE in its entirety

#### **SECTION 705 – WATER DISCHARGES**

**705-2.6.3 Community Health and Safety Plan.** To the City Supplements, DELETE in its entirety and SUBSTITUTE with the following:

**705-2.6.3 Community Health and Safety Plan.** See 703-2, “Community Health and Safety Plan.”

**705-2.6.1 General.** Paragraph (3), CORRECT reference to Section 803 to read “Section 703.”

#### **SECTION 707 – RESOURCE DISCOVERIES**

##### **ADD:**

**707-1.1 Environmental Document.** The City of San Diego Environmental Analysis Section (EAS) of the Development Services Department has prepared Mitigated Negative Declaration (MND) for Sewer and Water Group 820, Project No. 227680, as referenced in the Contract Appendix. You must comply with all requirements of the Mitigated Negative Declaration as set forth in the Contract Appendix A.

Compliance with the City’s environmental document is included in the various Bid items, unless a bid item has been provided.

#### **END OF SUPPLEMENTARY SPECIAL PROVISIONS (SSP)**

**SUPPLEMENTARY SPECIAL PROVISIONS**

**APPENDICES**

**APPENDIX A**

**Mitigated Negative Declaration**



## MITIGATED NEGATIVE DECLARATION

Project No. 227680  
SCH# N/A

**SUBJECT:** Sewer and Water Group 820: CITY COUNCIL APPROVAL to replace approximately 12,045 linear feet (LF) or (2.28 miles) of sewer and water main pipes. The project would replace 8,815 LF of existing 8-inch to 12-inch vitrified clay (VC) sewer pipes with 8-inch to 15-inch polyvinyl chloride (PVC) pipe, as well as replacement of 3,230 LF of existing 10-inch cast iron (CI) water pipes with 12-inch PVC pipes. A majority of the sewer pipes is replaced in place 4,257 LF (3 to 23 feet deep) in the same trench at the same or shallower depth. The remaining 4,558 LF consists of the installation of 2,237 LF of sewer main deeper than existing (3-20 feet deep) and 2,321 LF of new trench (3-23 feet deep), and 2,061 LF of water main replacement in place in the same trench at the same or shallower depth (3-5 feet deep). In addition, 664 LF of existing 16-inch CI water main on Exchange Place from Torrey Pines Road to Olivet Street would be replaced with the relocation of two below ground pressure reducing stations approximately 9 feet by 15 feet each to be moved from the existing location at Exchange Place and Torrey Pines Road, and installation of two 2-foot by 2-foot above ground telemetry and two 2-foot by 4-foot above ground electric meter for telemetry in order to meet hydraulic standards. An approximately 708 LF of existing 10-in CI water main on Exchange Place has already been abandoned and a portion of the abandoned 10-in CI water main would be replaced with 12-in pipe as needed. It is expected that a parallel line and new trench would be installed along this entire segment in order to complete the work and once complete the line would be abandoned in place. 826 LF of sewer main would be abandoned in place within the bluff edge (Coast Walk area), with slurry pumped in using hose extensions or similar manual method only. There would be no equipment accessing the area, nor would there be any types of grading or soil disturbance in this area of Coast Walk. All trenching work would be by conventional excavation (open trench) method, with some lateral work to be done using trenchless technology (directional drilling or similar) with smaller receiving and launch pits. Related work would also include replacement and re-installation of manholes, valves, new or re-plumb of sewer laterals, new water services, curb ramps, fire hydrants, and other appurtenances, including traffic control during construction, as well as street repair and resurfacing. Construction of the project would affect portions and the general vicinity of the following streets and areas: Coast Boulevard, Prospect Place, Ivanhoe Avenue, Exchange Place, Park Row, Cave Street, Coast Walk and Torrey Pines Road in the La Jolla Community Plan Area in the City and County of San Diego, California. This site is not included on any government code listings of hazardous waste sites.

**Applicant:** City of San Diego, Engineering and Capital Projects Department, Right-of-

Way Design Division. Contact: Michael Ninh

- 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 effect in the following areas(s): HISTORICAL RESOURCES (ARCHAEOLOGY) AND PALEONTOLOGICAL RESOURCES. The project proposal requires the implementation of specific mitigation identified in Section V of this Mitigated Negative Declaration (MND). The project as presented avoids or mitigates the potentially significant environmental effects identified, and the preparation of an Environmental Impact Report (EIR) would not be required.

- IV. DOCUMENTATION:

The attached Initial Study documents the reasons to support the above Determination.

- V. MITIGATION, MONITORING AND REPORTING PROGRAM:

**A. GENERAL REQUIREMENTS – PART I**

**Plan Check Phase (prior to permit issuance)**

1. Prior to the issuance Bid Opening/Bid Award 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 have been incorporated.
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.

**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:

**Archaeologist, Native American Monitor, and Paleontologist**

**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) 227680, shall conform to the mitigation requirements contained in the associated Environmental Document and implemented to the satisfaction of the DSD's ED, 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 that any other agency requirements or permits have been obtained or are in process 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.

*Not Applicable for this project.*

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.

- 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>Associated Inspection/Approvals/Note</i>
General	Consultant Qualification Letters meeting	Prior to Pre-construction
General	Consultant Const. Monitoring	Prior to or at the Pre-Construction meeting
Archaeology	Archaeology Reports	Archaeology observation
Paleontology	Paleontology Reports	Paleontology observation
Final MMRP		Final MMRP Inspection

**HISTORICAL RESOURCES (ARCHAEOLOGY)**

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

**A. Entitlements Plan Check**

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

**B. Letters of Qualification have been submitted to ADD**

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

**II. Prior to Start of Construction**

**A. Verification of Records Search**

1. The PI shall provide verification to MMC that a site specific records search (1/4 mile radius) has been completed. Verification includes, but is not limited to a copy of a confirmation letter from South Coastal Information Center, or, if the search was in-house, a letter of verification from the PI stating that the search was completed.

2. The letter shall introduce any pertinent information concerning expectations and probabilities of discovery during trenching and/or grading activities.
  3. The PI may submit a detailed letter to MMC requesting a reduction to the ¼ mile radius.
- B. PI Shall Attend Precon Meetings
1. Prior to beginning any work that requires monitoring; the Applicant shall arrange a Precon Meeting that shall include the PI, Native American consultant/monitor (where Native American resources may be impacted), Construction Manager (CM) and/or Grading Contractor, Resident Engineer (RE), Building Inspector (BI), if appropriate, and MMC. The qualified Archaeologist and Native American Monitor shall attend any grading/excavation related Precon Meetings to make comments and/or suggestions concerning the Archaeological Monitoring program with the Construction Manager and/or Grading Contractor.
    - a. If the PI is unable to attend the Precon Meeting, the Applicant shall schedule a focused Precon Meeting with MMC, the PI, RE, CM or BI, if appropriate, prior to the start of any work that requires monitoring.
  2. Acknowledgement of Responsibility for Curation (CIP or Other Public Projects)  
The applicant shall submit a letter to MMC acknowledging their responsibility for the cost of curation associated with all phases of the archaeological monitoring program.
  3. Identify Areas to be Monitored
    - a. Prior to the start of any work that requires monitoring, the PI shall submit an Archaeological Monitoring Exhibit (AME) (with verification that the AME has been reviewed and approved by the Native American consultant/monitor when Native American resources may be impacted) based on the appropriate construction documents (reduced to 11x17) to MMC identifying the areas to be monitored including the delineation of grading/excavation limits.
    - b. The AME shall be based on the results of a site specific records search as well as information regarding the age of existing pipelines, laterals and associated appurtenances and/or any known soil conditions (native or formation).
    - c. MMC shall notify the PI that the AME has been approved.
  4. When Monitoring Will Occur
    - a. Prior to the start of any work, the PI shall also submit a construction schedule to MMC through the RE indicating when and where monitoring will occur.
    - b. The PI may submit a detailed letter to MMC prior to the start of work or during construction requesting a modification to the monitoring program. This request shall be based on relevant information such as review of final construction documents which indicate conditions such as age of existing pipe to be replaced, depth of excavation and/or site graded to bedrock, etc., which may reduce or increase the potential for resources to be present.
  5. Approval of AME and Construction Schedule  
After approval of the AME by MMC, the PI shall submit to MMC written authorization of the AME and Construction Schedule from the CM.

### III. During Construction

- A. Monitor Shall be Present During Grading/Excavation/Trenching
1. The Archaeological Monitor shall be present full-time during all soil disturbing and grading/excavation/trenching activities which could result in impacts to archaeological resources as identified on the AME. **The Construction Manager is**

**responsible for notifying the RE, PI, and MMC of changes to any construction activities such as in the case of a potential safety concern within the area being monitored. In certain circumstances OSHA safety requirements may necessitate modification of the AME.**

2. The Native American consultant/monitor shall determine the extent of their presence during soil disturbing and grading/excavation/trenching activities based on the AME and provide that information to the PI and MMC. If prehistoric resources are encountered during the Native American consultant/monitor's absence, work shall stop and the Discovery Notification Process detailed in Section III.B-C and IV.A-D shall commence.
  3. The PI may submit a detailed letter to MMC during construction requesting a modification to the monitoring program when a field condition such as modern disturbance post-dating the previous grading/trenching activities, presence of fossil formations, or when native soils are encountered that may reduce or increase the potential for resources to be present.
  4. The archaeological and Native American consultant/monitor shall document field activity via the Consultant Site Visit Record (CSVSR). The CSVSR's shall be faxed by the CM to the RE the first day of monitoring, the last day of monitoring, monthly (**Notification of Monitoring Completion**), and in the case of ANY discoveries. The RE shall forward copies to MMC.
- B. Discovery Notification Process
1. In the event of a discovery, the Archaeological Monitor shall direct the contractor to temporarily divert all soil disturbing activities, including but not limited to digging, trenching, excavating or grading activities in the area of discovery and in the area reasonably suspected to overlay adjacent resources and immediately notify the RE or BI, as appropriate.
  2. The Monitor shall immediately notify the PI (unless Monitor is the PI) of the discovery.
  3. The PI shall immediately notify MMC by phone of the discovery, and shall also submit written documentation to MMC within 24 hours by fax or email with photos of the resource in context, if possible.
  4. No soil shall be exported off-site until a determination can be made regarding the significance of the resource specifically if Native American resources are encountered.
- C. Determination of Significance
1. The PI and Native American consultant/monitor, where Native American resources are discovered shall evaluate the significance of the resource. If Human Remains are involved, follow protocol in Section IV below.
    - a. The PI shall immediately notify MMC by phone to discuss significance determination and shall also submit a letter to MMC indicating whether additional mitigation is required.
    - b. If the resource is significant, the PI shall submit an Archaeological Data Recovery Program (ADRP) and obtain written approval of the program from MMC, CM and RE. ADRP and any mitigation must be approved by MMC, RE and/or CM before ground disturbing activities in the area of discovery will be allowed to resume. **Note: If a unique archaeological site is also an historical resource as defined in CEQA Section 15064.5, then the limits on the amount(s) that a project applicant may be required to pay to cover**

**mitigation costs as indicated in CEQA Section 21083.2 shall not apply.**

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

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

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

#### **IV. Discovery of Human Remains**

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

##### **A. Notification**

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

- in the Environmental Analysis Section (EAS) of the Development Services Department to assist with the discovery notification process.
2. The PI shall notify the Medical Examiner after consultation with the RE, either in person or via telephone.
- B. Isolate discovery site
1. Work shall be directed away from the location of the discovery and any nearby area reasonably suspected to overlay adjacent human remains until a determination can be made by the Medical Examiner in consultation with the PI concerning the provenience of the remains.
  2. The Medical Examiner, in consultation with the PI, will determine the need for a field examination to determine the provenience.
  3. If a field examination is not warranted, the Medical Examiner will determine with input from the PI, if the remains are or are most likely to be of Native American origin.
- C. If Human Remains **ARE** determined to be Native American
1. The Medical Examiner will notify the Native American Heritage Commission (NAHC) within 24 hours. By law, **ONLY** the Medical Examiner can make this call.
  2. NAHC will immediately identify the person or persons determined to be the Most Likely Descendent (MLD) and provide contact information.
  3. The MLD will contact the PI within 24 hours or sooner after the Medical Examiner has completed coordination, to begin the consultation process in accordance with CEQA Section 15064.5(e), the California Public Resources and Health & Safety Codes.
  4. The MLD will have 48 hours to make recommendations to the property owner or representative, for the treatment or disposition with proper dignity, of the human remains and associated grave goods.
  5. Disposition of Native American Human Remains will be determined between the MLD and the PI, and, if:
    - a. The NAHC is unable to identify the MLD, OR the MLD failed to make a recommendation within 48 hours after being notified by the Commission, OR;
    - b. The landowner or authorized representative rejects the recommendation of the MLD and mediation in accordance with PRC 5097.94 (k) by the NAHC fails to provide measures acceptable to the landowner, THEN
    - c. To protect these sites, the landowner shall do one or more of the following:
      - (1) Record the site with the NAHC;
      - (2) Record an open space or conservation easement; or
      - (3) Record a document with the County.
    - d. Upon the discovery of multiple Native American human remains during a ground disturbing land development activity, the landowner may agree that additional conferral with descendants is necessary to consider culturally appropriate treatment of multiple Native American human remains. Culturally appropriate treatment of such a discovery may be ascertained from review of the site utilizing cultural and archaeological standards. Where the parties are unable to agree on the appropriate treatment measures the human remains and 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.

## **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 (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 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 can not 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 precon meeting.
  2. The following procedures shall be followed.
    - a. No Discoveries  
In the event that no discoveries were encountered during night and/or weekend work, The PI shall record the information on the CSV and submit to MMC via 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.

## VI. PUBLIC REVIEW DISTRIBUTION:

Draft copies or notice of this Mitigated Negative Declaration were distributed to:

### City of San Diego:

Councilmember Lightner, District 1

Myra Herrmann, Senior Environmental Planner (MS 501)

Helene Deisher, Development Project Manager (MS 501)

Roman Anissi, Engineering and Capital Projects (MS 908A)

Michael Ninh, Engineering and Capital Projects (MS 908A)

Central Library (MS 17)

La Jolla/Riford Branch Library (81L)

Historical Resources Board (87)

### Other

San Diego Transit Corporation (112)

San Diego Gas and Electric (SDGE) (114)

San Diego Unified School District (125)

San Diego City Schools (132)

Carmen Lucas (206)

South Coastal Information Center @ San Diego University (210)

San Diego Archaeological Center (212)

Save Our Heritage Organization (214)

Ron Christman (215)

Louis Guassac (215A)

Clint Linton (215B)

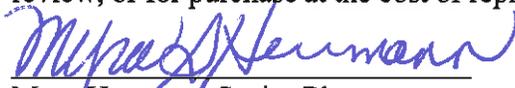
San Diego County Archaeological Society (218)

Kumeyaay Cultural Repatriation Committee (225)  
Native American Distribution (225A-R Public Notice only)  
La Jolla Village News (271)  
La Jolla Town Council (273)  
La Jolla Historical Society (274)  
La Jolla Community Planning Association (275)  
Milton Phegley (277)  
La Jolla Light (280)  
La Jollans for Responsible Planning (282)  
Patricia K. Miller (283)

VII. RESULTS OF PUBLIC REVIEW:

- ( ) No comments were received during the public input period.
- ( ) 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.
- (x) Comments addressing the findings of the draft Mitigated 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**, the Mitigation, Monitoring and Reporting Program and any Initial Study material are available in the office of the Entitlements Division for review, or for purchase at the cost of reproduction.

  
Myra Hermann, Senior Planner  
Development Services Department

July 22, 2011  
Date of Draft Report

Analyst: J. Szymanski  
P. Lizzi

August 17, 2011  
Date of Final Report

Attachments:  
Figure 1  
Initial Study Checklist

**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>
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	<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>
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	<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>
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	<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>
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7. **FEE AND DEPOSIT SCHEDULES**

7.1 **Fees and Deposit Schedules:** The fees and deposits, as listed in the Rate Book of Fees and Charges, on file with the Office of the City Clerk, are based on actual reimbursement of costs of services performed, equipment and materials. These deposits and fees will be amended, as needed, based on actual costs. Deposits, will be refunded at the end of the use of the fire hydrant meter, upon return of equipment in good working condition and all outstanding balances on account are paid. Deposits can also be used to cover outstanding balances.

All fees for equipment, installation, testing, relocation and other costs related to this program are subject to change without prior notification. The Mayor and Council will be notified of any future changes.

8. **UNAUTHORIZED USE OF WATER FROM A HYDRANT**

8.1 Use of water from any fire hydrant without a properly issued and installed fire hydrant meter is theft of City property. Customers who use water for unauthorized purposes or without a City of San Diego issued meter will be prosecuted.

8.2 If any unauthorized connection, disconnection or relocation of a fire hydrant meter, or other connection device is made by anyone other than authorized Water Department personnel, the person making the connection will be prosecuted for a violation of San Diego Municipal Code, Section 67.15. In the case of a second offense, the customer's fire hydrant meter shall be confiscated and/or the deposit will be forfeited.

8.3 Unauthorized water use shall be billed to the responsible party. Water use charges shall be based on meter readings, or estimates when meter readings are not available.

8.4 In case of unauthorized water use, the customer shall be billed for all applicable charges as if proper authorization for the water use had been obtained, including but not limited to bi-monthly service charges, installation charges and removal charges.

<b>CITY OF SAN DIEGO CALIFORNIA DEPARTMENT INSTRUCTIONS</b>	<b>NUMBER DI 55.27</b>	<b>DEPARTMENT Water Department</b>
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	<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).

**Larry Gardner  
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>	<u>T.B.</u>	<u>G.B. (CITY USE)</u>
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:	
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			

<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**

City of San Diego, Field Engineering Div., 9485 Aero Drive, SD CA 92123						Contractor's Name:					
Project Name:						Contractor's Address:					
SAP No. (WBS/IO/CC):											
City Purchase Order No. :						Contractor's Phone #:			Invoice No.		
Resident Engineer (RE):						Contractor's Fax #:			Invoice Date:		
RE Phone#:			RE Fax#:			Contact Name:			Billing Period:		
Item #	Item Description	Contract Authorization				Previous Estimate		This Estimate		Totals to Date	
		Unit	Qty	Price	Extension	%/QTY	Amount	% / QTY	Amount	% / QTY	Amount
1	2 Parallel 4" PVC C900	LF	1,380	\$34.00	\$46,920.00						
2	48" Primary Steel Casing	LF	500	\$1,000.00	\$500,000.00						
3	2 Parallel 12" Secondary Steel	LF	1,120	\$53.00	\$59,360.00						
4	Construction and Rehab of PS 49	LS	1	\$150,000.00	\$150,000.00						
5	Demo	LS	1	\$14,000.00	\$14,000.00						
6	Install 6' High Chain Link Fence	LS	1	\$5,600.00	\$5,600.00						
7	General Site Restoration	LS	1	\$3,700.00	\$3,700.00						
8	10" Gravity Sewer	LF	10	\$292.00	\$2,920.00						
9	4" Blow Off Valves	EA	2	\$9,800.00	\$19,600.00						
10	Bonds	LS	1	\$16,000.00	\$16,000.00						
11	Field Orders	AL	1	80,000	\$80,000.00						
11.1	Field Order 1	LS	5,500	\$1.00	\$5,500.00						
11.2	Field Order 2	LS	7,500	\$1.00	\$7,500.00						
11.3	Field Order 3	LS	10,000	\$1.00	\$10,000.00						
11.4	Field Order 4	LS	6,500	\$1.00	\$6,500.00						
12	Certified Payroll	LS	1	\$1,400.00	\$1,400.00						
<b>CHANGE ORDERS</b>											
Change Order 1			4,890								
Items 1-4					\$11,250.00						
Item 5-Deduct Bid Item 3		LF	120	-\$53.00	(\$6,360.00)						
Change Order 2			160,480								
Items 1-3					\$95,000.00						
Item 4 Deduct Bid Item 1		LF	380	-\$340.00	(\$12,920.00)						
Item 5-Encrease bid Item 9		LF	8	\$9,800.00	\$78,400.00						
Change Order 3 (Close Out)			-121,500								
Item 1 Deduct Bid Item 3			53	-500.00	(\$26,500.00)						
Item 2 Deduct Bid Item 4		LS	-1	45,000.00	(\$45,000.00)						
Items 3-9			1	-50,500.00	(\$50,500.00)						
<b>SUMMARY</b>								Total This	\$ -	Total Billed	\$0.00
A. Original Contract Amount						<b>Retention and/or Escrow Payment Schedule</b>					
B. Approved Change Order 1 Thru 3						Total Retention Required as of this billing					
C. Total Authorized Amount (A+B)						Previous Retention Withheld in PO or in Escrow					
D. Total Billed to Date						Add'l Amt to Withhold in PO/Transfer in Escrow:					
E. Less Total Retention (5% of D)						Amt to Release to Contractor from PO/Escrow:					
F. Less Total Previous Payments											
G. Payment Due Less Retention						Contractor Signature and Date:					
H. Remaining Authorized Amount											

**APPENDIX E**

**Location Map**

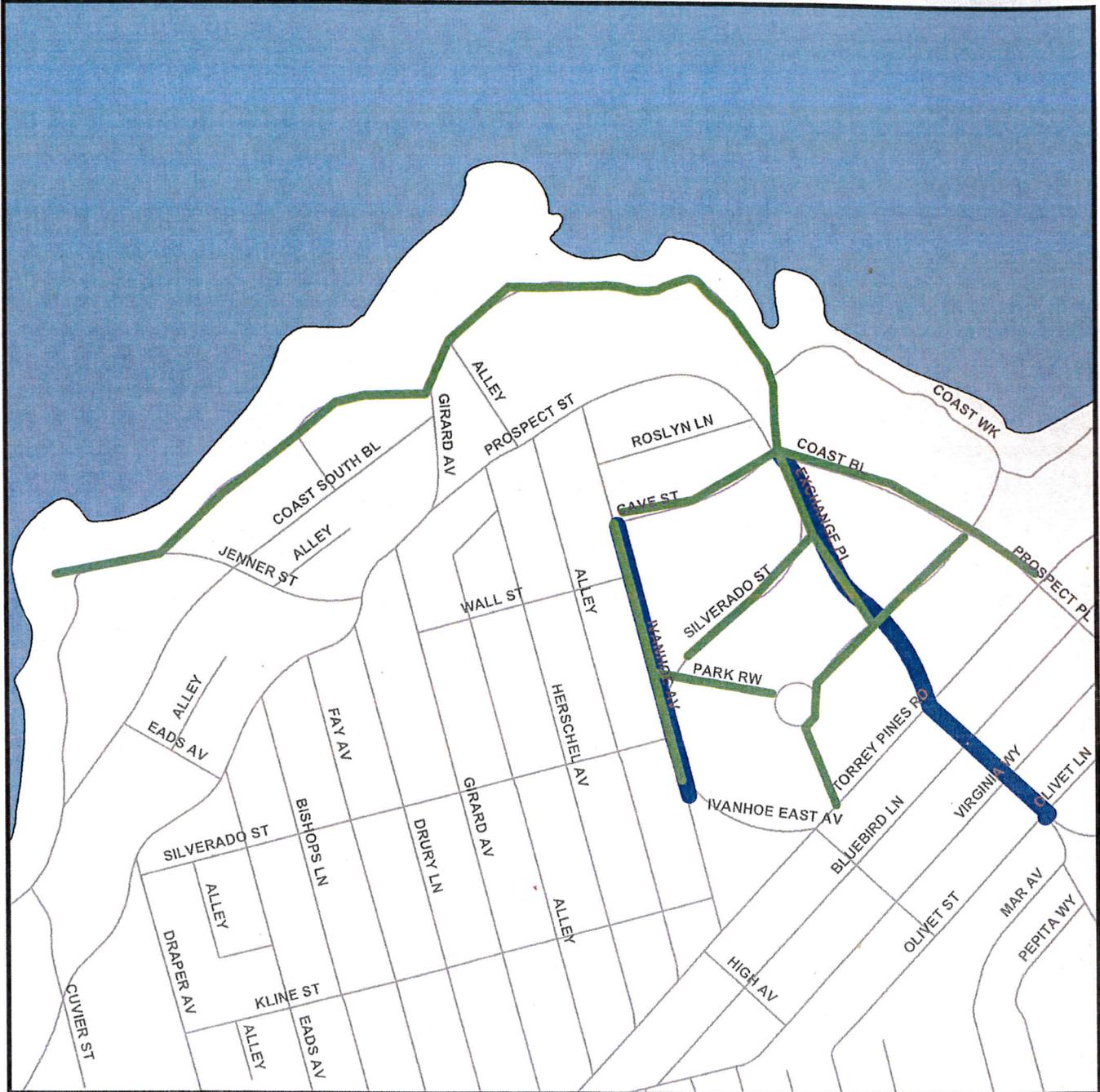
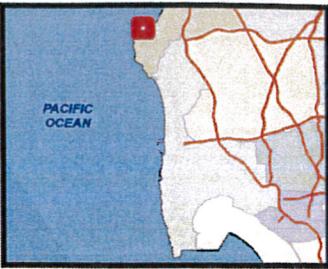
# SEWER AND WATER REPLACEMENT GROUP 820

SENIOR ENGINEER  
WENDY GAMBOA  
619-235-1971

PROJECT MANAGER  
MICHAEL NINH  
619-533-7443

PROJECT ENGINEER  
MERYL JIMENEZ  
619-235-1977

CONSTRUCTION PROJECT  
INFORMATION LINE  
619-533-4207



## Legend

- SEWER MAIN REPLACEMENT
- WATER MAIN REPLACEMENT



COMMUNITY NAME:  
LA JOLLA (38)

COUNCIL DISTRICT: 1

SAP ID: B00382 (S) \\  
B00110 (W)

Date: October 11, 2012



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**APPENDIX F**  
**Adjacent Projects**

# Torrey Pines Roadway Improvements Phase I

SENIOR ENGINEER  
Brad Johnson  
619-533-5120

PROJECT MANAGER  
David Li  
619-533-5164

PROJECT ENGINEER  
Marc Pirazzini  
619-533-5236

CONSTRUCTION PROJECT  
INFORMATION LINE  
619-533-4207



Right of Way Design Division



Improvements are at various locations along Torrey Pines Rd between Prospect Pl to La Jolla Shores Dr.



## Legend



COMMUNITY NAME:  
La Jolla

COUNCIL DISTRICT: 1

SAP ID: S-00613

Date: March 22, 2013



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# LA JOLLA COVE STATION

SENIOR ENGINEER  
ELIF CETIN  
(619) 533-4640

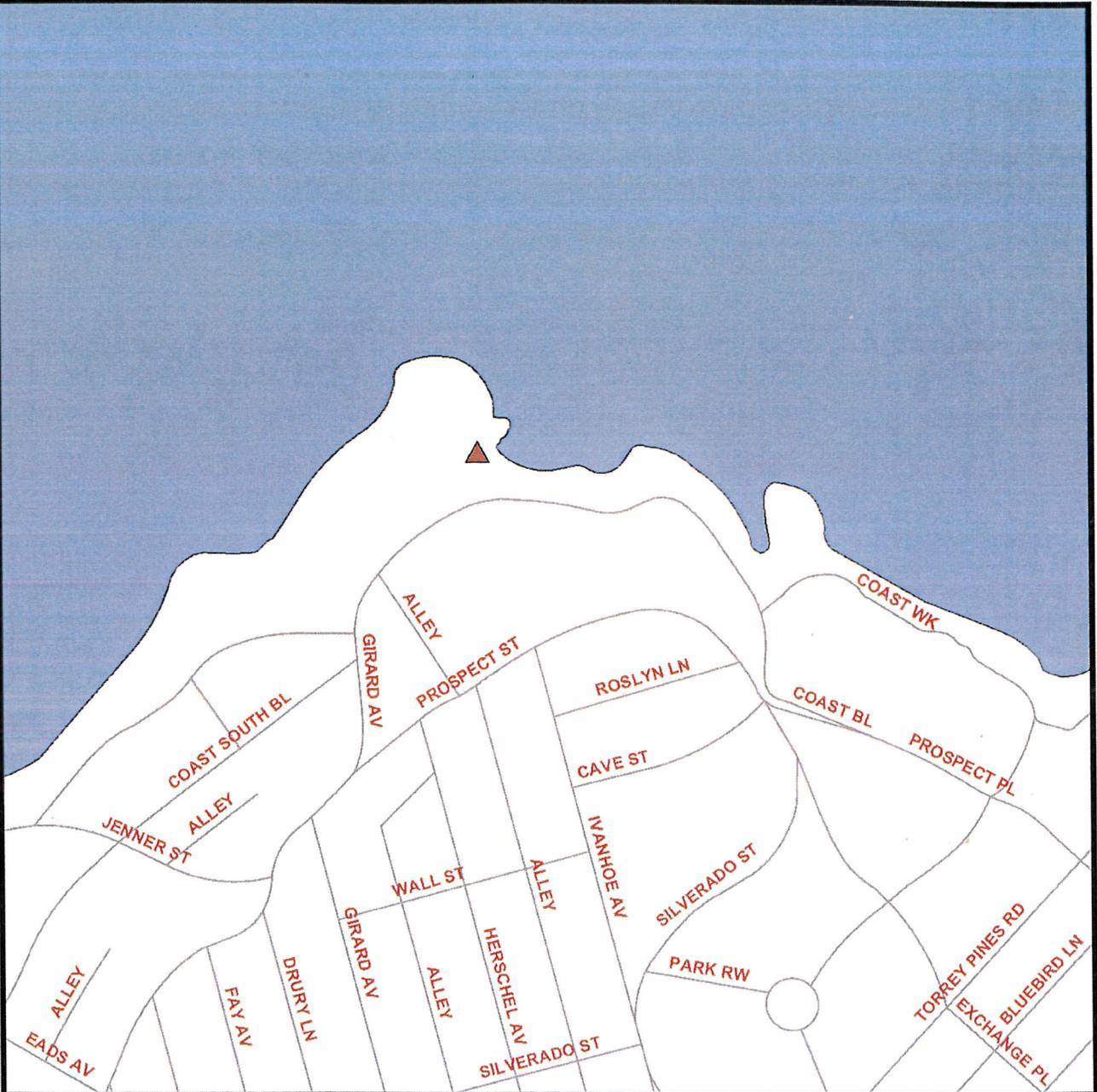
PROJECT MANAGER  
JIHAD SLEIMAN  
(619) 533-7532

PROJECT ENGINEER  
JIHAD SLEIMAN  
(619) 533-7532

PUBLIC INFORMATION OFFICER  
(619) 533-4207



Architectural Engineering and  
Parks Division



## Legend

▲ S00792, LA JOLLA COVE STATION



COMM. NAME: LA JOLLA

COUNCIL DISTRICT: 1

SAP ID: S00792



Date: August 15, 2011

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## CHILDREN'S POOL LIFEGUARD STATION & REST

SENIOR ENGINEER  
ELIF CETIN  
(619) 533-4640

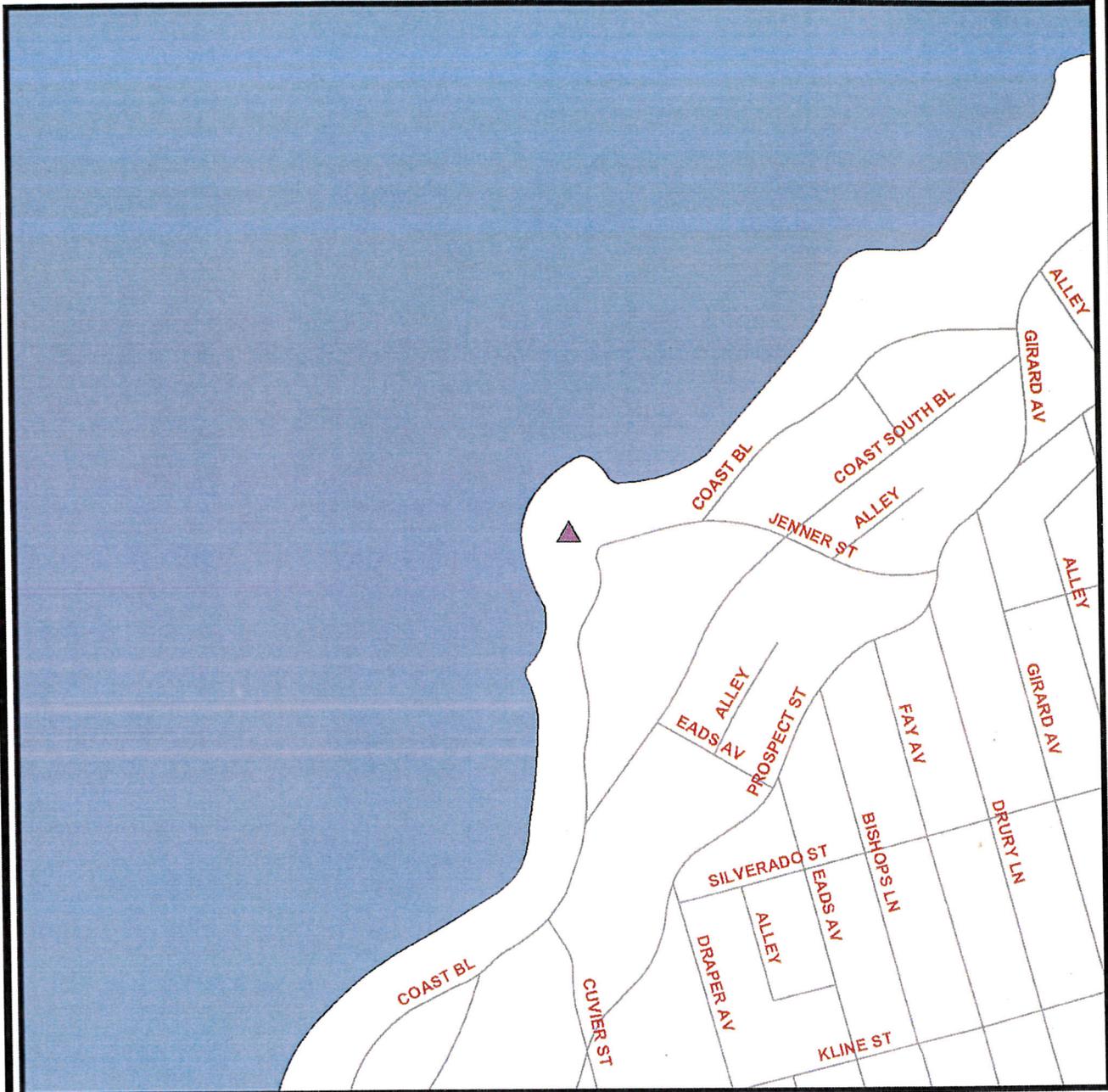
PROJECT ENGINEER  
JIHAD SLEIMAN  
(619) 533-7532

PROJECT MANAGER  
JIHAD SLEIMAN  
(619) 533-7532

PUBLIC INFORMATION OFFICER  
(619) 533-4207

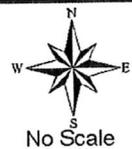


Architectural Engineering and  
Parks Division



### Legend

▲ S00644, CHILDREN'S POOL LIFEGUARD STATION & REST



COMM. NAME: LA JOLLA

COUNCIL DISTRICT: 1

SAP ID: S00644



Date: August 15, 2011

**APPENDIX G**

**Hydrostatic Discharge Form**

## APPENDIX

### Hydrostatic Discharge Requirements Certification (Discharge Events < 500,000 gpd)

All discharge activities related to this project comply with the Regional Water Quality Control Board (RWQCB) Order No. 2002-0020, General Permit for Discharges of Hydrostatic Test Water and Potable Water to Surface Water and Storm Drains as referenced by ([http://www.swrcb.ca.gov/rwqcb9/board\\_decisions/adopted\\_orders/2002/2002\\_0020.shtml](http://www.swrcb.ca.gov/rwqcb9/board_decisions/adopted_orders/2002/2002_0020.shtml)), and as follows:

Discharged water has been dechlorinated to below <b>0.1 (mg/l)</b> level; and effluent has been maintained between <b>6 and 9 (PH)</b> based on:							<i>is discharge within acceptable limits?</i>		<i>Comment</i>
Event #	Discharge Date & Amount (GAL)	Discharge Time	Meter Readings (at source)	Test Results (Chlorine / PH)	Name of Personnel Conducting Tests (print)	*signature of personnel	yes	no	
	Date	Start:	Start:						
	Amt:	End:	End:						
	Date	Start:	Start:						
	Amt:	End:	End:						
	Date	Start:	Start:						
	Amt:	End:	End:						
	Date	Start:	Start:						
	Amt:	End:	End:						
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	Date	Start:	Start:						
	Amt:	End:	End:						

*\*By signing, I certify that all of the statements and conditions for hydrostatic discharge events are correct.*

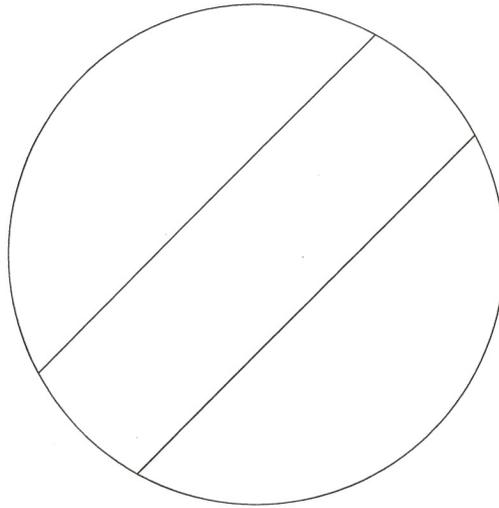
**Project Name:** \_\_\_\_\_

**Work Order No.(s):** \_\_\_\_\_

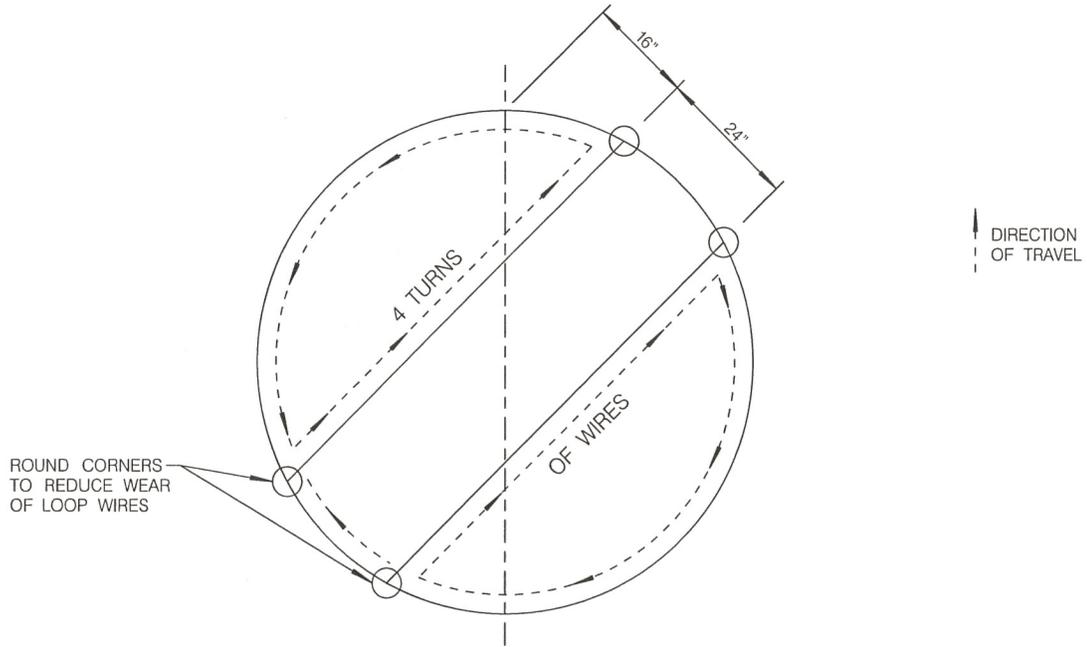
Have any thresholds have been exceeded? Per Order No. 2002-0020, would this be a reportable discharge and must be reported **within 24 hours** of the event? [Reportable discharge would include violation of maximum gallons per day, any upset which exceeds any effluent limit]

## **APPENDIX H**

### **Preformed Loop Construction**



PLAN DRAWING SYMBOL



ROUND CORNERS TO REDUCE WEAR OF LOOP WIRES

SAWCUT & WINDING DETAIL

NOTES:

1. LOOP DIAMETER = 6' TYP
2. DEPTH OF CUT = 3 1/8" MIN
3. NO LOOPS SHALL BE CUT INTO BRIDGE DECKS

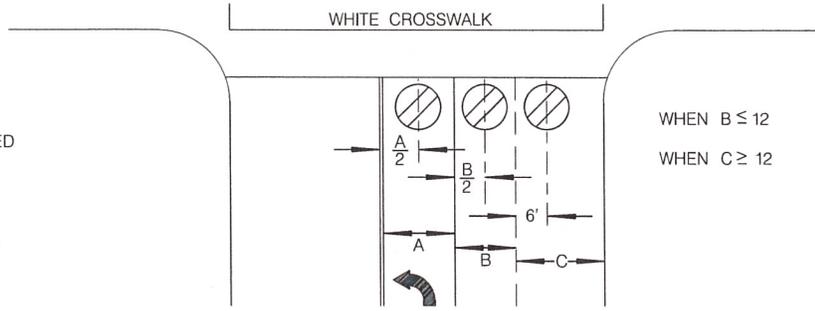
MODIFIED TYPE E LIMIT LINE / CROSSWALK DETECTOR

SHEET 1 OF 2

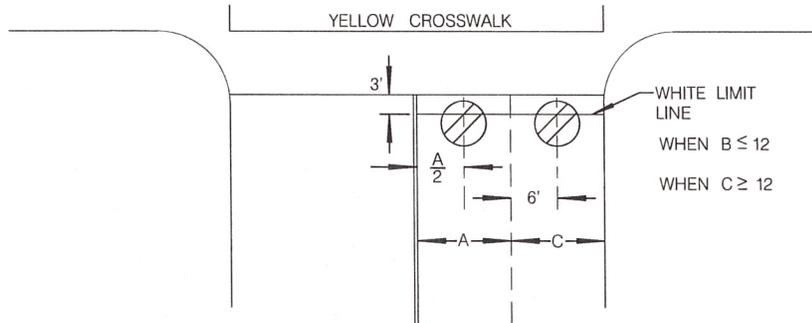
REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO - STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE	
ORIGINAL	KA	J. NAGELVOORT	01/12		<i>J. Nagelvoort</i>	12/17/2012
UPDATE	KA	J. NAGELVOORT	12/12	<b>TYPE E MODIFIED LOOP</b>	COORDINATOR R.C.E. 65271 DATE	
					DRAWING NUMBER	<b>SDE-104</b>

NOTES:

1. ALL FRONT LOOPS SHALL BE MODIFIED TYPE "E" LOOPS
2. FRONT LOOPS, SHALL BE INSTALLED IN FRONT OF THE LIMIT LINE OR CROSSWALK ACTING AS A LIMIT LINE



CASE "1"



CASE "2"

FRONT LOOP REPLACEMENT

SHEET 2 OF 2

REVISION	BY	APPROVED	DATE
ORIGINAL	KA	J. NAGELVOORT	01/12
UPDATE	KA	J. NAGELVOORT	12/12

CITY OF SAN DIEGO - STANDARD DRAWING

RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE

*R. Hadi*

12/17/2012

COORDINATOR R.C.E. 65271 DATE

**TYPE E MODIFIED LOOP**

DRAWING NUMBER

**SDE-104**

## **APPENDIX I**

### **Sewer Mains and Manhole Rehabilitation Sample Data Templates**





**APPENDIX J**

**Sample Archaeology Invoice**

**(FOR ARCHAEOLOGY ONLY)**

**Company Name**

**Address, telephone, fax**

**Date:** Insert Date

**To:** Name of Resident Engineer  
City of San Diego  
Field Engineering Division  
9485 Aero Drive  
San Diego, CA 92123-1801

**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:

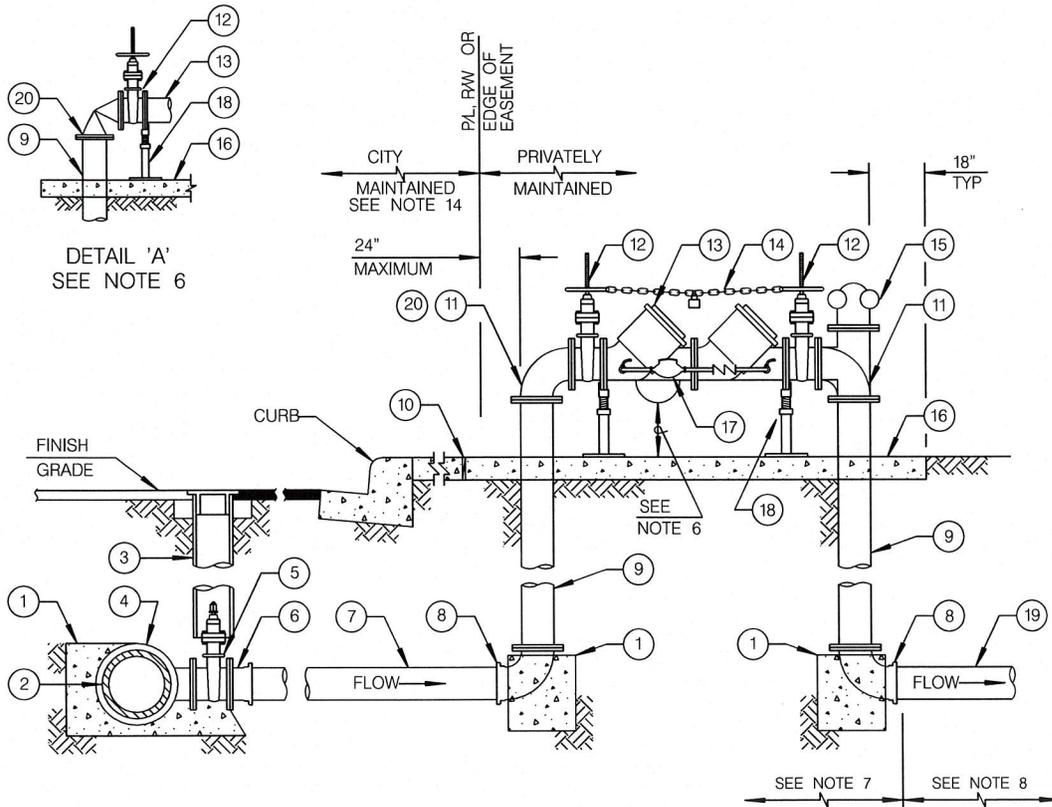
For curation/discovery related bid items or work completed as part of a discovery and curation process, the PI must provide a response to the following questions along with the invoice:

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 K**

**City Standard Drawings – Approved Updates for Use**



LEGEND ON PLANS

ITEM NO	SIZE AND DESCRIPTION	ITEM NO	SIZE AND DESCRIPTION
1	CONCRETE THRUST BLOCK SEE SDW-151	13	RPDA SEE NOTE 3
2	WATER MAIN	14	CHAIN WITH KNOX LOCK SEE NOTE 3
3	GATE WELL WITH CAP SEE SDW-153	15	FLANGED TEE WITH "FDC" SEE NOTE 3
4	SIZE x SIZE MJPO/FLG x FLG TEE	16	CONCRETE SLAB MINIMUM 4" THICK x 36" WIDE x AS REQUIRED
5	FLG x MJPO/FLG RWGV	17	3/4" BYPASS, METER & RP DEVICE
6	FLG x MJPO ADAPTER (IF REQUIRED)	18	ADJUSTABLE VALVE SUPPORT
7	C-900 PVC PIPE	19	PVC OR DIPIPE SEE NOTE 8
8	MJPO x FLG 90° BEND	20	FLANGED ANGLE PRESSURE REDUCING VALVE SEE NOTE 6
9	FLANGED DUCTILE IRON PIPE		
10	COLD JOINT STRIP		
11	FLANGED 90° BEND, SEE NOTE 6		
12	FLANGED OS&Y RWGV WITH HAND WHEEL		

SHEET 1 OF 2

REVISION	BY	APPROVED	DATE
ORIGINAL*	KA	J. NAGELVOORT	01/12
UPDATED	KA	J. NAGELVOORT	12/12

CITY OF SAN DIEGO - STANDARD DRAWING  
  
**4" AND LARGER FIRE  
SERVICE INSTALLATION**

RECOMMENDED BY THE CITY OF SAN DIEGO  
STANDARDS COMMITTEE  
  
 COORDINATOR R.C.E. 65271 DATE 12/17/2012  
 DRAWING NUMBER **SDW-105**

NOTES:

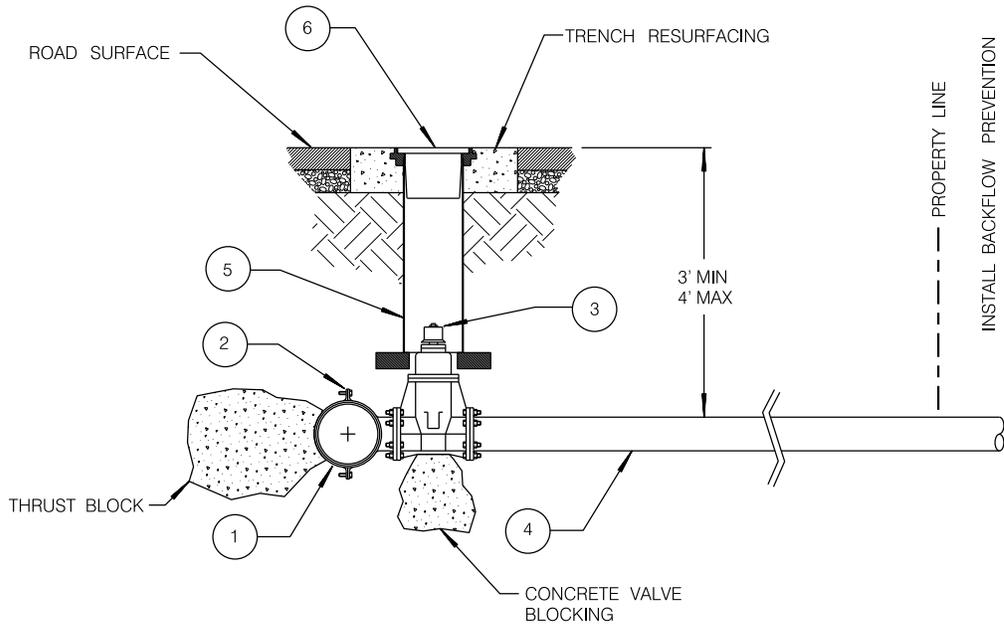
- 1) INSTALL WARNING / IDENTIFICATION TAPE
- 2) LOCATION OF FIRE SERVICES SHALL BE AS DIRECTED BY THE FIRE DEPARTMENT  
FIRE SERVICES SHOULD BE LOCATED IN SUCH A MANNER THAT WILL ALLOW THE  
DEVICE TO BE READILY ACCESSIBLE FOR INSPECTION, REPAIR, AND USE
- 3) TAMPER SWITCH, AUTOMATIC RESET, CHAIN WITH KNOX LOCK, AND FIRE  
DEPARTMENT CONNECTION ("FDC") SHALL BE AS REQUIRED BY THE FIRE  
DEPARTMENT
- 4) BALL VALVE TEST COCKS SHALL BE PROVIDED AND LOCATED PER THE  
MANUFACTURES RECOMMENDATIONS AND CITY STANDARDS
- 5) INSTALL FIRE SERVICES SO THAT THE DISTANCE BETWEEN THE BOTTOM OF THE  
RELIEF DIAPHRAGM AND THE CONCRETE SLAB OR FINISH GRADE IS 12"  
MINIMUM AND 24" MAXIMUM
- 6) INSTALL A PRESSURE REDUCING VALVE UPSTREAM OF THE FIRST 90  
BEND WHEN SYSTEM STATIC PRESSURE EXCEEDS 150 PSI OR WHEN  
RECOMMENDED BY THE BACKFLOW MANUFACTURER
- 7) INSTALL PIPE AND RELATED APPURTENANCES IN THIS AREA PER THE CITY  
REQUIREMENTS
- 8) INSTALL PIPE AND RELATED APPURTENANCES IN THIS AREA AS REQUIRED BY  
THE FIRE DEPARTMENT
- 9) ABOVE GROUND APPURTENANCES SHALL BE PAINTED AND IDENTIFIED AS  
CALLED FOR BY THE FIRE DEPARTMENT
- 10) TESTING SHALL BE CONDUCTED AS CALLED FOR IN THE SPECIFICATIONS  
PRIOR TO ACCEPTANCE
- 11) CONNECTIONS TO STEEL MAINS SHALL BE IN ACCORDANCE WITH SPECIFICATIONS
- 12) CITY RESPOSIBILITY ENDS AT EDGE OF PROPERTY LINE, RIGHT OF WAY, OR  
EASEMENT.



LEGEND ON PLANS

SHEET 2 OF 2

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO - STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE	
ORIGINAL*	KA	J. NAGELVOORT	01/12		<b>4" AND LARGER FIRE SERVICE INSTALLATION</b>	 COORDINATOR R.C.E. 65271 DATE 12/17/2012
UPDATED	KA	J. NAGELVOORT	12/12			DRAWING NUMBER <b>SDW-105</b>



ITEMS CALL OUT:

- 1 WATER MAIN
- 2 FLANGED TAPPING SLEEVE OR TEE (NO SIZE-ON-SIZE TAPS ALLOWED) ( 4 X 4, 6 X 6, ETC ). NO EXTENSIONS ALLOWED.
- 3 FULL RESILIENT SEAT GATE VALVE . SIZE OF VALVE SHALL MATCH SIZE OF FIRE SERVICE (4" MINIMUM DIAMETER). SEE NOTE #1.
- 4 4" OR LARGER DIAMETER OF PIPE (DUCTILE IRON OR PVC PER APPROVED MATERIALS LIST).
- 5 VALVE WELL.
- 6 VALVE WELL COVER SEE SDW-153.

NOTES:

- 1. FOR SMALLER FIRE SERVICE REQUIREMENTS, USE REDUCER AT PROPERTY LINE.
- 2. FOR CORROSION CONTROL REQUIREMENTS, SEE PUBLIC UTILITIES DEPARTMENT DESIGN GUIDE.

REVISION	BY	APPROVED	DATE
ORIGINAL	BB	OSKOUI	10/09
NOTES	AO	F. BELOCK	4/96
NOTES	JS	A. OSKOUI	12/06
UPDATED	KA	J. NAGELVOORT	01/12
UPDATED	KA	J. NAGELVOORT	12/12

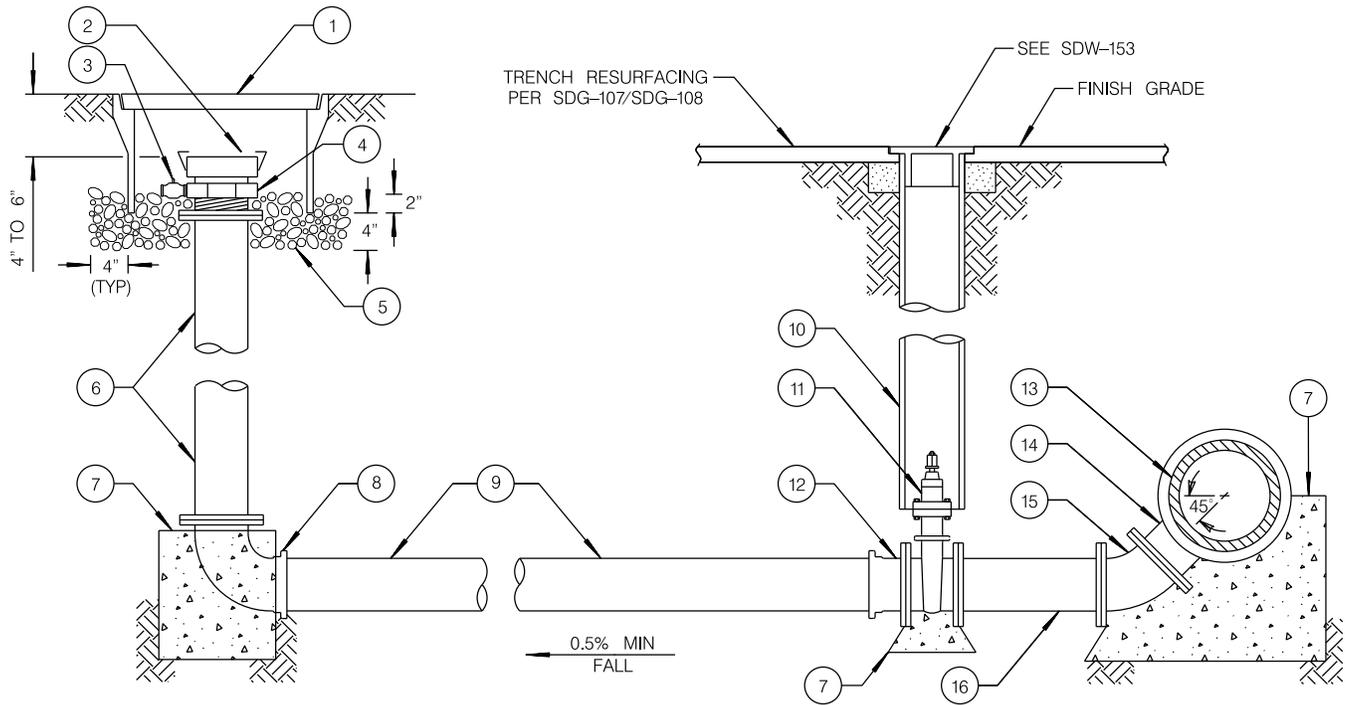
CITY OF SAN DIEGO – STANDARD DRAWING

**FIRE SERVICE CONNECTION  
& ASSEMBLY**

RECOMMENDED BY THE CITY OF SAN DIEGO  
STANDARDS COMMITTEE

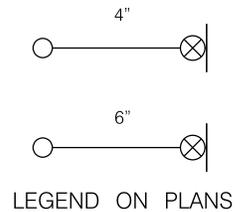
*A. Hadi* 12/17/2012  
COORDINATOR R.C.E. 65271 DATE

DRAWING  
NUMBER **SDW-118**



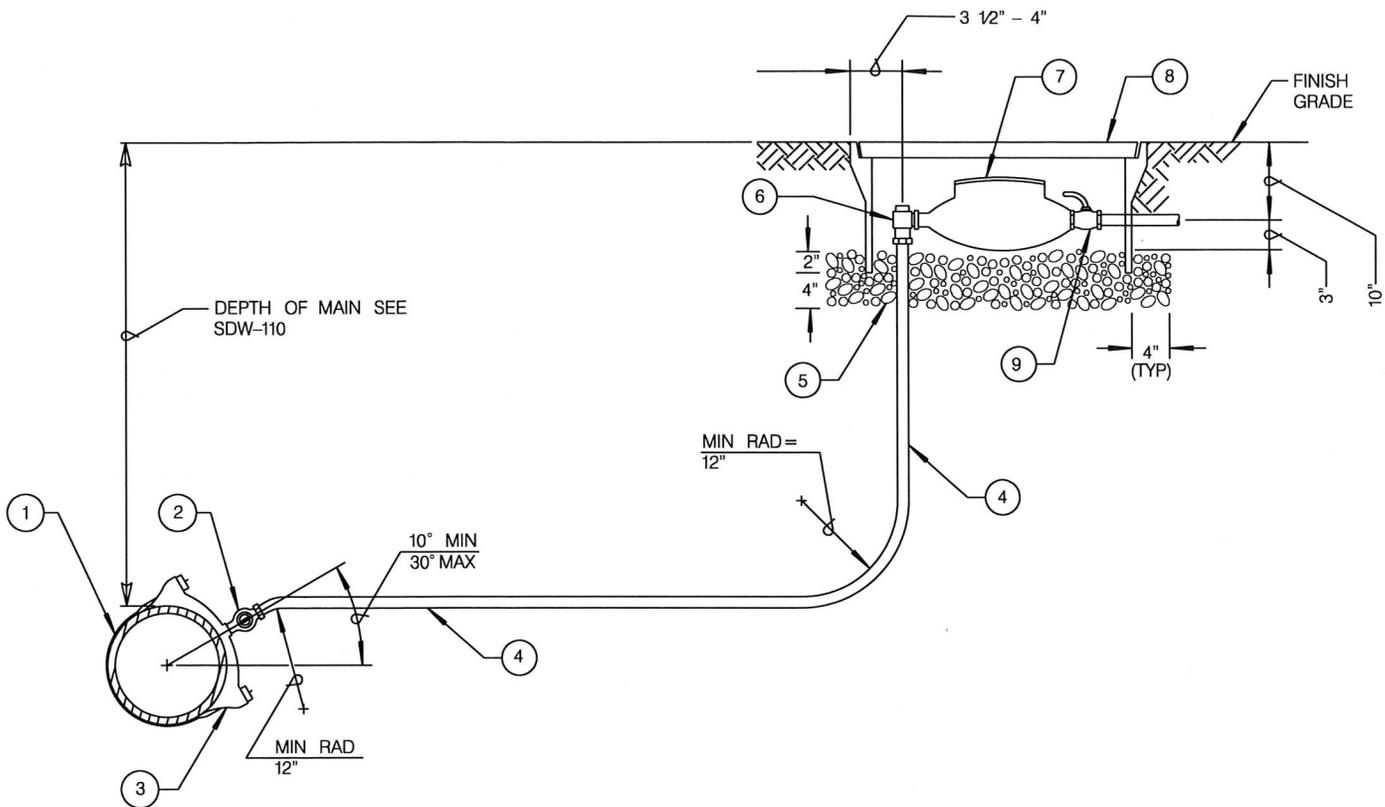
NOTES:

- 1) SET TOP OF METER BOX FLUSH WITH SIDEWALK, CURB OR FINISH GRADE
- 2) LOCATE METER BOX
- 3) INSTALL WARNING / IDENTIFICATION TAPE
- 4) FOR BLOW-OFF INSTALLATION AT END OF MAIN SEE OTHER STANDARD DRAWINGS
- 5) BLOW-OFF ASSEMBLIES INSTALLED FOR THE USE OF RECYCLED WATER SHALL BE IDENTIFIED AS DESCRIBED IN SPECIFICATIONS
- 6) 45° BEND SHALL BE USED FOR MAINS UP TO 30°. 90° BEND SHALL BE USED FOR MAINS IN EXCESS OF 30° AS DIRECTED BY THE ENGINEER
- 7) CAM & GROOVE ADAPTER SHALL BE DRILLED AND TAPPED AS REQUIRED FOR THE PRESSURE PET COCK



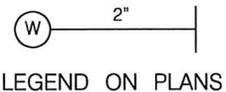
ITEM NO	SIZE AND DESCRIPTION	ITEM NO	SIZE AND DESCRIPTION
1	POLYMER METER BOX WITH LID 17" x 30", SEE NOTE 2	8	4" OR 6" FLG x MJPO 90° BEND
2	4" OR 6" CAM & GROOVE ADAPTER x MIPT WITH LOCKING DUST CAP, SEE NOTE 7	9	USE DUCTILE IRON OR PVC C900
3	1/4" PRESSURE PET COCK	10	VALVE WELL FRAME AND COVER (SEE SDW-153, SDW-154)
4	4" OR 6" FLANGED COMPANION x FIPT	11	4" OR 6" FLG x MJPOFLG RWGV
5	3/8" ROCK 4" TO 6" DEEP	12	4" OR 6" FLG x MJPO ADAPTER (IF REQUIRED)
6	4" OR 6" FLG DIPIPE x REQUIRED LENGTH (MAXIMUM OF 2 SPOOLS)	13	WATER MAIN
7	CONCRETE THRUST BLOCK SEE SDW-151	14	SIZE x 4" OR 6" MJPOFLG x FLG TEE
		15	4" OR 6" FLANGED 45° BEND
		16	4" OR 6" x 24" FLG DISPOOL

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE
ORIGINAL*	KA	J. NAGELVOORT	01/12		
UPDATED	KA	J. NAGELVOORT	12/12		
<b>4" &amp; 6" BLOW-OFF INSTALLATION TYPE A</b>				 COORDINATOR R.C.E. 65271 DATE 12/17/2012	
				DRAWING NUMBER <b>SDW-144</b>	



NOTES:

- 1) INSTALL CORPORATION STOP WITH KEY IN THE SIDE POSITION
- 2) SET TOP OF METER BOX FLUSH WITH SIDEWALK, CURB, OR FINISH GRADE
- 3) LOCATE METER BOX
- 4) INSTALL WARNING / IDENTIFICATION TAPE
- 5) ONLY APPROVED BRASS MECHANICAL COUPLING DEVICES ALLOWED FOR TYPE K COPPER PIPE.
- 6) ON STEEL MAINS USE WELD ON COUPLINGS, ON DUCTILE IRON MAINS USE DUCTILE IRON SERVICE SADDLES (INSULATING BUSHINGS ARE REQUIRED)
- 7) TOP TAPS NOT PERMITTED.



ITEM NO	SIZE AND DESCRIPTION	ITEM NO	SIZE AND DESCRIPTION
1	WATER MAIN	6	2" BRONZE ANGLE METER STOP WITH LOCKWING
2	2" BRONZE CORPORATION STOP	7	WATER METER FURNISHED AND INSTALLED BY THE CITY
3	SIZE x 2" BRONZE SERVICE SADDLE DOUBLE STRAP	8	METER BOX WITH LID, #6: 35"x 21"
4	2" x REQUIRED LENGTH COPPER PIPE TYPE "K" SOFT/RIGID	9	CUSTOMER SHUT-OFF VALVE (LOCKABLE) FURNISH AND INSTALLED BY THE CITY
5	3/8" ROCK, 4" TO 6" DEEP		

REVISION	BY	APPROVED	DATE
ORIGINAL*	KA	J. NAGELVOORT	2/13
UPDATED	KA	J. NAGELVOORT	3/13

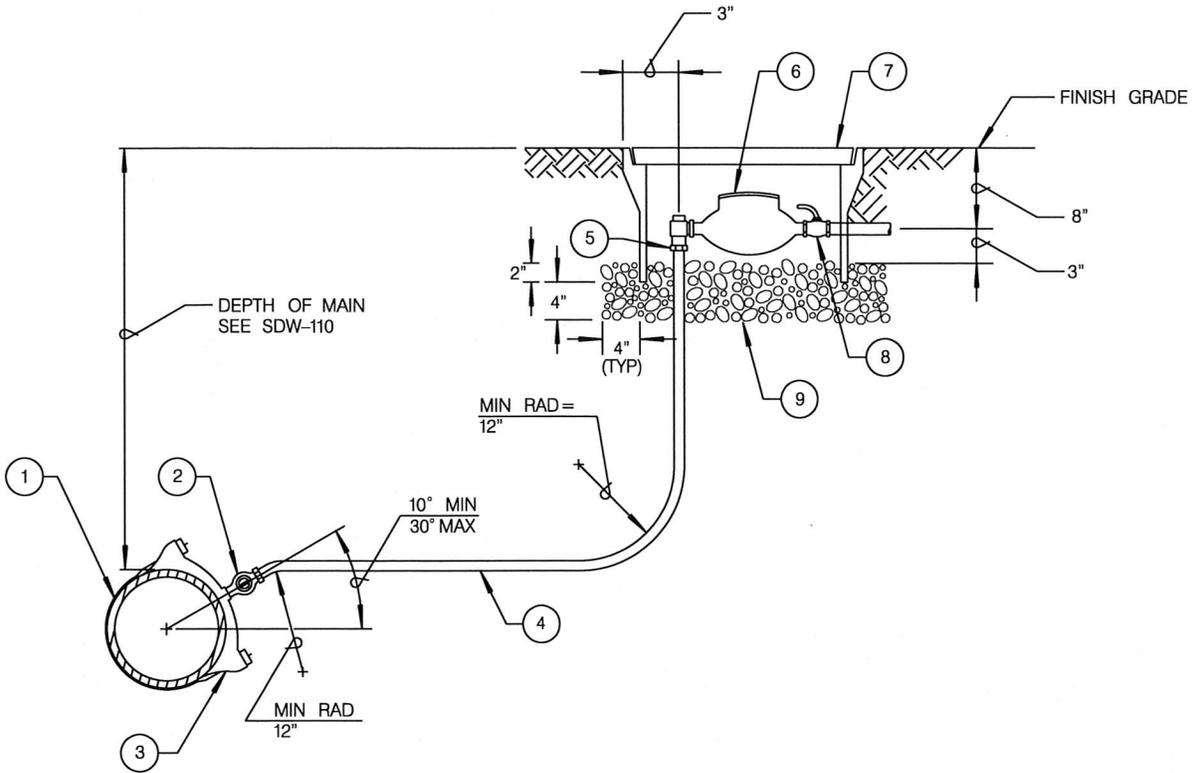
CITY OF SAN DIEGO - STANDARD DRAWING

**2" WATER SERVICE INSTALLATION**

RECOMMENDED BY THE CITY OF SAN DIEGO  
STANDARDS COMMITTEE

*H. Hadli* 30113  
COORDINATOR R.C.E. 65271 DATE

DRAWING NUMBER **SDW-149**



NOTES:

- 1) INSTALL CORPORATION STOP WITH KEY IN THE SIDE POSITION
- 2) SET TOP OF METER BOX FLUSH WITH SIDEWALK, CURB, OR FINISH GRADE
- 3) LOCATE METER BOX
- 4) INSTALL WARNING / IDENTIFICATION TAPE
- 5) ONLY APPROVED BRASS MECHANICAL COUPLING DEVICES ALLOWED FOR TYPE K COPPER PIPE.
- 6) ON STEEL MAINS USE WELD ON COUPLINGS, ON DUCTILE IRON MAINS USE DUCTILE IRON SERVICE SADDLES (INSULATING BUSHINGS ARE REQUIRED)
- 7) BRONZE PIPE SADDLES ARE REQUIRED FOR ALL TAPS INTO POLYVINYL CHLORIDE (PVC) WATER MAIN. TOP TAPS ARE NOT PERMITTED.



LEGEND ON PLANS

ITEM NO	SIZE AND DESCRIPTION	ITEM NO	SIZE AND DESCRIPTION
1	WATER MAIN	6	WATER METER FURNISHED & INSTALLED BY THE CITY
2	1" BRONZE CORPORATION STOP	7	METER BOX WITH LID, #37: 28" x 18"
3	SIZE x 1" BRONZE SERVICE SADDLE DOUBLE STRAP	8	CUSTOMER SHUT-OFF VALVE (LOCKABLE) FURNISHED AND INSTALLED BY THE CITY
4	USE COPPER TUBING TYPE (K) SOFT FOR 1" SERVICES ONLY. NO INTERMEDIATE JOINTS PERMITTED WITHIN THE FIRST 60' FROM THE MAIN FOR LENGTHS LONGER THAN 60 FEET USE FLARE JOINT UNION OR LOK-PAC FITTINGS WITH LOCKING CLAMP AND STAINLESS STEEL BOLT ONLY. NO SWEAT JOINTS ARE ALLOWED	9	38" ROCK, 4" TO 6" DEEP
5	BRONZE ANGLE METER STOP WITH LOCKWING DEVICE AND METER COUPLING ATTACHED. "FURNISH AND INSTALL BRONZE PROPERTY VALVE. USE SPACER FOR METER"		

REVISION	BY	APPROVED	DATE
ORIGINAL*	KA	J. NAGELVOORT	01/12
UPDATED	KA	J. NAGELVOORT	03/13

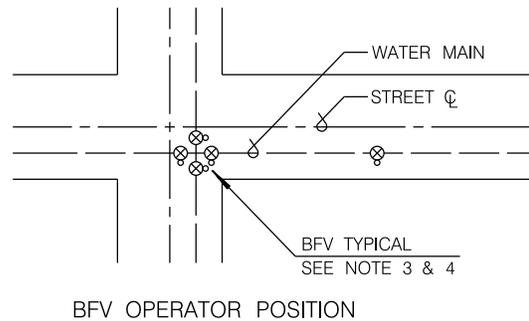
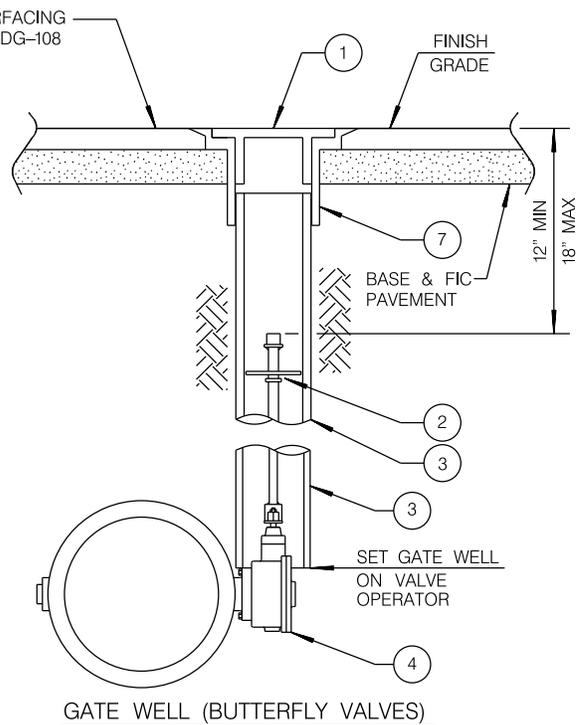
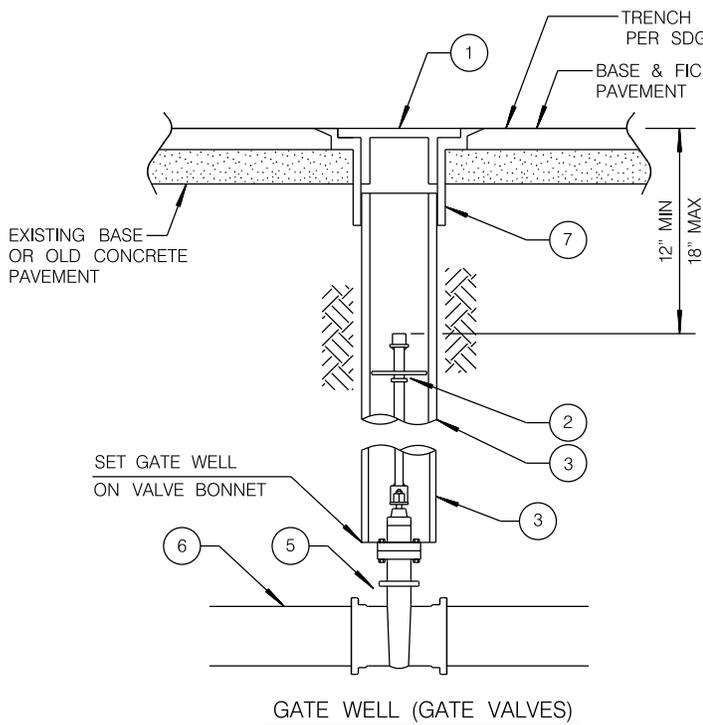
CITY OF SAN DIEGO - STANDARD DRAWING

**1" WATER SERVICE INSTALLATION**

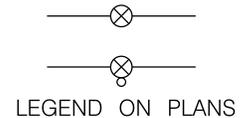
RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE

*D. Hadli* 30/13  
COORDINATOR R.C.E. 65271 DATE

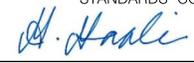
DRAWING NUMBER **SDW-150**

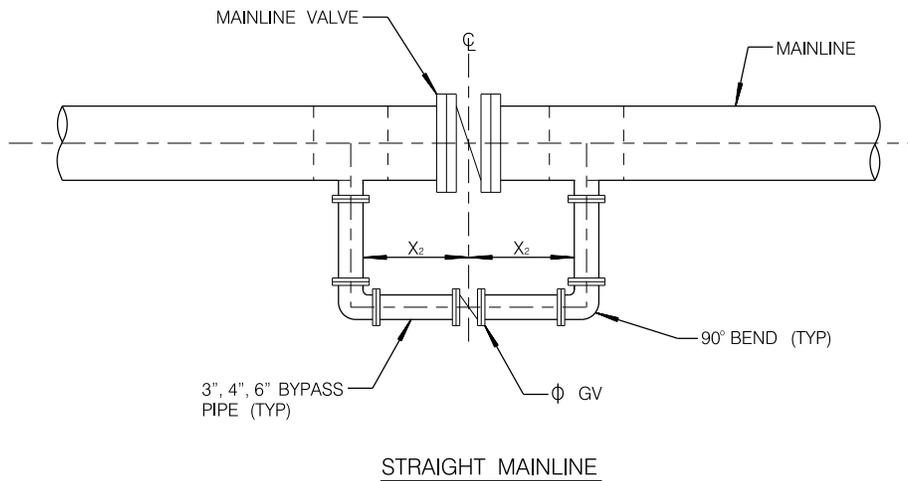
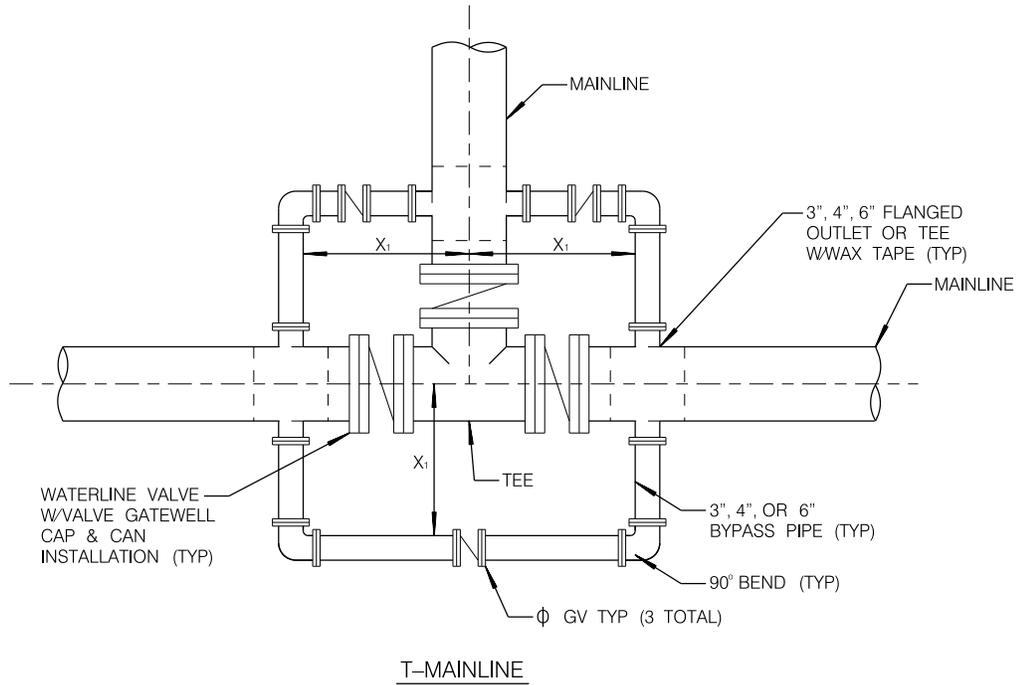


- NOTES:
- 1) VALVES DEEPER THAN 6' REQUIRE A VALVE STEM EXTENSION
  - 2) EXTENSION STEMS SHALL NOT BE ATTACHED/BOLTED TO OPERATING NUT
  - 3) GATE WELL AND CAP SHALL BE SET SO THAT NO MORE THAN TWO 1" ADJUSTMENT RINGS ARE USED
  - 4) BFV OPERATORS TO BE LOCATED TO THE CURBLINE SIDE OF WATER MAIN
  - 5) BFV'S INSTALLED AT CROSSES OR TEES REQUIRE A FLANGED DUCTILE IRON SPOOL TO BE INSTALLED BETWEEN THE FITTING AND VALVE IN ACCORDANCE WITH THE SPECIFICATIONS
  - 6) FOR INLINE VALVE ANCHOR BLOCK INSTALLATION
  - 7) VALVE WELL FRAME SHALL BE SET TO SLOPE OF STREET



ITEM NO	SIZE AND DESCRIPTION	ITEM NO	SIZE AND DESCRIPTION
①	GATE WELL WITH CAP	⑤	RESILIENT WEDGE GATE VALVE
②	VALVE STEM EXTENSION SEE NOTES 1 & 2	⑥	WATER MAIN
③	8" OD x 18" STEEL CASING x REQUIRED LENGTH GATE WELL SEE NOTE 6	⑦	18" THICK, 8 5/8" OD CAST IRON RISER RING PER SDRW-104
④	BUTTERFLY VALVE		

REVISION	BY	APPROVED	DATE	CITY OF SAN DIEGO – STANDARD DRAWING	RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE  12/17/2012 COORDINATOR R.C.E. 65271 DATE
ORIGINAL*	KA	J. NAGELVOORT	01/12		
UPDATED	KA	J. NAGELVOORT	12/12		
<b>GATE WELL CAP &amp; CAN INSTALLATION FOR VALVES 4" AND LARGER</b>				DRAWING NUMBER	<b>SDW-153</b>



NOTES:

1. BYPASS SHALL BE SAME CLASS AS MAINLINE PIPE.
2. THE VALVE SHALL BE THE SAME SIZE AS THE BYPASS PIPE.
3. SEE THE APPROVED WORKING DRAWINGS FOR X<sub>1</sub> AND X<sub>2</sub>.

MAIN SIZE	BYPASS SIZE
16" TRANSMISSION	3"
> 16" AND = < 36"	4"
> 36"	6"

REVISION	BY	APPROVED	DATE
ORIGINAL	KA	J. NAGELVOORT	01/12
UPDATED	KA	J. NAGELVOORT	12/12

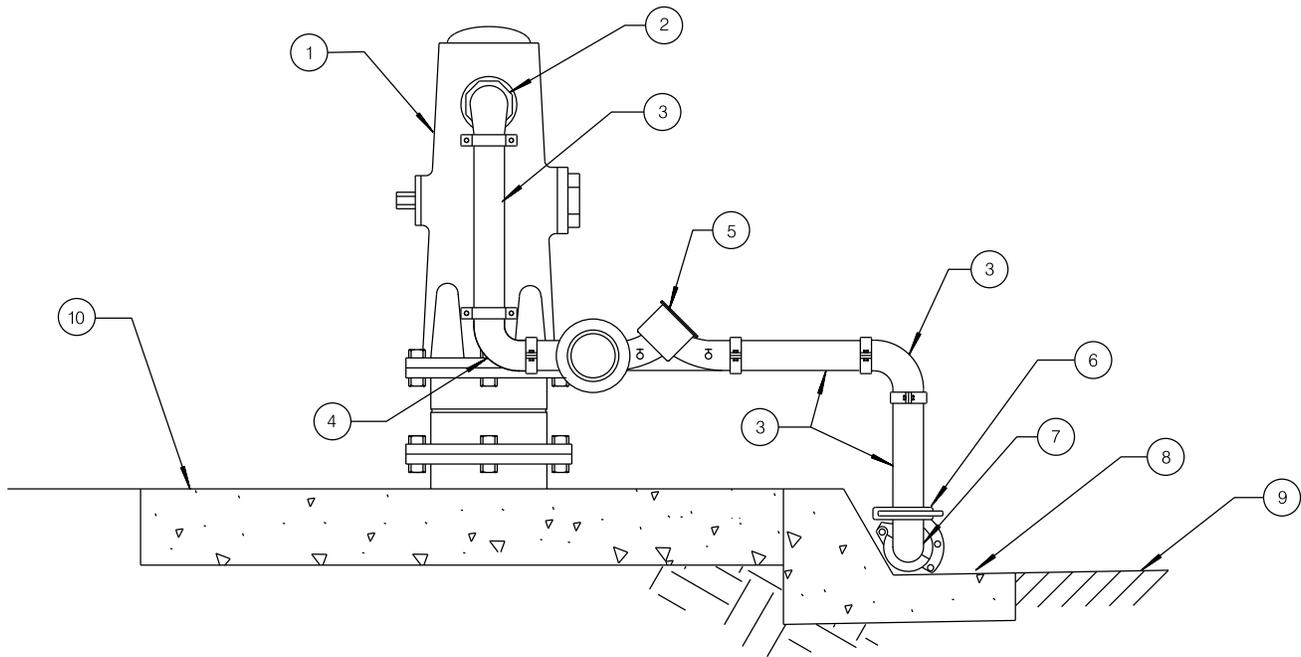
CITY OF SAN DIEGO – STANDARD DRAWING

**WATER VALVE BYPASS DETAILS  
FOR MAINLINES 16" AND LARGER**

RECOMMENDED BY THE CITY OF SAN DIEGO  
STANDARDS COMMITTEE

*R. C. E.* 12/17/2012  
COORDINATOR R.C.E. 65271 DATE

DRAWING  
NUMBER **SDW-154**



- ① EXISTING 2-PORT FIRE HYDRANT
- ② 2 1/2" PORT TO 2" ADAPTER ELBOW W/THREADED FITTING
- ③ 2" PIPE (GROOVED)
- ④ 2" 90° ELBOW W/THREADED JOINT FITTINGS
- ⑤ 2" BACKFLOW PREVENTER (ONE WAY CHECK VALVE) W/THREADED JOINT FITTINGS
- ⑥ SNAP-JOINT COUPLING (2-GROOVE)
- ⑦ 2" TEE/90° ELBOW W/ SNAP-JOINT COUPLING(S) (2-GROOVE) W/DIRECTIONAL SHUT OFF VALVE(S) (NOT SHOWN)
- ⑧ EXISTING CURB & GUTTER
- ⑨ EXISTING ROADWAY
- ⑩ EXISTING CONCRETE PAD/SIDEWALK

REVISION	BY	APPROVED	DATE
ORIGINAL	KA	J. NAGELVOORT	01/12
UPDATED	KA	J. NAGELVOORT	12/12

CITY OF SAN DIEGO – STANDARD DRAWING

**2" FIRE HYDRANT HIGHLINING CONNECTION**

RECOMMENDED BY THE CITY OF SAN DIEGO  
STANDARDS COMMITTEE

*A. Hadli* 12/17/2012  
COORDINATOR R.C.E. 65271 DATE

DRAWING NUMBER **SDW-170**

**APPENDIX L**

**Pressure Regulating Station (PRS)**

## **WATER GROUP JOB 820 (PRS) TABLE OF CONTENTS**

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### **VOLUME I**

#### DIVISION 2 - SITE WORK

02630 Ductile Iron Pipe.

#### DIVISION 3 – CONCRETE (NOT USED)

03400 Precast Concrete (Vault)

#### DIVISION 11 - EQUIPMENT

11000 Equipment General Provisions

#### DIVISION 13 - INSTRUMENTATION

13300 Instrumentation and Control

13370 Control Panels

13374 Control Panels Instrumentation

13400 Communications

#### DIVISION 15 - MECHANICAL

15000 Piping Components

15010 Mill Piping – Exposed and Buried

15020 Pipe Supports

15100 Valves, General

15104 Butterfly Valves

15109 Gate Valves

15114 Pressure Regulating Valves

#### DIVISION 16 - ELECTRICAL

16030 Electrical Tests

16050 Electrical Materials and Methods

16421 Surge Arresters

\*\* END OF TABLE OF CONTENTS \*\*

## 02630 - DUCTILE IRON PIPE

### PART 1 GENERAL

#### 1.1 WORK OF THIS SECTION

- A. The WORK of this Section includes providing ductile iron pipe and all appurtenant work. Polyurethane and fusion bond epoxy coating and lining material shall be furnished only by an OWNER-approved manufacturer.
- B. The WORK requires that one pipe manufacturer accept responsibility for furnishing the coated and lined pipe without altering or modifying the CONTRACTOR's responsibilities under the Contract Documents.

#### 1.2 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. Section 15000 Piping Components

#### 1.3 STANDARD SPECIFICATIONS

- A. Except as otherwise indicated in this Section of the Specifications, the CONTRACTOR shall comply with the Standard Specifications for Public Works Construction (SSPWC).

#### 1.4 SPECIFICATIONS AND STANDARDS

- A. Except as otherwise indicated, the current editions of the following apply to the WORK of this Section:
  - 1. AWWA C110/ANSI A21.10 Ductile-Iron and Gray-Iron Fittings, 3 in. through 48 in. for Water and Other Liquids
  - 2. AWWA C150/ANSI A21.50 Thickness Design of Ductile-Iron Pipe
  - 3. AWWA C151/ANSI A21.51 Ductile Iron Pipe, Centrifugally Cast, for Water or Other Liquids
  - 4. AWWA C153/ANSI A21.53 Ductile-Iron Compact Fittings, 3 in. through 24 inches and 54 through 64 inches for Water Service
  - 5. ASTM D 2240 Test Method for Rubber Property - Durometer Hardness
  - 6. ASTM D 4060 Test Method for Abrasion Resistance of Organic Coatings by Taber Abraser

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|----|-------------|--|
| 7. | ASTM D 4541 | Method for Pull-Off Strength of Coatings using Portable Adhesion Testers     |
| 8. | ASTM E 96   | Test Methods for Water Vapor Transmission of Materials                       |
| 9. | ASTM G 14   | Test Method for Impact Resistance of Pipeline Coatings (Falling Weight Test) |

**1.5 SHOP DRAWINGS AND SAMPLES**

- A. The following shall be submitted in compliance with contract documents:
  - 1. Certified dimensional drawings of all valves, fittings, pressure reducing regulator valves and appurtenances.
  - 2. Dimensional drawings and certifications from precast vault manufacturer.

**1.6 OWNER'S MANUAL**

- A. The following shall be included in the OWNER'S MANUAL in compliance with contract documents:
  - 1. A certified affidavit of compliance for pipe and other products or materials with the requirements of this Section.

**1.7 FACTORY INSPECTION AND TESTS**

- A. Inspection: All pipe shall be subject to inspection at the place of manufacture and place of coating and lining application in accordance with the provisions of the referenced standards, as supplemented by the requirements herein.
- B. During the manufacture of the pipe, the CONSTRUCTION MANAGER shall be given access to all areas where manufacturing is in process and shall be permitted to make all inspections necessary to confirm compliance with the Specifications.
- C. Tests: Except as modified herein, all materials used in the manufacture of the pipe shall be tested in accordance with the requirements of the associated standards as applicable.
- D. The CONTRACTOR shall perform said material tests at no additional cost to the OWNER. The CONSTRUCTION MANAGER will witness all testing conducted by the CONTRACTOR; provided, that the CONTRACTOR'S schedule is not delayed for the convenience of the CONSTRUCTION MANAGER.
- E. In addition to those tests specifically required, the CONSTRUCTION MANAGER may request additional samples of any material including lining and coating samples for testing by the OWNER. The additional samples shall be furnished at no additional cost to the OWNER.

**1.8 MARKING, HANDLING, AND STORAGE**

- A. Markings: All pipes shall be factory marked indicating size and class.

**PART 2 PRODUCTS**

**2.1 GENERAL**

- A. Pipe and Fittings: Ductile iron pipe and fittings shall be in accordance with SSPWC, Subsection 207-9 and the requirements contained herein. The 8”, 12” diameter pipe and fittings of this project shall be Class 350 (350 psi max working pressure) and the 16” diameter pipe and fittings shall be Class 250 (minimum) and arranged as shown on the construction plans.

**2.2 PIPE JOINTS**

- A. Ductile iron pipe joints shall comply with the requirements of SSPWC, Subsection 207-9.2.2 and shall be of the type indicated on the construction plans. Flanged joints shall comply with the pressure classes identified in section 2.1.A above.
- B. Restrained joints shall be an approved type provided and recommended by the pipe manufacturer.

**2.3 MATERIALS**

- A. Ductile Iron Pipe: Pipe materials shall conform to the requirements of SSPWC, Subsection 207-9.2, and AWWA C151.
- B. Polyethylene Sleeves shall not be used.

**2.4 SPECIAL FITTINGS**

- A. Fittings of the compact type for ductile iron pipe shall conform to the requirements of AWWA C153/ANSI A21.53, and shall have a minimum pressure rating of 350 psi.
- B. Fittings shall be of the diameter and class shown on the Plans. Compact type fittings shall only be used where expressly specified.

**2.5 CEMENT MORTAR LINING**

- A. The internal surfaces of ductile iron pipe and fittings shall be lined with cement mortar in accordance with SSPWC, Subsection 207-9.2.4. The minimum lining thickness for cement mortar shall be as follows:

Nominal Pipe Diameter (in)	Minimum Lining Thickness (in)
3-12	1/8
14-24	3/16

## 2.6 EXTERIOR FUSION-BONDED EPOXY COATING FOR DUCTILE IRON PIPE

- A. General: Ductile iron pipe, fittings, and specials shall be externally coated with fusion bond epoxy. Except as described below, the material system for the exterior of all ductile iron pipe in this project shall be in accordance with ANSI/AWWA C213.
- B. Minimum Pipe Diameter: The minimum pipe diameter for application of an internal lining shall be 4 inches.
- C. Maximum Temperature: This material system shall be able to withstand a maximum service temperature of 190<sup>0</sup> F.
- D. Thickness: The powder shall be applied to the preheated pipe at a uniform cured thickness. The minimum uniform cured thickness of the applied material shall be as follows:
  - 1. Exterior 14 mils
  - 2. Maximum thickness shall be determined by the applicator based on the roughness of the pipe so as to obtain a holiday free product. Lining and coating thickness for pipe joints shall be compatible with the pipe dimensional tolerances.
- E. Degassifying:
  - 1. The pipe and fittings shall be heated to between 425<sup>0</sup> F and 475<sup>0</sup>F and held at that temperature for 60 minutes or until total outgassing is achieved.
- F. Blast Cleaning:
  - 1. The pipe surfaces to be covered shall be Commercial Blast Cleaned (SSPC-SP6 as applicable to ductile iron pipe) to remove all visible oil, grease, soil, dust, mill scale, rust, paint, oxides, corrosion products and other foreign matter. Oil, grease, welding fluxes and other surface contaminants shall be removed by solvent cleaning per SSPC-SP1 prior to blast cleaning.
  - 2. Workmanship for metal surface preparation shall be in conformance with the current SSPC Standards and this Section. Blast cleaned surfaces shall match the standard samples available from the National Association of Corrosion Engineers, NACE Standard TM-01-70 - Visual Standard for Surfaces of New Steel Airblast Cleaned with Sand Abrasive and TM-01-75 - Visual Standard for Surfaces of New Steel Centrifugally Blast Cleaned with Steel Grits.
  - 3. All sharp edges shall be rounded or chamfered and all burrs, and surface defects and  
  
weld splatter shall be ground smooth prior to blast cleaning.
  - 4. The type and size of abrasive shall be selected to produce a surface profile that meets

the manufacturer's recommendation for the specific coating and service conditions. Abrasive shall not be used unless approved by the CONSTRUCTION MANAGER.

5. Where there is a conflict between these specifications and the coating manufacturer's printed recommendations for the intended service, the more stringent degree of cleaning shall apply.
6. The CONTRACTOR shall comply with the applicable federal, state, and local air pollution control regulations for blast cleaning.
7. Compressed air for air blast cleaning shall be supplied at adequate pressure from well maintained compressors equipped with oil/moisture separators which remove at least 95 percent of the contaminants.
8. Surfaces shall be cleaned of all dust and residual particles of the cleaning operation by dry air blast cleaning, vacuuming or another approved method prior to painting.
9. Enclosed areas and other areas where dust settling is a problem shall be vacuum cleaned and wiped with a tack cloth.
10. Damaged or defective coating shall be removed by the specified blast cleaning to meet the clean surface requirements before recoating.
11. Shop applied coatings of unknown composition shall be completely removed before the specified coatings are applied. Valves, castings, ductile or cast iron pipe, and fabricated pipe or equipment shall be examined for the presence of shop-applied temporary coatings. Temporary coatings shall be completely removed by solvent cleaning per SSPC-SP1 before the abrasive blast cleaning work has been started.

G. Continuity Tests:

1. Exterior of pipe shall be electrically inspected at the factory for continuity at 1965 volts. If the number of holidays exceeds one per 3 linear feet of pipe 20 inches in O.D. or smaller, the CONSTRUCTION MANAGER will determine if the pipe coating shall be removed and reapplied or if holidays shall be repaired in the shop. Shop repairs shall be performed similar to the procedures in ANSI/AWWA C213.

H. Fusion Bond Epoxy Manufacturers

1. 3M Scotchkote
2. Lilly Pipe Clad
3. or equal

I. Qualifications, Approval, and Documentation of Fusion Bond Epoxy Manufacturers

1. Qualifications: The fusion bond epoxy manufacturer shall have a record of at least one application of the proposed coating/lining material on a successfully performing ductile iron piping installation of comparable size and complexity constructed in the recent past.
2. Approval
  - a. Bidders shall submit the name and documented qualifications of the manufacturer proposed for the fusion bond epoxy material. The OWNER will review and approve the proposed selection.
  - b. Documentation to be submitted by CONTRACTOR
    1. Documentation of at least one ductile iron pipe project constructed in the recent past and successfully performing under similar service conditions.
    2. The name, telephone number, and address of the owner and completion date and location for the project listed above.
    3. The name, telephone number, and address of the firm which applied the fusion bond epoxy in the project listed above.
    4. Descriptive literature, including Material Safety Data Sheet, for the proposed material.

**PART 3 EXECUTION**

**3.1 INSTALLATION OF PIPE**

- A. Ductile iron pipe shall be installed in accordance with the applicable provisions of SSPWC, Subsection 306-1.2, Section 02600, and the recommendations of the manufacturer.

**3.2 FIELD TESTING FOR COATING CONTINUITY**

- A. All exterior surface coatings shall be inspected electrically immediately before the pipe is lowered into the trench, following the same requirements for factory inspection procedure and voltage indicated above for the protective material. All holidays shall be repaired before the pipe is placed in the trench.

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

## SECTION 03400 - PRECAST CONCRETE (VAULT)

### PART 1 -- GENERAL

#### 1.1 WORK OF THIS SECTION

- A. The CONTRACTOR shall provide precast concrete work, complete, in accordance with the Contract Documents.
- B. This Section covers the design, fabrication, delivery, and installation of the precast vault.

#### 1.2 REFERENCE SPECIFICATIONS, CODES AND STANDARDS

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

1.	ACI 211.1	Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete
2.	ACI 309R	Consolidation of Concrete
3.	ASTM C 857	Practice for Minimum Structural Design Loading for Underground Precast Concrete Utility Structures
4.	ASTM C 858	Specification for Underground Precast Concrete Utility Structures
5.	ASTM C 891	Practice for Installation of Underground Precast Concrete Utility Structures
6.	ASTM C 915	Specification for Precast Reinforced Concrete Crib Wall Members
7.	ASTM C 920	Specification for Elastomeric Joint Sealants
8.	ASTM C 923	Specification for Resilient Connectors Between Reinforced Concrete Manhole Structures, Pipes, and Laterals
9.	ASTM C 1037	Practice for Inspection of Underground Precast Concrete Utility Structures
10.	CRSI	Manual of Standard Practice
11.	CRSI	Placing Reinforcing Bars
12.	NPCA QC Manual	Quality Control Manual for Precast Concrete Plants

- 13. NPCA Selected ASTM Stds      ASTM Standards for Precast Concrete
- 14. MNL-120                              PCI Design Handbook

### **1.3 GENERAL REQUIREMENTS**

Precast concrete units shall be designed and fabricated by an experienced and acceptable precast concrete manufacturer. The manufacturer shall have been regularly and continuously engaged in the manufacture of precast concrete units similar to that indicated in the project specifications or drawings for at least 10 years.

### **1.4 CONTRACTOR SUBMITTALS**

A. Submittals shall be made in accordance with contract documents.

B. Preconstruction Submittals

- 1. Submit quality control procedures established by the precast manufacturer in accordance with the NPCA Quality Control Manual for Precast Concrete Plants.

C. Shop Drawings:

The shop drawings shall show all plan and elevations, dimensions, horizontal and vertical sections, openings, inserts, reinforcing, anchorage devices, details, design computations, and other requirements. Drawings shall be 24 inches by 36 inches maximum and stamped by a registered Civil or Structural engineer in the state of California.

Drawings for Custom-Made Precast Concrete Units

The drawings for custom-made precast concrete units shall be shop drawings furnished by the precast concrete producer for approval by the CONSTRUCTION MANAGER. These drawings shall show complete design, installation, and construction information in such detail as to enable the CONSTRUCTION MANAGER to determine the adequacy of the proposed units for the intended purpose. Details of steel reinforcement size and placement as well as supporting design calculations, if appropriate, shall be included. The precast concrete units shall be produced in accordance with the approved drawings.

D. Precast Concrete Unit Data

Standard Precast Concrete Units: For standard precast concrete units, the precast concrete producer shall supply cut sheets showing conformance to project drawings and requirements and to applicable industry design standards listed in this specification.

Proprietary Precast Concrete Units: For proprietary precast concrete units, the precast concrete producer shall supply standard plans or informative literature. Supporting calculations and design details shall be available upon request. The precast concrete producer shall provide sufficient information as to demonstrate that such products will perform the intended task.

Anchorage, Lifting Inserts and Devices: For anchors, lifting inserts and other devices, the precast concrete producer shall provide product data sheets and proper installation instructions upon request. The Precast concrete unit dimensions and safe working load shall be clearly indicated.

Accessory Items: For items including, but not limited to sealants, gaskets, pipe entry connectors, steps, racks and other items installed before or after delivery, the precast concrete producer shall include proper installation instructions and relevant product data upon request.

E. Design Data

Upon request, the precast concrete producer shall supply precast concrete unit design calculations and concrete mix design proportions and appropriate mix design test data. Structural design calculations shall be signed by a licensed professional engineer.

F. Test Reports

Upon request, the precast concrete producer shall supply copies of material certifications and/or laboratory test reports, including mill tests and all other test data, for portland cement, blended cement, pozzolans, ground granulated blast-furnace slag, silica fume, aggregate, admixtures, and curing compound proposed for use on this project.

Upon request, the precast concrete producer shall submit copies of test reports showing that the mix has been successfully tested to produce concrete with the properties specified and will be suitable for the project conditions. Such tests may include compressive strength, flexural strength, plastic or hardened air content, freeze-thaw durability, abrasion and absorption. Special tests for precast concrete items shall be clearly detailed herein.

Upon request, the precast concrete producer will supply copies of in-plant QA/QC inspection reports.

G. Certificates of Compliance: Submit quality control procedures established in accordance with NPCA Quality Control Manual for Precast Concrete Plants or verification of current NPCA Plant Certification.

H. Manufacturer's Qualifications: Before commencing operations, a statement shall be submitted giving the qualifications of the precast concrete Manufacturer, and evidence that the Manufacturer and plant are PCI certified.

## 1.5 DESIGN

A. Standard Precast Concrete Unit Design: Design standard precast concrete units to withstand indicated design load conditions in accordance with applicable industry design standards [ACI 318, ACI 350, ASTM, ACPA Design Manual, PCI MNL-120, and AASHTO]. Design must also consider stresses induced during handling, shipping and installation in order to avoid product cracking or other handling damage. Design loads for precast concrete units shall be indicated on the shop drawings.

- B. Non-Standard Precast Concrete Unit Design: Design calculations and drawings of non-standard precast units shall be prepared and signed by a licensed professional engineer, and submitted for customer approval prior to fabrication. Calculations shall include the analysis of units for lifting stresses and the sizing of lifting devices.
- C. Joints and Sealants: Joints and sealants between adjacent units shall be of the type and configuration indicated on shop drawings meeting specified design and performance requirements.
- D. Concrete Mix Design: The concrete mix shall be designed by the Manufacturer and be approved by the CONSTRUCTION MANAGER, to meet all of the requirements of this specification.

- 1. Proportioning of Concrete Mixes: Mixes shall be proportioned by weight except water and admixtures may be batched by volume if desired. Trial mixes and testing to meet requirements of the strengths of concrete is the CONTRACTOR's responsibility. Design mix shall contain similar materials as those proposed for use in the Work.

Selection of proportions for concrete shall be based on the methodology presented in ACI 211.1 for normal weight concrete, ACI 211.2 for lightweight concrete and ACI 211.3 for no-slump concrete. The concrete proportions shall be developed using the same type and brand of cement, the same type and brand of pozzolan, the same type and gradation of aggregates, and the same type and brand of admixture that will be used in the manufacture of precast concrete units for the project. Accelerators containing calcium chloride shall not be used in precast concrete containing reinforcing steel or other embedded metal items.

- 2. Admixtures: Concrete shall contain an air entraining admixture in proportion so as to provide 4 percent plus or minus 1 percent total air in the concrete as determined by ASTM C 173 or C 231. Set retarding admixtures may be used provided cement content is not reduced. Water reducing admixtures may be used provided they are used in the mix design studies. High-range water reducers (superplasticizers) shall be used only where indicated in this Section, otherwise superplasticizers shall not be used without written approval from the CONSTRUCTION MANAGER. No admixture may contain chlorides, bromides, or fluorides.

The use of self-consolidating concrete is permitted provided that mix design proportions and constituents meet the requirements of this specification.

- 3. Water: Clean, potable water. Tests to assure that no more than 200 parts per million total aggregated content of chlorides, bromides, and fluorides are present.
- 4. If a variance from the City of San Diego is required for the precast concrete mix design, the CONTRACTOR shall be responsible for submitting and obtaining the precast concrete mix variance. The admixtures used in the mix design shall be used in approved combinations and proportions in accordance with the local requirements.

- 5. Durability and Performance Requirements

Precast concrete units shall have a 28-day compressive strength of 4,000 psi.

- E. Formwork: Formwork shall be designed to withstand high-frequency vibration and to ensure finished units.

## 1.6 QUALITY ASSURANCE

Precast concrete producer shall demonstrate adherence to the standards set forth in the NPCA Quality Control Manual for Precast Concrete Plants. The precast concrete producer shall meet requirements written in subparagraph 1.6.A

- A. NPCA Plant Certification

The precast concrete producer shall be certified by the NPCA Plant Certification Program prior to and during production of the products for this project. If there are no local plants with this certification available, the concrete producer shall meet the requirements written in subparagraph 1.6.B.

- B. Qualifications, Quality Control and Inspection

- 1. Qualifications

The precast concrete producer shall have been in the business of producing precast concrete units similar to those specified for a minimum of 10 years. The precast concrete producer shall maintain a permanent quality control department or retain an independent testing agency on a continuing basis. The agency shall issue a report, signed by a licensed professional engineer, detailing the ability of the precast concrete producer to produce quality units consistent with industry standards.

- 2. Quality Control

The precast concrete producer shall show that the following quality control tests are performed as required and in accordance with the ASTM International standards indicated.

- a. Slump: A slump test shall be performed for each 150 cu yd of concrete produced per mix design, or once a day, whichever comes first. Slump tests shall be performed in accordance with ASTM C 143. Slump flow tests on self-consolidating concrete mixes shall be performed in accordance with ASTM C 1611.
    - b. Temperature: The temperature of fresh concrete shall be measured when slump or air content tests are made and when compressive test specimens are made in accordance with ASTM C 1064
    - c. Compressive Strength: At least four compressive strength specimens shall be made for each 150 cubic yards of concrete of each mix design in accordance with the following applicable ASTM standards; C 31, C 39, C 192, C 497

- d. Air Content: Tests for air content shall be made on air-entrained, wet-cast concrete for each 150 cu yd of concrete, per mix design, but not less often than once each day when air-entrained concrete is used. The air content shall be determined in accordance with either ASTM C 231 or ASTM C 173 for normal weight aggregates and ASTM C 173 for lightweight aggregates.
- e. Density (Unit Weight): Tests for density shall be performed a minimum of once per week to verify the yield of batch mixes. Density tests shall be performed for each 100 cu yd of lightweight concrete in accordance with ASTM C 138. Density tests shall be performed for each 100 cu yd of concrete per mix design, but not less often than once per day when volumetric batch equipment is used.

The precast concrete producer shall submit documentation demonstrating compliance with the above subparagraphs.

### 3. Inspection

The CONSTRUCTION MANAGER may place an inspector in the plant when the unit covered by this specification is being manufactured. The precast concrete producer shall give notice of 5 business days prior to the time the precast concrete unit will be available for plant inspection.

## 1.6 DELIVERY, STORAGE AND HANDLING

- A. General: Precast units shall be handled to position consistent with their shape and design; they shall be lifted and supported from design support points and provided with strong backs and other devices as required. Lifting devices or holes shall be consistent with industry standards and indicated on shop drawings. Lifting or handling equipment shall be capable of maintaining units during manufacture, storage, transportation, installation, and in position for fastening.
- B. Blocking and supports, lateral restraints and protective materials during transport and storage shall be clean, non-staining, without causing harm to exposed surfaces, including temporary support to prevent bowing and warping. Lateral restraints shall be provided to prevent undesirable horizontal movement. Edges and exposed faces of members shall be protected to prevent straining, chipping, or spalling of concrete.
- B. Units shall be marked with date of production and final position in structure in a location not visible after erection.
- C. Upon final acceptance, the CONSTRUCTION MANAGER acknowledges and understands the appropriate methods for handling the accepted precast concrete unit. Upon acceptance by the CONSTRUCTION MANAGER, the precast concrete manufacturer is not responsible for replacing damaged product resulting from improper handling practices on the job site.
- D. Stainless Steel Hardware: Stainless steel hardware shall be transported, handled, stored, and protected in wood crates.

## **PART 2 -- PRODUCTS**

### **2.1 CONCRETE MATERIALS**

- A. Cement: ASTM C 150, Type II, "low alkali". "Low alkali" requirement may be waived if not reactive as defined in Appendix to ASTM C 33. Submit laboratory test reports.
- B. Aggregate: ASTM C 33, 1/2-inch max coarse aggregate size fine aggregate ratio to total aggregate volume = 0.35 min, 0.55 max.
  - 1. Water Absorption, Coarse ASTM C 127.
  - 2. Water Absorption, Fine ASTM C 128.
- C. Reinforcing Steel: ASTM A 615, Grade 60, deformed, epoxy coated in accordance with ASTM A 775.
- D. Welded Wire Fabric:
  - 1. Plain: ASTM A 185, epoxy coated.
  - 2. Deformed Steel: ASTM A 497, epoxy coated.
  - 3. Fabricated Steel Bar or Rod Mats.: ASTM A 184, epoxy coated.
- E. Tie Wire: ASTM A 580, Type 316L, cold finished annealed, Huntington Alloy Co. "Monel" or "Inconel."
- F. Air Entrainment Admixture: ASTM C 260.
- G. Water Reducing or Retarding Admixtures: ASTM C 494, Type C, D, or F/G, with no chloride, bromide, and fluoride ingredients.
- H. Silica Fume Slurry Admixture: 45 to 50 percent silica fume, water, and superplasticizer as dispersant. Silica Fume: 85 percent amorphous silicon dioxide in accordance with ASTM C 311; loss on ignition shall not exceed 6 percent and moisture shall not exceed 3 percent in accordance with ASTM C 311. Surface area not less than 10,000 square meters per kilogram at bed porosity of 0.50 in accordance with ASTM C 204.
  - 1. Reduce water in mix by 5.6 to 9.5 pounds for each gallon of slurry added to mix, as recommended by slurry Manufacturer used.

### **2.2 ACCESS HATCH**

- A. Furnish and install vault access door Bilco Type JD H20 (or approved equal) double swing style size 2- 6'x2.25'. Total hatch area of 6'L x 4.5'W, Length denotes hinge side. The hatch shall be located on the existing 5' sidewalk so that it does not extend beyond the existing sidewalk boundary as shown on the construction plans. The vault access door shall be double leaf. The vault access door shall be pre-assembled from the manufacturer.

- B. Performance characteristics:
1. Covers: Shall be reinforced to support AASHTO H-20 wheel load with a maximum deflection of 1/150th of the span. Manufacturer to provide structural calculations stamped by a registered professional engineer upon request.
  2. Operation of the covers shall be smooth and easy with controlled operation throughout the entire arc of opening and closing.
  3. Operation of the covers shall not be affected by temperature.
- C. Covers: Shall be 1/4" (6.3 mm) steel diamond pattern.
- D. Frame: Channel frame shall be 1/4" (6.3 mm) steel with full anchor flange around the perimeter.
- E. Hinges: Shall be specifically designed for horizontal installation and shall be through bolted to the covers with tamperproof Type 316 stainless steel lock bolts and shall be through bolted to the frame with Type 316 stainless steel bolts and locknuts.
- F. Drain Coupling: Provide a 1-1/2" (38mm) drain coupling located in the right front corner of the channel frame.
- G. Lifting mechanisms: Manufacturer shall provide the required number and size of compression spring operators enclosed in telescopic tubes to provide, smooth, easy, and controlled cover operation throughout the entire arc of opening and to act as a check in retarding downward motion of the covers when closing. The upper tube shall be the outer tube to prevent accumulation of moisture, grit, and debris inside the lower tube assembly. The lower tube shall interlock with a flanged support shoe fastened to a formed 1/4" gusset support plate.
- H. A removable exterior turn/lift handle with a spring loaded ball detent shall be provided to open the covers and the latch release shall be protected by a flush, gasketed, removable screw plug.
- I. Hardware
1. Hinges: Heavy forged brass hinges, each having a minimum 3/8" (9.5mm) diameter Type 316 stainless steel pin, shall be provided and shall pivot so the cover does not protrude into the channel frame.
  2. Covers shall be equipped with a hold open arm that automatically locks the cover in the open position.
  3. Covers shall be fitted with the required number and size of compression spring operators. Springs shall have an electrocoated acrylic finish.
  4. A Type 316 stainless steel snap lock with fixed handle shall be mounted on the underside of the cover.

5. Hardware: Compression spring tubes shall be an anti-corrosive composite, all fasteners shall be Type 316 stainless steel material, and all other hardware shall be zinc plated and chromate sealed.
- J. Finishes: Factory finish shall be red oxide primed steel.

### **2.3 HATCH INTRUSION SWITCH**

- A. Furnish and install vault hatch surface-mount industrial grade intrusion switch(es). The switch used will depend on the mounting method required by the space available and the connection to the alarm circuit.
- B. Installation: Mount both the switch and the magnet so they will not intrude into the open hatch space where they can restrict entry and exit. To install the contact, do the following:
  1. Attach the selected switch on the hatch frame opposite the hatch hinges. Be sure to keep the gap distance between the switch and magnet within specified tolerance per manufacturers recommendation. Because the hatch and frame are made of steel, allow for the gap distance to be halved or use wide-gap switches.
  2. When installed, switch and magnet must be parallel for best operation. Mount the switch and magnet with the labels reading in the same direction (switch is polarity sensitive). Follow manufacturer recommendation
- C. Recommended Products:
  1. UTC Fire & Security 1045 Series Industrial Surface Mount Intrusion Switch (or approved equal).

### **2.4 SUPPORT DEVICES**

- A. Connecting and Support Devices: ASTM A 666, Type 316L stainless steel.
- B. Bolts: ASTM A 193, Grade B8M (Type 316).
- C. Nuts and Washers: ASTM A 194, Grade 8M (Type 316).
- D. Weld Filler Metal for Stainless Steel: Stainless steel to stainless steel; AWS A5.4, Grade 316L filler metal; stainless steel to carbon steel, AWS A5.4, Grade 309 filler metal, 3/32-inch diameter.
- E. Primer: Zinc-dust, zinc oxide primer in a phenolic resin spare varnish vehicle, TT-P-641 Type III (for galvanized surfaces).

### **2.5 ACCESSORIES**

- A. Plates, Angles, Anchors, and Studs: ASTM A 666, Type 316L stainless steel.

- B. Austenitic Steel Castings for Embedments and Anchorage Embedments and Anchorage Assemblies: ASTM A 351, Type CF3M, with Type 316 stainless steel bolts, nuts, and washers.
- C. Reglets: Plastic, shaped and flanged to remain in place once cast; tape closed to prevent concrete intrusion.
- D. Bearing Pads: Neoprene, molded to size or cut from molded sheet, 70-80 Type A durometer, ASTM D 2240.
- E. Sealant: In accordance with precast manufacturer's recommendations.

## 2.6 FORMS

- A. Forms: Manufacturer's standard with smooth, hard, dense, and rigid casting surface; without bow, warpage, oil canning, or other imperfections.
- B. Form Release Agent: Manufacturer's standard, nonstaining, nonpetroleum based; compatible with concrete surface sealer.
- C. Surface Sealer: Clear, flat, penetrating, nonyellowing, nonclouding solution; high concentration of organosilane in an aqueous alcoholic vehicle which is designed to provide water repellent concrete surfaces from which graffiti can be easily removed. Oil-type silicones, paraffins, waxes, vinyls, modified urethanes, or acrylics shall not be used. Sealant shall be tested by Manufacturer and proved compatible with surface sealer.

## 2.7 FABRICATION

- A. Rigid molds shall be used, constructed to maintain precast unit uniform in shape, size, and finish, free from castings and dents, gouges, oil canning, or other irregularities that will adversely affect appearance or strength of units. Consistent quality shall be maintained during manufacture.
- B. Reinforcing steel, anchors, inserts, plates, angles, and other cast-in-place items shall be embedded as shown on shop drawings. Reinforcement shall be fabricated and placed in conformance with ACI 318. No tack welding of or to reinforcement is permitted. Welding, when allowed, shall conform to AWS D1.4 requirements. No carbon steel chairs, spacers, nails or tie wire shall be used in positioning reinforcing and embedment.
- C. Adequate reinforcing steel shall be provided to control cracking. Maximum permissible crack width:
 

Surfaces exposed to weather:	0.005 inch
Surfaces exposed to view but not weather:	0.01 inch
- D. Connecting devices, plates, angles, items fit to steel framing members, inserts, bolts, and accessories shall be fabricated to permit initial placement and final attachment.

- E. Anchors, inserts, lifting devices, and other accessories shall be placed and embedded in accordance with approved shop drawings, accurately positioned in their designed location and anchored to prevent dislocation during construction.
- F. Units shall be moist cured with water mist to develop concrete quality and to minimize surface drying and appearance blemishes such as nonuniformity, staining, or surface cracking.
- G. Precast units shall be removed from formwork using procedures conforming to PCI MNL-117. Minor patching in plant is acceptable, providing structural adequacy and appearance of units are not impaired. Each precast unit shall be identified with corresponding code on erection drawings, on a location not visible.
- H. Repair of damaged epoxy coating, when required, shall be made with patching material conforming to ASTM A 775. Repair shall be in accordance with the material Manufacturer's recommendations.
- I. Fabrication and Tooling of Stainless Steel Connections and Embedment: All tools used during fabrication shall be made of stainless steel. Use of carbon steel tools is prohibited.
- J. Welding of stainless steel shall conform to AWS A5.4, AWS B2.1 and AWS D1.1, using tungsten inert gas procedures and 316L filler metal for stainless steel to stainless steel and 309 filler metal for stainless steel to carbon steel. Surfaces shall be sanded smooth (do not grind), and oxidized discoloration shall be removed (blue heat tint). Threaded parts of stainless steel bolts shall be lubricated with graphite suspended in alcohol (Neo-Lube) every time that nut is run on or off the threads. No other lubricant is acceptable.
- K. Erection slings, cables, blocking, hardware and restraints shall be nonmetallic or stainless steel. Cribbing or crating shall be wood.

## **2.8 FINISH OF PRECAST UNITS**

- A. Unexposed Faces: Smooth, dense, uniform surface free from blemishes. Defects in unexposed edges shall be repaired as approved.
- B. Exposed Faces (Requiring Architectural Treatment): Appearance, color, and texture finish of vault shall be free of major blemishes. Repairs will be acceptable only if structural adequacy and appearance of product are not impaired and the patch repair and surrounding area match.
- C. Mechanical finishing of precast vault shall be at essentially the same age and strength of concrete to assure finished appearance is uniform.

## **PART 3 -- EXECUTION**

### **3.1 SITE ACCESS**

- A. The general contractor shall be responsible for providing adequate access to the site to facilitate hauling, storage and proper handling of the precast concrete units.

### 3.2 INSTALLATION

- A. Precast concrete units shall be installed to the lines and grades shown in the contract documents or otherwise specified.
- B. Precast concrete units shall be lifted by suitable lifting devices at points provided by the precast concrete producer.
- C. Precast concrete units shall be installed in accordance with applicable industry standards. Upon request, the precast concrete producer shall provide installation instructions.
- D. Field modifications to the product shall relieve the precast producer of liability regardless if such modifications result in the failure of the precast concrete unit.
- E. Pickup points, boxouts, inserts and bearing surfaces shown shall be grouted with non-shrink grout. The color and texture of concrete surfaces of adjacent areas shall be finished to match in the same plane.
- F. Tolerances: In accordance with requirements of PCI MNL-117 unless otherwise indicated.
  - 1. Variation from Plane of Location: 1/4 inch in 10 feet, compensating not cumulative.
  - 2. Out of Square: 1/8 inch in 10 feet maximum, noncumulative.
  - 3. Variation in Dimensions Indicated in Shop Drawings: Plus or minus 1/8 inch.
  - 4. Misalignment of Anchors, Inserts, Openings: 1/8 inch, maximum.
  - 5. Exposed Joint Dimension: 3/4 inch plus or minus 1/8 inch.
  - 6. Location of Reglets: 1/4 inch from true position.
- G. Joint Sealing: In accordance with Manufacturer's recommendation

### 3.2 PROTECTION

- A. Adjacent surfaces shall be protected from damage during sealing and cleaning operations and against damage, disfiguration, or discoloration from subsequent operations. Noncombustible shielding shall be used during welding operations.

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

## **SECTION 11000 - EQUIPMENT GENERAL PROVISIONS**

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

#### **1.1 WORK OF THIS SECTION**

- A. The WORK of this Section includes providing general requirements for the WORK of applicable Sections of these Specifications. Unless there are more restrictive requirements in the individual Sections, the provisions of this Section shall apply.
- B. The WORK of this Section applies to the WORK of the following Sections:
  - 1. Equipment in Divisions 02, 13, 15 and 16.

#### **1.2 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. Section 02630 Ductile Iron Pipe
  - 2. Section 13300 Instrumentation and Control
  - 3. Section 15000 Piping Components
  - 4. Section 15020 Pipe Supports
  - 5. Section 16030 Electrical Tests
  - 6. Section 16050 Basic Electrical Materials and Methods

#### **1.3 CODES**

- 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. International Mechanical Code (IMC)
  - 2. International Plumbing Code (IPC)
  - 3. International Fire Code (IFC)
  - 4. National Electrical Code (NEC)
  - 5. International Building Code (IBC)

#### **1.4 SPECIFICATIONS AND STANDARDS**

- A. Except as otherwise indicated, the applicable standards of the following organizations apply to the WORK of this Section:
  - 1. American Society for Testing and Materials (ASTM)
  - 2. American Public Health Association (APHA)
  - 3. American National Standards Institute (ANSI)

4. American Society of Mechanical Engineers (ASME)
5. American Water Works Association (AWWA)
6. American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE)
7. American Welding Society (AWS)
8. National Fire Protection Association (NFPA)
9. National Electrical Manufacturers Association (NEMA)
10. Antifriction Bearing Manufacturers Association (ABMA)
11. American Gear Manufacturers Association (AGMA)

B. The current editions of the following apply to the WORK of this Section:

1. ANSI B16.1 Cast Iron Pipe Flanges and Flanged Fittings Class 25, 125, 250, and 800
2. ANSI B16.5 Pipe Flanges and Flanged Fittings, Steel, Nickel Alloy, and Other Special Alloys
3. ANSI B46.1 Surface Texture
4. ANSI/ASME B1.20.1 General Purpose Pipe Threads (Inch)
5. ASTM A 48 Specification for Gray Iron Castings
6. ANSI/NFPA 70 National Electrical Code
7. MIL STD 167-2 Mechanical Vibrations of Shipboard Equipment (Reciprocating Machinery and Propulsion System and Shafting)

## **1.5 SHOP DRAWINGS AND SAMPLES**

A. The following shall be submitted in compliance with contract documents:

1. Manufacturer's product data including catalogue cuts.
2. Equipment name, identification number and specification numbers.
3. Shop drawings showing details, dimensions, anchorage details, and installation of equipment with all special fittings, appurtenances and required clearances.
4. Shipping weights.
5. Calculations of equipment anchorage forces and anchorage details.
6. Certification that the single manufacturer accepts the indicated unit responsibilities.
7. Parts list with materials of construction by ASTM reference and grade.
8. List of at least 5 installations and telephone numbers, where identical equipment has been used.

## 1.6 OWNER'S MANUAL

- A. In addition to the requirements of paragraph 01300-1.5, the following shall be included in the OWNER'S MANUAL:
1. Manufacturer's catalog including installation instructions.
  2. Manufacturer's operating and maintenance procedures.
  3. Manufacturer's certification that products comply with the indicated requirements.
  4. Certification that products have been factory-tested and found to conform with the contract requirements.
  5. Certification that the WORK has been field-tested and the WORK complies with the indicated requirements.
  6. Equipment tolerances
  7. Electrical data including control and wiring diagrams.
  8. Address and telephone number of local service representative.

## 1.7 SERVICES OF MANUFACTURER

- A. **Inspection, Startup, and Field Adjustment:** In accordance with the requirements of contract documents, an authorized service representative of the manufacturer shall visit the site and witness the following:
1. Installation of the equipment.
  2. Inspection, checking, and adjusting the equipment.
  3. Startup and field-testing for proper operation.
  4. Performing field adjustments to ensure that the equipment installation and operation comply with the Specifications.
- B. **Instruction of OWNER'S Personnel:**
1. An authorized service representative of the manufacturer shall instruct the OWNER'S personnel in the operation and maintenance of the equipment, including step-by-step troubleshooting with necessary test equipment. Training shall be specific to the models of equipment provided.
  2. The representative shall have at least one year of qualified experience in training covering the relevant subjects described in paragraph 11000-1.7.B.1. A resume for the representative shall be submitted to the CONSTRUCTION MANAGER.
  3. Training shall be scheduled a minimum of 3 weeks in advance of the first session.
  4. Training materials shall remain with the trainees.
- C. **Local Service:** The manufacturer shall have a local service agency (within 50 miles of the site) which maintains properly trained personnel and adequate spare parts and is able to respond and complete repairs within 24 hours.

## 1.8 FACTORY INSPECTION AND TESTING

- A. The CONTRACTOR shall be responsible for all costs associated with inspection and testing of materials, products, or equipment at the place of manufacture.
- B. **Product Testing:** Products shall be tested at the factory for compliance with the indicated requirements.

## 1.9 FIELD TESTING

- A. **Testing:** Products shall be field-tested for compliance with the indicated requirements.
- B. **Witnesses:** The OWNER and the CONSTRUCTION MANAGER (at the option of either) reserves the right to witness field tests.

## 1.10 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. **Delivery of Materials:** Products shall be delivered in original, unbroken packages, containers, or bundles bearing the name of the manufacturer. Materials delivered onsite without an approved submittal for verification shall be rejected and payment withheld.
- B. **Storage:** Products shall be carefully stored in a manner that will prevent damage and in an area that is protected from the elements.
- C. **Protection of Equipment:** Equipment shall be boxed, crated, or otherwise protected from damage and moisture during shipment, handling, and storage. Equipment shall be protected from exposure to corrosive fumes and shall be kept thoroughly dry at all times. Electrical equipment and other equipment with anti-friction or sleeve bearings shall be stored in weather tight storage facilities prior to installation. For extended storage periods, plastic equipment wrappers shall not be used to prevent accumulation of condensate.
- D. **Investigation of Failed Products:** Prior to disposal of failed products, the CONTRACTOR shall investigate the causes of failure and submit a report to the CONSTRUCTION MANAGER, who will subsequently direct the CONTRACTOR for disposal.

## PART 2 - PRODUCTS

### 2.1 GENERAL

- A. **General:** Only products meeting the indicated requirements shall be provided.
- B. **Manufacturers:** Products shall be new, of current manufacture, and shall be the products of reputable manufacturers specializing in the manufacture of such products.
- C. **Products:** Materials shall be suitable for the intended purpose and free of defects and shall be recommended by the manufacturer for the application indicated.

- D. **No Endorsement:** The listing of a manufacturer shall not be construed as an endorsement of a particular manufacturers product, nor shall it be construed that a named manufacturers standard product will comply with the indicated requirements. No preference is implied by the order of listing of named manufacturers, and the listings are not intended to be comprehensive. The manufacturer listings are only an indication that the OWNER and DESIGN CONSULTANT believe that the named manufacturers are capable of producing equipment and products which will satisfy the indicated requirements.

## 2.2 GENERAL REQUIREMENTS

- A. **Identification of Equipment Items:** Each item of equipment shall have an indelible, legible identifying mark corresponding to the equipment number indicated.
- B. **Shop Fabrication:** Shop fabrication shall be performed in accordance with the shop drawings.
- C. **Machine Finish:** The type of finish shall be the most suitable for the application in micro-inches complying with ANSI B46.1. The following finishes shall be used:
  - 1. Surface roughness of surfaces in sliding contact shall not exceed 63 micro-inches.
  - 2. Surface roughness shall not exceed 250 micro-inches except where a tight joint is indicated.
  - 3. Surface roughness for other mechanical parts shall not exceed 500 micro-inches.

## 2.3 EQUIPMENT SUPPORTS AND FOUNDATIONS

- A. **Equipment Supports:** Equipment supports, anchors, and restrainers shall be designed for static, dynamic, and seismic loads. The design horizontal peak ground acceleration shall be the greater of that indicated in the Geotechnical Report or as required by the UBC for seismic Zone 4. Unless otherwise indicated, seismic design importance factors shall be in accordance with Table 16-K of the UBC. Determination of seismic forces and load combinations shall follow procedures in the UBC.

## 2.4 PIPE HANGERS, SUPPORTS, AND GUIDES

- A. Pipe connections to equipment shall be supported, anchored, and guided to minimize stresses and loads on equipment flanges and equipment. Supports and hangers shall comply with the requirements of Section 15020.

## 2.5 FLANGES AND PIPE THREADS

- A. Flanges on equipment shall comply with ANSI B16.1, Class 125; or B16.5, Class 150, unless otherwise indicated. Threaded flanges and fittings shall have standard taper pipe threads complying with ANSI/ASME B1.20.1.

## 2.6 COUPLINGS

Flexible couplings shall be provided where indicated to accommodate slight angular misalignment, parallel misalignment, end float, and to minimize shock loads.

Gaskets, bolts, nuts, glands, end rings, and hardware for pipe couplings of all types shall be furnished by the manufacturer of the pipe coupling and shall be designed as an integral system by the pipe coupling manufacturer. Gaskets shall be designed for the coupling and appropriately sized to provide a watertight seal at the design pressure. Gaskets, bolts, nuts, glands, end rings, and hardware for pipe couplings shall be shipped with the pipe coupling and shall be clearly labeled indicating the origin of the material, including place and date of manufacture. Manufacturer's printed installation instructions shall be packaged with each pipe coupling.

Where universal type couplings are indicated, they shall be of the needle bearing type construction, equipped with commercial type grease fittings. Bearings shall be sized in accordance with ABMA 11, using a 1.25 service factor, for the same L-10 life expectancy as the driven equipment, but not less than 50,000 hours.

### A. STEEL FLEXIBLE PIPE COUPLINGS

1. Steel couplings shall have center sleeves and end rings made of carbon steel conforming to AWWA C219, Section 4. Minimum center sleeve length shall be 7 inches for pipe sizes 5 inches through 24 inches.
2. Sleeve bolts in exposed service or buried shall be Type 304 stainless steel per AWWA C219, Section 4.
3. Steel end follower rings shall be cast, forged, or hot rolled in one piece. Do not use rings fabricated from two or more shapes.
4. Wall thickness of sleeve shall be at least that specified for the size of pipe in which the coupling is to be used.

### B. DUCTILE IRON FLEXIBLE PIPE COUPLINGS

1. Couplings shall have center sleeves and end rings made of ductile iron conforming to AWWA C219, Section 4.
2. Sleeve bolts in exposed service or buried shall be Type 304 stainless steel per AWWA C219, Section 4.
3. Couplings shall be ductile iron, Dresser Style 153, Smith-Blair Type 441, Baker Series 228, or approved equal.

### C. FLANGED COUPLING ADAPTERS FOR DUCTILE IRON PIPE, PVC PRESSURE PIPE, OR PVC DISTRIBUTION PIPE

1. Adapters shall be ductile iron or steel, Dresser Style 127 or 128, Romac Type RFC-A-PVC-17.40, Smith-Blair Type 912 or 913, Baker Series 601 or 602, or approved equal. Flange ends shall match the Flange of the connecting pipe.

D. LINING AND COATING FOR COUPLINGS

Coat interior and exterior ferrous surfaces of flexible pipe couplings, transition couplings, and flanged coupling adapters with fusion-bonded epoxy per Standard Specification Section 02630. Coating shall be holiday free on interior surfaces and applied by manufacturer.

**2.7 INSULATING CONNECTIONS**

- A. Insulating bushings, unions, couplings, and flanges, shall comply with the requirements of Section 15000.

**2.8 GASKETS AND PACKINGS**

- A. Gaskets shall comply with the requirements of Section 15000.
- B. Packing around valve stems and reciprocating shafts shall be of compressible material, compatible with the fluid being used. Chevron-type "V" packing shall be Garlock No. 432, John Crane "Everseal," or equal.
- C. Packing around rotating shafts (other than valve stems) shall be "O"-rings, stuffing boxes, or mechanical seals, as recommended by the manufacturer.

**2.9 TOOLS AND SPARE PARTS**

- A. **Spare Parts:** All equipment shall be furnished with the manufacturers' recommended spare parts, as indicated in the individual equipment Sections.

Spare parts shall be tagged by project equipment number and identified as to part number, equipment manufacturer, and subassembly component (if appropriate). Spare parts subject to deterioration such as ferrous metal items and electrical components shall be properly protected by lubricants or desiccants and encapsulated in hermetically sealed plastic wrapping. Spare parts with individual weights less than 50 pounds and dimensions less than 2 feet wide, or 18 inches high, or 3 feet in length shall be stored in a wooden box with hinged wooden cover and locking hasp. Hinges shall be strap type. The box shall be painted and identified with stenciled lettering stating the name of the equipment, equipment numbers, and the words "spare parts." A neatly typed inventory of spare parts shall be taped to the underside of the cover.

**2.10 NAMEPLATES**

- A. Equipment nameplates of stainless steel shall be engraved or stamped and fastened to the equipment in accessible locations with stainless steel screws or drive pins. Nameplates shall contain the manufacturer's name, model, serial number, size, characteristics, and appropriate data describing the machine performance ratings.

**2.11 ANCHOR BOLTS, NUTS AND WASHERS**

- A. Unless otherwise specified, the CONTRACTOR shall provide Type 316 stainless steel anchor bolts and washers, and Type 416 stainless steel or other corrosion resistant, non-galling alloy nuts.

## **PART 3 - EXECUTION**

### **3.1 INSTALLATION**

- A. **General:** Products and equipment shall be installed in accordance with the manufacturer's written installation instructions, the requirements of this Section, the requirements of the individual equipment specifications, and as indicated.

### **3.2 COUPLINGS**

- A. Couplings shall be installed in accordance with the manufacturer's installation instructions.

### **3.3 INSULATING CONNECTIONS**

- A. Insulating connections shall be installed in accordance with the manufacturer's instructions.

### **3.4 PIPE HANGERS, SUPPORTS, AND GUIDES**

- A. Hangers, supports, and guides shall be installed in compliance with ANSI/ASME B31.1 and with Section 15020.

### **3.5 BOLTS AND MISCELLANEOUS METALS**

- A. Bolts, including anchor bolts, and miscellaneous metals shall comply with paragraph 11000-2.11.

### **3.6 PACKAGED EQUIPMENT**

- A. When any system is provided as pre-packaged equipment, coordination shall include space and structural requirements, clearances, utility connections, signals, outputs and features required by the manufacturer including safety interlocks.

### **3.7 PROTECTIVE COATING**

- A. Equipment shall be painted and coated in accordance with Section 02630. Non-ferrous metal and corrosion-resisting steel surfaces shall be coated with grease or lubricating oil. Coated surfaces shall be protected from abrasion or other damage during handling, testing, storing, assembly, and shipping.

**\*\* 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 City shall configure the radios and provide PLC program development.
- C. Responsibilities
  - 1. The CONTRACTOR, through the use of a qualified Instrumentation Subcontractor or vendor and qualified electrical and mechanical installers, shall be responsible to the OWNER for the implementation of the I&C and the integration of the I&C with other required instrumentation and control devices.
  - 2. Due to the complexities associated with the interfacing of numerous control system devices, the Instrumentation Subcontractor or vendor shall be responsible to the CONTRACTOR for the integration of the I&C with existing devices and devices provided under other Sections and provide a completely- integrated control system free of signal incompatibilities.
  - 3. As a minimum, the Instrumentation Subcontractor or vendor shall perform the following work:
    - a. Implementation of the I&C:
      - (1) Prepare shop drawing submittals
      - (2) Design, develop, and electronically draft loop drawings and control panel designs
      - (3) Prepare the test plan, the training plan, and the spare parts submittals
      - (4) Procure hardware
      - (5) Fabricate panels
      - (6) Perform factory tests on panels
      - (7) Perform bench calibration and verify calibration after installation
      - (8) Oversee and certify installation
      - (9) Oversee, document, and certify loop testing

- (10) Oversee, document, and certify system commissioning
- (11) Conduct the performance test
- (12) Prepare operations and maintenance Operations and Maintenance Information
- (13) Conduct training classes
- (14) Prepare record drawings
- (15) Prepare calibration sheets
- (16) Certify the installation of the I&C

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, or functional incompatibilities between the I&C and interfacing devices.

4. Instrumentation Subcontractor or vendor responsibilities in addition to the items identified above shall be at the discretion of the CONTRACTOR. Additional requirements in this Section and Division 13 that are stated to be the CONTRACTOR's responsibility may be performed by the Instrumentation Subcontractor or vendor.

D. Certification of Intent:

- 1. Fifteen days after Notice of 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 13300-1.1C3 in full compliance with the requirements of the Contract Documents."
  - b. "It is certified that the quotation to the CONTRACTOR includes full and complete compliance with the requirements of the Contract Documents without exception."

E. Documentation of Instrumentation Subcontractor Qualifications:

1. List of at least two instrumentation and control system projects successfully completed, of size and scope similar to that described herein, in which the applicant performed system engineering, system fabrication and installation, documentation (including schematic, wiring and panel assembly drawings), field testing, calibration and start-up, operator instruction and maintenance training. Each of the references cited must be accompanied by a written confirmation of the accuracy of the data by a managerial member of the control system operational staff.
2. In addition, list the following information for each project above:
  - a. Name of plant, OWNER, contact name, and telephone number. All phone numbers and contacts shall be verified by the applicant before submission.
  - b. Name of manufacturer(s) for the majority of instrumentation provided.
  - c. Type of equipment furnished (i.e., transmitters, recorders, indicators, etc.)
  - d. Manufacturer and model number of DCS, SCADA, or PLC to which the analog system interfaced.
  - e. Date of completion or acceptance.
3. Furnish the name of the individual person who will be responsible for office engineering and management of this project, and the individual who will be responsible for field testing, calibration, start-up, and operator training for this project. Include references of recent projects of these individual persons.
4. Submit specific documentation which verifies that Instrumentation Subcontractor employs the minimum of individuals who have been formally trained in the application of the:
  - a. Indicated operating systems.
  - b. Indicated software packages.
  - c. Indicated graphical user interface software packages.
5. Document that the applicant's company has been actively involved in the instrumentation systems business (under the same corporate name).

## 1.2 RELATED SECTIONS

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

1. Section 16050 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. International Building Code (IBC)
- 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 –Contract Documents and the following:
  1. Coordinate the instrumentation Work so that the complete instrumentation and control system will be provided and will be supported by accurate shop drawings and record drawings.
  2. Symbology and Nomenclature: In these Contract Documents, all systems, all meters, all instruments, and all other elements are represented schematically, and are designated by symbology as derived from Instrument Society of America Standard ANSI/ISA S5.1 - Instrumentation Symbols and Identification. The nomenclature and numbers designated herein and on the Drawings shall be employed exclusively throughout shop drawings, and similar materials. No other symbols, designations, or nomenclature unique to the manufacturer's standard methods shall replace those prescribed above, used herein, or on the Drawings.
- B. Presubmittal Conference:
  1. Arrange and conduct a Presubmittal Conference within 30 days after award of the contract. The purpose of the Presubmittal Conference is to review and approve the manner in which the CONTRACTOR intends to carry out its responsibilities for shop drawing submittal on the Work to be provided under this Section. The CONTRACTOR, the Instrumentation Subcontractor or vendor, and the ENGINEER shall attend. Both the CONTRACTOR and the ENGINEER may invite additional parties at their discretion.

2. Allow one, 8-hour days for the Presubmittal Conference.
3. Submit 3 copies of the following items for discussion at the Presubmittal Conference:
  - a. A list of equipment and materials required for the I&C and the manufacturer's name and model number for each proposed item.
  - b. A list of proposed clarifications to the Contract Documents along with a brief explanation of each. Resolution shall be subject to a separate formal submittal and review by the ENGINEER.
  - c. A sample of each type of submittal specified herein.
  - d. A flow chart showing the steps to be taken in preparing and coordinating each submittal.
  - e. A bar-chart type schedule for all system related activities from the Presubmittal Conference through start-up and training. Dates of submittals, design, fabrication, programming, factory testing, deliveries, installation, field testing, and training shall be shown. The schedule shall be subdivided to show activities relative to each major item or group of items when everything in a given group is on the same schedule.
  - f. An overview of the proposed training plan. The ENGINEER will review the overview and may request changes. All changes to the proposed training shall be resolved at the Presubmittal Conference. The overview shall include the following for each proposed course:
    - (1) Course title and objectives.
    - (2) Prerequisite training and experience of attendees.
    - (3) Course content - a topical outline.
    - (4) Course duration.
    - (5) Course format - lecture, laboratory demonstration, etc.
  - g. A preliminary copy of the Instrumentation Subcontractor Qualification submittal.
4. Take minutes of the Presubmittal Conference, including all events, questions, and resolutions. Before adjournment, all parties must concur with the accuracy of the minutes and sign accordingly.

C. Shop Drawings:

1. General:

- a. Preparation of shop drawings shall not start until adjournment of the Presubmittal Conference.
- b. 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.
- c. Organization of the shop drawing submittals shall be compatible with eventual submittals for later inclusion in the operations and maintenance information submitted. Submittals that are improperly organized or incomplete for a given loop will be rejected.
- d. 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.
- e. 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. Instrument Submittal: Submit the instrument submittal as a complete bound package at one time within 60 calendar days after the commencement date stated in the Notice to Proceed, including:

- a. A complete index that lists each device by tag number, type, and Manufacturer. A separate technical brochure or bulletin shall be included with each instrument data sheet. The data sheets shall be indexed in the submittal by systems or loops, as a separate group for each system or loop. If, within a single system or loop, a single instrument is employed more than once, one data sheet with one brochure or bulletin may cover all identical uses of that instrument in that system. Each brochure or bulletin shall include a list of tag numbers for which it applies. System groups shall be separated by labeled tags.
- b. Fully executed data sheets according to ISA-S20 - Specification Forms for Process Measurement and Control Instruments, Primary Elements and Control Valves, for each component, together with a technical product brochure or bulletin. The technical product brochures shall be complete enough to verify conformance to all Contract Document requirements. The data sheets, as a minimum, shall show:

- 1). Component functional description used in the Contract Documents
  - 2). Manufacturer's model number or other product designation
  - 3). Project tag number used in the Contract Documents
  - 4). Project system or loop of which the component is a part
  - 5). Project location or assembly at which the component is to be installed
  - 6). Input and output characteristics
  - 7). Scale, range, units, and multiplier (if any)
  - 8). Requirements for electric supply (if any)
  - 9). Requirements for air supply (if any)
  - 10). Materials of component parts to be in contact with or otherwise exposed to process media and corrosive ambient air
  - 11). Special requirements or features
- c. Flow Meter Sizing Calculations: Calculations shall be submitted on the Instrument Manufacturer letterhead and shall include the following:
- 1). Proposed flow meter size based on indicated minimum, maximum and average flow rates
  - 2). Guaranteed flow meter accuracy based on the upstream and downstream straight runs associated with the location of each flow meter
  - 3). Permanent head loss associated with each flow meter
  - 4). Flow vs. differential pressure curves for all head-type devices. For compressible fluids, curves shall be pressure and temperature compensated.
  - 5). References to ASME and ISA standard equations used
  - 6). Values used for all parameters used in calculations
- d. Calibration sheets in accordance with Subsection 13300-1.4C5.
- e. Priced list of all spare parts for all devices

- f. Instrument installation, mounting, and anchoring details shall be submitted in an electronic INTERGRAPH MICROSTATION format and hard copy format. Each instrument shall have a dedicated 8-1/2" X 11" detail that pertains to the specific instrument by tag number. Instruments that share the same installation detail shall be tabulated by tag numbers on the same detail sheet. As a minimum, each detail shall have the following content:
- 1). Show all necessary sections and elevation views required to define instrument location by referencing tank, building or equipment names and numbers, and geographical qualities such as north, south, east, west, basement, first floor.
  - 2). Ambient temperature and humidity of the environment where the instrument will be installed.
  - 3). Corrosive qualities of the environment where the instrument will be installed.
  - 4). Hazardous rating of the environment where the instrument will be installed.
  - 5). Process line pipe or tank size, service and material.
  - 6). Process tap elevation and location
  - 7). Upstream and downstream straight pipe lengths between instrument installation and pipe fittings and valves.
  - 8). Routing of tubing and identification of supports.
  - 9). Mounting brackets, stands, and anchoring devices.
  - 10). Conduit entry size, number, location, and delineation between power and signal.
  - 11). NEMA ratings of enclosures and all components.
  - 12). Clearances required for instrument servicing.
  - 13). List itemizing all manufacturer makes, model numbers, quantities, lengths required, and materials of each item required to support the implementation of the detail.
- 3 Project-Wide Loop Drawing Submittal: Furnish a Project-wide Loop Drawing Submittal (PLDS) that completely defines and documents the contents of each monitoring, alarming, interlock, and control loop associated with equipment provided under the instrumentation sections, equipment provided under sections in other Divisions, existing, and OWNER-furnished equipment that is to be incorporated into the I&C. The PLDS shall be a singular complete bound package electronically drafted in INTERGRAPH

MICROSTATION format, submitted within 120 days after contract award, and shall include the following:

- a. A complete index in the front of each bound volume. The loop drawings shall be indexed by systems or process areas. All loops shall be tagged in a manner consistent with the Contract Documents. Loop drawings shall be submitted for every analog and discrete monitoring and control loop.
- b. Drawings showing definitive diagrams for every instrumentation loop system. These diagrams shall show and identify each component of each loop or system using legend and symbols from ANSI/ISA S5.4 - Instrument Loop Drawings, and as defined by the most recent revision in ISA. Each system or loop diagram shall be drawn on a separate drawing sheet. Loop drawings shall be developed for loops in equipment vendor supplied packages, equipment provided under the instrumentation sections, and OWNER furnished equipment. The loop drawings shall also show all software modules and linkages. In addition to the expanded ISA S5.4 requirements the loop diagrams shall also show the following details:
  - 1). Functional name of each loop.
  - 2). Reference name, drawing, and loop diagram numbers for any signal continuing off the loop diagram sheet.
  - 3). MCC panel, circuit, and breaker numbers for all power feeds to the loops and instrumentation.
  - 4). Designation, and if appropriate, terminal assignments associated with every manhole, pullbox, junction box, conduit, and panel through which the loop circuits pass.
  - 5). Vendor panel, instrument panel, conduit, junction boxes, equipment and PLC I/O terminations, termination identification wire numbers and colors, power circuits, and ground identifications.
- c. Itemized instrument summary. The instrument summary shall list all of the key attributes of each instrument provided under this Contract. As a minimum, attributes shall include:
  - 1). Tag number
  - 2). Manufacturer
  - 3). Model number
  - 4). Service
  - 5). Area location

- 6). Calibrated range
  - 7). Loop drawing number
  - 8). Associated LCP, PLC, PCM, or RTU
- 4 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.
- 5 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

- 6 Training Submittals: Subsequent to the receipt of the CONTRACT MANAGER's input made at the Presubmittal Conference, the CONTRACTOR shall submit a training plan that includes:
    - a. A resubmittal of the training plan overview from the Presubmittal Conference with incorporation of all modifications agreed upon at that meeting.
    - b. Schedule of training courses including dates, durations, and locations of each class.
    - c. 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 - Process and Instrumentation Diagrams
    - b. Section B - Loop Descriptions
    - c. Section C - Loop Drawings
    - d. Section D - Instrument Summary
    - e. Section E - Instrument Data Sheets
    - f. Section F - Sizing Calculations
    - g. Section G - Instrument Installation Details
    - h. Section H - 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.
  4. Start-up of systems shall begin no sooner than 15 days after final approval of the I&C operations and maintenance information provided.
- 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.

## **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.
- 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 +0.5% of full scale and a minimum repeatability of +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 control panels shall be provided with redundant power supplies that are configured in a fault-tolerant manner to prevent interruption of service upon failure and interruption of service necessitated by the replacement of a power supply. All power supplies shall have an excess rated capacity of 40%. The failure of a power supply shall be annunciated at the control panel and repeated to the SCADA System.
- J. Alternative Equipment and Methods: Equipment or methods requiring redesign of any project details are not acceptable without prior written approval of the ENGINEER through the "or equal" process. Any proposal for approval of alternative equipment or methods shall include evidence of improved performance, operational advantage and maintenance enhancement over the equipment or method indicated, or shall include evidence that an indicated component is not available.

## 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 - water treatment or pumping facility
- 2 Temperature Range - 32 through 104 degrees F
- 3 Thermal Shock - 1 degree F per minute, maximum
- 4 Relative Humidity - 20 through 90%, non-condensing

### **2.3 SPARE PARTS AND SPECIAL TOOLS**

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

### **2.4 ELECTRONIC PRESSURE TRANSMITTERS**

- A. Electronic pressure transmitters shall consist of a capsule assemble, bottom works, vent plug, drain plug, cover flange, process connector and connection, amplifier unit, integral indicator, terminal box with cover, block and bleed valves, and conduit connections. Pressure applied to the transmitter shall be transmitted by a sealed fill fluid to both sides of a sensing diaphragm. The sensing diaphragm and the sensor body shall function as the moving and fixed electrodes of a differential capacitor respectively. As the applied pressure causes the diaphragm to move, the capacitance of the cell shall change. The amplifier unit shall convert the change in capacitance to a 4-20 mA DC signal, wire type, with an allowable loop load of no less than 600 ohms. Static pressure rating shall be a minimum of 500 psig. The maximum over-range pressure limit shall be a minimum of 150% of the minimum range. Span shall be adjustable over a minimum of 5:1 range: External adjustments shall include zero and span. Damping shall be provided as an internal adjustment. All equipment shall be suitable for an ambient operating range of -40 to + 212 degrees F. All wetted parts shall be constructed of Type 316 stainless steel. All block and bleed valves shall be constructed of Type 316 stainless steel. The integral indicator shall be calibrated in process units. Power supply shall be 24 VDC. Accuracy, including linearity and repeatability, shall be a plus or minus 0.1% of span.
- B. The table below of electronic pressure transmitters shall be provided. CONTRACTOR should not consider this a complete Bill of Materials and must provide all equipment necessary for complete working systems. Electronic gauge pressure transmitters shall be Smar Model 301.

<b>Tag No.</b>	<b>Range</b>	<b>Body/Bolt Material</b>	<b>Fill Fluid</b>	<b>Process Connection</b>	<b>NEMA Rating</b>
PIT-1	0-300 psi	316 SS	Silicone	1/2" NPT	4x
PIT-2	0-300 psi	316 SS	Silicone	1/2" NPT	4x

## **2.5 LEVEL SWITCH**

- A. Float Type: Liquid Level Float Switches. Float switch (es) shall be direct acting and consist of a Polyvinylchloride (PVC) housing, flexible 3-conductor cable with a switch. The float housing shall be a sphere of at least 4½ inches in diameter. The switch shall be embedded in a housing inside the float. The lead cable shall be #14 AWG with 105 strands per conductor, made specifically for underwater use and heavy flexing service. The switch shall be connected to two of the three conductors of the cable. The third conductor shall be an internal ground and shall be colored green. The switch shall have a 20-ampere rating at 115 VAC (6A @ VDC). An additional synthetic rubber jacket shall act as a hinge between the float and where the cable is held by the stationary clamp. A liquid rise of 9 inches from the reset position shall operate the float switch, and reset shall occur when the liquid level drops 9 inches. Operating temperature shall be 0° to +140° F. Weight and buoyancy shall be such that contaminants, like a cake of grease, will not result in the float switch changing operating level. A NEMA 4x junction box shall be supplied for termination of the float cables to allow conventional wiring and conduit to be run from the junction box to a control panel. It shall have terminal blocks for the required number of circuits and shall accept sealed fittings furnished with the float switch. The float switch (es) shall be Magnetrol T10, or equal.

## **2.6 SUBMERSIBLE TYPE PRESSURE/LEVEL TRANSMITTER (NOT USED)**

## **2.7 TEMPERATURE TRANSMITTER (NOT USED)**

## **2.8 POLYETHYLENE TUBING**

- A. Tubing shall be thermoplastic fabricated from high molecular weight polyethylene and shall meet the following codes: ASTM D-1248-60T, Type 1, Class A, Grade 4 and Federal Specification LP-590, Type 2, Grade 7. The tubing shall have a working pressure 160psi and a burst pressure of 600psi at normal operating conditions. Provide all fittings and valves required by the manufacturer of the tubing for a complete operating system. The tubing shall be Poly-Flo Polyethylene tubing 66-P or approved equal.

## **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. Instrument process sensing lines shall be installed similar to conduit specified under Section 16050 - Basic Electrical Materials and Methods. Individual tubes shall run parallel and near the surfaces from which they are supported. Supports shall be used at intervals of not more than 3 feet of rigid tubing.
  5. Bends shall be formed to uniform radii with the proper tool without deforming or thinning the walls of the tubing. Plastic clips shall be used to hold individual plastic tubes parallel. Ends of tubing shall be square-cut and cleaned before being inserted in the fittings. Bulkhead fittings shall be provided at all panels requiring pipe or tubing entries.
  6. All differential pressure elements shall have three valve manifolds.
  7. All flexible cables and capillary tubing shall be installed in flexible conduits. The lengths shall be sufficient to withdraw the element for periodic maintenance.
  8. All power and signal wires shall be terminated with crimped type lugs.
  9. All connectors shall be, as a minimum, water tight.
  10. All wires shall be mounted clearly with an identification tag that is of a permanent and reusable nature.
  11. 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.
  12. All mounting stands and bracket materials and workmanship shall comply with requirements of the Contract Documents.

13. 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.
14. The OWNER will not be responsible for any additional cost of rework attributable to actions of the CONTRACTOR or the Instrumentation Subcontractor.

### **3.4 CALIBRATION**

- A. General: All devices provided under the instrumentation sections shall be calibrated according to the manufacturer's recommended procedures to verify operational readiness and ability to meet the indicated functional and tolerance requirements.
- B. Calibration Points: Each instrument shall be calibrated at 20, 40, 60, 80 and 100% of span using test instruments to simulate inputs. The test instruments shall have accuracies traceable to National Institute of Testing Standards.
- C. Bench Calibration: Instruments that have been bench-calibrated shall be examined in the field to determine whether any of the calibrations are in need of adjustment. Such adjustments, if required, shall be made only after consultation with the ENGINEER.
- D. Field Calibration: Instruments that were not bench-calibrated shall be calibrated in the field to insure proper operation in accordance with the instrument loop diagrams or specification data sheets.
- E. Calibration Tags: A calibration and testing tag shall be attached to each piece of equipment or system at a location determined by the ENGINEER. Have the Instrumentation Supplier sign the tag when calibration is complete. The ENGINEER will sign the tag when the calibration and testing has been accepted.

### **3.5 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. Interlocks: All hardware and software interlocks between the instrumentation and the motor control circuits, control circuits of variable-speed controllers and packaged equipment controls shall be checked to the maximum extent possible.
- C. 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.

- D. 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.
- E. 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

- F. Loop Certifications: When installation tests have been successfully completed for all individual instruments and all separate analog control networks, a certified copy of all test forms signed by the ENGINEER or the ENGINEER representative as a witness, with test data entered, shall be submitted to the ENGINEER together with a clear and unequivocal statement that all instrumentation has been successfully calibrated, inspected, and tested.

### **3.6 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 CONSTRUCTION MANGER. 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 motor control center and 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. Final acceptance of the control system shall be based upon plant completion as stated in the General Conditions.

### **3.7 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 to check all equipment, perform the tests indicated in this Section, and furnish startup services.

### **3.8 PERFORMANCE TEST**

- A. The entire I&C shall operate for 30 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 30-day period.

### **3.9 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, trouble shooting 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.

### **3.10 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 13370 – CONTROL PANELS**

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

#### **1.1 WORK OF THIS SECTION**

- A. General: The CONTRACTOR shall provide control panels, complete and operable, in accordance with the Contract Documents.
- B. The provisions of this Section apply to local control panels provided in equipment systems specified in other sections unless indicated otherwise in those sections.

#### **1.2 RELATED SECTIONS**

- A. The Work of the following Sections applies to the Work of this Section. Other Sections, not referenced below, also apply to the extent required for proper performance of this Work:
  - 1. Section 13300 Instrumentation and Control
  - 2. Section 13374 Control Panel Instrumentation

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

- A. Except as otherwise indicated, the current editions of the following commercial standards apply to the Work of this Section:
  - 1. ASTM A36 Specification for Carbon Structural Steel
  - 2. ASTM A283 Specification for Low and Intermediate Tensile Strength Carbon Steel Plates
  - 3. NEMA ICS-1-101 Industrial Control Systems
  - 4. SSPC-SP6 Specification for the Society for Protective Coating B Commercial Blast

#### **1.4 CONTRACTOR SUBMITTALS**

- A. Control Panel Engineering Submittal: The CONTRACTOR shall submit a control panel engineering submittal (CPES) for each control panel and enclosure provided under Division 13. The CPES shall completely define and document the construction, finish, layout, power circuits, signal and safety grounding circuits, fuses, circuit breakers, signal circuits, internally mounted instrumentation and SCADA system components, face plate mounted instrumentation components, internal panel arrangements, and external panel arrangements. All panel drawings shall be "B" size, and all data sheets and manufacturer specification sheets shall be "A" size. The submittal shall be in conformance with NEMA Standard ICS-1-1.01, shall be submitted as a singular complete bound volume or multi-volume package within 120 calendar days after Notice to Proceed and shall have the following content:

1. A complete index shall appear in the front of each bound volume. Panels shall be indexed by system or process area, and drawings and data associated with a panel shall be grouped together. All panel tagging and nameplate nomenclature shall be consistent with the requirements of the Contract Documents.
2. Scale construction drawings which define and quantify the type and gauge of steel to be used for panel fabrication, the ASTM A36 grade proposed for structural shapes and straps, panel door locks and hinge mechanisms, type of bolts and bolt locations for section joining and anchoring, details and proposed locations on the use of "Unistrut" members, stiffener materials and locations, electrical terminal box and outlet locations, electrical access locations, print pocket locations, writing board locations and lifting lug material and locations.
3. Scale physical arrangement drawings which define and quantify the physical groupings comprising control panel sections, auxiliary panels, subpanels, and racks. Cutout locations with nameplate identifications shall be indicated.
4. Front of panel layouts for all control panels.
5. Schematic/elementary diagrams depicting all control devices and circuits and their functions.
6. Wiring/connection diagrams locating and identifying electrical devices, terminals and interconnecting wiring. These diagrams shall show interconnecting wiring by lines, designate terminal assignments, and show the physical location of all electrical and control devices.
7. Interconnection diagrams locating and identifying all external connections between the control panel/control panel devices and associated equipment. These diagrams shall show interconnecting wiring by lines, designate terminal assignments, and show the physical location of all panel ingress and egress points.
8. Control sequence diagrams to portray the contact positions or connections required to be made for each successive step of the control action. Written descriptions explaining the control sequence diagrams and system operation shall be furnished.
9. Completed ISA-S20 data sheets for all instrumentation devices associated with each control panel, supplemented with manufacturer specification sheets which verify conformance to the requirements of the Contract Documents.
10. A bill of material which enumerates all devices associated with the control panel.
11. A priced listing of analog spare parts.

## **1.5 SPARE PARTS AND SPECIAL TOOLS**

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

## **PART 2 -- PRODUCTS**

### **2.1 GENERAL**

- A. Environmental Suitability: All outdoor control panels and instrument enclosures shall be suitable for operation in the ambient conditions associated with the locations designated in the Contract Documents. Heating, cooling, and dehumidifying devices shall be provided in order to maintain all instrumentation devices no less than 20% below the maximum rated environmental operating level, and at least 20% above the minimum rated environmental operating level. The CONTRACTOR shall provide all power wiring for these devices. Enclosures suitable for the environment shall be furnished.
- B. The control panel controls shall be 24 VDC. Control conductors shall be provided in accordance with the indicated requirements.
- C. The main feeder disconnect shall have a door-mounted handle unless otherwise indicated.
- D. Control panels shall be housed in NEMA 4X enclosures with gasketed doors. Control panels shall be freestanding or pedestal-mounted as indicated. Internal control components shall be mounted on an internal back-panel or side-panel as required.
- E. Each source of foreign voltage shall be isolated by providing disconnecting or pull-apart terminal blocks or a disconnect operable from the control panel front. Each control panel shall be provided with identified terminal strips for the connection of all external conductors. Provide sufficient terminal blocks to connect 25% additional conductors for future use.
- F. Discrete outputs from the control panel shall be provided by electrically isolated contacts rated for 5 A at 120 VAC. Analog inputs and outputs shall be an isolated 4-20 mA, 2-wire signals with power supply.
- G. Programmable Logic Controllers (PLCs) may be provided in lieu of relays if the programmable logic controllers match the PLCs provided under Section 13374 - Control Panel Instrumentation.
- G. All control panel mounted devices shall be mounted a minimum of 3 feet above finished floor elevation.
- H. Painting: Control panels shall be thoroughly cleaned and sand blasted per Steel Structures Painting Council Specification SSPC-SP-6 (Commercial Blast) after which surfaces shall receive a prime coat of Amercoat 185 or equal 3-mils dry, for a

total thickness of the complete system of 6 mils. The finished color of the outside surfaces shall be selected by the ENGINEER, unless otherwise indicated. The interior of the control panel, back-panel, and side-panel(s) shall have a white finish coat.

## 2.2 CONTROL PANELS

### A. Materials:

1. Panel section faces shall be No. 10 gauge minimum thickness steel for free standing panels and No. 14 gauge minimum thickness steel for wall mounted or pedestal mounted panels. All materials shall be selected for levelness and smoothness.
2. Relay rack high density type panels shall use standard relay racks with No. 14 gauge steel frame and supports.
3. Structural shapes and strap steel shall comply with ASTM A283.
  - a. Bolting Material: Commercial quality carbon steel bolts, nuts and washers, shall be 2-inch diameter with UNC threads. Carriage bolts shall be used for attaching end plates. All other bolts shall be hex head machine bolts. All nuts shall be hot pressed hex, American Standard, heavy. Standard wrought washers shall be used for foundation bolts and attachments to building structures. All other bolted joints shall have SAE standard lock washers.
4. Construction: Dimensions shall be in accordance with vendor's requirements. Elevations and horizontal spacing shall be subject to ENGINEER's approval.

### B. Fabrication:

1. End plates, top plates and top closure panels (to hung ceiling) shall be provided when required by the material requisition. End plates, top plates and top closure panels shall be removable with countersunk bolts to match panels. Top closure panels shall be provided in lengths which match the widths of standard panels, except that one top closure panel may extend across two 4-foot 6-inches wide or five 2-foot wide standard panels. The vertical joints of these panels shall align with the vertical joints of the standard panels.
2. End closure or rear closure doors shall be provided where required. Such doors shall be flush fitting, gasketed, and be of the hinged lift-off type with lockable door handles. A common key shall be provided for all doors on one panel assembly. Removable access panels shall be provided with dished handle fasteners. Screw driver 1/4 turn or Dzus type fasteners are not acceptable.
  - a. The flanged edges of all panels shall be straight and smooth. Corners shall be welded and ground smooth.

- b. The face of the panel shall be true and level after flanging.
- c. All panel cut-outs and holes may be cut or drilled by any standard method that does not cause deformation. Burrs shall be ground smooth.
- d. Adjacent panels shall be assembled with faces flush. Gaps or cracks shall not be visible from the front of the assembled instrument board.
- e. Stiffeners shall be welded to the back of panels as required to prevent panel deformation due to the weight of face mounted instruments.
- f. Panels shall be self-supporting as defined below.

C. Frameworks and Supports:

- 1. The rear of each panel section shall have a steel framework assembled to it for supporting conduit, wireways, switches, piping, and all instrument accessory items such as relay or terminal enclosures, transducers, pressure switches, valves, and air relays. The main framework shall be constructed of standard structural shapes. Special shapes such as "Unistrut" may be used for secondary supports. The framework shall neither interfere with instrument connections nor interfere with access needed for maintenance or adjustments.
- 2. The steel framework shall extend 2 feet 4 inches back from the panel face, or as indicated in the material requisition. Where indicated, individual adjustable leg supports shall be provided at the back of the framework so that the entire panel is self-supporting.

D. Preparation of Panel Surface:

- 1. The following requirements apply to the front and rear face of the panel, both sides and the edges of all flanges, and the periphery of all holes or cut-outs:
  - a. All high spots, burrs, and rough spots shall be ground smooth.
  - b. The surfaces shall be sanded or sandblasted to a smooth, clean bright finish.
  - c. All traces of oil shall be removed with a solvent.
  - d. The first coat of primer shall be applied immediately.

E. Panel Finishing:

- 1. A thin coat primer surface shall be applied over the entire panel surface.
- 2. Wet sand, dry, then quick glaze spot putty on the front of the panel only. Dry, then wet sand again and dry.
- 3. A primer surface shall be applied on the front of the panel only.

4. Wet sand to smooth clear finish, then dry.
  5. At least two coats of air-dry, satin finish, lacquer enamel shall be applied over the entire surface. Color shall be as approved by ENGINEER. Finish shall be suitable for high UV exposure.
  6. Furnish two one-pint containers of air drying, matching paint for field touch-up of the panel face.
- F. Instrument Finishing: The final coats applied to painted surface of instrument cases, doors, or bezels which are visible from the front of panels shall be manufacturer's standard unless otherwise indicated. Black japan or "crinkle" finishes on instrument cases are not acceptable.
- G. Mounting of Instruments:
1. The panel vendor shall provide cut-outs and shall mount all instrument items indicated to be panel mounted, including any instruments indicated to be furnished by other vendors but installed in panel (if applicable).
  2. The panel vendor shall also mount behind the panels other instrument accessory items as required for functionality or as indicated.
  3. Equipment mounted at the rear of panel shall be installed to allow for commissioning adjustments, servicing requirements, and cover removal.
  4. Spare space shall be kept clear of wiring to give maximum space for future additions.
- H. Electrical Requirements:
1. Conduit, wireways, switches, wire, and electrical fittings shall be provided for all 115 V circuits to instruments and other electrical devices as required for a complete and operable installation.
  2. Conduit, wireways, junction boxes, and fittings shall be provided for all signal wire, thermocouple, or resistance thermometer lead wire. Conduit or wireway runs shall include those required between temperature sensors and temperature transmitters and between the thermocouple wireway or junction box to instruments.
  3. Each terminal connection shall have a plastic plate with a terminal and instrument tag number. All wiring shall be identified with stamped tubular wire and markers.
  4. Freestanding panels shall be provided with switched 100-W incandescent back-of-panel lights. One light shall be provided for every 4 feet of panel width and shall be mounted inside and in the top of the back-of-panel area.
  5. Freestanding panels shall be provided with a 15-A, 120-V, service outlet circuit within the back-of-panel area. The circuit shall be provided with 3-

wire, 120-V, 15-A, duplex receptacles one for every 4 feet of panel width (one minimum per panel), spaced evenly along the back-of-panel area.

6. Wall mounted or pedestal mounted panels shall be so sized as to adequately dissipate heat generated by equipment mounted in or on the panel.
7. Wall mounted or pedestal mounted panels mounted outside or in unshaded areas shall be provided with thermostatically controlled heaters that maintain inside temperature above 40 degrees F.
8. A hand switch controlled 100-W incandescent light and a breaker protected 120-V, 15-A duplex receptacle shall be provided within each wall mounted or pedestal mounted panel.
9. Wiring methods and materials for all panels shall be in accordance with the NEC requirements for General Purpose (no open wiring) unless otherwise indicated.
10. Signal and Control Circuit Wiring:
  - a. Wire type and sizes: Conductor shall be flexible stranded copper machine tool wire UL listed Type MTW, and shall be rated 600 V. Wires for instrument signal circuits and alarm input circuits shall be No. 14 AWG. All other wires, including shielded cables, shall be No. 16 AWG, minimum.
  - b. Wire Marking: Each signal, control, alarm, and indicating circuit conductor connected to a given electrical point shall be designated by a single unique number which shall be shown on all shop drawings. These numbers shall be marked on all conductors at every terminal using white numbered wire markers which shall be plastic-coated cloth, Brady Type B-500 or equal or shall be permanently marked by heat-shrink plastic.
  - c. Flexible conduit is not acceptable except when specifically approved by the ENGINEER in writing.
  - d. Conduit fittings shall be Crouse-Hinds cast fittings or equal.
  - e. Splicing of wires in conduits is discouraged. If permitted, splicing shall be approved by the ENGINEER and splices shall be soldered or pressure type crimped.
  - f. For case grounding, panels shall be provided with a 1/4-inch by 1-inch copper ground bus complete with solderless connector for one No. 4 AWG bare stranded copper cable. The copper cable shall be connected to a system ground loop.

11. Electrical Locations:
  - a. Terminal boxes for incoming and outgoing signal leads shall be located at the top or bottom of the panel as indicated or as otherwise required.
12. Power Supply Wiring:
  - a. Unless otherwise indicated, all instruments, alarm systems, and motor controls shall operate on 24 VDC.
  - b. At a location near the top of the panel (or bottom), the panel fabricator shall provide terminal box connections for the main power supply entry.
  - c. Instruments located on the same panel section and serving the same process unit may be connected to a common branch circuit from the power supply. The number of circuits depends on the circuit load as indicated. Different panel sections or different process units shall not use common branch circuits. When instruments are not equipped with integral fuses, fuses shall be provided as required for the protection of individual instruments against fault currents. Fuses shall be mounted on the back of the panel in a fuse holder, and each fuse shall be identified by a service name tag.
  - d. Each potentiometer type instrument, electronic transducer, controller, or analyzer shall have an individual disconnect switch. Disconnect switches shall have metal or plastic tags indicating instrument tag numbers. Individual plug and cord set power supply connections may be used without switches when indicated.
13. Alarm Wiring: The panel vendor shall provide all alarms including light cabinets, audible signal units, test and acknowledge switches, and remote logic units as indicated. Interconnecting wiring to panel mounted initiating devices shall also be wired by the panel vendor. The wiring from external initiating devices shall be provided by the installation contractor. Where plug and cord sets are provided for component interconnection, the panel vendor shall harness and support the cables in neat and orderly fashion. Where separate wire is required, panel vendor shall install No. 16 AWG with THWN or THHN insulation between all components.
14. Signal Wiring:
  - a. Signal Wire - Non Computer Use:
    - (1) Signal wire shall be twisted pair or triads in conduit or troughs. Cable shall be constructed of No. 16 AWG copper signal wires with THWN or THHN insulation.

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

Positive (+): Black

Negative (-): White

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

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

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

## **2.3 RCP ENCLOSURE**

A. Enclosures are Hoffman standard enclosures. Enclosures shall be free of damage and exterior blemishes. Enclosures shall be square with the doors seating properly at the gaskets and operating freely. Enclosures are 48@ H X 36@ W X 16@ D single door wall mount NEMA 4X enclosures with the following features:

1. 14 gauge type 304 stainless steel with painted white finish.
2. Seams continuously welded and ground smooth, no holes or knockouts.
3. Type 316L stainless steel padlocking handle with 3-point latch.
4. Gasketed doors.
5. Continuous door hinge length > 90% of door height.
6. Removable full back panel Gloss white finish.
7. All exterior hardware type 316 stainless steel.
8. High-impact thermoplastic data pocket mounted to interior of door.
9. 12 inch type 304 stainless steel floor stand kit with painted white finish.

## **PART 3 -- EXECUTION**

### **3.1 INSTALLATION**

A. Preparation and Shipping:

1. Crate panels for shipment using a heavy framework and skids. The panel sections shall be cushioned to protect the finish of the instruments and panel during shipment. All instruments which are shipped with the panel shall

further have suitable shipping stops and cushioning material installed to protect parts which could be damaged due to mechanical shock. Each separate panel unit shall be provided with removable lifting lugs to facilitate handling.

2. All shipments shall be by air ride van, unless otherwise indicated.
  3. All control panel testing and inspection shall be performed before shipping.
- B. Control panels shall be installed in accordance with Section 13300 - Instrumentation and Control.

### **3.2 CONTROL PANEL SIGNAL AND CONTROL CIRCUIT WIRING**

- A. Wiring Installation: All wires shall run in plastic wireways except for the following:
1. Field wiring.
  2. Wiring between mating blocks in adjacent sections.
  3. Wiring to panel-mounted components.
- B. Wiring to Rear Terminals: Wiring to rear terminals on panel-mount instruments shall be in plastic wireways secured to horizontal brackets above or below the instruments in about the same plane as the rear of the instruments.
- C. Shop drawings shall show conformance to the above wiring installation requirements.
- D. Wire Marking: Each signal, control, alarm, and indicating circuit conductor connected to a given electrical point shall be designated by a single unique number which shall be shown on all shop drawings. These numbers shall be marked on all conductors at every terminal using white numbered wire markers which shall be plastic-coated cloth, or permanently marked heat-shrink plastic.
- E. Wires shall be fitted with a crimp type spade lug of the proper size at screw terminals except in the cases of termination fittings designed for compression or solder type termination. There shall be at least 2" of unencumbered wire extending from any point of attachment within the panel. Wire numbers shall be located within 1" of the point of attachment and shall be applied such that the number can be read from the front of the panel without rotating the wire. No more than two wires shall be located at any point of termination, including terminal blocks (terminal blocks specified are designed to accept two points of termination at each side).
- F. Wires shall be routed through Panduit brand wireway of the size shown on the drawings. Routing shall separate 24 Vdc paths from 120 Vac paths as far as possible. Wireway shall be secured to the removable back panel by multiple pan head screws of the proper size at intervals of one at every other mounting hole station provided by Panduit. The mounting hole station shall be completely utilized at the extreme ends of each wireway segment. Within wireway, wire bundles shall be loosely bound with individual plastic tie wraps at intervals of approximately two feet.

- G. External to wireway, wire shall be bundled neatly and secured with plastic tie wraps at intervals of approximately 8". Wire splicing within the Instrument Panel is not acceptable.
1. Wiring color code shall be as shown in this subsection
    - a. Blue: 24vdc +
    - b. Brown: 24vdc B
    - c. White: 120vac common
    - d. Black: 120vac power
    - e. Red: 120vac control power
    - f. Green: ground
    - g. Violet: 12vdc +
    - h. Yellow: 12vdc B
    - i. Belden black (+)
    - j. Belden clear (-)
- H. Panels shall be fitted with a duplex electrical outlet as shown on the drawings. Illumination at the panel interior shall be by incandescent lamps operated by a door switch integral to the lamp assembly (Hoffman A-LTDB1). Provide a door switch wired to the terminal blocks, as shown on the drawings, to indicate when the RCP door is open.
- I. Legend plates shall be laminated plastic or phenolic, black over white engraved by removing black material to reveal white letters. Lettering shall be sharp and clear, 3/16" nominal height. Engraving which is not uniform either letter to letter or within each character will not be accepted. Tags identifying interior components shall be affixed to the cabinet back panel.
1. The following interior components shall be labeled with phenolic tags:
    - a. Low voltage relay
    - b. Control relays
    - c. Modicon PLC
    - d. Microwave Data Systems Radio package
    - e. AC line surge arrestor
    - f. DC power supply transformer
    - g. DC power supply
    - h. Each terminal strip

### **3.3 CALIBRATION, TESTING, AND INSTRUCTION**

- A. General: Calibration, testing, and instruction shall be performed in accordance with Section 13300 - Instrumentation and Control.

B. Inspection and Approval:

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

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

## **SECTION 13374 – CONTROL PANEL INSTRUMENTATION**

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

#### **1.1 WORK OF THIS SECTION**

- A. The CONTRACTOR shall provide all control panel instrumentation, complete and operable, in accordance with the Contract Documents.
- B. The City shall provide PLC program development.

#### **1.2 RELATED SECTIONS**

- A. The Work of the following Sections applies to the Work of this Section. Other Sections, not referenced below, also apply to the extent required for proper performance of this Work:
  - 1. Section 13300 Instrumentation and Control
  - 2. Section 13370 Control Panels

#### **1.3 CONTRACTOR SUBMITTALS**

- A. Shop drawings, information, and data sheets shall be submitted in conformance with the requirements of Section 13370 - Control Panels.

### **PART 2 -- PRODUCTS**

#### **2.1 GENERAL**

- A. The PLC system shall operate in ambient conditions of 32 to 140°F temperature and 5 to 95 percent relative humidity without the need for purging or air conditioning
- B. PLC system shall be designed with high noise immunity to prevent occurrence of false logic signals resulting from switching transients, relay, and circuit breaker noise or conducted and radiated radio frequency interference.
- C. The controller shall be grounded to the panel ground bus with a separate ground conductor sized per the manufacturers grounding requirements.

#### **2.2 PROGRAMMABLE LOGIC CONTROLLERS**

- A. The microcontroller system and subsystem components shall be Modicon Momentum M1 Series, No “Or Equal”.
- B. Construction: The microcontroller shall be of solid-state design. All CPU operating logic shall be contained within an integral control chassis. Microcontroller terminal base units shall allow for the easy removal and replacement of the controller. The controller shall be capable of operating in a hostile industrial environment without fans, air conditioning, or electrical filtering (up to 60 degrees C and 95 percent humidity).

- C. The PLC shall be a Modicon Momentum of the latest design/manufacture, consisting of the following individual components:
1. Modicon Momentum, M1 Processor Adaptor; Part No. 171CCC96030C; Qty. 1.
  2. Modicon Momentum, Modbus (RS232/485) Option Adaptor, with TOD Clock & Battery Backup; Part No. 172JNN21032C; Qty. 1.
  3. Modicon Momentum, Interbus Communications Adapter; Part No. 170INT11000; Qty 1.
  4. Modicon Momentum, 8 Channel 4-20mA Differential Analog Input I/O Base; Part #170AAI03000C; Qty. 1.
  5. Modicon Momentum, 24 VDC 16 point Discrete Input and 24 VDC 16 point Discrete Output I/O Base; Part #170ADM35010C; Qty. 1.
  6. Modicon Momentum, Interbus Cable; Part #170MCI00700; Qty. 1.
  7. Modicon Momentum, Terminal Block; Part #170XTS00100; Qty. 1.

### **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.

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

## SECTION 13400 – COMMUNICATIONS

### PART 1 -- GENERAL

#### 1.1 WORK OF THIS SECTION

- A. The Work of this Section includes providing a complete and operational communication system between the remote project facilities and the existing Alvarado Water Treatment Facility Control System (AWTF CCS). The system shall include interface hardware, modules, radio, communication bridges, and application software necessary for a communication network.
- B. The Work, equipment, and services required by this Section shall be provided and furnished by the Communication System Contractor.

#### 1.2 RELATED SECTIONS

- A. The Work of the following Sections applies to the Work of this Section. Other Sections, not referenced below, shall also apply to the extent required for proper performance of this Work.
  - 1. Section 13300 Instrumentation and Control
  - 2. Section 13370 Control Panels
  - 3. Section 13374 Control Panel Instrumentation
  - 4. Section 16050 Basic Electrical Materials and Methods

#### 1.3 REFERENCE SPECIFICATIONS, CODES AND STANDARDS

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

## **1.4 ENVIRONMENTAL CONDITIONS**

- A. The communication systems shall be designed and constructed for operation under the following environmental conditions:
  - 1. Equipment outdoors:
    - a. Temperature range: 40 through 105 degrees F
    - b. Thermal shock: two degree F per minute maximum
    - c. Relative humidity: 20 through 90%

## **1.5 PRODUCT DELIVERY, STORAGE, AND HANDLING**

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

## **1.6 RECORD DRAWINGS**

- A. Accurate drawings of underground antenna cable locations shall be included on the record drawings.

## **PART 2 -- PRODUCTS**

### **2.1 GENERAL**

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

## 2.2 RADIO TELEMETRY

### A. Licensing and Surveying:

1. The OWNER has FCC licensing for the sites included in this project. The license allows the OWNER to operate 928-952 MHZ frequencies for multiple address systems (MAS). The equipment provided shall be suitable for use on the assigned frequencies.
2. In locations where there is no microwave path to one of the five MAS radio repeaters, a 902-928 MHZ microwave spread spectrum radio shall be provided to transmit to a remote SCADA location having a path to a repeater. Existing radios may be used to provide multiple paths.
3. The sites included in this Contract have been surveyed and are included in the radio feasibility study performed by the OWNER. The results of this survey indicate reliable radio communications can be implemented between the central station and remote sites. The report is available to the Communication System Contractor from the ENGINEER.
4. Before installation of the radio equipment, the Communication System Contractor shall verify that the radio paths are still reliable based on the present terrain and structure conditions. Any structures or other objects that may obstruct the radio paths or cause transmission or path fade margin problems shall be brought to the ENGINEER's attention immediately.

B. Transmission: RF transmitters shall be directly frequency modulated by a built-in digital modem from the digital data stream furnished by the central computer system. RF receivers shall provide a digital data stream to the central computer system. Each assembly shall be capable of transmitting and receiving data at a rate of 9600 baud over a 928-952 MHz FCC assigned channel.

C. Fixed Frequency Radio Transceiver at the Repeater Site (NOT USED)

D. Spread Spectrum Radio Transceiver at the Repeater Site (NOT USED)

E. Spread Spectrum Radio Transceiver at the Pressure Reducing:

1. The spread spectrum radio at the Wellhead shall be capable of interfacing with the PLC and processing the data for transmission via the antenna system to the Repeater Site. The Contractor shall install the spread spectrum radio in the RCP. The radio equipment and accessories shall be mounted on a single panel supplied by the manufacturer. The radio is an MDS 9810 with P60 package (less P60 enclosure).
2. Contractor shall provide and install all necessary cables and connections from the radio equipment to the PLC interface. Proper power supply shall be provided.
3. Provide radio/antenna components as shown on the drawings.

4. Transceivers and associated equipment shall be designed to operate on 12 VDC. Each transceiver shall have a 12 VDC battery backup system (including a battery charger). The power backup system shall be capable of powering the radio and its associated equipment for a minimum of 8 hours. The battery backup system shall be isolated from the primary power. Upon primary power failure, the power shall be transferred to the backup system by use of relay contacts or diodes. Battery tapping of a 24 V power system to obtain 12 V is not acceptable.
5. Each battery backup system shall include signals for low battery voltage condition and primary power failure. Batteries shall be designed for standby power use and sized to operate the load for the indicated time. Batteries shall be gel type lead dioxide with sealed construction, be capable of at least 200 charge-discharge cycles and have a service life of at least 3 years.
6. Battery chargers shall be designed to charge the type of battery furnished. The charger shall be automatic dual rate and produce the voltage and current recommended by the battery manufacturer to ensure maximum battery life.

F. Yagi Antenna System at the Repeater Site:

1. The Yagi antenna at the Repeater Site is a Scala TY-900. Antenna system shall be provided complete and functional for the intended use. System shall include antenna, mounting masts and hardware, grounding rods and accessories, and coaxial cables with connectors. Antenna heights shall be based on the radio survey and shall not exceed FCC limitations.
2. Antenna mounting components and hardware shall be hot-dip galvanized steel, stainless steel, or aluminum. Aluminum antennas or mounting components shall be anodized. Lightning suppressors shall be provided on antenna coaxial feed lines.
3. Antennas and antenna poles shall be mounted as indicated.
4. Antenna connections and openings shall be sealed and weatherproofed.
5. Antenna shall be suitable for use on the assigned radio frequency and shall have the gain required for reliable communications. The antennas for all remote sites shall be heavy duty YAGI type meeting the following requirements:

Frequency range	- 890 to 960 MHZ
Forward gain	- 12 Db
Front-to-back ration	- >20 Db
VSWR	-<1.5 to 1.0 maximum
Polarization	- Horizontal or Vertical
Impedance	- 50ohms
Horizontal beamwidth	- 48 degrees (half powerpoint)
Input power	- 100 W Maximum
Wind rating	- 150 mphs survival (no ice)
Lighting protection	- Direct ground
Input connector	- N Female

6. Antenna feed lines shall be 1/4-inch low loss coax for remote sites. Feed lines shall be routed to radio transceivers through conduit or inside the antenna mast. Provide Andrew Superflex FSJ1-50A. Connectors shall be 1/4-inch male N, Andrew F1PNM-H.
  7. Transmission lines and the antenna system shall be grounded as indicated.
  8. The lightning arrestor is a Polyphaser IS-B50LN-C2.
- G. Omni Antenna System at the Repeater Site: (NOT USED)

### **2.3 NAMEPLATES, TOOLS AND SPARE PARTS**

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

## **PART 3 -- EXECUTION**

### **3.1 INSTALLATION**

- A. General: The Communication System Contractor shall employ installers who are skilled and experienced in the installation and connection of all the elements, accessories and assemblies of communication systems.
- B. Access: All equipment shall be provided as indicated, or, if not indicated, so that it will be readily accessible for operation and maintenance. The ENGINEER reserves the right to require minor changes in equipment location before roughing in without any additional cost to the OWNER.
- C. Review: The Communication System Contractor shall review the existing site conditions and examine all shop drawings for equipment in order to determine exact routing and final terminations for all wiring and cables. Exact routing shall be shown on the Record Drawings.
- D. Installation and Connection: The Communication System Contractor shall install and connect all field-mounted components and assemblies and as recommended by the manufacturer and as indicated.
- E. Conduits: In building interior locations, conduits shall be surface mounted on walls or ceilings wherever possible and parallel to building lines. Conduit shall not be routed on floors unless indicated otherwise. In exterior locations, conduit shall be routed below grade. Existing concrete or asphalt slabs shall be sawcut, conduit installed, and the cut repaired to original condition. Exposed conduit and raceway shall be installed perpendicular or parallel to building lines.

- F. Final Checks: Final check of the communication systems shall be performed as an integral part of the system specified in Section 13300 - Instrumentation and Control.

### **3.2 FIELD TESTING**

- A. RF Equipment Testing: The following measurements shall be made, recorded and compared to normal reading on each RF assembly prior to system testing to ensure that all equipment meets published specifications:
  - 1. Operating voltages
  - 2. Transmitter frequency
  - 3. Transmitter output power (at output of duplexer)
  - 4. Transmitter deviation
  - 5. Receiver local oscillator frequency
  - 6. Receiver sensitivity (10 to -6 BER)
- B. Testing: All systems furnished under this Contract shall be exercised through operational tests in the presence of the ENGINEER in order to demonstrate compliance with requirements. The testing of the communication system shall be performed in accordance with and as an integral part of the testing of the instrumentation and control specified in Section 13300 - Instrumentation and Control.

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

## **SECTION 15000 - PIPING COMPONENTS**

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

#### **1.1 WORK OF THIS SECTION**

- A. The WORK of this Section includes providing fittings, hangers, supports, anchors, expansion joints, flexible connectors, insulation, lining and coating, testing, disinfection, and accessories.

#### **1.2 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. Section 02630 Ductile Iron Pipe
  - 2. Section 11000 Equipment General Provisions
  - 3. Section 15010 Mill Piping - Exposed and Buried
  - 4. Section 15020 Pipe Supports

#### **1.3 CODES**

- A. The WORK of this Section shall comply with the current editions, with revisions, of the following codes and City of San Diego Supplements:
  - 1. International Mechanical Code
  - 2. International Plumbing Code
  - 3. International Fire Code

#### **1.4 SPECIFICATIONS AND STANDARDS**

- A. Except as otherwise indicated, the current editions of the following applies to the WORK of this Section:
  - 1. ANSI/ASME B1.20.1 Pipe Threads, General Purpose (inch)
  - 2. ANSI B16.5 Pipe Flanges and Flanged Fittings, Steel Nickel Alloy and other Special Alloys
  - 4. ANSI/AWWA C111 Rubber-Gasket Joints for Ductile Iron Pressure Pipe and Fittings
  - 5. ANSI/AWWA C150 Thickness Design for Ductile Iron Pipe
  - 6. ANSI/AWWA C153 Ductile Iron Compact Fittings, 3 In through 24 In and 54 In Through 64 In for Water Service

- |     |                |   |
|-----|----------------|---|
| 7.  | ANSI/AWWA C900 | Polyvinyl Chloride (PVC) Pressure Pipe, 4 In Through 12 In for Water Distribution         |
| 8.  | ANSI/AWS D10.9 | Specifications for Qualifications of Welding Procedures and Welders for Piping and Tubing |
| 9.  | ASTM A 123     | Specification for Zinc Coatings on Iron and Steel Products                                |
| 10. | ASTM A 536     | Ductile Iron Castings   |

## 1.5 SHOP DRAWINGS AND SAMPLES

- A. The following shall be submitted in compliance with Contract Documents:
1. Shop drawings showing dimensions and details of pipe joints, fittings, fitting specials, valves and appurtenances.
  2. Detailed layout, spool, or fabrication drawings showing pipe spools, spacers, adapters, connectors, fittings, and pipe supports.

## 1.6 OWNER'S MANUAL

- A. The following shall be included in the OWNER'S MANUAL in compliance with Contract Documents:
1. Manufacturer's product data.
  2. Manufacturer's installation instructions.
  3. Manufacturer's certification of compliance.
  4. Statement from the pipe fabricator certifying that all pipe will be fabricated subject to a Quality Control Program.
  5. Outline of Quality Control Program.

## 1.7 INSPECTION, TESTING AND WELDING

- A. **Inspection:** Products shall be inspected at the manufacturer's plant.
- B. **Tests:** Materials used in the manufacture of the pipe shall be tested in accordance with the applicable Specifications and Standards.

## 1.8 FACTORY TESTING

- A. **Product Testing:** Products shall be tested at the factory for compliance with the indicated requirements.
- B. **Witnesses:** The OWNER and the CONSTRUCTION MANAGER (at the option of either) reserves the right to witness factory tests.

## 1.9 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. **Delivery of Materials:** Products shall be delivered in original, unbroken packages, containers, or bundles bearing the name of the manufacturer.

1. **Storage:** Products shall be carefully stored in a manner that will prevent damage and in an area that is protected from the elements.

## PART 2 -- PRODUCTS

### 2.1 GENERAL

- A. **Miscellaneous Small Pipes:** Miscellaneous small pipes and fittings shall comply with Section 15010.
- B. **Pipe Supports:** Pipes shall be properly supported in accordance with Section 15020.
- C. **Coating:** Pipes above ground or in structures shall be field-painted in accordance with Section 02630.
- D. **Pressure Rating:** Except as otherwise indicated, piping systems shall be designed for 150 percent of the maximum indicated pressure.

### 2.2 PIPE FLANGES

- A. **Flanges:** Where the design pressure is greater than 150 psi, up to a maximum of 275 psi, flanges shall conform to either ANSI/AWWA C207 Class E, Class F, or ANSI B16.5 150-lb class. Where the design pressure is greater than 275 psi up to a maximum of 700 psi, flanges shall conform to ANSI B16.5 300-lb class. Flanges shall be attached to the pipe in accordance with ANSI/AWWA C207.
- B. **Blind Flanges:** Blind flanges shall comply with ANSI/AWWA C207. Blind flanges for pipe sizes 12 inches and larger shall include lifting eyes in form of welded or screwed eye bolts.
- C. **Flange Coating:** Machined faces of metal blind flanges and pipe flanges shall be coated with a temporary rust-inhibitive coating to protect the metal until the installation is completed.
- D. **Flange Bolts:** Studs and bolts shall extend through the nuts a minimum of 1/4-inch. All-thread studs may be used only on valve flange connections where space restrictions preclude the use of regular bolts.
  1. **Bolt Requirements:** The nuts shall be capable of developing the full strength of the bolts. Threads shall be Coarse Thread Series conforming to the requirements of the American Standard for Screw Threads. Bolts and cap screws shall have hexagon heads and nuts shall be Heavy Hexagon Series.

The length of all bolts shall be such that after joints are made up, each bolt shall extend through the entire nut, but in no case more than 1/2-inch beyond the nut.
  2. **Standard Service Bolts (Not Buried):** Except where otherwise indicated, bolts and nuts shall be steel and shall be galvanized after fabrication. Threads on galvanized bolts and nuts shall be formed with suitable taps and dies such that they retain their normal clearance after hot-dip galvanizing. Except as otherwise indicated herein, steel for bolts, anchor bolts and cap screws shall be in accordance with the requirements of ASTM A 325, or threaded parts of ASTM A 36. ASTM A 325 bolts and nuts shall not be galvanized.

3. **Bolts Buried:** Unless otherwise indicated, bolts, anchor bolts, nuts and washers which are buried shall be of Type 316 stainless steel.
4. Unless otherwise indicated, eyebolts shall conform to ASTM A 489.
5. **Insulating Flanges:** Insulated flanges shall have bolt holes 1/4-inch diameter greater than the bolt diameter.
6. **Insulating Flange Sets:** Insulating flange sets shall be provided where indicated and shall consist of insulating gaskets, insulating sleeves and washers and a steel washer. Insulating sleeves and washers shall be one piece when flange bolt diameter is 1-1/2-inch or smaller and shall be made of acetal resin. For bolt diameters larger than 1-1/2-inch, insulating sleeves and washers shall be 2-piece and shall be made of polyethylene or phenolic. Steel washers shall comply with ASTM A 325. Insulating gaskets shall be full-face.
7. i) **Flange Gaskets:** Gaskets for flanged joints shall be full-face, 1/16-inch thick sheets of virgin graded teflon, suitable for temperatures to 550 degrees F, a pH of 0 to 14, and pressures to 1400 psig. Blind flanges shall have gaskets covering the entire inside face of the blind flange and shall be cemented to the blind flange. Ring gaskets shall not be permitted.

### 2.3 SLEEVE-TYPE COUPLINGS

- A. **Construction:** Sleeve-type couplings shall be installed where indicated and shall include steel bolts, without pipe stop, and shall be sized to fit the pipe and fittings indicated. The middle ring shall be not less than 1/4-inch in thickness and shall be either 7 inches long for standard steel couplings. The followers shall be single-piece contoured mill section welded and cold-expanded as required for the middle rings. They shall be of sufficient strength to accommodate the number of bolts necessary to obtain adequate gasket pressures without excessive rolling. The shape of the follower shall be of such design as to provide positive confinement of the gasket. Bolts and nuts shall conform to Section 2.2 above. Buried sleeve-type couplings shall be epoxy-coated at the factory.
- B. **Pipe Preparation:** The ends of the pipe, where indicated, shall be prepared for flexible steel couplings. Plain ends for use with couplings shall be smooth and round for a distance of 12 inches from the ends of the pipe, with outside diameter not more than 1/64-inch smaller than the nominal outside diameter of the pipe. The middle ring shall be fully restrained by mechanical methods shown on the plans.
- C. **Gaskets:** Gaskets for sleeve-type couplings shall be rubber-compound material that will not deteriorate from age or exposure to air under normal storage or use conditions. The rubber in the gasket shall comply with the following:
  1. Color - Jet Black
  2. Surface - Non-blooming
  3. Durometer Hardness - 74  $\nabla$  5
  4. Tensile Strength - 1000 psi Minimum

5. Elongation - 175 percent Minimum

D. The gaskets shall resist deterioration caused by impurities normally found in water. Gaskets shall comply with ASTM D 2000, AA709Z, meeting Suffix B13 Grade 3, except as otherwise indicated. Gaskets shall be compatible with the piping service and fluid utilized.

**D. Restrained Joints:**

1. Harnesses for flexible sleeve type couplings shall be in accordance with the requirements of the appropriate reference standards and standard practices.

2. Push-On Joints: Restraints shall be provided where shown.

a. Restrained push-on joints for shall be comprised of two rings with connecting rods. The restraint ring shall be on the spigot, and a plain or slit bell ring shall be on the bell. Pressure ratings shall be:

(1) Ductile Iron Pipe

(a) 3 to 16 inch diameter: 350 psi (2:1 safety factor)

(2) Dimensions of push-on bell restraints shall be compatible with ANSI/AWWA C150 and C900 or C905 for ductile iron or PVC pipe, respectively.

b. Restraint glands shall be of ductile iron conforming to ASTM A 536. Dimensions of the glands shall be compatible with standard mechanical joint bell and tee head bolts conforming to ANSI/AWWA C111 and C153, respectively.

c. Bolts and nuts shall conform to Section 2.2 above.

**2.4 PIPE THREADS**

A. Pipe threads shall comply with ANSI/ASME B1.20.

**2.5 MANUFACTURERS**

A. **Manufacturers:** Products of the type or model indicated shall be manufactured by one of the following (or equal):

1. Insulating Flanges:

JM Red Devil, Type E

Maloney Pipeline Products Co.

PSI Products, Inc.

2. Flange Gaskets:

John Crane, Style 2160

Garlock, Style 3000

3. Ductile Iron Pipe Couplings:  
Gustin-Bacon  
Victaulic Style 31
4. Sleeve-Type Couplings:  
Dresser, style 38  
Ford Meter Box Co., Inc., Style FC1 or FC3  
Smith-Blair, Style 411

### **PART 3 -- EXECUTION**

#### **3.1 GENERAL**

- A. Pipes, fittings, and appurtenances shall be installed in accordance with the manufacturer's installation instructions.

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

## **SECTION 15010 - MILL PIPING - EXPOSED AND BURIED**

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

#### **1.1 WORK OF THIS SECTION**

- A. The WORK of this Section includes providing small steel pipe, stainless steel pipe and tubing, red brass pipe, copper pipe and tubing, solvent-welded PVC pipe, CPVC pipe, fiber glass reinforced plastic pipe, process glass pipe, cast iron soil pipe, and corrosion-resistant cast iron pipe with fittings, gaskets, bolts, insulating connections, pipe insulation, and other specialties required for an operable piping system.

#### **1.2 RELATED SECTIONS**

- A. The WORK of the following Section 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. Section 11000 Equipment General Provisions
  2. Section 15000 Piping Components

#### **1.3 SPECIFICATIONS AND STANDARDS**

- A. Except as otherwise indicated, the current editions of the following apply to the WORK of this Section:
1. ANSI B16.5 Pipe Flanges and Flanged Fittings, Steel Nickel Alloy and Other Special Alloys
  2. ANSI B16.11 Forged Steel Fittings, Socket-Welding and Threaded
  3. ANSI/ASME B16.15 Cast Bronze Threaded Fittings, Classes 125 and 250
  4. ASTM A 74 Specification for Cast Iron Soil Pipe and Fittings
  5. ASTM B 42 Specification for Seamless Copper Pipe, Standard Sizes
  6. ASTM B 43 Specification for Seamless Red Brass Pipe, Standard Sizes
  7. ASTM B 62 Specification for Composition Bronze or Ounce Metal Castings
  8. ASTM B 88 Specifications for Seamless Copper Water Tube
  9. ASTM D 1785 Specification for Poly (Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120

## **1.4 SHOP DRAWINGS AND SAMPLES**

- A. The following shall be submitted in compliance with Contract Documents:
- B. Manufacturer's product specifications and performance information.

## **PART 2 -- PRODUCTS**

### **2.1 STAINLESS STEEL PIPE**

- A. Unless otherwise indicated, stainless steel pipe shall be Type 316 Schedule 40 threaded pipe conforming to ASTM A 312 with stainless steel threaded fittings, or with stainless steel welded fittings, where indicated. Lightweight stainless steel pipe shall be Type 316 Schedule 10 pipe conforming to ASTM A 312, with stainless steel welding fittings.

### **2.2 STAINLESS STEEL TUBING**

- A. Stainless steel tubing shall be made of Type 316 L stainless steel to the requirements of ASTM A 269, of minimum 1/4-inch inside diameter, or as indicated, for the test pressure required. The fittings shall be swage ferrule design of Type 316 L stainless steel, of the double acting ferrule design, providing both a primary seal and a secondary bearing force. Flare bite or compression type fittings are not acceptable.

### **2.3 RED BRASS PIPE**

- A. Brass pipe shall conform to the requirements of ASTM B 43. Fittings shall be of bronze conforming to the requirements of ASTM B 62 with threaded ends, conforming to ANSI/ASME B16.15.

### **2.4 COPPER PIPE**

- A. Copper pipe shall be hard drawn, to the requirements of ASTM B 42, with regular or extra strong wall thickness, as required for the test pressure. Copper pipe shall have screwed ends for NPT fittings, or brazed joints. The fittings shall be threaded cast bronze fittings to the requirements of ANSI/ASME B16.15, class 125 or 250, as required, or flanged cast copper alloy fittings to the requirements of ANSI/ASME B16.24, with 150 lbs rating, or as required.

### **2.5 COPPER TUBING**

- A. Copper tubing shall conform to the requirements of ASTM B 88 and shall be Type K, soft temper for buried tubing and hard drawn for above-ground application. Fittings shall be soldered or sweated on and shall be of wrought copper conforming to ANSI B16.22. Soldered joints shall contain 95-percent tin and 5-percent antimony. For oxygen service, joints shall be made with silver solder. No solders or fluxes containing more than 0.2 percent of lead shall be used.

## **PART 3 -- EXECUTION**

### **3.1 INSTALLATION**

- A. **General:** Mill piping shall be installed in accordance with the manufacturer's installation instructions.
- B. **Small Steel Pipe:** Buried galvanized or black steel pipe shall be coated in accordance with Section 02630 or with an extruded high density polyethylene coating with minimum thickness of 35 mils.

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

## SECTION 15020 - PIPE SUPPORTS

### PART 1-- GENERAL

#### 1.1 WORK OF THIS SECTION

- A. The WORK of this Section includes providing pipe supports, hangers, guides, and anchors.

#### 1.2 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. Section 11000 Equipment General Provisions
  - 2. Section 15000 Piping Components

#### 1.3 SPECIFICATIONS AND STANDARDS

- A. Except as otherwise indicated, the current editions of the following apply to the WORK of this Section:
  - 1. ANSI/MSS SP-58 Standard Pipe Support Components

#### 1.4 SHOP DRAWINGS AND SAMPLES

- A. Submittals shall comply with Section 15000 and shall include:
  - 1. Shop drawings of pipe supports including details of concrete inserts.

### PART 2 -- PRODUCTS

#### 2.1 GENERAL REQUIREMENTS

- A. **General:** Piping systems including connections to equipment shall be properly supported to prevent deflection and stresses. Supports shall comply with ANSI/ASME B31.1, except as otherwise indicated.
- B. **ANSI/MSS Types:** Except as otherwise indicated, pipe support components shall comply with the types in ANSI/MSS SP-58.

C. **Support Spacing:** Supports for horizontal piping shall be properly spaced. Except as otherwise indicated, pipe support spacing shall comply with the following:

1. Support Spacing for Copper Tubing:

Tube size inches	Max. Span feet
1/2 to 1-1/2	6
2 to 4	10
6 & Above	12

2. Support Spacing for Ductile Iron Pipe:

<u>All Sizes</u>	<u>Max. Span</u>
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2 Supports per length or 10 feet (One of the 2 supports located at joint)

3. **Variations:** For temperatures other than ambient temperatures and for other piping materials or wall thicknesses, the above spacing's shall be modified in accordance with the pipe manufacturer's recommendations.

4. **Additional Supports:** Additional supports complying with ANSI B31.1 shall be provided at critical elbows, valves, gauges, and meters.

D. **Riser Supports:** Risers shall be supported on each floor with riser clamps and lugs, independent of the connected horizontal piping.

E. **Point Loads:** Regulator Valves, valves, heavy equipment, and other point loads on ductile iron pipe, shall be supported on both sides according to manufacturer's recommendations to avoid pipe stresses. Supports on piping shall be equipped with pipe saddles or galvanized steel shields.

F. **Structural Design:** Pipe supports, anchors, and restrainers shall be designed for static, dynamic, and seismic loads. The horizontal seismic design force shall be the greater of that indicated in the project Geotechnical Report or the requirement of the UBC for Seismic Zone 4.

## 2.2 ANCHOR BOLTS

A **General:** Anchor bolts shall comply with the following:

1. Anchor bolts shall be fabricated of materials complying with SSPWC Subsections 206-1.4.1 and 209-2.2 and as follows:

Steel bolts	ASTM A325
Fabricated steel bolts	ASTM A36
Stainless steel bolts,	ASTM A320, Type 316
Nuts, washers	

2. Anchor bolt holes in equipment support frames shall not exceed the bolt diameters by more than 25 percent, up to a maximum over sizing of 1/4 inch. Unless otherwise indicated, minimum anchor bolt diameter shall be 1/2 inch. Anchor bolts for equipment shall be 316 stainless steel and shall be provided with leveling nuts which shall be tightened against flat surfaces to not less than 10 percent of the bolt's safe tensile stress.
3. Tapered washers shall be provided where mating surface is not square with the nut.
4. Expansion, wedge, or adhesive anchors set in holes drilled in the concrete after the concrete is placed is not permitted as substitution for anchor bolts except where otherwise indicated. Upset threads shall not be acceptable.
5. ASTM A307 anchor bolts are prohibited.

B. **Adhesive Anchors:** Unless otherwise indicated, drilled concrete or masonry anchors shall be adhesive anchors. Substitutions will not be considered unless accompanied with ICBO report verifying strength and material equivalency. Except as otherwise indicated, adhesive anchors shall comply with the following:

1. Epoxy adhesive anchors may be provided for drilled anchors where exposed to weather, in submerged, wet, splash, overhead, and corrosive conditions, and for anchoring handrails and reinforcing bars. Threaded rod shall be stainless steel Type 316.
2. Glass capsule, polyester resin adhesive anchors may be permitted in other locations.

## 2.3 COATING

- A. **Galvanizing:** Fabricated pipe products, except stainless steel or non-ferrous supports, shall be blast-cleaned after fabrication and hot-dip galvanized in accordance with ASTM 123.
- B. **Other Coatings:** Other than stainless steel or non-ferrous supports, supports shall be coated in accordance with manufacturers recommendations.

## 2.3 MANUFACTURERS

- A. Pipe supports shall be manufactured by one of the following (or equal):

Basic Engineers

Bergen-Paterson Corp.

ITT-Grinnell Corp.

NPS Industries, Inc.

Powerstrut

Unistrut

## PART 3 -- EXECUTION

### 3.1 INSTALLATION

- A. **General:** Pipe supports, hangers, brackets, anchors, guides, and inserts shall be installed in accordance with the manufacturer's installation instructions and ANSI/ASME B31.1.
- B. **Appearance:** Supports and hangers shall be installed to produce an orderly, neat piping system.

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

## **SECTION 15100 - VALVES, GENERAL**

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

#### **1.1 WORK OF THIS SECTION**

- A. The WORK of this Section includes providing general requirements for valves including epoxy coating, installing, adjusting, and testing of valves and where buried valves are indicated, valve boxes to grade, with covers, stem extensions, and position indicators.

The WORK of this Section applies to the WORK of the following Sections:

1. Section 15104 Butterfly Valves
2. Section 15109 Gate Valves
3. Section 15114 Pressure Regulating Valves

#### **1.2 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. Section 11000 Equipment General Provisions
2. Section 15000 Piping Components

#### **1.3 SPECIFICATIONS AND STANDARDS**

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

1. ANSI B16.1 Cast Iron Pipe Flanges and Flanged Fittings, Class 25, 125, 250, and 800
2. ANSI B16.5 Pipe Flanges and Flanged Fittings, Steel Nickel Alloy and Other Special Alloys
3. ANSI/ASME B1.20.1 General Purpose Pipe Threads (Inch)
4. ASTM A 126 Specification for Gray Iron Castings for Valves, Flanges, and Pipe Fittings
5. ASTM A 536 Specification for Ductile Iron Castings
6. ASTM B 584 Specification for Copper Alloy Sand Castings for General Applications
7. ANSI/AWWA C500 Gate Valves for Water and Sewage Systems

- |     |                |   |
|-----|----------------|---|
| 8.  | ANSI/AWWA C509 | Resilient-Seated Gate Valves for Water and Sewage Systems |
| 9.  | SSPC-SP-2      | Hand Tool Cleaning  |
| 10. | SSPC-SP-5      | White Metal Blast Cleaning                                |

#### 1.4 SHOP DRAWINGS AND SAMPLES

- A. The following shall be submitted in compliance with Contract Documents:
1. Manufacturer's product data including catalogue cuts.
  2. Manufacturer's installation instructions.
  3. Shop drawings showing details and dimensions.
  4. Manufacturer's certification that products comply with the indicated requirements.
  5. Schedule of valves indicating valve identification and location.
  6. Manufacturer's certification that epoxy coatings have been factory tested and comply with the indicated requirements.

#### 1.5 OWNER'S MANUAL

- A. The following shall be included in the OWNER'S MANUAL in compliance with Contract Documents:
1. Manufacturer's installation and operating instructions
  2. Manufacturer's maintenance procedures.
  3. List of special tools.
  4. Schedule of valves indicating valve identification and location.

#### 1.6 FACTORY TESTING

- A. **General:** Valves shall be tested in compliance with the AWWA Standards as indicated. Except as otherwise indicated, each valve body shall be tested under a test pressure equal to twice its design water-working pressure.
- B. **Proof-of-Design Tests:** The CONTRACTOR shall furnish the CONSTRUCTION MANAGER three (3) certified copies of a report from an independent testing laboratory certifying successful completion of proof-of-design testing for all valves of sizes 8-inch and larger unless indicated otherwise in the specific valve Section. In lieu of testing the valves at an independent testing laboratory, proof-of-design testing may be performed at the valve manufacturer's laboratory, but must be witnessed by a

representative of a qualified independent testing laboratory representative. Proof-of-design testing shall have been performed on not less than three valves, with all three units demonstrating full compliance with the test standards. Failure to satisfactorily complete the test shall be deemed sufficient evidence to reject all valves of the proposed make or manufacturer's model number.

## 1.7 FIELD TESTING

- A. **Testing:** Valves shall be field-tested for compliance with the indicated requirements.

## PART 2 -- PRODUCTS

### 2.1 VALVES

- A. **General:** Shut-off valves, 6-inch and larger, shall have operators with position indicators. Where buried, these valves shall be provided with valve boxes and covers containing position indicators, and valve extensions. Valves mounted higher than 7 feet above working level shall be provided with chain operators.
- B. **Valve Flanges:** The flanges of valves shall comply with Section 15000.
- C. **Gate Valve Stems:** Where dezincification is indicated, gate valve stems shall be fabricated with bronze conforming to ASTM B 62, containing not more than 5 percent of zinc no more than 2 percent of aluminum. Gate valve stems shall be designed for minimum tensile strength of 60,000 psi, minimum yield strength of 40,000 psi, and an elongation of at least 10 percent in 2 inches, as determined by a test coupon poured from the same ladle from which the valve stems are poured. Where dezincification is not indicated, bronze conforming to ASTM B 584 may be used.
- D. **Protective Coating:** Except where otherwise indicated, ferrous surfaces, exclusive of stainless steel surfaces, in the water passages of all valves 4-inch and larger, and exterior surfaces of submerged valves, shall be epoxy coated conforming to Section 02630. Flange faces of valves shall not be epoxy coated.
- E. **Nuts and Bolts:** Nuts and bolts on valve flanges, bodies and supports shall comply with Contract Docs.

### 2.2 NAMEPLATES, TOOLS AND SPARE PARTS

- A. **Nameplates:** Except as otherwise indicated, a label shall be provided on all valves. The label shall be 1/16-inch plastic or stainless steel, minimum 2 inches by 4 inches in size, and shall be permanently attached to the valve.
- B. **Spare Parts:** Two sets of packings, O-rings, gaskets, discs, seats, and bushings shall be furnished with each valve, as applicable.

## **PART 3 -- EXECUTION**

### **3.1 VALVE INSTALLATION**

- A. **General:** Valves, operating units, stem extensions, valve boxes, and accessories shall be installed in accordance with the manufacturer's installation instructions. Valves shall be independently supported to prevent stresses on the pipe.
- B. **Access:** Valves shall be installed to provide easy access for operation, removal, and maintenance and to prevent interferences between valve operators and structural members or handrails.
- C. **Valve Accessories:** Where combinations of valves, sensors, switches, and controls are indicated, the combinations shall be properly assembled and installed to ensure that systems are compatible and operating properly.

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

## SECTION 15104 - BUTTERFLY VALVES

### PART 1 - GENERAL

#### 1.1 WORK OF THIS SECTION

- A. The WORK of this Section includes providing butterfly valves with epoxy coating, operators, and accessories.

#### 1.2 RELATED SECTIONS

- A. The WORK of the following Section 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. Section 11000 Equipment General Provisions
  - 2. Section 15000 Piping Components
  - 3. Section 15100 Valves, General

#### 1.3 FACTORY TESTING

- A. Valves shall be tested in compliance with AWWA C 504 and Section 15100.
- B. Proof-of-design tests reports shall be submitted in compliance with Section 15100 and AWWA C504

### PART 2 - PRODUCTS

#### 2.1 BUTTERFLY VALVES (AWWA)

- A. **General:** Butterfly valves shall conform to ANSI/AWWA C504 and shall be flanged, of the size and class indicated. Flanged valves shall have 125-lb flanges complying with ANSI B.16.5, or 250-lb where so indicated, and may be either short-bodied or long-bodied except as otherwise indicated. Shaft seals shall be designed for use with standard split-V type packing or other approved seals, and the interior passage shall not have any excessive obstructions or stops. Cartridge-type valve seats, or valve employing snap rings to retain the rubber seats, will not be acceptable. The EPDM rubber seat shall be mounted in the valve body.
- B. **Coating:** Corrosive ferrous surfaces of valves, 4-inch and larger, which will be in contact with water (exclusive of flange faces) shall be epoxy-coated complying with Section 02630.
- C. **Manual Operators:**
  - 1. Operators shall conform to ANSI/AWWA C504. Except as otherwise indicated, manually-operated butterfly valves shall be equipped with a 2-inch square operating nut and position indicator.

2. Buried valves shall be equipped with worm-gear operators, lubricated and sealed to prevent entry of dirt or water into the operator at a water pressure of 20 feet of head. Operators shall require a minimum of 40 turns to rotate the disc from fully open to fully closed position.

## **2.2 MANUFACTURERS**

- A. Butterfly valves shall be manufactured by one of the following (or equal):
  1. AWWA butterfly valves (or approved equal):
    - De Zurik Corporation
    - Henry Pratt Company

## **PART 3 - EXECUTION**

### **3.1 INSTALLATION**

- A. Installation shall be in accordance with manufacturer's recommendation.

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

## SECTION 15109 - GATE VALVES

### PART 1 -- GENERAL

#### 1.1 WORK OF THIS SECTION

- A. The WORK of this Section includes providing epoxy-coated gate valves.

#### 1.2 RELATED SECTIONS

- A. The WORK of the following Section 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. Section 15000 Piping Components
  - 2. Section 15100 Valves, General

### PART 2 -- PRODUCTS

#### 2.1 GENERAL

- A. Buried valves shall be of the inside screw type and shall be designed for repacking under line pressure. Quick-opening valves shall have quick opening levers and cams in lieu of handwheel operators. Ferrous surfaces of the valves, 4-inch and larger and in contact with water shall be epoxy-coated conforming to Section 02630.

#### 2.2 METAL-SEATED GATE VALVES (3-INCH AND LARGER)

- A. **Double-Disc Type:** Metal-seated gate valves for water service shall conform to ANSI/AWWA C 500. Valves shall be of the double-disc type with non-rising stem, opening counter-clockwise, and provided with a 2-inch square operating nut, as indicated. Valves shall have flanged ends.

#### 2.3 RESILIENT-SEATED GATE VALVES (3-INCH AND LARGER)

- A. Resilient-seated gate valves conforming to ANSI/AWWA C509 may be provided, in lieu of metal-seated double disc or solid disc gate valves. Resilient-seated gate valves shall have cast iron bodies with flanged ends, rubber-coated cast iron disc, flanged bonnet, bronze stem, O-ring seals, and operators with square nut except as otherwise indicated.

#### 2.4 MANUFACTURERS

- A. Products of the type or size indicated shall be manufactured by one of the following (or equal):
  - 1. Metal seated gate valves (3-inch and larger):
    - American-Darling Valve Co.
    - Clow Corporation

Kennedy Valve Mfg. Co. (ITT Grinnell)

Milwaukee Valve Company

Mueller Company

Stockham Valves and Fittings]

2. Resilient-seated gate valves:

Clow Corporation

Kennedy Valve Mfg. Co., (ITT Grinnell)

Mueller Company

Stockham Valves and Fittings

**PART 3 -- EXECUTION**

**3.1 INSTALLATION**

- A. Gate valves shall be installed in accordance with Section 15100.

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

## SECTION 15114 - PRESSURE REGULATING VALVES

### PART 1 -- GENERAL

#### 1.1 WORK OF THIS SECTION

- A. The WORK of this Section includes providing pressure regulating valves indicated, complete and operable, with all accessories.

#### 1.2 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. Section 15000 Piping Components
  - 2. Section 15100 Valves, General

### PART 2 -- PRODUCTS

#### 2.1 WATER PRESSURE REGULATING VALVES (LARGER THAN 1-1/2 INCHES)

The Pressure Reducing Valve shall maintain a constant downstream pressure regardless of changing flow rate and/or inlet pressure.

- A. General: Large water pressure regulating valves shall be of the diaphragm-actuated globe type, with cast iron body and stainless steel trim. Unless otherwise indicated, the valves shall have a pressure rating of not less than class 150 (250 psi), shall have 125-lb flanges, and shall have pilot-operated regulators with adjustable downstream pressure range with a downstream setting as required.
- B. Main Valve: The valve shall be hydraulically operated, single diaphragm-actuated, globe pattern. The valve shall consist of three major components: the body, with seat installed; the cover, with bearings installed; and the diaphragm assembly. The diaphragm assembly shall be the only moving part and shall form a sealed chamber in the upper portion of the valve, separating operating pressure from line pressure. Packing glands and/or stuffing boxes are not permitted and there shall be no pistons operating the main valve or pilot controls.
- C. Main Valve Body: No separate chambers shall be allowed between the main valve cover and body. Valve body and cover shall be of cast material. Ductile Iron is standard and other materials shall be available. No fabrication or welding shall be used in the manufacturing process. Total shipping weight shall be equal or greater in all respects to the body.

The valve shall contain a resilient, synthetic rubber disc, with a rectangular cross-section contained on three and one-half sides by a disc retainer and forming a tight seal against a single removable seat insert. No O-ring type discs (circular, square, or quad type) shall be permitted as the seating surface. The disc guide shall be of the

contoured type to permit smooth transition of flow and shall hold the disc firmly in place. The disc retainer shall be of a sturdy one-piece design capable of withstanding opening and closing shocks. It must have straight edge sides and a radius at the top edge to prevent excessive diaphragm wear as the diaphragm flexes across this surface. No hourglass-shaped disc retainers shall be permitted and no V-type or slotted type disc guides shall be used.

The diaphragm assembly containing a non-magnetic 303 stainless steel stem with sufficient diameter to withstand high hydraulic pressures shall be fully guided at both ends by a bearing in the valve cover and an integral bearing in the valve seat. No center guides shall be permitted. The stem shall be drilled and tapped in the cover end to receive and affix such accessories as may be deemed necessary. The diaphragm assembly shall be the only moving part and shall form a sealed chamber in the upper portion of the valve, separating operating pressure from line pressure. The flexible, non-wicking, FDA approved diaphragm shall consist of nylon fabric bonded with synthetic rubber compatible with the operating fluid. The center hole for the main valve stem must be sealed by the vulcanized process or a rubber grommet sealing the center stem hole from the operating pressure. The diaphragm must withstand a Mullins Burst Test of a minimum of 600 psi per layer of nylon fabric and shall be cycle tested 100,000 times to insure longevity. The diaphragm shall not be used as the seating surface. The diaphragm shall be fully supported in the valve body and cover by machined surfaces which support no less than one-half of the total surface area of the diaphragm in either the fully opened or fully closed position.

The main valve seat and the stem bearing in the valve cover shall be removable. The cover bearing and seat in 6" and smaller size valves shall be threaded into the cover and body. The valve seat in 8" and larger size valves shall be retained by flat head machine screws for ease of maintenance. The lower bearing of the valve stem shall be contained concentrically within the seat and shall be exposed to the flow on all sides to avoid deposits. To insure proper alignment of the valve stem, the valve body and cover shall be machined with a locating lip. No "pinned" covers to the valve body shall be permitted. Cover bearing, disc retainer, and seat shall be made of the same material. All necessary repairs and/or modifications other than replacement of the main valve body shall be possible without removing the valve from the pipeline.

Packing glands and/or stuffing boxes shall not be permitted and components including cast material shall be of North American manufacture. The valve manufacturer shall warrant the valve to be free of defects in material and workmanship for a period of three years from date of shipment, provided the valve is installed and used in accordance with all applicable instructions. Electrical components shall have a one year warranty. The valve manufacturer shall be able to supply a complete line of equipment from 1 1/4" through 24" sizes and a complete selection of complementary equipment. The valve manufacturer shall also provide a computerized cavitation chart which show flow rate, differential pressure, percentage of valve opening, Cv factor, system velocity, and if there will be cavitation damage.

- D. Pilot Control System: The pressure reducing pilot control shall be a direct-acting, adjustable, spring-loaded, normally open, diaphragm valve designed to permit flow when controlled pressure is less than the spring setting. The pilot control is held open by the force of the compression on the spring above the diaphragm and it closes when the delivery pressure acting on the underside of the diaphragm exceeds the spring

setting. The pilot control system shall include a fixed orifice. No variable orifices shall be permitted. The pilot control shall have a second downstream sensing port which can be utilized to install a pressure gauge. A full range of spring settings shall be available in ranges of 0 to 450 psi. A direct factory representative shall be made available for start-up service, inspection and necessary adjustments.

## **2.3 MANUFACTURERS**

A. Products shall be manufactured by one of the following (or equal):

1. Large pressure regulating valves:

Cla-Val Company 90-01/690-01 Series

Golden-Anderson Valve Division (G A Industries, Inc.)

Watts Regulator Company

## **PART 3 -- EXECUTION**

### **3.1 INSTALLATION**

A. Pressure regulating valves shall be installed in accordance with the manufacturer's written instructions.

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

## **SECTION 16030 - ELECTRICAL TESTS**

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

#### **1.1 WORK OF THIS SECTION**

- A. The WORK of this Section includes testing, commissioning and demonstrating electrical WORK.
- B. The WORK of this Section includes circuit activation, equipment running and installation of temporary jumpers.
- C. The WORK of this Section includes correction of defects and retesting.

#### **1.2 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. Section 13300 Instrumentation and Control
  - 2. Section 16050 Electrical Materials and Methods

#### **1.3 CODES**

- A. The WORK of this Section shall comply with the current editions, with revisions, of the following codes and City of San Diego Supplements:
  - 1. National Electrical Code

#### **1.4 SPECIFICATIONS AND 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, Section 16T: Electrical Acceptance Tests

#### **1.5 SHOP DRAWINGS AND SAMPLES**

- A. The following shall be submitted:
  - 1. Report of testing of electrical WORK.

#### **1.6 MODIFICATIONS TO NETA TEST REQUIREMENTS**

- A. The following modifications to NETA test requirements apply to the WORK of this Section:
  - 1. The requirements of 16T, part 1, paragraph 1.1 shall be deleted.

2. The requirements of 16T, part 1, paragraph 1.2 shall be changed to read as follows: "The CONTRACTOR shall engage the services of a . . .".
3. The requirements of 16T, part 4, paragraph 4.4 shall be changed to read as follows: "The CONTRACTOR shall supply. . .".
4. The requirements of 16T, part 4, paragraph 4.6 shall be changed to read as follows: "The CONTRACTOR shall notify days prior to commencement of any testing."
5. The requirements of 16T, part 5, paragraph 5.22 shall be changed to read as follows: "Furnish 12 copies of the complete report to no later than 30 days after completion of the project."
6. The requirements of 16T, part 6 shall be replaced with the following: "The work shall include the inspection and testing of all electrical devices, equipment and materials provided by the CONTRACTOR."
7. The requirements of 16T, part 7 shall be deleted and replaced with the following: "The CONTRACTOR shall engage an independent testing firm for the purpose of inspecting, setting, testing, and calibrating the protective relays, circuit breakers, fuses and other applicable devices in accordance. The testing firm shall strictly conform to the requirements of these testing specifications."
8. The requirements of 16T, part 9 shall be deleted.

## **PART 2 -- PRODUCTS**

### **2.1 TEST EQUIPMENT AND MATERIALS**

- A. Test instruments shall be calibrated to references traceable to the National Bureau of Standards and shall have a current sticker showing date of calibration, deviation from standard, name of calibration laboratory and technician, and date recalibration is required.

## **PART 3 -- EXECUTION**

### **3.1 TESTING**

- A. In addition to indicated testing requirements and acceptance criteria, testing shall include the following:
  1. Lighting: Switching, including remote control. Circuitry in accordance with panel schedules. Lighting fixtures located to minimize obstruction of illumination by mechanical equipment or building structural elements.
  2. Power Instrumentation: Demonstration that voltmeter and ammeter switches are functional and that meters, including kilowatt meters, are installed within catalog accuracy.

3. Demonstration of mechanical and electrical interlocking by attempting to subvert the indicated sequence.
4. Activation of ground fault tripping by operating test features provided with ground current protective systems and by injecting a known, and reasonable, current in the ground current sensor circuit. Where not otherwise indicated, ground fault tripping shall occur at a ground current equivalent to 20 percent of phase current. Current injection is not required of circuit 400 amperes or less.
5. Test ground interrupter (GFI) receptacles and circuit breakers for proper operation by methods recommended by the receptacle Manufacturer.
6. Functional test and testing of electrical components shall be performed prior to subsystem testing and commissioning. Compartments and equipment shall be cleaned before commencement of functional testing. Functional testing shall include:

Visual and physical check of cables, busswork, circuit breakers, transformers, and connections associated with new and modified equipment.

Setting of protective relays in conformance with results of the Short Circuit Study and testing of relays to assure that relays will trip at the current value and time required by the Study.

Circuit breakers which are specified with adjustable time or pick-up settings for ground current, instantaneous overcurrent, short-time overcurrent, or long-time overcurrent, shall be field adjusted by a representative of the circuit breaker Manufacturer. Time and pickup setting shall correspond to the recommendations of the Short Circuit Study. Setting shall be tabulated and proven for each circuit breaker in its installed position; test results shall be certified and copies shall be submitted to the CONSTRUCTION MANAGER.

7. Complete ground testing of all grounding electrodes prior to operating the equipment.
- B. Subsystem testing shall occur after the proper operation of alarm and status contacts has been demonstrated to the CONSTRUCTION MANAGER and after process control devices have been adjusted. The WORK of this Section includes adjusting level switches prior to testing and setting.
  - C. After initial settings have been completed, each subsystem shall be operated in the manual mode. Once the manual mode of operation has been proven and similar parameters.
  - D. NOT USED.
  - E. Ground resistance tests shall be conducted in the presence of the CONSTRUCTION MANAGER utilizing ground resistance megger "Earth" tester with a maximum of 0-

50 scale. Tests shall be conducted utilizing the full of potential method or the three terminal method as described by Biddle or Neta.

- F. Subsystems, in the context discussed here, mean individual and groups of pumps, conveyor systems, chemical feeders, air conditioning units, ventilation fans, air compressors, and similar equipment.

### **3.2 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 station operation in which 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 shall be considered only upon receipt of a written request by the CONTRACTOR.

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

## **SECTION 16050 - BASIC ELECTRICAL MATERIALS AND METHODS**

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

#### **1.1 WORK OF THIS SECTION**

- A. The WORK of this Section includes providing the following:
1. Raceways, Fittings and Supports
  2. Concrete Pads, Underground Ducts, Manholes and Pull-Boxes
  3. Conductors, Wire and Cable
  4. Wiring Devices
  5. Disconnect Switches
  6. Electrical Identification
  7. Cabinets and Enclosures
  8. Process Control Devices

#### **1.2 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. Section 13300 Instrumentation and Control
  2. Section 16030 Electrical Tests

#### **1.3 STANDARD SPECIFICATIONS**

- A. Except as otherwise indicated in this Section of the Specifications, the CONTRACTOR shall comply with the Standard Specifications for Public Works Construction (SSPWC).

#### **1.4 CODES**

- 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. International Building Code
  2. National Electrical Code

#### **1.5 SPECIFICATIONS AND STANDARDS**

- A. Except as otherwise indicated, the current editions of the following apply to the WORK of this Section:
1. Federal Specifications:  
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-581E	Conduit, Metal, Rigid, And Intermediate; And Coupling, Elbow, and Nipple, Electrical Conduit: Steel, Zinc Coated
WW-C-581E	Intermediate; and Coupling, Elbow, and Nipple, Electrical Conduit; Zinc Coated
2.	Commercial Standards:
ANSI B16.5	Pipe Flanges and Flanged Fittings, Steel, Nickel Alloy, and Other Special Alloys
ANSI C80.1	Rigid Steel Conduit, Zinc Coated, Specification For
ANSI Z55.1	Gray Finishes for Industrial Apparatus and Equipment
ANSI C80.1	Rigid Steel Conduit-Zinc Coated
ANSI C80.3	Electrical Metallic Tubing-Zinc Coated
ANSI/IEEE 386	Separable Insulated Connector Systems for Power Distribution Systems Above 600V
ANSI/IEEE C37.30A	Definitions and Requirements for High-Voltage Air Switches, Insulators, and Supports, Supplement to C37.30-1971
ANSI C37.32	Schedules of Preferred Ratings, Manufacturing Specifications and Application Guide for High-Voltage Air Switches, Bus Supports, and Switch Accessories
ANSI C37.46	Specifications for Power Fuses and Fused Disconnecting Switches
NEMA VE-1	Ventilated Cable Tray
NEMA TC2	Electrical Plastic Tubing (EPT) and Conduit (EPC 40 and EPC 80)
NEMA ICS 6	Enclosures for Industrial Controls and Systems
NEMA 250	Enclosures for Electrical Equipment (1000 volts maximum)

NEMA WC7	Cross-Linked-Thermosetting Insulated Wire and Cable for the Transmission and Distribution of Electric Energy
IPCEA S-61-402	Thermoplastic - Insulated Wire and Cable for the Transmission and Distribution of Electrical Energy
IPCEA S-19	Rubber - Insulated Wire and Cable for the Transmission and Distribution of Electrical Energy
JIC EMP-1-67	Electrical Standards for Mass Production Equipment
AEIC CS6	Ethylene Propylene Rubber Insulated Shielded Power Cables Rated 5 through 69 KV
ASTM B3	Soft or Annealed Copper Wire
ASTM B8	Concentric-Lay-Stranded Copper Conductors, Hard, Medium-Hard, or Soft
ASTM B33	Tinned Soft or Annealed Copper Wire for Electrical Purposes
ASTM B189	Lead Coated and Lead-Alloy-Coated Soft Copper Wire for Electrical Purposes
ASTM A193/A193M	Alloy-Steel and Stainless Steel Bolting Materials for High Temperature Service
ICEA S-68-516	Ethylene-Propylene-Rubber-Insulated Wire
IEEE 383	Type Test of Class IE Electric Cables, Field Splices, and Connections for Nuclear Power Generating Stations
UL 1242	Intermediate Metal Conduit
UL 44	Rubber-Insulated Wires and Cable
UL 83	Thermoplastic-Insulated Wires and Cable
UL 67	Underwriters Laboratories, Electric Panelboards
UL 489	Molded-Case Circuit Breakers and Circuit Breaker Enclosures
UL 50	Cabinets and Boxes

## 1.6 SHOP DRAWINGS AND SAMPLES

A. The following shall be submitted:

### 1. General

Shop drawings including the following:

Front, side, and rear elevations and top views.

Location of conduit entrances and access plates.

Identification of conductors not indicated on drawings.

Identification numbers of conductors.

Manufacturers' equipment drawings.

Details of shielded power cable termination.

Component data.

Connection, terminal and internal wiring diagrams, and conductor sizes.

Layout drawings indicating arrangement, dimensions and weights.

Methods of anchoring.

Finish.

Nameplates.

Temperature limitations, as applicable.

Manufacturer's product data including the following:

Catalogue cuts, bulletins, brochures, or photocopies of applicable pages for mass produced, non-custom manufactured products stamped to indicate the project name, applicable Specification section and paragraph, model number, ratings and options.

Lists of the following:

Materials, equipment, apparatus and fixtures proposed for use; with the list including sizes, names of manufacturers, catalog numbers, and such other information required to identify the items.

Test reports of the following:

Factory-fabricated products.

Currents resulting from DC high potential testing.

## 1.7 OWNER'S MANUAL

A. The following shall be included in the OWNER'S MANUAL:

1. Manufacturer's installation instructions.

2. Manufacturer's maintenance procedures.

## 1.8 PROJECT RECORD DRAWINGS

- A. The following shall be included in the PROJECT RECORD DRAWINGS:
1. Accurate location of conductors including depths and routing of concealed below-grade electrical WORK.
  2. Accurate location of electrical WORK (raceway and conductors) where the location differs substantially from the locations indicated.

## 1.9 AREA DESIGNATIONS

- A. **General:** For purposes of delineating electrical enclosure and installation requirements, certain areas are classified as defined below. Electrical installations within these areas shall conform to the indicated code requirements for the area indicated.
- B. **General Purpose Locations:** WORK installed in areas which are not otherwise specifically classified shall be "General Purpose." Enclosures shall comply with the requirements of these Specifications and shall be NEMA Type 1.
- C. **Outdoor Locations:** In outdoor locations, raceway shall be rigid galvanized steel conduit; entrances shall be threaded; and fittings shall have gasketed covers. Fittings and conduit shall be drained. Threaded fastening hardware shall be stainless steel. Mounting brackets shall be galvanized. Attachments or welded assemblies shall be galvanized after fabrication. Power panels, switchboards and motor control centers shall be "Weatherproof NEMA Type 3R." Enclosures shall be mounted 1/4-inch from walls to provide an air space unless specifically shown otherwise.
- D. **Damp Location:** Locations which are indoors and 2 feet below grade elevation or which are indicated as damp locations on the Drawings shall have electrical installations which conform to the requirements for outdoor locations; except, that the air space from walls may be less than 1/4-inch and enclosures shall be NEMA Type 2. "Damp locations" shall include pipe galleries, tunnels, and basements. Rooms housing liquid handling equipment are also classified as damp locations regardless of grade elevation.
- E. **Splash Locations:** Areas indicated as "splash-proof" locations shall have electrical installations as described for "outdoor locations"; except, that NEMA Type 4 enclosures shall be provided for instruments and controls, panels, switchboards, and motor control centers.
- F. **Corrosive Locations:** Areas indicated as "corrosive" locations shall have stainless steel threaded hardware; electrical hardware, fittings, and raceway systems shall be PVC-coated. Enclosures shall be NEMA Type 4X of fiberglass and reinforced polyester or equal. Corrosive locations include chemical feeder and chemical storage rooms, chlorination rooms, reservoir access, valve structures, and outdoor areas within 10 feet of chemical storage tanks and areas within 10 feet of inlet channels.
- G. **Hazardous Locations:** NEC "Hazardous (Classified) Locations" shall be as indicated and shall comply with NFPA 820.

## 1.10 FACTORY TESTING

- A. **Product Testing:** Products shall be tested at the factory for compliance with the indicated requirements and as follows:
  - (1) **Cabinets and Enclosures:** Each motor control center shall be completed, assembled, wired, and tested at the factory. All buses and wiring shall be given a dielectric test in accordance with the latest IEEE and NEMA Standards.
- B. **Witnesses:** The OWNER and the CONSTRUCTION MANAGER (at the option of either) reserves the right to witness factory tests.

## 1.11 FIELD TESTING

- A. **Testing:** Products shall be field-tested for compliance with the indicated requirements.
- B. **Witnesses:** The OWNER and the CONSTRUCTION MANAGER (at the option of either) reserves the right to witness field tests.

## 1.12 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. **Delivery of Materials:** Products shall be delivered in original, unbroken packages, containers, or bundles bearing the name of the manufacturer.
- B. **Storage:** Products shall be carefully stored in a manner that will prevent damage and in an area that is protected from the elements. Products shall not be damaged, marred, or splattered with water, foam, plaster, or paint. Moving parts shall be kept clean and dry.
- C. **Replacement:** Damaged materials or equipment, including face plates of panels and switchboard sections, shall be replaced or refinished by the manufacturer at no expense to the OWNER.

## 1.13 REGULATORY REQUIREMENTS

- A. In addition to other indicated regulatory requirements, the WORK of this Section shall comply with the requirements of SSPWC Subsection 209-1.

## 1.14 UTILITY REQUIREMENTS

- A. The WORK of this Section includes compliance with the requirements of San Diego Gas and Electric Company and payment of related charges.

## PART 2. -- PRODUCTS

### 2.1 GENERAL

- A. **Listing:** Electrical equipment and materials shall be listed for the intended purpose by an independent testing laboratory including Underwriters Laboratories (UL).

Independent testing laboratory shall be acceptable to the inspection authority having jurisdiction.

- B. **Unlisted Products:** When a product is not available with a testing laboratory listing for the intended purpose, special testing (if any) required by the authority having jurisdiction shall be included in the original contract price.
- C. **Project/Site Conditions:** Unless otherwise indicated, equipment and materials shall be sized and rated for the ambient conditions in San Diego but not less than an ambient temperature of 40 degrees C at sea level without exceeding the manufacturer's stated tolerances.
- D. **Product Qualifications:** Equipment and materials shall be new and shall bear the UL label, where UL requirements apply. Equipment and materials shall be the products of reputable manufacturers specializing in the products indicated in this Section. Similar items in the project shall be products of the same manufacturer. Equipment and materials shall be of industrial grade and standard of construction and shall be of sturdy design and manufacture; and shall be capable of reliable, trouble-free service.

## 2.2 RACEWAY, FITTINGS AND SUPPORTS

- A. **Raceway:** Raceway shall comply with the following:
  - 1. **Rigid Steel Conduit:** Raceway shall be rigid steel conduit complying with ANSI C80.1 unless otherwise indicated. Rigid steel conduit shall be full weight, mild steel, hot-dip galvanized and bichromate coated inside and outside after galvanizing.
  - 2. **Intermediate Metal Conduit:** Intermediate metal conduit shall comply with UL 1242 and FEDSPEC WW-C-581E and shall have smooth finished surfaces. Conduit shall be galvanized. Minimum size shall be 3/4 inch.
  - 3. **Fittings:** Locknuts shall be extra heavy electrogalvanized steel for sizes through 2 inches. Locknuts larger than 2 inches shall be electrogalvanized malleable iron. Bushings shall be electrogalvanized malleable iron with insulating collar. Grounding bushings shall be locking type and shall include a feed-through compression lug for securing the ground cables. Unions shall be electrogalvanized ferrous alloy type. Threadless fittings are not acceptable. Gaskets shall be made of neoprene.

Expansion fittings in embedded runs shall be watertight and shall be provided with an internal bonding jumper. The expansion material shall be neoprene and shall allow for 3/4-inch movement in any direction.
  - 4. **Plastic Coated Rigid Steel Conduit and Fittings:** Plastic coated conduit shall be rigid steel conduit with PVC jacket and shall conform to Federal Specification WW-C-581E, ANSI C80.1, and to Underwriter's Laboratories specifications. The zinc surfaces of the conduit shall remain intact and undisturbed on both the inside and the outside of the conduit through the preparation and application processing. A PVC coating shall be bonded to

the galvanized outer surface of the conduit. The bond between the PVC coating and the conduit surface shall be greater than the tensile strength of the plastic. The thickness of the PVC coating shall be a minimum of 40 mils. A PVC jacketed coupling shall be provided with each length of conduit. A PVC sleeve equal to the OD of the conduit shall extend 1-1/2 inches from each end of coupling.

Fittings used with plastic coated conduit shall be similarly coated to the same thickness as the conduit and shall be provided with type 304 stainless steel hardware. Conduit and fittings shall be manufactured by the same company. Minimum size shall be 3/4 inch.

5. **Electrical Metallic Tubing:** Electrical metallic tubing shall be electrogalvanized complying with ANSI C80.3. Fittings shall be compression type. Minimum size shall be 3/4 inch. Electrical metallic tubing shall be galvanized inside and out with an enamel coating inside and a chromate coating outside.
6. **Flexible Metal Conduit:** Flexible metal conduit shall be formed from spirally wound galvanized steel strip with successive convolutions securely interlocked. Minimum size shall be 1/2 inch. Fittings shall be compression type. Flexible metal conduit shall be provided with ground wire.
7. **Liquidtight Flexible Steel Conduit:** Liquidtight flexible steel conduit shall be formed from spirally wound galvanized steel strip with successive convolutions securely interlocked and jacketed with liquidtight plastic cover. Minimum size shall be 1/2 inch. Fittings for liquidtight conduit shall have cadmium-plated malleable iron body and gland nut with cast-in lug, brass grounding ferrule threaded to engage conduit spiral and O-ring seals around the conduit, box connection and insulated throat. Forty-five and 90-degree fittings shall be used where applicable.
8. **Explosionproof Flexible Conduit:** Explosionproof flexible conduit shall be suitable for use in Class I, Division 1, Groups C and D hazardous areas complying with NEC and shall be watertight.
9. **Rigid Nonmetallic Conduit:** Rigid nonmetallic conduit shall be NEMA TC2, type EPC-40-PVC, or EPC-80-PVC high impact, polyvinylchloride (PVC). Fittings used with PVC conduit shall be PVC solvent weld type. Nonmetallic conduits shall be UL listed for applications indicated. Minimum size shall be 1 inch.
10. **Wireways:** Wireways and auxiliary gutters shall be JIC EMP-1 sectional flanged oiltight type with hinged covers and shall be 8 inches by 8 inches in cross section unless otherwise indicated.

**B. Boxes and Fittings:** Boxes and fittings shall comply with the following:

1. **Sheet Metal Boxes:** Boxes and fittings installed in areas where electrical metallic tubing is indicated shall be standard UL approved electro-galvanized sheet steel.

2. **Cast Ferrous Alloy Boxes:** Boxes shall be hot-dip galvanized cast ferrous alloy unless otherwise indicated. Integrally cast threaded hubs or bosses shall be provided for conduit entrances and shall provide for full 5-thread contact on tightening. Drilling and threading shall be done before galvanizing. A full body neoprene gasket shall be included with the cover. Type 304 stainless steel screws shall be provided for covers. Where two or more devices are located together, outlet and device boxes shall be gang type. Cover plates shall be hot-dip galvanized cast ferrous alloy unless the particular device requires a cover that is not manufactured in this material
3. **Floor Boxes:** Floor boxes shall be hot-dip galvanized cast boxes with an NEMA 4 rating. Boxes shall include a recessed ring neoprene gasket, hot-dip galvanized steel checker cover plates and type 304 stainless steel machine screws of not less than 1/4 inch diameter. The cover screws shall be flat head type or recessed socket head screws designed to be flush with cover plate.
4. **Welded Sheet Steel Boxes:** Large boxes shall be fabricated from welded steel and shall be hot-dip galvanized after fabrication. Before finish is applied, a grounding pad drilled for two bolted grounding lugs or a grounding stud shall be welded to the inside of the box. Hardware shall be 304 stainless steel. Boxes shall, as a minimum, meet NEMA 12 and JIC EMP-1 requirements.
5. **Explosionproof Boxes and Seal Fittings:** In areas specified as Class I, Division 1 or 2, hazardous, boxes and fittings shall be NEMA 7, Groups C and D, explosionproof. Seal fittings for conduit systems in hazardous atmosphere locations shall be hot-dip galvanized cast ferrous alloy. Sealing compound shall be hard type and UL listed for explosionproof sealing fittings.
6. **Hubs:** Threaded hubs for connection of conduit to junction, device or terminal boxes shall be made of cast ferrous alloy, electroplated with zinc and shall have insulated liner and insulating bushings. The hubs shall utilize a neoprene O-ring and shall ensure a watertight connection.

**C. Raceway Supports:** Raceway supports shall comply with the following:

1. **Conduit Supports:** Hot-dip galvanized framing channel shall be used to support groups of conduit. Individual conduit supports shall be one-hole galvanized malleable iron pipe straps used with galvanized clamp backs and nesting backs where required. Conduit supports for PVC coated rigid steel and PVC conduit systems shall be one-hole PVC coated clamps or PVC conduit wall hangers.
2. **Ceiling Hangers:** Ceiling hangers shall be adjustable galvanized carbon steel rod hangers. Straps or hangers of plumber's perforated tape are not acceptable. Unless otherwise indicated hanger rods shall be 1/2-inch full-threaded rods and shall meet ASTM A193. Hanger rods in corrosive areas and those exposed to weather or moisture shall be stainless steel.

3. **Structural Attachments (Racks):** Structural attachments shall be constructed from hot-dip galvanized framing channel as specified. Field cuts shall be treated with zinc enriched paint.

### 2.3 CONCRETE PADS, UNDERGROUND DUCTS, MANHOLES AND PULL-BOXES

- A. **General:** The WORK of this Section includes concrete pads, manholes, pull-boxes and concrete required for encasement, installation, or construction and shall be 2500-psi concrete and the following:
  1. Consolidation of encasement concrete around duct banks shall be by hand puddling, and no mechanical vibration will be permitted.
  2. A workability admixture consisting of a hydroxylated carboxylic acid type in liquid form shall be used in encasement concrete, 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.
- B. **Concrete Pads:** Concrete housekeeping pads shall be provided for floor-standing electrical equipment. Housekeeping pads shall be 4 inches above surrounding finished floor or grade and shall be 4 inches larger in both dimensions than the supported equipment unless otherwise indicated.
- C. **Concrete-Encased Ducts:** Where an underground distribution system is indicated, it shall be constructed of multiple runs of single bore thin-wall non-metallic ducts, concrete encased, with steel reinforcing bars, with underground manholes and pullboxes.
- D. **Manholes and Pull-Boxes:** Manholes and pullboxes shall comply with the following:
  1. Manholes and pull-boxes shall be of precast concrete. Concrete construction shall be designed for traffic loading. Covers shall be [traffic] [parkway] type, except as otherwise indicated. "P" covers shall be identified as "High Voltage Electric." "S" covers shall be identified as "Secondary Electric" and "C" covers as "Signal." Manholes and pullboxes shall be equipped with pulling-in irons opposite and below each ductway entrance. Manholes shall have concrete covers with 30-inch diameter lids. Covers and lids shall be bolted to cast-in-place steel frames with corrosion resistant hardware. Frames shall be factory-primed; covers shall be galvanized and shall have lifting handles.
  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 shall be fastened with galvanized bolts and shall be fabricated of fiberglass or galvanized steel.

3. Duct entrances shall be grouted smooth. Ducts for primary and secondary cables shall be terminated with flush-end bells. Sections of prefabricated manholes and pullboxes shall be assembled with waterproof mastic. Each manhole or pullbox shall be set on a 6-inch bed of gravel as recommended by the manufacturer.

## 2.4 CONDUCTORS, WIRE AND CABLE

- A. **General:** The type, size and number of conductors shall comply with the indicated requirements. Number and types of communication, paging, and security cables shall be as required for the particular equipment provided.

Conductors, including ground conductors, shall be copper. Insulation shall bear the manufacturer's trademark, type, voltage rating, and conductor size.

- B. **Color Coding:** Color coding shall comply with the following:

1. Control Conductors: Control conductors color coding shall be manufacturer's standard.
2. Power Conductors: Single-conductor power conductors shall have the following colors for 600V or less:

		<u>120/208V</u>	<u>480/277V</u>
Phase	A	Black	Brown
Phase	B	Red	Orange
Phase	C	Blue	Yellow
Ground		Green	Green
Neutral		White	Grey

Color coding tape shall be used where colored insulation is not available. Branch circuit switch shall be yellow. Insulated ground wire shall be green, and neutral shall be gray. Color coding and phasing shall be consistent throughout the site, but bars at panelboards, switchboards, and motor control centers shall be connected Phase A-B-C, top to bottom, or left to right, facing connecting lugs.

General purpose ac control conductors shall be pink. General purpose dc control conductors shall be blue.

Cables sized No. 4 AWG and larger may be black with colored 3/4-inch vinyl plastic tape applied in 3-inch lengths around the cable at each end. The cables shall be tagged at terminations and in pull boxes, handholes and manholes.

C. **Lighting and Receptacle Branch Circuit Conductors:** Lighting conductors shall be stranded except for No. 12 AWG which shall be solid.

(1) Conductors shall comply with the following characteristics:

Voltage: 600 volts.

Conductor: Bare annealed copper; stranded in accordance with ASTM B8.

Insulation: THWN/THHN, 90 degree C dry, 75 degree C wet, polyvinylchloride (PVC) per UL 83.

Jacket: Nylon.

Flame resistance: UL 83.

D. **Signal Cables:** Signal cables shall comply with the following:

1. General: Signal cable shall be provided for instrument signal transmission, alarm, communication and any circuit operating at less than 100 volts. Cables shall be color coded black and white for pairs or black, white and red for triads. Circuit shielding shall be provided in addition to cable shielding.

2. Single Circuit: Cable shall consist of one pair or triad, No. 16 AWG conductors with 15 mils of 90 degree C polyvinylchloride (PVC) insulation, 4 mils nylon conduit or jacket, twisted on a 2-inch lay, and covered with a 100 percent 1.35 mil aluminum-Mylar tape shield with No. 18 AWG 7-strand tinned copper drain wire and a 45 mil PVC jacket overall. Cable shall be UL listed, Type TC, rated 600 volts.

3. Multiple Circuit: Cable shall consist of four or more pairs or triads which are made up of No. 18 AWG conductors with 15 mils of 90 degree C PVC insulation, 4 mils nylon jacket, twisted on a staggered lay 1-1/2 to 2-1/2 inches, and covered with a 100 percent 1.35 mil aluminum-Mylar tape shield with No. 22 AWG 7-strand tinned copper drain wire. Overall cable shield shall be 2.35 mil aluminum-Mylar tape with a No. 20 AWG 7-strand tinned copper drain wire. Cable shall be UL listed, Type TC, 600 volts.

4. Thermocouple Extension: Extension cable shall be provided for the type of thermocouple circuit indicated. Conductors shall be 16 AWG, solid alloy, with 15 mils of 90 degree C flame-retardant polyvinylchloride insulation, twisted and covered with 100 percent 2.35 mil aluminum polyester tape and a 20 AWG, 7-strand, tinned-copper drain wire and a 35 mil, flame-retardant PVC jacket overall. Cable shall be listed for cable tray installation.

5. Communication, Paging and Security System: Communication, paging, and security system cables shall comply with Section 13300.

- E. **Portable Cord:** Portable cord shall be UL listed, Type SO for sizes No. 10 AWG and smaller. Cords with conductors larger than No. 10 AWG shall be UL listed, Type G. Cords shall contain an equipment grounding conductor.

1. Cables shall comply with the following:

Conductors: Flexible rope stranded per ASTM B189 and B33. Conductors shall be coated except ground conductors may be uncoated.

Insulation: Insulation shall be ethylenepropylene (EPR) as per ICEA S-68-516 and rated for continuous operation at 90 degrees C.

Jacket: Heavy-duty neoprene as per ICEA S-68-516.

## 2.5 WIRING DEVICES

- A. **General:** Wiring devices shall be UL approved for the current and voltage indicated and shall comply with NEMA WD-1. Devices shall contain provisions for back wiring and side wiring with captively held binding screws.

Devices shall be brown, except those located in finished areas shall be ivory.

Special purpose devices shall be the color indicated.

Receptacles and switches shall conform to Federal Specifications W-C-596E and W-S-896E, respectively, and the indicated standards.

- B. **Receptacles and Plugs:** Receptacles and plugs shall comply with the following:

1. General: Receptacles shall be grounding type.

2. 120V Receptacles: Receptacles indicated for indoor use in clean areas shall be duplex 20 amp, NEMA 5-20R, and shall accept NEMA 5-15P and 5-20P plug caps.

Receptacle indicated for use outdoors or in process or corrosive areas shall be duplex, 20 ampere, NEMA 5-20R, and shall accept NEMA 5-15P and 5-20P plug caps. Receptacle and plug caps shall be corrosion resistant, marine duty with yellow polycarbonate weatherproof lift covers.

3. Ground Fault Interrupter Receptacles: Receptacles shall be NEMA 5-20R configured and shall mount in a standard outlet box. Units shall trip at 5 milliamperes of ground current and shall comply with NEMA WD-1-1.10 and UL 943. GFI receptacles shall be capable of individual as well as "downstream" operation.

4. NOT USED

5. Plug Caps: Male plug caps for 120 volt and 240 volt receptacles shall be of the cord grip armored type with heavy phenolic housing, of the same

manufacture as the receptacle. Plug caps shall be rated 15 amps. One plug cap shall be provided for every four receptacles (minimum 2 plug caps).

6. NOT USED

7. NOT USED

C. **Switches:** Switches shall comply with the following:

1. General Purpose (Indoor, Clean Areas): General purpose switches shall be quiet AC type, specification grade, and shall comply with rated capacities as required. Switches shall match receptacles in color.

2. NOT USED

3. Switches For Outdoor and Corrosive Areas: Switches shall be heavy-duty industrial type 20-ampere presswitch type with weatherproof/corrosion resistant neoprene plate. CONTRACTOR shall provide abuse-resistant nylon handles, and switches with corrosion-resistant steel nickel plate bridge.

D. **Device Plates:** Device plates shall be provided with switches. In noncorrosive indoor areas, receptacle device plates shall be made of sheet steel, zinc electroplated with chrome finish.

Device plates in corrosive or outdoor areas shall be corrosion-resistant/marine-duty type. Device plates for explosionproof equipment shall be factory provided with the equipment.

Device plates shall include engraved laminated phenolic nameplates with 1/8-inch white characters on black background.

Nameplates for switches shall identify panel and circuit number and area served.

Nameplates for receptacles shall identify circuit and voltage if other than 120 volts, single phase.

ii) NOT USED

## 2.6 LIGHTING AND POWER DISTRIBUTION PANELBOARDS (NOT USED)

## 2.7 DISCONNECT SWITCHES (NOT USED)

## 2.8 ELECTRICAL IDENTIFICATION

A. **Nameplates:** Nameplates shall be fabricated from white-center, black-face laminated plastic engraving stock. Nameplates shall be fastened securely, using fasteners of brass, cadmium plated steel, or stainless steel, screwed into inserts or tapped holes, as required. Engraved characters shall be block style of adequate size to be read easily at a distance of 6 feet with no characters smaller than 1/8-inch high.

- B. **Conductor and Equipment Identification:** Conductor and equipment identification devices shall be either imprinted plastic-coated cloth marking devices or shall be heat-shrink plastic tubing, imprinted split-sleeve markers cemented in place.
- C. **Identification Tape (Buried):** Identification tape for protection of buried installation shall be a 6-inch wide green polyethylene tape imprinted "CAUTION - ELECTRIC UTILITIES BELOW".

## 2.9 CABINETS AND ENCLOSURES

- A. **General:** The WORK of this Section includes the following requirements for control compartments of motor control sections, for control cabinets of lighting panelboards, and for separate terminal and control cabinets:
  - 1. **Terminal Cabinets:** Terminal cabinets located indoors shall be NEMA 12. Cabinets located outdoors and in corrosive areas shall be NEMA 4X. Cabinets shall be provided with hinged doors. Cabinets shall be provided with channel mounted terminal blocks rated 30 amperes, 600 volt AC. Terminals shall be No. 8 minimum strap-screw type, suitable for ring tongue or locking spade terminals. Sufficient terminal blocks to terminate 25 percent more conductors than are indicated shall be provided.
  - 2. **Components:** Compartments of motor control centers containing terminal blocks and control components shall be isolated from other compartments of the control center and shall have a separate hinged door with locking handle. Internal control components shall be mounted on a removable mounting pan.
  - 3. **Relay and Control Cabinets:** Relay and control cabinets shall comply with NEMA 12 for enclosures. Floor-standing cabinets shall have locking handles with 3-point catches. Bottom conduit entrances shall be located accurately and cut to the conduit diameter using a circle cutter (not a torch). Interiors of relay and control compartments shall be finished white. Terminal block requirements shall comply with the requirements for Terminal Cabinets.
- B. **Wiring:** Wiring of terminal cabinets and control cabinets shall be accomplished with stranded copper conductor rated for 600-volts and UL listed as Type MTW. Wires for annunciator and indication circuits shall be No. 16 AWG. Other wiring shall be No. 14 AWG. Color coding shall comply with the indicated requirements. Incoming wires to terminal or relay cabinets shall be terminated on a master set of terminal blocks. All wiring from the master terminals to internal components shall be factory-installed and shall be contained in plastic raceways with removable covers. Wiring to door-mounted devices shall be extra flexible and anchored to doors using wire anchors cemented in place. Exposed terminals of door-mounted devices shall be guarded to prevent accidental personnel contact with energized terminals.
- C. **Engraving:** Nameplates shall comply with the indicated requirements.

## **2.10 PROCESS CONTROL DEVICES (NOT USED)**

## **2.11 MANUFACTURERS**

- A. Products of the type or model number indicated shall be manufactured by one of the below listed manufacturers (or equal):
1. Unions:  
Appleton UNF or UNY  
Crouse-Hinds UNF or UNY
  2. Device Boxes:  
Appleton FD  
Crouse-Hinds FD
  3. Sealing Compound:  
Chico A
  4. Watertight Seals:  
O.Z. Gedney Co., Type CSMC  
Thunderline Corp.  
Link Seal
  5. Lighting and Receptacle Branch Circuit Conductors:  
Okoseal-N, Series 116-67-XXXX
  6. Single Power and Control Conductors and Cable, 600V:  
Okonite-Okolon, Series 112-11-XXXX  
Anaconda  
Durasheath EP
  7. Multiconductor Cables:  
Okonite-Okolon, Series 202-11-3XXX  
Anaconda  
Durasheath EP
  8. Direct Burial Cables:  
Okonite  
CLX
  9. Armored Cable:  
Okoguard, Series 571-23-3XXX  
Anaconda  
Duralox Unishield EP
  10. Single Circuit Signal Cable:  
Okoseal-N Type P-OS
  11. Multiple Circuit Signal Cable:  
Okoseal-N Type SP-OS

12. Thermocouple Extension:  
Okonite P-OS, Type PLTC
13. Portable Cords:  
Okocord
14. Compression Tool Die For Splicing:  
Thomas and Betts Corp.
15. Heat Shrinkable Moisture Seal Caps:  
Raychem Corp. "Thermofit"
16. 120V Receptacles (Indoor, Clean Areas):  
Hubbell IG-5362  
Arrow-Hart 6766  
G.E. 4107-1 (Brown)
17. 120V Receptacles (Outdoor, Process or Corrosive Areas):  
Hubbell 53CM62/53CM21  
General Electric GE5262-C
18. 240V Duplex Receptacles (Gray):  
Hubbell 5462  
General Electric G.E. 4188-9
19. 240V Single Receptacles (Black):  
Hubbell 9308  
General Electric G.E. 4138-3
20. Toggle Switches:
 

	<b>Hubbell</b>	<b>Bryant</b>	<b>Hubbell</b>	<b>Bryant</b>
Single Pole (ivory)	1221 (brown)	4901 (brown)	1221I (ivory)	4901I
Three Way	1223	4903	1223I	4903I
Double Pole	1222	4902	1222I	4902I
Momentary	1556	4821	1556I	4821I
21. Switches (Hazardous Areas):  
Crouse-Hinds EFSC2129  
Appleton EFSC175-F1
22. Electrical Identification:  
Nameplates  
Formica Type ES-1  
Imprinted Plastic Coated Cloth  
Brady  
Thomas & Betts

23. Device Plates:  
Crouse-Hinds  
Appleton
24. Plug Strips:  
Plugmold
25. Manholes and Pullboxes:  
Brooks  
Quikset
26. Flexible Conduit:  
American Brass  
Anaconda  
Electroflex
27. Compression Connectors:  
Burndt "Hi Lug"  
Thomas & Betts "Shure Stake"
28. Spring Connectors (Wire Nuts):  
3M "Scotch Lok"  
Ideal "Wing Nuts"
29. Insulating Tape:  
Scotch No. 33  
Plymouth "Slip knot"
30. High Temperature Insulating Tape (Polyvinyl):  
Plymouth  
3M
31. Pre-Insulated Fork Tongue Lugs:  
Thomas & Betts RC Series  
Burndy
32. Epoxy Resin Splicing Kits:  
3M Scotchcoat 82 Series  
Burndy "Hy Seal"
33. Stress Cone Material For Make-up Of Medium Voltage Shielded Cable:  
G & W  
3M  
duPont
34. Stainless Steel Covers:  
Sierra S-line  
Hubbell
35. Products For Cast Boxes:

Switches at outdoor locations  
Crouse-Hinds DS 128  
Mackworth Rees Style 3845  
Joy Flexitite

Switches at damp locations  
Mackworth Rees Style 3496  
Joy Flexitite

Switches at dry locations  
Crouse-Hinds DS 32G  
Pyle National SCT-10k

Receptacles at outdoor locations  
Crouse-Hinds  
Hubbell

Receptacles at damp or dry locations  
Crouse-Hinds DS 23G  
Pyle National N-1

Receptacles at corrosive locations  
Crouse-Hinds "Ark Gard"  
Appleton DTQ  
Hubbell 52CM21 or 5221

36. Cast Boxes Required for Pull or Junction Boxes:  
Floor boxes with checker plate covers  
O-Z Type "YR",  
Surface boxes  
O-Z type "YH"
37. Floor Type Outlet Boxes:  
Hubbell Catalog B-2530 with S-2530 cover plate  
Steel City (Russell & Stoll) Catalog 78AL and 889
38. Power Outlet Boxes:  
Hubbell Cat. No. SC-3098  
Steel City Cat. No SFH40RG
39. Telephone Outlet Boxes:  
Hubbell Cat. No. SS-309-T  
Steel City Cat. No SFL10
40. Insulated Bushings:  
O-Z Type A and B  
Thomas & Betts  
Steel City  
Appleton  
Efcor  
Gedney

- 41. Insulated Grounding Bushings:
  - O-Z Type BL
  - Thomas & Betts
  - Steel City
  - Efcor
  - Gedney
- 42. Erickson Couplings:
  - Appleton Type EC
  - Thomas & Betts
  - Steel City
  - Efcor
  - Gedney
- 43. Liquid-tight Fittings:
  - Appleton Type ST
  - Thomas & Betts
  - Crouse-Hinds
  - Efcor
  - Gedney
- 44. Hubs:
  - Appleton Type HUB
  - Thomas & Betts
  - Myers Scrutite
  - Efcor
- 45. Sealing Fittings:
  - Appleton Type EYS
  - O-Z Type FSK
- 46. Expansion Couplings:
  - O-Z Type D
  - Crouse-Hinds Type

### **PART 3. -- EXECUTION**

#### **3.1 GENERAL**

- A. **Field Control of Location and Arrangement:** The Drawings diagrammatically indicate the location and arrangement of outlets, conduit runs, equipment, and other items. Exact locations shall be determined in the field based on the physical size and arrangement of equipment, finished elevations, and obstructions. Locations shown on the Drawings shall be adhered to as closely as possible. Omissions or conflicts on Drawings or between Drawings and Specifications shall be brought to the attention of the CONSTRUCTION MANAGER for clarification before proceeding with the WORK.
- B. **Installation:** The CONTRACTOR shall make all necessary provisions throughout the site to receive the work as construction progresses and shall furnish and install adequate backing, supports, inserts, and anchor bolts for the hanging and support of

all electrical fixtures, conduit, panelboard, and switches, and shall furnish and install sleeves through walls, floors, or foundations where electrical lines are required to penetrate.

Conduit and equipment shall be installed in such a manner as to avoid all obstructions and to preserve head room and keep openings and passageways clear. Fixtures, switches, convenience outlets, and similar items shall be located within finished rooms, as shown. Where the Drawings do not indicate exact locations, locations of concealed conductors shall be as indicated on the shop drawings.

- C. **Workmanship:** Materials and equipment shall be installed in accordance with printed recommendations of the manufacturer. The installation shall be accomplished by workmen skilled in this type of work and installation shall be coordinated in the field with other trades so that interferences are avoided.
- D. **Tests:** The WORK of this Section includes tests required by the authority having jurisdiction. Tests shall be performed in the presence of the CONSTRUCTION MANAGER. The WORK includes testing equipment, replacement parts and labor necessary to repair damage resulting from damaged equipment or from testing and correction of faulty installation. The following tests shall be performed:

Insulation resistance tests.

Operational testing of equipment.

- E. **Field Quality Control:** Conduit shall be provided with a number tag at each end and in each manhole and pullbox. Trays shall be identified by stencils at intervals not exceeding 50 feet, at intersections, and at each end.

### 3.2 RACEWAY, FITTINGS AND SUPPORTS

- A. **General:** Except as otherwise indicated, conduit installed in direct contact with earth and in concrete slabs on grade shall be corrosion-protected.

Conduit shall be left exposed until inspected by the CONSTRUCTION MANAGER.

Raceways shall be installed as indicated. 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 conduits. Bends in larger sizes of metallic conduit shall be accomplished by field bending or by the use of factory elbows.

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 and shall be encased with a minimum cover of 3 inches of concrete.

Non-metallic conduit may be cast integral with horizontal slabs with placement criteria as stated in the previous paragraph. 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. Non-metallic 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. Non-metallic conduit shall be permitted only in concealed locations as described above. The use of direct burial thinwall duct will be permitted only as indicated for underground ducts.

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 rigid steel conduit, either terminating at the exposed concrete surface with a flush coupling. Piercing of concrete walls by non-metallic runs shall be accomplished by means of a short steel nipple terminating with flush couplings.

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.

1. Application: Galvanized rigid steel shall be installed in the locations indicated:

Embedded or encased in non-hazardous areas	Schedule 40 PVC
Exposed in corrosive areas	Plastic coated, rigid steel
Direct buried lighting and receptacle raceways in non-hazardous areas	Schedule 80 PVC
Hazardous and corrosive areas within stud walls, above suspended ceilings, and within elevator machine rooms	Plastic coated, rigid metallic tubing
Final raceway connections to lighting fixtures, equipment and pressure switches subject to vibration-DRY AREAS	Flexible metallic
Final raceway connections to equipment	Liquidtight, flexible metallic

2. Conduit Runs Between Boxes: The number of directional changes of the conduit shall be limited to total not more than 270 degrees in any run between pull boxes. Conduit runs shall be limited to 400 feet, less 100 feet or fraction thereof, for every 90 degrees of change in direction. Bends and offsets shall be avoided where possible but, where necessary, shall be made without flattening or kinking, or shall be factory preformed bends. Turns shall be made with cast metal fittings or conduit bends. Welding, brazing or otherwise heating of conduit is not acceptable.

3. **Junction and Pull Boxes:** Cast junction or pull boxes shall be installed where required for pulling cable and as necessary to meet the indicated requirements. Pull boxes used for multiple conduit runs shall not combine circuits of different motor control centers, switchboards, or switchgear.
4. **Conduit Terminations:** The WORK of this Section includes conductors required to interconnect incoming annunciator, control and instrumentation except as otherwise indicated.

Two- and 3-conductor shielded cables installed in conduit runs which exceed 2,000 feet may be spliced in pullboxes. These cable runs shall have only one splice per conductor.

Control conductors shall be spliced or terminated only at the locations indicated and only on terminal strips or terminal lugs of vendor furnished equipment. 120/208-volt and 480-volt branch circuit conductors may be spliced in suitable fittings at locations required. 5-kV conductors shall be spliced or terminated only at equipment terminals indicated.

Solid conductors shall be terminated at equipment terminal screws such that conductor is tightly wound around screw and does not protrude beyond screw head. Stranded conductors shall be terminated directly on equipment box lugs such that all conductor strands are confined within lug. Use forked-tongue lugs where equipment box lugs have not been provided.

Splices in 600-volt wire which are not pre-insulated shall be insulated with three layers of tape each half lapped except that splices in below grade pull boxes or in any box subject to flooding shall be made watertight using an epoxy resin splicing kit.

Splices to motor leads in motor terminal boxes shall be taped with varnished cambric tape and with high temperature tape on the exterior.

Shielded power cable shall be terminated with pre-assembled stress cones in a manner approved by the cable manufacturer. The CONTRACTOR shall submit the proposed termination procedure as described for shop drawings.

Control devices, such as solenoid operated valves, that are normally supplied with conductor pigtails, shall be terminated as described for control conductors.

Conduit entering NEMA 1 type sheet steel boxes or cabinets shall be secured by locknuts on both the interior and exterior of the box or cabinet and shall have an insulating grounding or bonding bushing installed over the conduit end. Conduit entering other boxes shall be terminated with a threaded hub. Cast boxes and nonmetallic enclosures shall have threaded hubs. Joints shall be made with standard couplings or threaded unions. Metal parts of nonmetallic boxes and plastic coated boxes shall be bonded to the conduit system. Running threads shall not be used in lieu of conduit nipples, nor shall excessive thread be used on any conduit. The ends of conduit shall be cut square, reamed, and threaded with straight threads. Rigid steel conduit

shall be made up tight and without thread compound. Exposed male threads on rigid steel conduit shall be coated with zinc-rich paint.

PVC conduit entering fiberglass boxes or cabinets shall be secured by threaded bushings on the interior of the box and shall be terminated with a threaded male terminal adapter having a neoprene O-ring. Joints shall be made with standard PVC couplings.

Conduit entering field equipment enclosures shall enter the bottom or side of the box. Where conduit comes from above, it shall be run down beside the enclosure and a tee conduit and drip leg installed.

5. **Matching Existing Facilities:** When new conduit is added to areas which are already painted, the conduit and its supports shall be painted to match the existing facilities. Where new conduit is used to replace existing conduit, the existing conduit and supports shall be removed, resulting blemishes shall be patched and repainted to match original conditions. Similarly, if existing conduits are to be reused and rerouted, resulting blemishes shall be corrected in the same manner. Coating system shall comply with Section 09800.
6. **Conduit Support:** Exposed rigid steel or plastic coated conduit shall be run on supports spaced not more than 10 feet apart and shall be constructed with runs parallel or perpendicular to walls, structural members, or intersections of vertical planes and ceiling. Exposed PVC conduit shall be run on supports spaced not more than 3 feet apart for conduits up to 1 inch, 5 feet apart for conduits 1 1/4 inches to 2 inches and 6 feet apart for conduits 2 1/2 inches and larger. No conduit shall approach closer than 6 inches to any object operating above 30 degrees C. PVC conduit shall not be provided where it will be damaged by heat.

Conduit rack and tray supports shall be secured to concrete walls and ceilings by means of cast-in-place anchors. Individual conduit supports shall use cast-in-place anchors, die-cast, rustproof alloy or expansion shields. Wooden plugs, plastic inserts or gunpowder-driven inserts are not acceptable.

7. **Conduit Penetrations:** Unless otherwise indicated, conduit routed perpendicular through floors, walls or other concrete structures shall pass through cast-in-place openings wherever possible. In cases where cast-in-place openings are not possible, appropriate size holes shall be bored through the concrete to accommodate the conduit passage. The size and location of the holes shall not impair the structure's integrity. After completion, grout or calk around conduit and finish to match existing surroundings. Unless otherwise protected, conduits that rise vertically through the floor shall be protected by a 3 1/2-inch high concrete pad with a sloping top.

Conduits entering manholes and handholes shall be horizontal. Conduits shall not enter through the concrete bottom of handholes and manholes.

Wherever conduits penetrate outdoor concrete walls or ceilings below grade, watertight seal shall be installed.

8. **Conduit Separation:** Signal conduits shall be separated from AC power or control conduits. The separation shall be a minimum of 12 inches for metallic conduits and 24 inches for nonmetallic conduits.
9. **Conduit Seals For Hazardous or Corrosive Areas:** Conduit passing from a hazardous or corrosive area into a nonhazardous or noncorrosive area shall be provided with a sealing fitting which shall be located at the boundary in accordance with NEC.

Seal fittings for conduit systems in hazardous atmosphere locations shall be hot-dip galvanized cast ferrous alloy. Sealing compound shall be hard type and shall be UL listed for explosionproof sealing fittings. Sealing compound shall be nonhardening type for corrosive areas. Sealing compound shall not be poured in place until electrical installation has been otherwise accepted.

10. **Plastic Coated Conduit:** Plastic coated conduit shall be made up tight with strap wrenches. Conduit threads shall be covered by a plastic overlap which shall be coated and sealed in accordance with manufacturer's recommendations. Pipe wrenches and channel locks shall not be used for tightening plastic coated conduits. Damaged areas shall be patched, using manufacturer's recommended material. The area to be patched shall be built up to the full thickness of the coating. Painted fittings are not acceptable.
11. **Liquidtight Flexible Conduit:** The length of flexible liquidtight conduit shall not exceed 15 times the trade diameter of the conduit. The length of liquidtight conduit shall not exceed 36 inches.
12. **Conduit Fittings:** Fittings shall comply with the same requirements as the raceway 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 non-ferrous metal. Fittings larger than one inch shall be "mogul size." Fittings shall be of the gland ring compression type. Covers of fittings, unless in "dry" locations, shall include gaskets. Surface-mounted cast fittings, housing wiring devices in outdoor and damp locations, shall have mounting lugs.

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.

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.

### **3.3 UNDERGROUND DUCTS, MANHOLES AND PULL-BOXES**

- A. **Underground Ducts:** Where an underground distribution system is indicated, installation shall comply with the following:
  1. Ducts 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. 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. Couplings shall be staggered at least 6 inches vertically. Bottom of trench shall be of select backfill or sand. Horizontal and vertical duct separation shall be maintained by plastic spacers set every 5 feet. The duct array shall be anchored every 4 feet to prevent movement during placement of the concrete envelope. 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, a wire brush and swab shall be drawn through. 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.

2. 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 flush with grade. The letter "D" and arrow set in the concrete shall be facing in the direction of the duct alignment.

- b. **Manholes and Pull-Boxes:** Manholes and handholes shall be set plumb to limit the depth of standing water to a maximum of 2 inches. Manhole covers, unless otherwise indicated, shall be set at grade. Sections of pre-fabricated manholes and pullboxes shall be assembled with waterproof mastic and shall be set on a 6-inch bed of gravel as recommended by the manufacturer.

### 3.4 CONDUCTORS, WIRE AND CABLE

- A. **General:** Pulling wire and cable into conduit or trays shall be completed without damaging or putting undue stress on the cable insulation. Soapstone, talc or UL listed pulling compounds are acceptable lubricants for pulling wire and cable. Grease is not acceptable. Raceway construction shall be complete, cleaned, and protected from the weather before cable is installed.

Whenever a cable leaves a raceway, a cable support shall be provided.

When flat bus bar connections are made with unplated bar, the contact areas shall be "scratch-brushed" before connection. Bolts shall be torqued to the bus manufacturer's recommendations.

- B. **600 Volt Conductor and Cable:** Conductors in panels and electrical equipment, No. 6 AWG and smaller, shall be bundled and laced at intervals not greater than 6 inches, spread into trees and connected to their respective terminals. Lacing shall be made up with plastic cable ties. Lacing is not necessary in plastic panel wiring duct. Conductors crossing hinges shall be bundled into groups not exceeding 12 and shall be so arranged that they will be protected from chafing when the hinged member is moved.

Slack shall be provided in junction and pull boxes, handholes and manholes. Slack shall be sufficient to allow cables or conductors to be routed along the walls of the

box. Amount of slack shall be equal to largest dimension of the box. Where plastic panel wiring duct is installed for wire runs, lacing is not required. Plastic panel wiring duct shall not be used in manholes and handholes.

Stranded conductors shall be terminated. Conductors shall be terminated directly on the terminal block. Compression lugs and connectors shall be installed using manufacturer's recommended tools.

Lighting and receptacle circuits may be in the same conduit in accordance with derating requirements of the NEC. However, lighting and receptacle circuits shall not be installed in conduits with power or control conductors.

Solid wire shall not be lugged nor shall electrical spring connectors be used on any except for solid wires in lighting and receptacle circuits. Lugs and connectors shall be installed with a compression tool.

Terminations at 460 volt motors shall be made by bolt-connecting the lugged connectors. Connections shall be insulated and sealed with factory-engineered kits. Motor connection kits shall consist of heat-shrinkable, polymeric insulating material over the connection area and a high dielectric strength mastic to seal the ends. Bolt connection area shall be kept free of mastics and fillers to facilitate rapid stripping and re-entry. Motor connection kits shall accommodate a range of cable sizes for both in-line and stub-type configurations.

In-line splices and tees shall be made with tubular compression connectors and insulated as for motor terminations, except that conductors No. 10 AWG and smaller may be spliced using self-insulating connectors. Splices and tees in underground handholes or pull boxes shall be insulated using Scotch-cast epoxy resin splicing kits. Terminations at devices with 120V pigtail leads, at solenoid valves, 120 volt motors, and other devices furnished with pigtail leads shall be made using self-insulating tubular compression connectors.

Conductor and cable markers shall be provided at splice points.

- C. **Signal Cable:** Circuits shall be installed as individually shielded twisted pairs or triads. In no case shall a circuit be made up using conductors from different pairs or triads. Triads shall be used wherever 3-wire circuits are required. Terminal blocks shall be provided at instrument cable junctions, and circuits shall be identified at such junctions unless otherwise indicated. Signal circuits shall be installed without splices between instruments, terminal boxes, or panels.

Shields are not acceptable as a signal path, except for circuits operating at radio frequencies and utilizing coaxial cables.

Common ground return conductors for two or more circuits are not acceptable.

Unless otherwise indicated, shields shall be bonded to the signal ground bus at the control panel and isolated from ground and other shields at other locations. Terminals shall be installed for running signal leads and shield drain wires through junction boxes.

Spare circuits and the shield drain wire shall be terminated on terminal blocks at both ends of the cable run and be electrically continuous through terminal boxes. Shield drain wires for spare circuits shall not be grounded at either end of the cable run.

Terminal boxes shall be installed at instrument cable splices. If cable is buried or in raceway below grade at splice, an instrument stand shall be provided as specified with terminal box mounted approximately 3 feet above grade.

Cable for paging, telephone, and security systems shall be installed and terminated in compliance with the manufacturer's recommendations.

D. **Testing:** Testing shall comply with the requirements of Section 16030 and the following:

1. **Signal Cable:** Each signal pair or triad shall be tested for electrical continuity. Any pair or triad exhibiting a loop resistance of less than or equal to 50 ohms shall be deemed satisfactory without further test. For pairs with greater than 50 ohm loop resistance, the expected loop resistance shall be calculated considering loop length and intrinsic safety barriers if present. Loop resistance shall not exceed the calculated value by more than 5 percent.

Each shield drain conductor shall be tested for continuity. Shield drain conductor resistance shall not exceed the loop resistance of the pair or triad.

Each conductor (signal and shield drain) shall be tested for insulation resistance with all other conductors in the cable grounded.

Instruments used for continuity measurements shall have a resolution of 0.1 ohms and an accuracy of better than 0.1 percent of reading plus 0.3 ohms. A 500 volt megohmmeter shall be used for insulation resistance measurements.

### 3.5 WIRING DEVICES

A. **General:** Boxes shall be independently supported by galvanized brackets, expansion bolts, toggle bolts, or machine or wood screws as appropriate. Wooden plugs inserted in masonry or concrete shall not be used as a base to secure boxes, nor shall welding or brazing be used for attachment.

Unless otherwise indicated, receptacles and switches installed in sheet steel boxes shall be flush mounted and shall be located 18 inches above the floor unless otherwise indicated.

Switch boxes and receptacles installed in cast device boxes shall be mounted 48 inches above the floor.

B. **Application of Boxes and Covers:** Boxes and covers shall be installed as follows:

1. Outlet, switch, and junction boxes for flush-mounting in general purpose locations shall be cast ferrous alloy

2. Outlet, switch, and junction boxes where surface mounted in exposed locations shall be cast alloy ferrous boxes with mounting lugs, zinc or cadmium plating, and enamel finish. Surface mounted boxes in concealed locations may be welded sheet steel boxes.
3. Outlet, control station, and junction boxes, including covers, for installation in corrosive locations shall be fiberglass-reinforced polyester and shall include mounting lugs.
4. Cast ferrous alloy boxes for flush-mounting in concrete shall include with cast, malleable box covers and gaskets. Covers for pressed steel boxes shall be one-piece pressed steel, cadmium plated, except that boxes for installation in plastered areas shall be stainless steel over plaster rings.
5. Outlet boxes shall be used as junction boxes wherever possible. Where separate pullboxes are indicated, they shall include screw covers. Outdoors boxes shall be galvanized and shall be provided with gasketed covers and threaded hubs. Indoor boxes shall be painted.

### **3.6 CABINETS AND ENCLOSURES**

- A. The installation of cabinets and enclosures shall comply with the following:
  1. Cabinets: Cabinets shall be set plumb at an elevation such that the maximum circuit breaker height shall be less than 5 ft 6 inches. 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 flush and serves as a "ground" for plaster application.
  2. Connections: Factory bus and wire connections shall be made at shipping splits, and all field wiring and grounding connections shall be made after the assemblies are anchored.
  3. Finishes: Enclosures smaller in volume than 500 cubic inches shall be finished in accordance with the manufacturer's standard procedures. Finish color shall be No. 61 complying with ANSI Z55.1.

Enclosures larger in volume than 500 cubic inches shall comply.

### **3.7 EQUIPMENT ANCHORING**

- A. Freestanding or wall-hung equipment shall be anchored in place by methods that will meet seismic requirement in the area where project is located. Wall-mounted panels that weigh more than 500 pounds or which are within 18 inches of the floor shall be provided with fabricated steel support pedestal(s). Pedestals shall be of welded steel angle sections. If the supported equipment is a panel or cabinet and enclosed with removable side plates, it shall match supported equipment in physical appearance and dimensions. Transformers hung from 4-inch stud walls and weighing more than 300 pounds, shall have auxiliary floor supports.

- B. Anchoring methods and leveling shall comply with the printed recommendations of the equipment manufacturers.

### **3.8 CONDUCTOR AND EQUIPMENT IDENTIFICATION**

- A. The completed electrical installation shall include adequate identification to facilitate proper control of circuits and equipment and to reduce maintenance effort.
- B. Control and instrumentation wire and cable shall be assigned a unique identification number. Numbers shall be assigned to conductors having common terminals. Identification numbers shall appear within 3 inches of conductor terminals. "Control" shall be defined as any conductor used for alarm, annunciator, or signal purposes or any connect switch or relay contacts or any relay coils.
  - 1. Multiconductor cable shall be assigned a number which shall be attached to the cable at intermediate pull boxes and at stub-up locations beneath free-standing equipment. It is expected that the cable number will form a part of the individual wire number. All individual control conductors and instrumentation cable shall be identified at pull points as described above.
  - 2. The instrumentation cable numbers shall incorporate the loop numbers shown.
- C. Spare conductors shall be terminated on terminal screws and shall be identified with a unique number as well as with destination.
- D. Nameplates shall be provided for panelboards, panels, starters, switches, and pushbutton stations. In addition to the name plates indicated, control devices shall be equipped with standard collar-type legend plates, as required.
- E. Terminal strips shall be identified by imprinted, varnished, marker strips attached under the terminal strip.
- F. Three-phase receptacles shall be consistent with respect to phase connection of receptacle terminals. Errors in phasing shall be corrected at the bus, not at the receptacle.
- G. Toggle switches which control loads out of sight of switch, and all multi-switch locations of more than 2 switches, shall have suitable inscribed finish plates.
- H. Empty conduits shall be tagged at both ends to indicate the destination at the far end. Where it is not possible to tag the conduit, destination shall be identified by marking an adjacent surface.
- I. Identification tape shall be installed directly above buried raceway. Tape shall be installed 8 inches below grade and parallel with raceway. Identification tape shall be installed for buried raceway not under buildings or equipment pads except identification tape is not required for protection of street lighting raceway.

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

## **SECTION 16421 - SURGE ARRESTERS**

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

#### **1.1 WORK OF THIS SECTION**

- A. The WORK of this Section includes providing surge arresters with mounting for the protection of electrical power equipment against surges caused by switching.

#### **1.2 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. Section 16050 Basic Electrical Materials and Methods

#### **1.3 CODES**

- A. The WORK of the Section shall comply with the current editions, with revisions, of the following codes and City of San Diego Supplements:
  - 1. National Electrical Code

#### **1.4 SPECIFICATIONS AND STANDARDS**

- A. Except as otherwise indicated, the current editions of the following apply to the WORK of this Section:
  - 1. ANSI C 62.1 Surge Arresters for AC Power Circuits
  - 2. NEMA LA 1 Surge Arresters

#### **1.5 SHOP DRAWINGS AND SAMPLES**

- A. The following shall be submitted per Contract Documents:
  - 1. Manufacturer's product data including catalogue cuts for arresters.
  - 2. Shop drawings showing arrester mounting.
  - 3. Information on at least one successfully performing installation of comparable size and complexity designed and fabricated in the recent past by the manufacturer responsible for this WORK, including contact names, addresses, and telephone numbers.

#### **1.6 OWNER'S MANUAL**

- A. The following shall be included in the OWNER'S MANUAL:
  - 1. Manufacturer's installation instructions.

2. Manufacturer's maintenance procedures.
3. Manufacturer's certified test data for arresters showing compliance with ANSI C 62.1.

## 1.7 FACTORY TESTING

- A. **Product Testing:** Products shall be tested at the factory for compliance with ANSI C 62.1.
- B. **Tests:** The following tests shall be made on each arrester in conformance with ANSI 62.1:
  1. Power-frequency spark-over
  2. Radio interference voltage
  3. Sealing
- C. **Witnesses:** The OWNER and the CONSTRUCTION MANAGER (at the option of either) reserves the right to witness factory tests.

## 1.8 PRODUCT DELIVERY, STORAGE, AND HANDLING

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

## 1.9 QUALIFICATIONS

- A. **Manufacturer:** Company specializing in surge arresters with at least one successfully performing installation of comparable size and complexity constructed during the recent past.

## PART 2 -- PRODUCTS

### 2.1 GENERAL

- A. **General:** Only products certified as complying with the indicated requirements shall be provided.
- B. **Type:** The surge arresters shall be valve-type or gapless metal oxide designed to protect electrical power distribution equipment against overvoltages.

### 2.2 CLASSIFICATION OF ARRESTERS

- A. **General:** Surge arresters shall be classified according to ANSI C 62.1 test requirements.

- B. **Station Class:** Where indicated, station class arresters shall be provided on electrical distribution equipment rated above 10,000 KVA unless otherwise indicated.
- C. **Intermediate Class:** Where indicated, intermediate class arresters shall be provided on electrical distribution equipment rated 10,000 KVA and below unless otherwise indicated.
- D. **Distribution Class:** Where indicated, distribution class arresters shall be provided on electrical power distribution equipment.

## 2.4 NAMEPLATES

- A. **Nameplates:** Nameplates of stainless steel shall be engraved or stamped and fastened to the arresters. Nameplates shall contain the manufacturer's name, model, serial number, size, characteristics, and appropriate data describing the performance ratings.

## 2.5 MANUFACTURERS

- A. **Manufacturers:** Substation transformers shall include metal oxide arresters manufactured by one of the following (or equal):
  - 1. Westinghouse
  - 2. General Electric

## PART 3 -- EXECUTION

### 3.1 INSTALLATION

- A. Arresters shall be installed in accordance with the manufacturer's written installation instructions.
- B. Surge arresters shall be mounted adjacent to equipment terminals.
- C. Terminations shall be torqued as recommended by the manufacturer.

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

# City of San Diego

CITY CONTACT: Claudia Abarca - Contract Specialist, Email: [cabarca@sandiego.gov](mailto:cabarca@sandiego.gov)  
Phone No. (619) 533-3439 - Fax No. (619) 533-3633

## ADDENDUM "A"

FOR



## SEWER AND WATER GROUP 820

BID NO.:	<u>K-14-5403-DBB-3</u>
SAP NO. (WBS/IO/CC):	<u>B-00382 / B-00110</u>
CLIENT DEPARTMENT:	<u>2011 / 2013</u>
COUNCIL DISTRICT:	<u>1</u>
PROJECT TYPE:	<u>JA/KB</u>

### BID DUE DATE:

**2:00 PM**  
**AUGUST 7, 2013**  
**CITY OF SAN DIEGO**  
**PUBLIC WORKS CONTRACTING GROUP**  
**1010 SECOND AVENUE, SUITE 1400, MS 614C**  
**SAN DIEGO, CA 92101**

**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. VOLUME 2**

1. To BIDDING DOCUMENTS, PROPOSAL (BID), page 19, **DELETE** in its entirety and **SUBSTITUTE** with page 3 of 3 of this Addendum.

Tony Heinrichs, Director  
Public Works Department

Dated: *August 5, 2013*  
San Diego, California

TH/bd/ca/les/rir

**BIDDING DOCUMENTS**

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The Bid shall contain an acknowledgment of receipt of all addenda, the numbers of which shall be filled in on the Bid form. If an addendum or addenda has been issued by the City and not noted as being received by the Bidder, this proposal shall be rejected as being **non-responsive**. The following addenda have been received and are acknowledged in this bid: \_\_\_\_\_

The names of all persons interested in the foregoing proposal as principals are as follows:

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**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.

Bidder: \_\_\_\_\_

Title: \_\_\_\_\_

Business Address: \_\_\_\_\_

Place of Business: \_\_\_\_\_

Place of Residence: \_\_\_\_\_

Signature: \_\_\_\_\_

8/8/13 CN

# City of San Diego

CONTRACTOR'S NAME: TC CONSTRUCTION Co. INC.  
 ADDRESS: 10540 PROSPECT AVE, SANTEE, CA. 92071  
 TELEPHONE NO.: 619.448.4560 FAX NO.: 619.448.3344  
 CITY CONTACT: Claudia Abarca - Contract Specialist, Email: cabarca@san Diego.gov  
Phone No. (619) 533-3439 - Fax No. (619) 533-3633  
 MNINH / BDORINGO / LS



## CONTRACT DOCUMENTS

## FOR

## SEWER AND WATER GROUP 820

VOLUME 2 OF 2

BID NO.:	<u>K-14-5403-DBB-3</u>
SAP NO. (WBS/IO/CC):	<u>B-00382 / B-00110</u>
CLIENT DEPARTMENT:	<u>2011 / 2013</u>
COUNCIL DISTRICT:	<u>1</u>
PROJECT TYPE:	<u>JA/KB</u>

**THIS CONTRACT IS SUBJECT TO THE FOLLOWING:**

- > PHASED-FUNDING.
- > THE CITY'S SUBCONTRACTING PARTICIPATION REQUIREMENTS FOR SLBE PROGRAM.

**THIS BIDDING DOCUMENT TO BE SUBMITTED IN ITS ENTIRETY REFER TO VOLUME 1 COVER PAGE FOR TIME, DATE, AND LOCATION**

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## Volume 2 - Bidding Documents

The following forms must be completed in their entirety and submitted with the Bid. Include the form(s) even if the information does not apply. Where the information does not apply write in N/A. Failure to include any of the forms may cause the Bid to be deemed **non-responsive**. If you are uncertain or have any questions about any required information, contact the City no later than 14 days prior to Bid due date.

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**BIDDING DOCUMENTS**

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**PROPOSAL**

**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.

**IF A SOLE OWNER OR SOLE CONTRACTOR SIGN HERE:**

- (1) Name under which business is conducted \_\_\_\_\_
- (2) Signature (Given and surname) of proprietor \_\_\_\_\_
- (3) Place of Business (Street & Number) \_\_\_\_\_
- (4) City and State \_\_\_\_\_ Zip Code \_\_\_\_\_
- (5) Telephone No. \_\_\_\_\_ Facsimile No. \_\_\_\_\_

**IF A PARTNERSHIP, SIGN HERE:**

- (1) Name under which business is conducted \_\_\_\_\_
- (2) Name of each member of partnership, indicate character of each partner, general or special (limited):  
\_\_\_\_\_  
\_\_\_\_\_

**BIDDING DOCUMENTS**

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(3) Signature (Note: Signature must be made by a general partner)

\_\_\_\_\_

Full Name and Character of partner

\_\_\_\_\_

\_\_\_\_\_

(4) Place of Business (Street & Number) \_\_\_\_\_

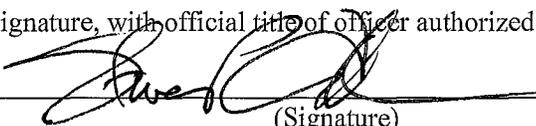
(5) City and State \_\_\_\_\_ Zip Code \_\_\_\_\_

(6) Telephone No. \_\_\_\_\_ Facsimile No. \_\_\_\_\_

**IF A CORPORATION, SIGN HERE:**

(1) Name under which business is conducted TC CONSTRUCTION Co. INC.

(2) Signature, with official title of officer authorized to sign for the corporation:

  
\_\_\_\_\_  
(Signature)

STEVE COKER  
\_\_\_\_\_  
(Printed Name)

VICE PRESIDENT  
\_\_\_\_\_  
(Title of Officer)

(Impress Corporate Seal Here)

(3) Incorporated under the laws of the State of CALIFORNIA

(4) Place of Business (Street & Number) 10540 PROSPECT AVE.

(5) City and State SANTEE, CA. Zip Code 92071

(6) Telephone No. 619.448.4560 Facsimile No. 619.448.3341

**BIDDING DOCUMENTS**

**THE FOLLOWING SECTIONS MUST BE FILLED IN BY ALL PROPOSERS:**

In accordance with the "NOTICE INVITING BIDS", the bidder holds a California State Contractor's license for the following classification(s) to perform the work described in these specifications:

LICENSE CLASSIFICATION A, C.2.1

LICENSE NO. 402459 EXPIRES 4.30.15

This license classification must also be shown on the front of the bid envelope. Failure to show license classification on the bid envelope may cause return of the bid unopened.

TAX IDENTIFICATION NUMBER (TIN): [REDACTED]

E-Mail Address: scoker@tainasd.com

**THIS PROPOSAL MUST BE NOTARIZED BELOW:**

I certify, under penalty of perjury, that the representations made herein regarding my State Contractor's license number, classification and expiration date are true and correct.

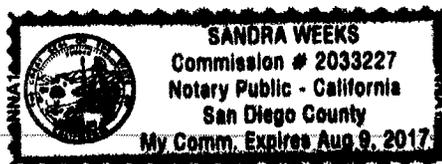
Signature  Title VICE PRESIDENT  
STEVE COKER

SUBSCRIBED AND SWORN TO BEFORE ME, THIS \_\_\_\_\_ DAY OF \_\_\_\_\_,

Notary Public in and for the County of \_\_\_\_\_, State of \_\_\_\_\_

(NOTARIAL SEAL)

State of California County of San Diego  
Subscribed and sworn to (or affirmed)  
before me on this 6<sup>th</sup> day of August, 2013 by  
Steve P. Coker  
proved to me on the basis of satisfactory evidence  
to be the person(s) who appeared before me.  
Signature Sandra Weeks  
(Seal)



**BIDDING DOCUMENTS**

**CONTRACTORS CERTIFICATION OF PENDING ACTIONS**

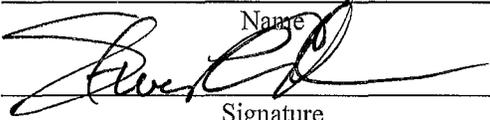
As part of its bid or proposal (Non-Price Proposal in the case of Design-Build contracts), the Bidder shall provide to the City a list of all instances within the past 10 years where a complaint was filed or pending against the Bidder in a legal or administrative proceeding alleging that Bidder discriminated against its employees, subcontractors, vendors or suppliers, and a description of the status or resolution of that complaint, including any remedial action taken.

CHECK ONE BOX ONLY.

- The undersigned certifies that within the past 10 years the Bidder has NOT been the subject of a complaint or pending action in a legal administrative proceeding alleging that Bidder discriminated against its employees, subcontractors, vendors or suppliers.
- The undersigned certifies that within the past 10 years the Bidder has been the subject of a complaint or pending action in a legal administrative proceeding alleging that Bidder discriminated against its employees, subcontractors, vendors or suppliers. A description of the status or resolution of that complaint, including any remedial action taken and the applicable dates is as follows:

DATE OF CLAIM	LOCATION	DESCRIPTION OF CLAIM	LITIGATION (Y/N)	STATUS	RESOLUTION/REMEDIAL ACTION TAKEN

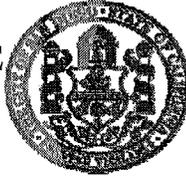
Contractor Name: TC CONSTRUCTION CO. INC.

Certified By STEVE COKER Title VICE PRESIDENT  
Name  
  
Signature Date 8.7.13

**USE ADDITIONAL FORMS AS NECESSARY**

**BIDDING DOCUMENTS**

**EQUAL BENEFITS ORDINANCE  
CERTIFICATION OF COMPLIANCE**



For additional information, contact:  
**CITY OF SAN DIEGO**  
**EQUAL BENEFITS PROGRAM**  
202 C Street, MS 9A, San Diego, CA 92101  
Phone (619) 533-3948 Fax (619) 533-3220

**COMPANY INFORMATION**

Company Name: <b>TC CONSTRUCTION CO. LLC.</b>	Contact Name: <b>STEVE COKER</b>
Company Address: <b>10540 PROSPECT AVE.</b>	Contact Phone: <b>619.448.4560</b>
<b>SANTEE, CA. 92071</b>	Contact Email: <b>scoker@tcinsd.com</b>

**CONTRACT INFORMATION**

Contract Title: <b>SEWER AND WATER GROUP 820</b>	Start Date: <b>TBD</b>
Contract Number (if no number, state location): <b>K. 14. 5403. DBB. 3</b>	End Date: <b>TBD</b>

**SUMMARY OF EQUAL BENEFITS ORDINANCE REQUIREMENTS**

The Equal Benefits Ordinance [EBO] requires the City to enter into contracts only with contractors who certify they will provide and maintain equal benefits as defined in SDMC §22.4302 for the duration of the contract. To comply:

- Contractor shall offer equal benefits to employees with spouses and employees with domestic partners.
  - Benefits include health, dental, vision insurance; pension/401(k) plans; bereavement, family, parental leave; discounts, child care; travel/relocation expenses; employee assistance programs; credit union membership; or any other benefit.
  - Any benefit not offer an employee with a spouse, is not required to be offered to an employee with a domestic partner.
- Contractor shall post notice of firm's equal benefits policy in the workplace and notify employees at time of hire and during open enrollment periods.
- Contractor shall allow City access to records, when requested, to confirm compliance with EBO requirements.
- Contractor shall submit *EBO Certification of Compliance*, signed under penalty of perjury, prior to award of contract.

NOTE: This summary is provided for convenience. Full text of the EBO and Rules Implementing the EBO are available at [www.sandiego.gov/administration](http://www.sandiego.gov/administration).

**CONTRACTOR EQUAL BENEFITS ORDINANCE CERTIFICATION**

Please indicate your firm's compliance status with the EBO. The City may request supporting documentation.

- I affirm **compliance** with the EBO because my firm (*contractor must select one reason*):
- Provides equal benefits to spouses and domestic partners.
  - Provides no benefits to spouses or domestic partners.
  - Has no employees.
  - Has collective bargaining agreement(s) in place prior to January 1, 2011, that has not been renewed or expired.
- I request the City's approval to pay affected employees a cash equivalent in lieu of equal benefits and verify my firm made a reasonable effort but is not able to provide equal benefits upon contract award. I agree to notify employees of the availability of a cash equivalent for benefits available to spouses but not domestic partners and to continue to make every reasonable effort to extend all available benefits to domestic partners.

It is unlawful for any contractor to knowingly submit any false information to the City regarding equal benefits or cash equivalent associated with the execution, award, amendment, or administration of any contract. [San Diego Municipal Code §22.4307(a)]

Under penalty of perjury under laws of the State of California, I certify the above information is true and correct. I further certify that my firm understands the requirements of the Equal Benefits Ordinance and will provide and maintain equal benefits for the duration of the contract or pay a cash equivalent if authorized by the City.

**STEVE COKER, VICE PRES.**

**8.7.13**

Name/Title of Signatory

Signature

Date

**FOR OFFICIAL CITY USE ONLY**

Receipt Date: \_\_\_\_\_ EBO Analyst: \_\_\_\_\_  Approved  Not Approved – Reason: \_\_\_\_\_

(Rev 02/15/2011)

**BIDDING DOCUMENTS**

**PROPOSAL (BID)**

The Bidder agrees to the construction of SEWER AND WATER GROUP 820, for the City of San Diego, in accordance with these contract documents for the prices listed below. The Bidder guarantees the Contract Price for a period of 120 days (90 days for federally funded contracts and contracts valued at \$500,000 or less) from the date of Bid opening to Award of the Contract. 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 e.g., bond and insurance.

Item	Quantity	Unit	NAICS	Payment Reference	Description	Unit Price	Extension
<b>BASE BID</b>							
<b>COMMON ITEMS</b>							
1	1	LS	524126	2-4.1	Bonds (Payment and Performance)	<del>                    </del>	\$ 29,500.-
2	1	EA	541214	3-3.2.2.1	Certified Payroll	\$ 100.-	\$ 100.-
3	1	LS	238990	7-9.1.1	Video Recording of Pre-existing Conditions	<del>                    </del>	\$ 4,500.-
4	1	LS	237310	7-10.2.6	Traffic Control	<del>                    </del>	\$ 130,000.-
5	1	LS	237310	7-10.2.6	Flashing Arrow Boards	<del>                    </del>	\$ 17,000.-
6	1	AL	237310	7-10.2.6	Portable Changeable Message Signs (PCMS) - Type I	<del>                    </del>	\$5,000.00
7	1	LS	237110	9-3.4.1	Mobilization	<del>                    </del>	\$ 120,000.-
8	9	EA	237310	302-1.12	Traffic Detector Loop Replacement	\$ 600.-	\$ 5,400.-
9	2987	SF	237310	302-1.12	Cold Mill AC Pavement (0 - 1 1/2")	\$ 2.50	\$ 7,467.50
10	50	TON	237310	302-3.4	Asphalt Pavement Repair	\$ 220.-	\$ 11,000.-
11	123000	SF	237310	302-4.12.4	Rubber Polymer Modified Slurry Type II and Striping	\$ .40	\$ 49,200.-
12	5000	SF	237310	302-5.2.1	Pavement Restoration Adjacent to Trench	\$ 12.-	\$ 60,000.-
13	982	TON	237310	302-5.9	1-1/2 Inch Asphalt Concrete Overlay and Striping	\$ 120.-	\$ 117,840.-

**BIDDING DOCUMENTS**

Item	Quantity	Unit	NAICS	Payment Reference	Description	Unit Price	Extension
14	7000	SF	237310	302-6.8	Concrete Pavement	\$ 5.50	\$ 38,500.-
15	200	LB	237310	302-14.5	Crack Seal	\$ 30.-	\$ 6,000.-
16	100	LF	237310	303-5.9	Additional Curb and Gutter	\$ 35.-	\$ 3,500.-
17	400	SF	237310	303-5.9	Additional Sidewalk Removal and Replacement	\$ 8.-	\$ 3,200.-
18	1	EA	237310	303-5.9	Relocate Existing Contractor Date Stamp and Impressions	\$ 250.-	\$ 250.-
19	11	EA	237310	303-5.10.2	Curb Ramp Type A with Stainless Steel Detectable Warning Tiles	\$ 2,300.-	\$ 25,300.-
20	2	EA	237310	303-5.10.2	Curb Ramp Type A with Detectable Warning Tiles	\$ 2,100.-	\$ 4,200.-
21	3	EA	237310	303-5.10.2	Curb Ramp Type C1 with Stainless Steel Detectable Warning Tiles	\$ 2,300.-	\$ 6,900.-
22	5	EA	237310	303-5.10.2	Curb Ramp Type C1 with Detectable Warning Tiles	\$ 2,100.-	\$ 10,500.-
23	5	EA	237310	303-5.10.2	Curb Ramp Type C2 with Stainless Steel Detectable Warning Tiles	\$ 2,500.-	\$ 12,500.-
24	9	EA	237310	303-5.10.2	Curb Ramp Type C2 with Detectable Warning Tiles	\$ 2,200.-	\$ 19,800.-
25	2	EA	237310	303-5.10.2	Curb Ramp Type D with Stainless Steel Detectable Warning Tiles	\$ 2,000.-	\$ 4,000.-
26	2	EA	237310	303-5.10.2	Curb Ramp Case B with Stainless Steel Detectable Warning Tiles	\$ 2,400.-	\$ 4,800.-
27	1	EA	237310	303-5.10.2	Curb Ramp Case C Blended Transition with Stainless Steel Detectable Warning Tiles	\$ 4,000.-	\$ 4,000.-

**BIDDING DOCUMENTS**

Item	Quantity	Unit	NAICS	Payment Reference	Description	Unit Price	Extension
28	1	LS	237110	306-1.1.6	Trench Shoring	<del>                    </del>	\$ <del>35,000.-</del>
29	100	CY	237110	306-1.2.1.1	Additional Bedding	\$ 50.-	\$ 5,000.-
30	532	TON	237310	306-1.5.1	Temporary Resurfacing	\$ 110.-	\$ 58,520.-
31	136	TON	237110	306-1.6	Imported Backfill	\$ 20.-	\$ 2,720.-
32	2	EA	238210	307-2	Relocate Push Button at Stub Pole Next to Curb Ramp Landing	\$ 2,500.-	\$ 5,000.-
33	1	EA	541370	309-4	Survey Monuments	\$ 2,500.-	\$ 2,500.-
34	600	SF	237310	314-2.3	Removal of Pavement Markings for Existing Crosswalk per Note #8 on Sheet 25-D	\$ 3.-	\$ 1,800.-
35	600	SF	237310	314-4.4.6	Thermoplastic Pavement Markings for New Crosswalk per Note #8 on Sheet 25-D	\$ 3.-	\$ 1,800.-
36	1	LS	541330	701-13.9.5	Water Pollution Control Program Development	<del>                    </del>	\$ <del>5,500.-</del>
37	1	LS	237990	701-13.9.5	Water Pollution Control Program Implementation	<del>                    </del>	\$ <del>36,000.-</del>
38	5	DAYS	541690	707-1	Suspension of Work – Resources	\$ 150.-	\$ 750.-
39	5731	LF	541690	707-2	Archeological and Native American Monitoring Program	\$ 7.-	\$ 40,117.- <del>\$ 40,117.-</del> (SC)
40	1941	LF	541690	707-3	Paleontological Monitoring Program	\$ 1.50	\$ 2,911.50
41	1	AL	541690	707-4	Archeological and Native American Mitigation and Curation - Type I	<del>                    </del>	\$5,000.00
42	50	CY	541690	707-5	Paleontological Mitigation and Excavation	\$ 16.-	\$ 800.-

**BIDDING DOCUMENTS**

Item	Quantity	Unit	NAICS	Payment Reference	Description	Unit Price	Extension
<b>WATER ITEMS</b>							
43	1	AL		9-3.5	Field Orders - Type II	<del>                    </del>	\$59,000.00
44	43	LF	237110	306-1.6	8-Inch Water Main	\$ 250.-	\$ 10,750.-
45	2130	LF	237110	306-1.6	12-Inch Water Main	\$ 109.-	\$ 232,170
46	568	LF	237110	306-1.6	16-Inch Water Main	\$ 115.-	\$ 65,320.-
47	6	EA	237110	306-1.6	Water Main Thrust Blocks for 16" & Larger	\$ 560.-	\$ 3,360.-
48	1	EA	237110	306-1.6	4-Inch Fire Service Connection & Assembly	\$ 6,500.-	\$ 6,500.-
49	1	EA	237110	306-1.6	6-Inch Fire Service Connection & Assembly	\$ 6,500.-	\$ 6,500.-
50	1	EA	237110	306-1.6	6-Inch Fire Hydrant Assembly & Marker, 3-Port	\$ 9,500.-	\$ 9,500.-
51	5	EA	237110	306-1.6	8-Inch Gate Valve	\$ 1,600.-	\$ 8,000.-
52	1	EA	237110	306-1.6	10-Inch Gate Valve	\$ 2,500.-	\$ 2,500.-
53	10	EA	237110	306-1.6	12-Inch Gate Valve	\$ 2,900.-	\$ 29,000.-
54	1	EA	237110	306-1.6	16-Inch Butterfly Valve Class 250B with Bypass and 3" Gate Valve	\$ 14,000.-	\$ 14,000.-
55	2	EA	237110	306-5.3	Removal and Abandonment of Existing Water Facilities	\$ 8,300.-	\$ 16,600.-
56	594	LF	237110	306-5.3	Large Water Main Abandonment	\$ 12.-	\$ 7,128.-
57	10	EA	237110	306-13	Abandon Water Services (Stiff)	\$ 660.-	\$ 6,600.-
58	35	EA	237110	306-14.1	1-Inch Water Service	\$ 2,500.-	\$ 87,500.-
59	1	EA	237110	306-14.1	1-Inch Water Service Transfer	\$ 1,800.-	\$ 1,800.-

**BIDDING DOCUMENTS**

Item	Quantity	Unit	NAICS	Payment Reference	Description	Unit Price	Extension
60	2	EA	237110	306-14.1	1-Inch Water Service Transfer w/ Pressure Regulating Valve	\$ 3,000.-	\$ 6,000.-
61	15	EA	237110	306-14.1	1-Inch Water Service with Pressure Regulating Valve Inside Separate Water Meter Box	\$ 5,000.-	\$ 75,000.-
62	1	EA	237110	306-14.1	2-Inch Water Service	\$ 4,500.-	\$ 4,500.-
63	2	EA	237110	306-18	4-Inch Blowoff Valve Assembly	\$ 4,500.-	\$ 9,000.-
64	1	EA	237110	306-19	2-Inch Air & Vacuum Valve, Class 250	\$ 6,000.-	\$ 6,000.-
65	4400	LF	237110	600-1.2.1.3	High-lining Removed by Contractor	\$ 12.-	\$ 52,800.-
66	1	LS	237110	600-1.3.1.5	Contractor Furnished Materials for City Forces Connection and Cut-in Work for Mains 16-inch and Larger	<del>                    </del>	\$ 25,000.-
67	1500	SF	237110	600-1.3.1.5	Pavement Restoration for City Forces Final Connection	\$ 15.-	\$ 22,500.-
68	25	EA	237310	301-1.7	Adjusting Existing Valve Cover to Grade	\$ 131.-	\$ 3,275.-
69	1	LS	237110	306-23	Pressure Regulating Station per Sheet 19-D & All Associated Details on Sheets 27-D and 28-D	<del>                    </del>	\$ 72,000.-
70	1	LS	237110	306-23	Pressure Regulating Station with Scada and Telemetry per Sheet 23-D & All Associated Details on Sheets 36-D through 48-D	<del>                    </del>	\$ 160,000.-
<b>SEWER ITEMS</b>							
71	1	AL		9-3.5	Field Orders - Type II	<del>                    </del>	\$115,000.00
72	15	EA	237310	301-1.7	Adjusting Existing Manhole Frame & Cover to Grade	\$ 180.-	\$ 2,700.-

**BIDDING DOCUMENTS**

Item	Quantity	Unit	NAICS	Payment Reference	Description	Unit Price	Extension
73	3015	LF	237110	306-1.6	8-Inch Sewer Main	\$ 120.-	\$ 361,800.-
74	2784	LF	237110	306-1.6	8-Inch Sewer Main, Special Strength SDR-26	\$ 140.-	\$ 389,760.-
75	249	LF	237110	306-1.6	10-Inch Sewer Main	\$ 117.-	\$ 29,133.-
76	143	LF	237110	306-1.6	10-Inch Sewer Main, Special Strength SDR-26	\$ 244.-	\$ 34,892.-
77	209	LF	237110	306-1.6	10-Inch Sewer Main (Concrete Encased)	\$ 209.-	\$ 43,681.-
78	275	LF	237110	306-1.6	12-Inch Sewer Main	\$ 129.-	\$ 35,475.-
79	115	LF	237110	306-1.6	12-Inch Sewer Main (Concrete Encased)	\$ 227.-	\$ 26,105.-
80	33	EA	237110	306-1.8.6	Manholes (4 x 3), PVC Lined	\$ 7,600.-	\$ 250,800.-
81	1	EA	237110	306-1.8.6	Connection to Existing Manhole and Rechanneling	\$ 1,700.-	\$ 1,700.-
82	155	EA	237110	306-1.9.1	4-Inch Sewer Lateral & Cleanout (Street)	\$ 2,100.-	\$ 325,500.-
83	4	EA	237110	306-1.9.1	6-Inch Sewer Lateral & Cleanout (Street)	\$ 4,500.-	\$ 18,000.-
84	1	EA	237110	306-1.9.1	8-Inch Sewer Lateral & Cleanout (Street)	\$ 4,500.-	\$ 4,500.-
85	1	EA	237110	306-1.9.1	4-Inch Sewer Lateral Connection	\$ 1,500.-	\$ 1,500.-
86	19	EA	237110	306-5.3	Abandon Existing Manhole Outside of Trench	\$ 980.-	\$ 18,620.-
87	3830	LF	237110	306-5.3	Abandon and Fill Existing 6-Inch Sewer Main Outside of Trench Limit	\$ 3.-	\$ 11,490.-
88	921	LF	237110	306-5.3	Abandon and Fill Existing 12-Inch Sewer Main Outside of Trench Limit	\$ 7.-	\$ 6,447.-
89	233	LF	237110	306-5.3	Abandon and Fill Existing 15-Inch Sewer Main Outside of Trench Limit	\$ 14.-	\$ 3,262.-

**BIDDING DOCUMENTS**

Item	Quantity	Unit	NAICS	Payment Reference	Description	Unit Price	Extension
90	1654	LF	237110	306-9.7	Cleaning and Video Inspecting Pipelines Prior to Construction	\$ 1.25	\$ 2,067.50
91	8444	LF	237110	306-9.7	Video Inspecting Pipelines for Final Acceptance	\$ .50	\$ 4,222.-
92	18	EA	237110	306-9.7	Video Inspecting Service Laterals for Final Acceptance	\$ 34.-	\$ 612.-
93	18	EA	237110	500-1.1.9	Cleaning and Video Inspecting Service Laterals Prior to Construction	\$ 86.-	\$ 1,548.-
94	1374	LF	237110	500-1.1.9	Rehabilitate 12-Inch Sewer Main	\$ 50.-	\$ 68,700.-
95	280	LF	237110	500-1.1.9	Rehabilitate 15-Inch Sewer Main	\$ 90.-	\$ 25,200.-
96	18	EA	237110	500-4.9	Service Lateral Connection Sealing	\$ 1,400.-	\$ 25,200.-
97	18	EA	237110	500-1.6.6	4 -Inch Sewer Lateral Lining	\$ 1,000.-	\$ 18,000.-
98	8	EA	237110	500-2.10.2	Rehabilitate Existing Manhole	\$ 3,500.-	\$ 28,000.-
99	1	LS	237110	704-4	Sewage Bypass and Pumping Plan (Diversion Plan)	<del>                    </del>	\$ 4,500.-
<b>ESTIMATED TOTAL BASE BID</b>							<b>\$ 3,764,593.50</b>
<b>ALTERNATE A</b>							
1	3	EA	237110	306-5.3	Abandon Existing Manhole Outside of Trench Manually on Foot. (See Sheet 18-D)	\$ 3,500.-	\$ 10,500.-
2	826	LF	237110	306-5.3	Abandon and Fill Existing Sewer Mains Outside of Trench Limit Manually on Foot. (See Sheet 18-D)	\$ 8.-	\$ 6,608.-
3	500	LF	237110	306-1.6	8-Inch Sewer Main, Special Strength SDR-26, (See Sheet 17-D)	\$ 300.-	\$ 150,000.-

**BIDDING DOCUMENTS**

Item	Quantity	Unit	NAICS	Payment Reference	Description	Unit Price	Extension
4	1	EA	237110	306-1.7.2.5	4-Inch Sewer Lateral with Private Replumbing 7981 Prospect Pl	\$ 15,000.-	\$ 15,000.-
5	1	EA	237110	306-1.7.2.5	4-Inch Trenchless Method for Private Replumbing 7969 Prospect Pl	\$ 22,000.-	\$ 22,000.-
6	1	EA	237110	306-1.7.2.5	4-Inch Trenchless Method for Private Replumbing 7933 Prospect Pl	\$ 26,500.-	\$ 26,500.-
7	1	EA	237110	306-1.7.2.5	4-Inch Trenchless Method for Private Replumbing 7963 Prospect Pl	\$ 27,000.-	\$ 27,000.-
8	1	EA	237110	306-1.7.2.5	4-Inch Trenchless Method for Private Replumbing 1435 Coast Walk	\$ 27,000.-	\$ 27,000.-
9	1	EA	237110	306-1.7.2.5	4-Inch Trenchless Method for Private Replumbing 7925 Prospect Pl	\$ 31,000.-	\$ 31,000.-
10	1	EA	237110	306-1.7.2.5	4-Inch Trenchless Method for Private Replumbing 7919 Prospect Pl	\$ 31,000.-	\$ 31,000.-
<b>ESTIMATED TOTAL ALTERNATE A</b>							\$ 346,608.-
<b>ALTERNATE B</b>							
1	6	EA	237110	306-1.6	16-Inch Butterfly Valve Class 250B with bypass and 3" gate valve	\$ 6,100.-	\$ 36,600.-
2	2	EA	237110	600-1.3.2.10	8-Inch through 12-Inch Cut-in Tee by Contractor	\$ 3,500.-	\$ 7,000.-
3	11	EA	237110	600-1.3.2.10	8-Inch through 12-Inch Connection to the Existing System by Contractor	\$ 3,700.-	\$ 40,700.-
4	2	EA	237110	600-1.3.2.10	16-Inch Cut-in cross by Contractor	\$ 5,600.-	\$ 11,200.-

**BIDDING DOCUMENTS**

Item	Quantity	Unit	NAICS	Payment Reference	Description	Unit Price	Extension
5	2	EA	237110	600-1.3.2.10	16-Inch Connection to the Existing System by Contractor	\$ 6,300.-	\$ 12,600.-
6	11	EA	237110	600-1.4.9	Cut and Plug of the Existing System by Contractor	\$ 1,200.-	\$ 13,200.-
7	-1	LS	237110	600-1.3.1.5	Contractor Furnished Materials for City Forces Connection and Cut-in Work for Mains 16-inch and Larger (Base Bid Item 66)	X	\$ <25,000.->
8	-1500	SF	237110	600-1.3.1.5	Pavement Restoration for City Forces Final Connection (Base Bid Item 67)	\$ 15.-	\$ <22,500.->
<b>ESTIMATED TOTAL ALTERNATE B</b>							\$ 73,800.-
<b>ALTERNATE C</b>							
1	1	LS	237110	600-1.2.2.10	High-lining by the Contractor	X	\$ 42,000.-
2	-4400	LF	237110	600-1.2.1.3	High-lining Removed by Contractor (Base Bid Item 65)	\$ 12. <sup>00</sup>	\$ <52,800.->
<b>ESTIMATED TOTAL ALTERNATE C</b>							\$ <10,800.->
<b>ESTIMATED TOTAL BASE BID PLUS ALTERNATES A, B, AND C</b>							\$ 4,174,201.50

TOTAL BID PRICE FOR BID (Items 1 through 99, PLUS Alternate A, Item 1 through 10, Alternate B, Items 1 through 8 and Alternate C, Items 1 through 2, inclusive) amount written in words:

Four million one hundred seventy four ~~thousand~~ <sup>(50)</sup> thousand two hundred and one dollars ~~and~~ <sup>(50)</sup> Fifty cents

BIDDING DOCUMENTS

The Bid shall contain an acknowledgment of receipt of all addenda, the numbers of which shall be filled in on the Bid form. If an addendum or addenda has been issued by the City and not noted as being received by the Bidder, this proposal shall be rejected as being **non-responsive**. The following addenda have been received and are acknowledged in this bid: A

The names of all persons interested in the foregoing proposal as principals are as follows:

TERRY CAMERON, PRESIDENT

AUSTIN CAMERON, SEC.-TREAS.

STEVE COKER, VICE PRESIDENT

DEREK FRANKEN, VICE PRESIDENT

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.

Bidder: TC CONSTRUCTION CO. INC.

Title: VICE PRESIDENT

Business Address: 10540 PROSPECT AVE., SANTEE, CA. 92071

Place of Business: SAME

Place of Residence: N/A

Signature:  STEVE COKER

## BIDDING DOCUMENTS

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### NOTES:

- A. The City shall determine the low Bid based on the Base Bid plus the following Alternates: **A, B, C**.
- B. After the low Bid has been determined, the City may award the Contract for the Base Bid alone or if applicable, for the Base Bid plus any combination of alternates selected in the City's sole discretion.
- C. Prices and notations shall be in ink or typewritten. All corrections (which have been initiated by the Bidder using erasures, strike out, line out, or "white-out") shall be typed or written in with ink adjacent thereto, and shall be initialed in ink by the person signing the bid proposal.
- D. Failure to initial all corrections made in the bidding documents shall cause the Bid to be rejected as **non-responsive** and ineligible for further consideration.
- E. Blank spaces must be filled in, using figures. Bidder's failure to submit a price for any Bid item that requires the Bidder to submit a price shall render the Bid **non-responsive** and shall be cause for its rejection.
- F. Unit prices shall be entered for all unit price items. Unit prices shall not exceed two (2) decimal places. If the Unit prices entered exceed two (2) decimal places, the City will only use the first two digits after the decimal points without rounding up or down.
- G. All extensions of the unit prices bid will be subject to verification by the City. In the case of inconsistency or conflict between the product of the Quantity x Unit Price and the Extension, the product shall govern.
- H. In the case of inconsistency or conflict, between the sums of the Extensions with the estimated total Bid, the sum of the Extensions shall govern.
- I. Bids shall not contain any recapitulation of the Work. Conditional Bids will be rejected as being **non-responsive**. Alternative proposals will not be considered unless called for.

**BIDDING DOCUMENTS**

**LIST OF SUBCONTRACTORS**

In accordance with the requirements provided in the "Subletting and Subcontracting Fair Practices Act", Division 2, Part 1, Chapter 4 of the Public Contract Code, the Bidder shall list below the name and address of each Subcontractor who will perform work, labor, render services or 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 list below the portion of the work which will be done 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 shall result in the Bid being rejected as **non-responsive** and ineligible for award. The Bidder's attention is directed to the Special Provisions - General; Paragraph 2-3 Subcontracts, 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 that Bidders are seeking recognition towards achieving any mandatory, voluntary, or both subcontracting participation percentages.

NAME, ADDRESS AND TELEPHONE NUMBER OF SUBCONTRACTOR	CONSTRUCTOR OR DESIGNER	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
<del>Name: Zebbron Address: PO Box 2874 City: Newport Beach State: CA Zip: 92659 Phone: 714.632.6690</del>	<del>Constructor</del>	<del>Sewer manhole Rehab</del>	<del>\$21,720.00</del>			
Name: Oldcastle Precast Address: 2735 Cactus Rd City: San Diego State: CA Zip: 92154 Phone: 619.240.8000	Constructor	Pre-Cast vaults	\$32,770.00			
Name: Southwest Traffic Signal Address: 397 Raleigh Avenue City: El Cajon State: CA Zip: 92020 Phone: 619.442.3343	Constructor	Traffic loops + Push Button Relocation	\$6,520.00	ELBE	City	

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   | San Diego Regional Minority Supplier Diversity Council | SRMSDC   |
| State of California's Department of General Services | CADoGS | City of Los Angeles                                    | LA       |
| State of California                                  | CA     | U.S. Small Business Administration                     | SBA      |

0.1531  
CW

**The Bidder will not receive any subcontracting participation percentages if the Bidder fails to submit the required proof of certification.**

**BIDDING DOCUMENTS**

**LIST OF SUBCONTRACTORS**

In accordance with the requirements provided in the "Subletting and Subcontracting Fair Practices Act", Division 2, Part 1, Chapter 4 of the Public Contract Code, the Bidder shall list below the name and address of each Subcontractor who will perform work, labor, render services or 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 list below the portion of the work which will be done 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 shall result in the Bid being rejected as **non-responsive** and ineligible for award. The Bidder's attention is directed to the Special Provisions - General; Paragraph 2-3 Subcontracts, 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 that Bidders are seeking recognition towards achieving any mandatory, voluntary, or both subcontracting participation percentages.

NAME, ADDRESS AND TELEPHONE NUMBER OF SUBCONTRACTOR	CONSTRUCTOR OR DESIGNER	TYPE OF WORK	DOLLAR VALUE OF SUBCONTRACT	MBE, WBE, DBE, DVBE, OBE, ELBE, SLBE, SDB, WoSB, HUBZone, OR SDVOSB <sup>①</sup>	WHERE CERTIFIED <sup>②</sup>	CHECK IF JOINT VENTURE PARTNERSHIP
Name: <u>Terra West Inc.</u> Address: <u>1061 Terra del Rey Ste 204</u> City: <u>Chula Vista</u> State: <u>CA</u> Zip: <u>91910</u> Phone: <u>619.591.1007</u>	Designer	WPCP	\$495.00	SDBE	City	
Name: <u>YBS Concrete Inc.</u> Address: <u>821 Kuhn Dr Ste 204</u> City: <u>Chula Vista</u> State: <u>CA</u> Zip: <u>91914</u> Phone: <u>619.271.1122</u>	Constructor	concrete Flatwork	\$116,650.00	ELBE	City	
Name: <u>Southern Contracting Co.</u> Address: <u>559 Twin Oaks Valley Rd</u> City: <u>San Marcos</u> State: <u>CA</u> Zip: <u>92079</u> Phone: <u>760.744.0760</u>	Constructor	electrical + instrumentation	\$98,000			

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	San Diego Regional Minority Supplier Diversity Council	SRMSDC
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.**

**BIDDING DOCUMENTS**

**LIST OF SUBCONTRACTORS**

In accordance with the requirements provided in the "Subletting and Subcontracting Fair Practices Act", Division 2, Part 1, Chapter 4 of the Public Contract Code, the Bidder shall list below the name and address of each Subcontractor who will perform work, labor, render services or 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 list below the portion of the work which will be done 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 shall result in the Bid being rejected as **non-responsive** and ineligible for award. The Bidder's attention is directed to the Special Provisions - General; Paragraph 2-3 Subcontracts, 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 that Bidders are seeking recognition towards achieving any mandatory, voluntary, or both subcontracting participation percentages.

NAME, ADDRESS AND TELEPHONE NUMBER OF SUBCONTRACTOR	CONSTRUCTOR OR DESIGNER	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: <u>Brian F. Smith + Associates</u> Address: <u>14010 POWAY RD STE A</u> City: <u>POWAY</u> State: <u>CA</u> Zip: <u>92064</u> Phone: <u>858.079.8218</u>	Constructor	Archeo / Paleol monitoring	\$45,886.-	SLBE	City	
Name: <u>R+C Structures, Inc.</u> Address: <u>11015 Lamirada Drive</u> City: <u>SAN MARCOS</u> State: <u>CA</u> Zip: <u>92069</u> Phone: <u>760.744.3355</u>	Constructor	Sewer manholes	\$192,126.-			
Name: <u>Coastal Pipeline Services</u> Address: <u>PO BOX 285053</u> City: <u>ENCINITAS</u> State: <u>CA</u> Zip: <u>92023</u> Phone: <u>760.828.5174</u>	Constructor	CCTV	\$7,343.80	ELBE	City	

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	San Diego Regional Minority Supplier Diversity Council	SRMSDC
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.**

**BIDDING DOCUMENTS**

**LIST OF SUBCONTRACTORS**

In accordance with the requirements provided in the "Subletting and Subcontracting Fair Practices Act", Division 2, Part 1, Chapter 4 of the Public Contract Code, the Bidder shall list below the name and address of each Subcontractor who will perform work, labor, render services or 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 list below the portion of the work which will be done 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 shall result in the Bid being rejected as **non-responsive** and ineligible for award. The Bidder's attention is directed to the Special Provisions - General; Paragraph 2-3 Subcontracts, 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 that Bidders are seeking recognition towards achieving any mandatory, voluntary, or both subcontracting participation percentages.

NAME, ADDRESS AND TELEPHONE NUMBER OF SUBCONTRACTOR	CONSTRUCTOR OR DESIGNER	TYPE OF WORK	DOLLAR VALUE OF SUBCONTRACT	MBE, WBE, DBE, DVBE, OBE, ELBE, SLBE, SDB, WoSB, HUBZone, OR SDVOSB <sup>①</sup>	WHERE CERTIFIED <sup>②</sup>	CHECK IF JOINT VENTURE PARTNERSHIP
Name: <u>Norfleet Video Productions</u> Address: <u>1015 Calle Paula</u> City: <u>Solana Beach</u> State: <u>CA</u> Zip: <u>92075</u> Phone: <u>858.755.0553</u>	Constructor	Pre-existing Video	\$1,500.00	ELBE	City	
Name: <u>American Asphalt South</u> Address: <u>19436 Santa Ana Ave</u> City: <u>Ferranda</u> State: <u>CA</u> Zip: <u>92337</u> Phone: <u>909.427.8276</u>	Constructor	Slurry Seal And Crack Seal	\$37,485.50			
Name: <u>Pauco Specialties, Inc</u> Address: <u>120 N. 2nd Avenue</u> City: <u>Onulavista</u> State: <u>CA</u> Zip: <u>91910</u> Phone: <u>619.422.9204</u>	Constructor	Striping	\$12,750.00			

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   | San Diego Regional Minority Supplier Diversity Council | SRMSDC   |
| State of California's Department of General Services | CADoGS | City of Los Angeles                                    | LA       |
| State of California                                  | CA     | U.S. Small Business Administration                     | SBA      |

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**BIDDING DOCUMENTS**

**LIST OF SUBCONTRACTORS**

In accordance with the requirements provided in the "Subletting and Subcontracting Fair Practices Act", Division 2, Part 1, Chapter 4 of the Public Contract Code, the Bidder shall list below the name and address of each Subcontractor who will perform work, labor, render services or 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 list below the portion of the work which will be done 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 shall result in the Bid being rejected as **non-responsive** and ineligible for award. The Bidder's attention is directed to the Special Provisions - General; Paragraph 2-3 Subcontracts, 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 that Bidders are seeking recognition towards achieving any mandatory, voluntary, or both subcontracting participation percentages.

NAME, ADDRESS AND TELEPHONE NUMBER OF SUBCONTRACTOR	CONSTRUCTOR OR DESIGNER	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: <u>Southwest Pipeline + Trenchless Corp</u> Address: <u>22118 South Vermont Ave</u> City: <u>Torrance</u> State: <u>CA</u> Zip: <u>90502</u> Phone: <u>310.329.8717</u>	Constructor	sewer lateral connection Sealing	\$18,900.00			
Name: <u>Repipe - California UP</u> Address: <u>12771 Brown Ave</u> City: <u>Riverside</u> State: <u>CA</u> Zip: <u>92509</u> Phone: <u>909.921.4050</u>	Constructor	sewer main Rehab	\$69,878.00			
Name: <u>Gasu Flo</u> Address: <u>13082 Lindamere Lane</u> City: <u>San Diego</u> State: <u>CA</u> Zip: <u>92128</u> Phone: <u>619.908.7200</u>	Constructor	sewer lateral lining	\$19,800.00	ELBE	city	

ⓐ 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 |  |         |

ⓑ 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   | San Diego Regional Minority Supplier Diversity Council | SRMSDC   |
| 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**

The Bidder seeking the recognition of equipment, materials, or supplies obtained from Suppliers towards achieving any mandatory, voluntary, or both subcontracting participation percentages shall list the Supplier(s) on the Named Equipment/Material Supplier List. The Named Equipment/Material Supplier List, at a minimum, shall have the name, locations (City) and the **DOLLAR VALUE** of the Suppliers. The Bidder will be credited up to 60% of the amount to be paid to the Suppliers for such materials and supplies unless vendor manufactures or substantially alters materials and supplies in which case 100% will be credited. The Bidder is to indicate (Yes/No) whether listed firm is a supplier or manufacturer. In calculating the subcontractor participation percentages, vendors/suppliers will receive 60% credit of the listed **DOLLAR VALUE**, whereas manufacturers will receive 100% credit. If no indication provided, listed firm will be credited at 60% of the listed dollar value for purposes of calculating the Subcontractor Participation Percentage, Suppliers will receive 60% credit of the listed **DOLLAR VALUE**, whereas manufacturers will receive 100% credit. If no indication provided, listed firm will be credited at 60% of the listed **DOLLAR VALUE** for purposes of calculating the subcontractor participation percentages.

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>Ⓛ</sup>	WHERE CERTIFIED <sup>Ⓜ</sup>
Name: _____ Address: _____ City: _____ State: _____ Zip: _____ Phone: _____						
Name: _____ Address: _____ City: _____ State: _____ Zip: _____ Phone: _____						
Name: _____ Address: _____ City: _____ State: _____ Zip: _____ Phone: _____						

Ⓛ 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		

Ⓜ 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	San Diego Regional Minority Supplier Diversity Council	SRMSDC
State of California's Department of General Services	CADoGS	City of Los Angeles	LA
State of California	CA	U.S. Small Business Administration	SBA

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**BIDDING DOCUMENTS**

**SUBCONTRACTORS ADDITIVE/DEDUCTIVE ALTERNATES**  
(USE ONLY WHEN ADDITIVE ALTERNATES ARE REQUIRED)

Bidder shall list all Subcontractors described in the Bidder's *Base Bid* whose percentage of work will increase or decrease if alternates are selected for award. Bidder shall also list additional Subcontractors not described in the Bidder's *Base Bid* who, as a result of the alternates, will perform work or labor, or render services, or specially fabricate and install a portion [type] of work or improvements in an amount in excess of 0.5%.. The Bidder shall list all SLBE, ELBE, DBE, DVBE, MBE, WBE, OBE, SDB, WoSB, HUBZone, and SDVOSB Subcontractors that Bidders are seeking recognition towards achieving any mandatory, voluntary, or both subcontracting participation percentages.

ADDITIVE/DEDUCTIVE ALTERNATE	NAME, ADDRESS AND TELEPHONE NUMBER OF SUBCONTRACTOR	CONSTRUCTOR OR DESIGNER	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: _____						
	Name: _____ Address: _____ City: _____ State: _____ Zip: _____ Phone: _____						
	Name: _____ Address: _____ City: _____ State: _____ Zip: _____ Phone: _____						
	Name: _____ Address: _____ City: _____ State: _____ Zip: _____ Phone: _____						

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		

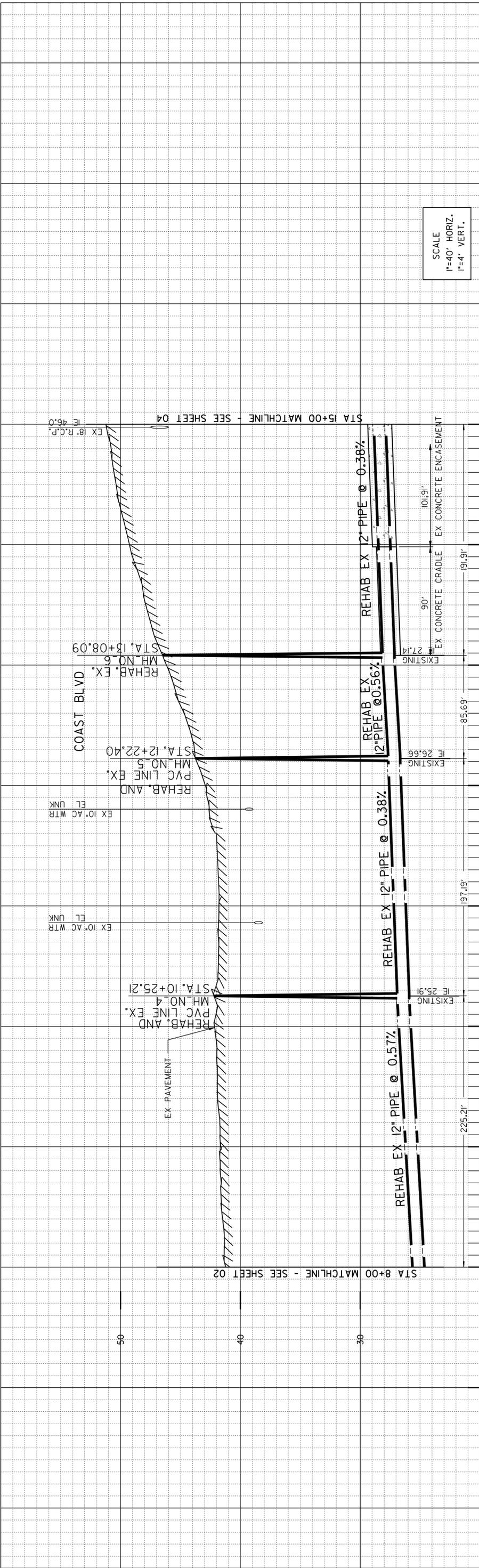
② As appropriate, Bidder shall indicate if Subcontractor is certified by:

City of San Diego	CITY	State of California Department of Transportation	CALTRANS
California Public Utilities Commission	CPUC	San Diego Regional Minority Supplier Diversity Council	SRMSDC
State of California's Department of General Services	CADoGS	City of Los Angeles	LA
State of California	CA	U.S. Small Business Administration	SBA

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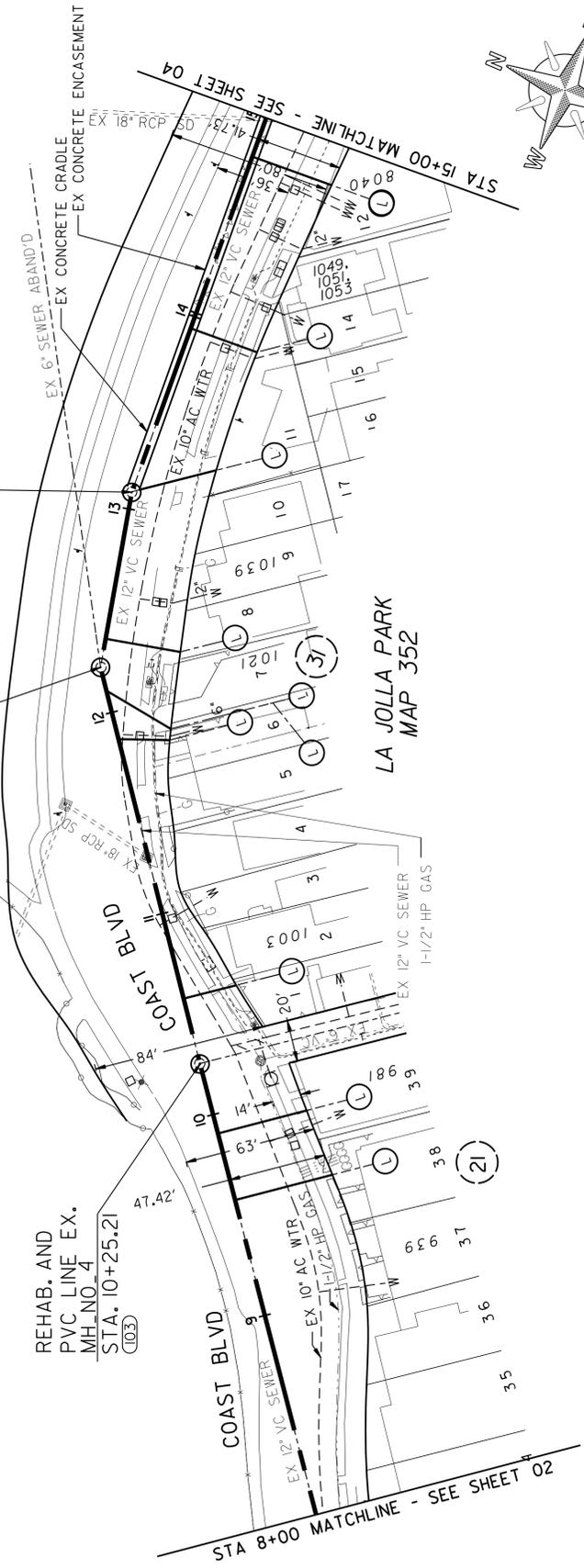


SCALE  
1"=40' HORIZ.  
1"=4' VERT.

8+00 9+00 10+00 11+00 12+00 13+00 14+00 15+00

REFERENCE:  
WATER: 12047-2-D, 13490-D  
SEWER: 12047-3-D  
STORM DRAIN: 886-L, 19701-3-D  
GAS: 45-227  
ELECTRIC: 248-1683, 248-1686  
CABLE TV: LJO6  
TELEPHONE: LJO304  
IMPROVEMENTS: 886-L, 3335-L  
100' SCALE/FIELD BOOK: AIOS  
THOMAS BROS.: 1227

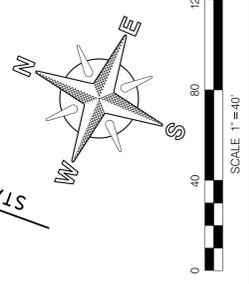
RETIREMENTS:  
12" - VC - 700' - 1968  
MH: 4X3, 3, 1968  
4" LATERAL - 8 - (VC) - 1968  
6" LATERAL - 1 - (VC) - 1968



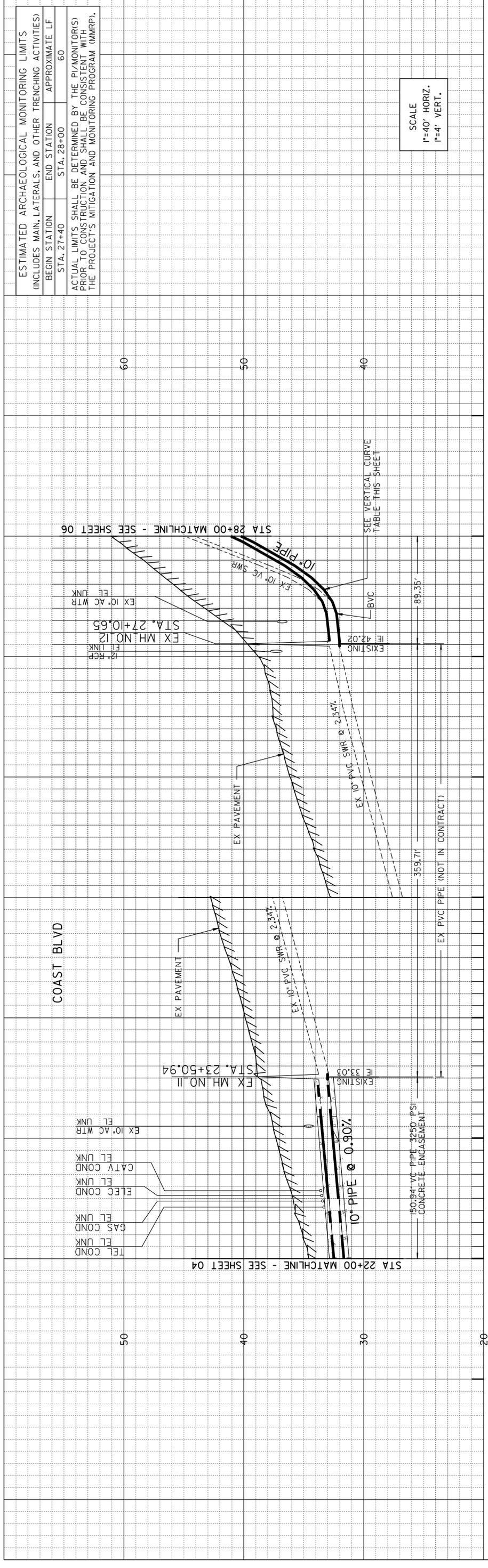
C-2

SEWER AND WATER GROUP 820  
COAST BLVD  
STA 8+00 TO STA 15+00

CITY OF SAN DIEGO CALIFORNIA ENGINEERING AND CAPITAL PROJECTS DEPARTMENT SHEET 03 OF 48 SHEETS		WATER W.D. NO. B-00382
FOR CITY ENGINEER	DATE 5/1/13	PROJECT MANAGER MICHAEL NINH
DESCRIPTION ORIGINAL	BY APPROVED DATE FILMED	PROJECT ENGINEER MERYL JIMENEZ
		246-1683
		6244407.1886444
		35408-03-D







SCALE  
1"=40' HORIZ.  
1"=4' VERT.

ESTIMATED ARCHAEOLOGICAL MONITORING LIMITS (INCLUDES MAIN, LATERALS, AND OTHER TRENCHING ACTIVITIES)		
BEGIN STATION	END STATION	APPROXIMATE LF
STA. 27+40	STA. 28+00	60

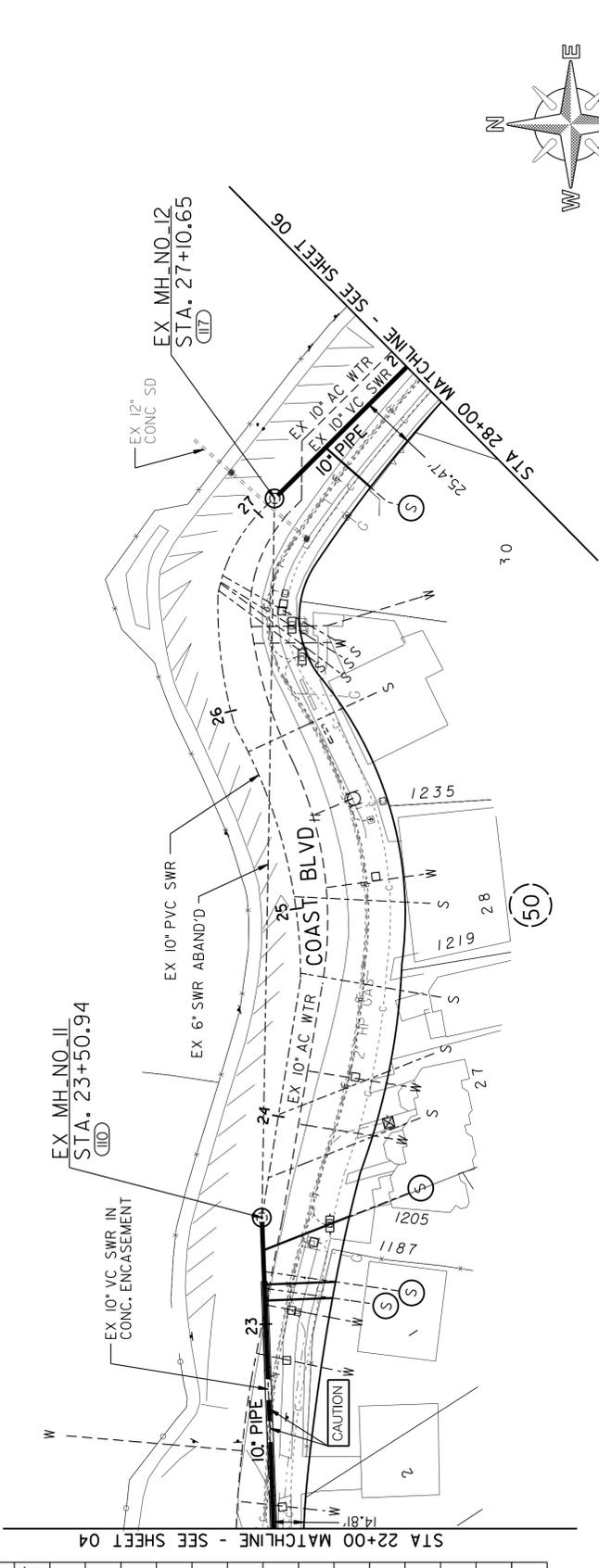
ACTUAL LIMITS SHALL BE DETERMINED BY THE PI(MONITOR)S PRIOR TO CONSTRUCTION AND SHALL BE CONSISTENT WITH THE PROJECT'S MITIGATION AND MONITORING PROGRAM (MMRP).

SEGMENT	STATION	IE	MH/PIPE	COMMENT
1	27+26.69	42.02	MH	-
2	27+51.69	42.27	PIPE	BVC
3	27+61.68	42.62	PIPE	
4	27+71.66	43.32	PIPE	
5	27+81.60	44.36	PIPE	
6	27+91.51	45.75	PIPE	
7	28+11.2	49.23	PIPE	
8	28+30.77	53.38	PIPE	
9	28+50.17	58.22	PIPE	
10	28+55.06	59.26	PIPE	
11	28+59.99	60.13	PIPE	
12	28+64.94	60.83	PIPE	
13	28+74.88	61.87	PIPE	
14	28+84.31	62.55	MH	EVC

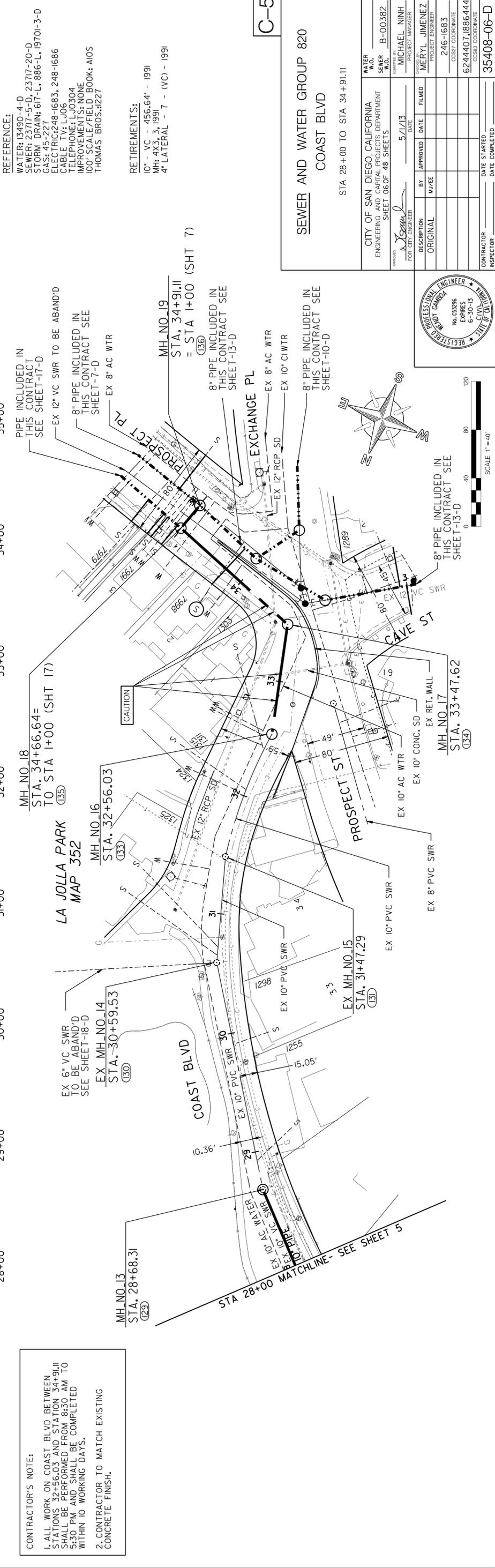
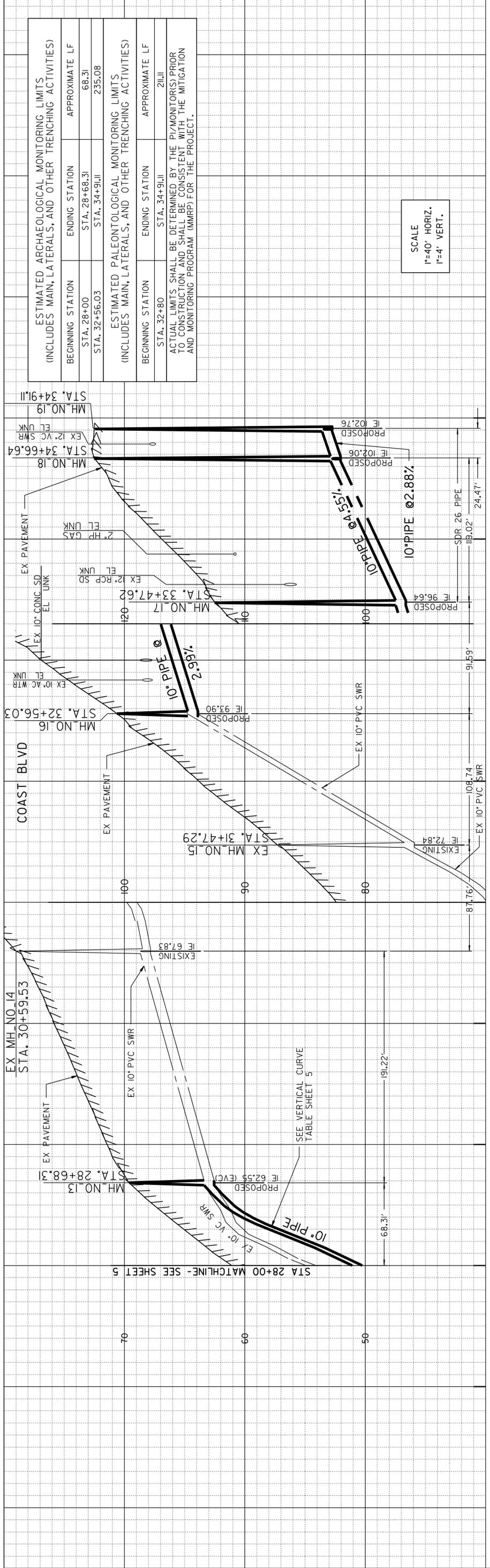
REFERENCE:  
WATER: 13490-3-D  
SEWER: 23717-5-D  
STORM DRAIN: 886-L, 19701-3-D  
GAS: 45-227  
ELECTRIC: 248-1683, 248-1686  
CABLE TV: LJO6  
TELEPHONE: LJO304  
IMPROVEMENTS: 886-L  
100' SCALE/FIELD BOOK: A105  
THOMAS BROS.#1227

RETIREMENTS:  
10' - VC - 240.3' - 1991  
MH: 4X3, 0, 1900  
4" LATERAL - 4 - (VC) - 1991

LA JOLLA PARK  
MAP 352



SEWER AND WATER GROUP 820 COAST BLVD STA 22+00 TO STA. 28+00		CITY OF SAN DIEGO, CALIFORNIA ENGINEERING AND CAPITAL PROJECTS DEPARTMENT SHEET 05 OF 48 SHEETS		WATER W.D. SEWER W.D. NO. B-00382	
FOR CITY ENGINEER	DATE	5/1/13	PROJECT MANAGER	MICHAEL NINH	
DESCRIPTION	BY	APPROVED	DATE	FILED	
ORIGINAL	M/EE				
CONTRACTOR		DATE STARTED			
INSPECTOR		DATE COMPLETED			



**CONTRACTOR'S NOTE:**  
 1. ALL WORK ON COAST BLVD BETWEEN STATIONS 32+56.03 AND STATION 34+91.11 SHALL BE PERFORMED FROM 8:30 AM TO 5:30 PM AND SHALL BE COMPLETED WITHIN 10 WORKING DAYS.  
 2. CONTRACTOR TO MATCH EXISTING CONCRETE FINISH.

**REFERENCE:**  
 WATER: I3490-4-D  
 SEWER: 23717-5-D, 23717-20-D  
 STORM DRAIN: 617-L, 886-L, 19701-3-D  
 GAS: 45-227  
 ELECTRIC: 248-1683, 248-1686  
 CABLE TV: LJO6  
 TELEPHONE: LJO304  
 IMPROVEMENTS: NONE  
 100' SCALE/FIELD BOOK: A10S  
 THOMAS BROS.: 1227

**RETIREMENTS:**  
 10' - VC 456.64' - 1991  
 MH: 4X3, 3, 1991  
 4'-LATERAL - 7 - (VC) - 1991

**ESTIMATED ARCHAEOLOGICAL MONITORING LIMITS (INCLUDES MAIN, LATERALS, AND OTHER TRENCHING ACTIVITIES)**

BEGINNING STATION	ENDING STATION	APPROXIMATE LF
STA. 28+00	STA. 28+68.31	68.31
STA. 32+56.03	STA. 34+91.11	235.08

**ESTIMATED PALEONTOLOGICAL MONITORING LIMITS (INCLUDES MAIN, LATERALS, AND OTHER TRENCHING ACTIVITIES)**

BEGINNING STATION	ENDING STATION	APPROXIMATE LF
STA. 32+80	STA. 34+91.11	211.11

ACTUAL LIMITS SHALL BE DETERMINED BY THE P/AMONITOR(S) PRIOR TO CONSTRUCTION AND SHALL BE CONSISTENT WITH THE MITIGATION AND MONITORING PROGRAM (MMRP) FOR THE PROJECT.

**SEWER AND WATER GROUP 820**  
**COAST BLVD**  
 STA 28+00 TO STA 34+91.11

DESCRIPTION	BY	APPROVED	DATE	FILED
ORIGINAL	M. J. Jimenez	[Signature]	5/1/13	

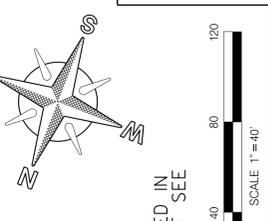
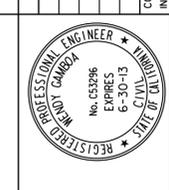
FOR CITY ENGINEER

PROJECT MANAGER	PROJECT ENGINEER	DATE
MICHAEL NINH	MERYL JIMENEZ	246-1683

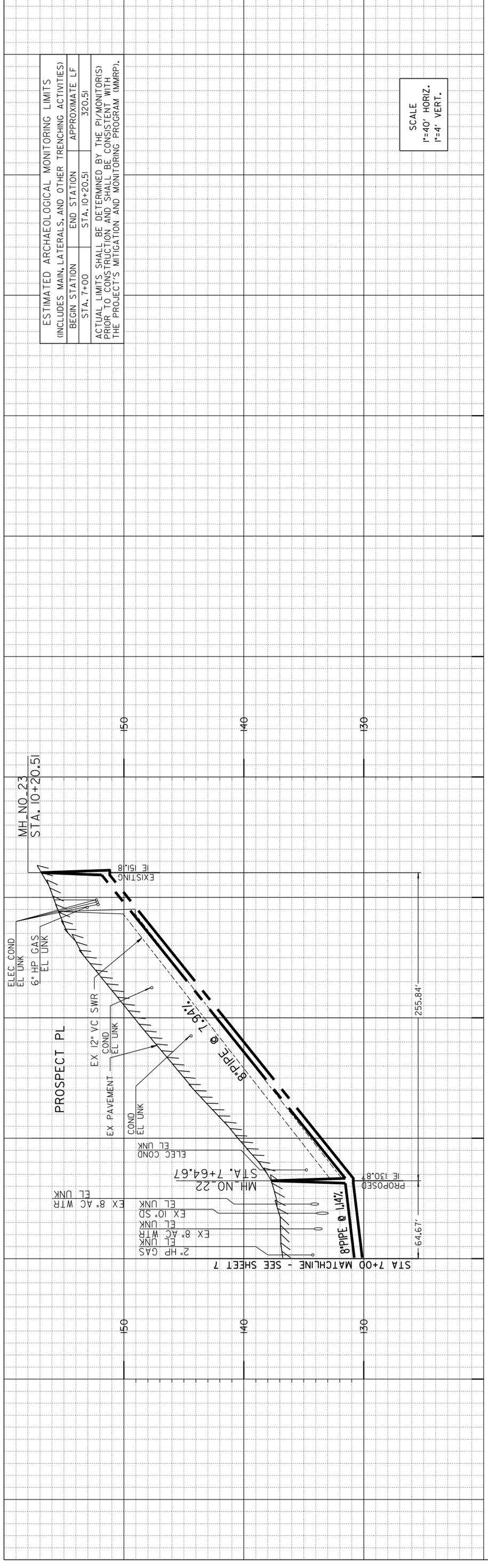
WATER W.D. B-00382  
 SEWER W.D. B-00382  
 SHEET 06 OF 48 SHEETS

CITY OF SAN DIEGO, CALIFORNIA  
 ENGINEERING AND CAPITAL PROJECTS DEPARTMENT

CONTRACTOR: \_\_\_\_\_ DATE STARTED: \_\_\_\_\_  
 INSPECTOR: \_\_\_\_\_ DATE COMPLETED: \_\_\_\_\_





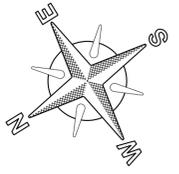
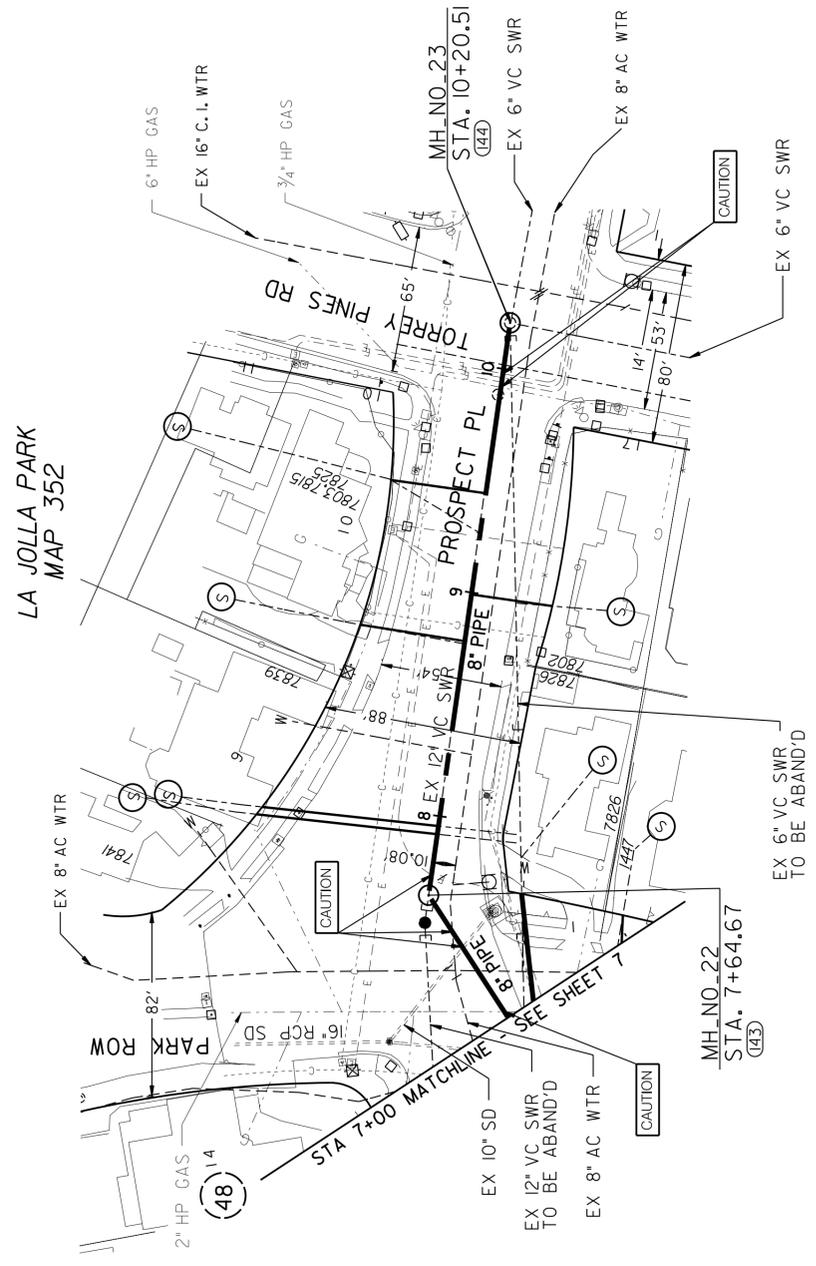


SCALE  
1"=40' HORIZ.  
1"=4' VERT.

ESTIMATED ARCHAEOLOGICAL MONITORING LIMITS (INCLUDES MAIN, LATERALS, AND OTHER TRENCHING ACTIVITIES)		
BEGIN STATION	END STATION	APPROXIMATE LF
STA. 7+00	STA. 10+20.51	320.51
ACTUAL LIMITS SHALL BE DETERMINED BY THE PI/MONITOR(S) PRIOR TO CONSTRUCTION AND SHALL BE CONSISTENT WITH THE PROJECT'S MITIGATION AND MONITORING PROGRAM (MMRP).		

REFERENCE:  
WATER: 7074-W, 30862-5-D  
SEWER: 581-II-L, 1308-D  
STORM DRAIN: 618-L  
GAS: 45-227  
ELECTRIC: 248-1683, 248-1686  
CABLE TV: LJO6  
TELEPHONE: LJO304  
IMPROVEMENTS: 408-B, 06750-D  
100' SCALE/FIELD BOOK: AIOS  
THOMAS BROS.: 1227

RETIREMENTS:  
6" - VC - 320' - 1963  
12" - VC - 76' - 1963  
MH: 4X3, 2, 1963  
4" LATERAL - 6 - (VC) - 1963



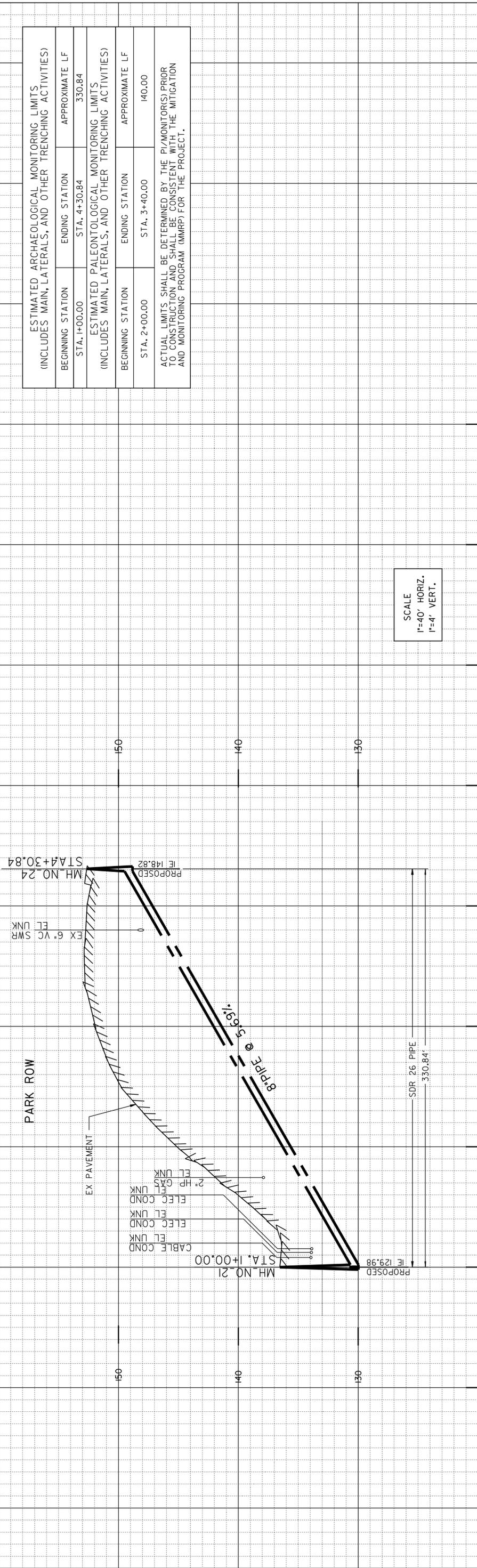
SEWER AND WATER GROUP 820 PROSPECT PL STA 7+00 TO 10+20.51		CITY OF SAN DIEGO, CALIFORNIA ENGINEERING AND CAPITAL PROJECTS DEPARTMENT SHEET 08 OF 48 SHEETS		WATER W.D. B-00382 SEWER W.D. B-00382
APPROVED BY: <i>M. Jimenez</i>	DATE: 5/1/13	PROJECT MANAGER: MICHAEL NINH	DESIGNED BY: MERYLL JIMENEZ	PROJECT ENGINEER: 246-1683
DESCRIPTION: ORIGINAL	DATE: _____	FILED: _____	DATE: _____	COORDINATE: 6244407.1886444
CONTRACTOR: _____	DATE STARTED: _____	DATE COMPLETED: _____	INSPECTOR: _____	CS88 COORDINATE: 35408-08-D

C-7

# PARK ROW

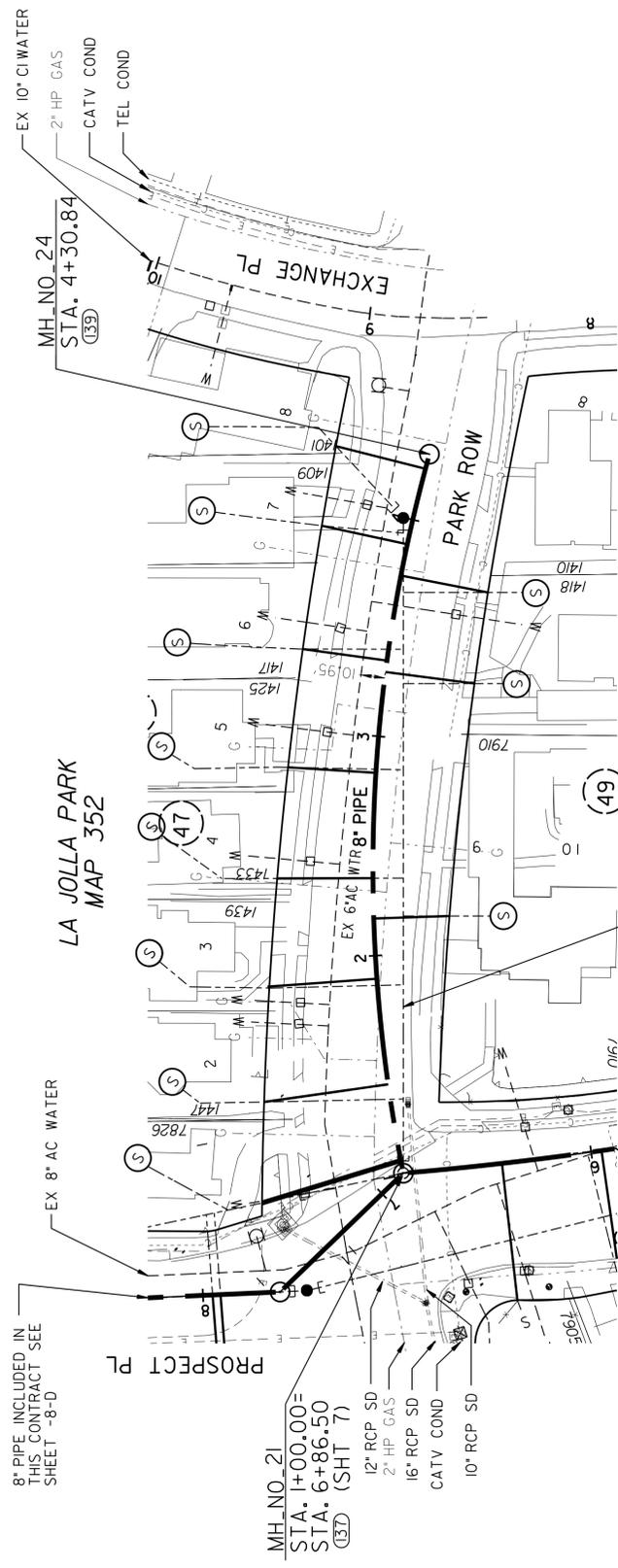
ESTIMATED ARCHAEOLOGICAL MONITORING LIMITS (INCLUDES MAIN, LATERALS, AND OTHER TRENCHING ACTIVITIES)		
BEGINNING STATION	ENDING STATION	APPROXIMATE LF
STA. 1+00.00	STA. 4+30.84	330.84
ESTIMATED PALEONTOLOGICAL MONITORING LIMITS (INCLUDES MAIN, LATERALS, AND OTHER TRENCHING ACTIVITIES)		
BEGINNING STATION	ENDING STATION	APPROXIMATE LF
STA. 2+00.00	STA. 3+40.00	140.00
ACTUAL LIMITS SHALL BE DETERMINED BY THE P/MONITOR(S) PRIOR TO CONSTRUCTION AND SHALL BE CONSISTENT WITH THE MITIGATION AND MONITORING PROGRAM (MMRP) FOR THE PROJECT.		

SCALE  
H=40' HORIZ.  
V=4' VERT.



REFERENCE:  
 WATER: 12567-12-D  
 SEWER: 24536-01-D  
 STORM DRAIN: 618-L  
 GAS: 45-227  
 ELECTRIC: 248-1683, 248-1686  
 CABLE TV: LJO6  
 TELEPHONE: LJO304  
 IMPROVEMENTS: 06315-L  
 100' SCALE/FIELD BOOK: AIOS  
 THOMAS BROS.: 1227

RETIREMENTS:  
 6" - VC - 299' - 1963  
 MH: 4X3, 2, 1963  
 4" LATERAL - II - (VC) - 1963



<b>SEWER AND WATER GROUP 820</b> PARK ROW	
STA 1+00 TO STA 4+30.84	
C-8	
CITY OF SAN DIEGO, CALIFORNIA ENGINEERING AND CAPITAL PROJECTS DEPARTMENT SHEET 9 OF 48 SHEETS	
APPROVED BY: <i>Meryl Jimenez</i>	DATE: 5/1/13
FOR CITY ENGINEER	PROJECT MANAGER
DESCRIPTION: ORIGINAL	FILED
M/TEE	DATE
BY: MERYL JIMENEZ	PROJECT ENGINEER
246-1683	CS327 COORDINATE
6244407.1886444	CS388 COORDINATE
CONTRACTOR: _____	DATE STARTED: _____
INSPECTOR: _____	DATE COMPLETED: _____
35408-9-D	

8" PIPE INCLUDED IN THIS CONTRACT SEE SHEET -8-D

MH\_NO\_21  
 STA. 1+00.00=  
 STA. 6+86.50  
 (37) (SHT 7)

EX 12" SEWER

8" PIPE INCLUDED IN THIS CONTRACT SEE SHEET-7-D

EX 6" VC SWR TO BE ABAND'D

EX 8" AC WATER

MH\_NO\_24  
 STA. 4+30.84  
 (39)

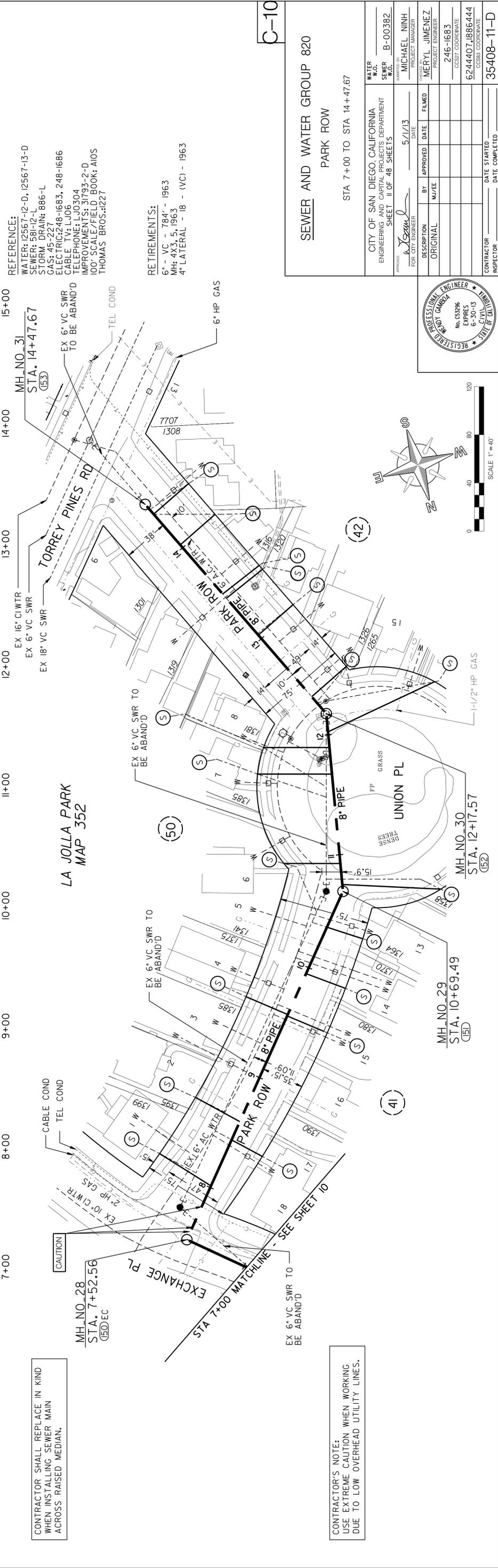
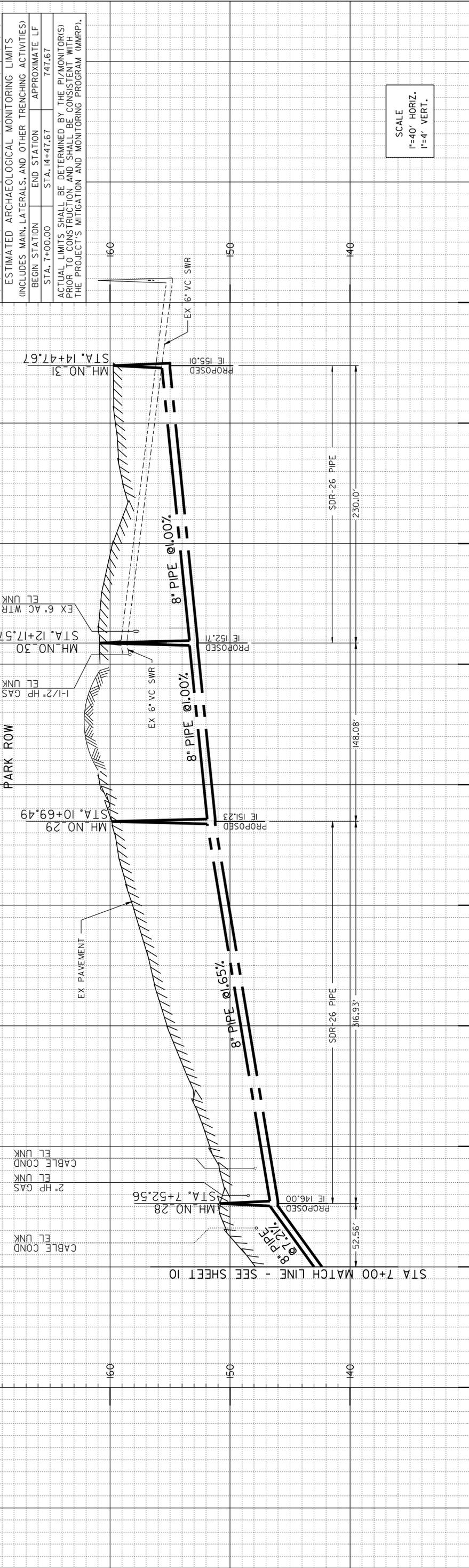
EX 10" CI WATER  
 2" HP GAS  
 CATV COND  
 TEL COND



# PARK ROW

ESTIMATED ARCHAEOLOGICAL MONITORING LIMITS (INCLUDES MAIN, LATERALS, AND OTHER TRENCHING ACTIVITIES)		
BEGIN STATION	END STATION	APPROXIMATE LF
STA. 7+00.00	STA. 14+47.67	747.67

ACTUAL LIMITS SHALL BE DETERMINED BY THE PI(MONITORS) PRIOR TO CONSTRUCTION AND SHALL BE CONSISTENT WITH THE PROJECT'S MITIGATION AND MONITORING PROGRAM (MMRP).



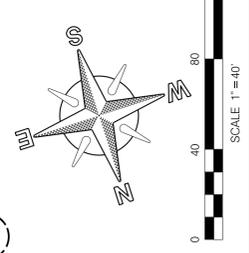
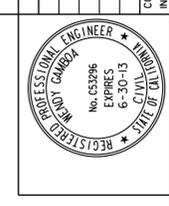
REFERENCE:  
 WATER: I2567-12-D, I2567-13-D  
 SEWER: 581-12-L  
 STORM DRAIN: 886-L  
 GAS: 45-227  
 ELECTRIC: 248-1683, 248-1686  
 CABLE TV: LJO6  
 TELEPHONE: LJO304  
 IMPROVEMENTS: 31793-2-D  
 100' SCALE/FIELD BOOK: AIOS  
 THOMAS BROS.: 1227

RETIREMENTS:  
 6" - VC - 7847 - 1963  
 MH: 4X3, 5, 1963  
 4" LATERAL - 18 - (VC) - 1963

CONTRACTOR SHALL REPLACE IN KIND WHEN INSTALLING SEWER MAIN ACROSS RAISED MEDIAN.

CONTRACTOR'S NOTE:  
 USE EXTREME CAUTION WHEN WORKING DUE TO LOW OVERHEAD UTILITY LINES.

SEWER AND WATER GROUP 820 PARK ROW		STA 7+00 TO STA 14+47.67	
CITY OF SAN DIEGO, CALIFORNIA ENGINEERING AND CAPITAL PROJECTS DEPARTMENT SHEET 11 OF 48 SHEETS			
DESIGNER	BY	APPROVED	DATE
ORIGINAL	M/EE		5/1/13
PROJECT MANAGER		DATE	
MICHAEL NINH		FILED	
PROJECT ENGINEER		MERYL JIMENEZ	
PROJECT ENGINEER		246-1683	
PROJECT ENGINEER		6244407.1886444	
PROJECT ENGINEER		35408-11-D	
CONTRACTOR		DATE STARTED	
INSPECTOR		DATE COMPLETED	



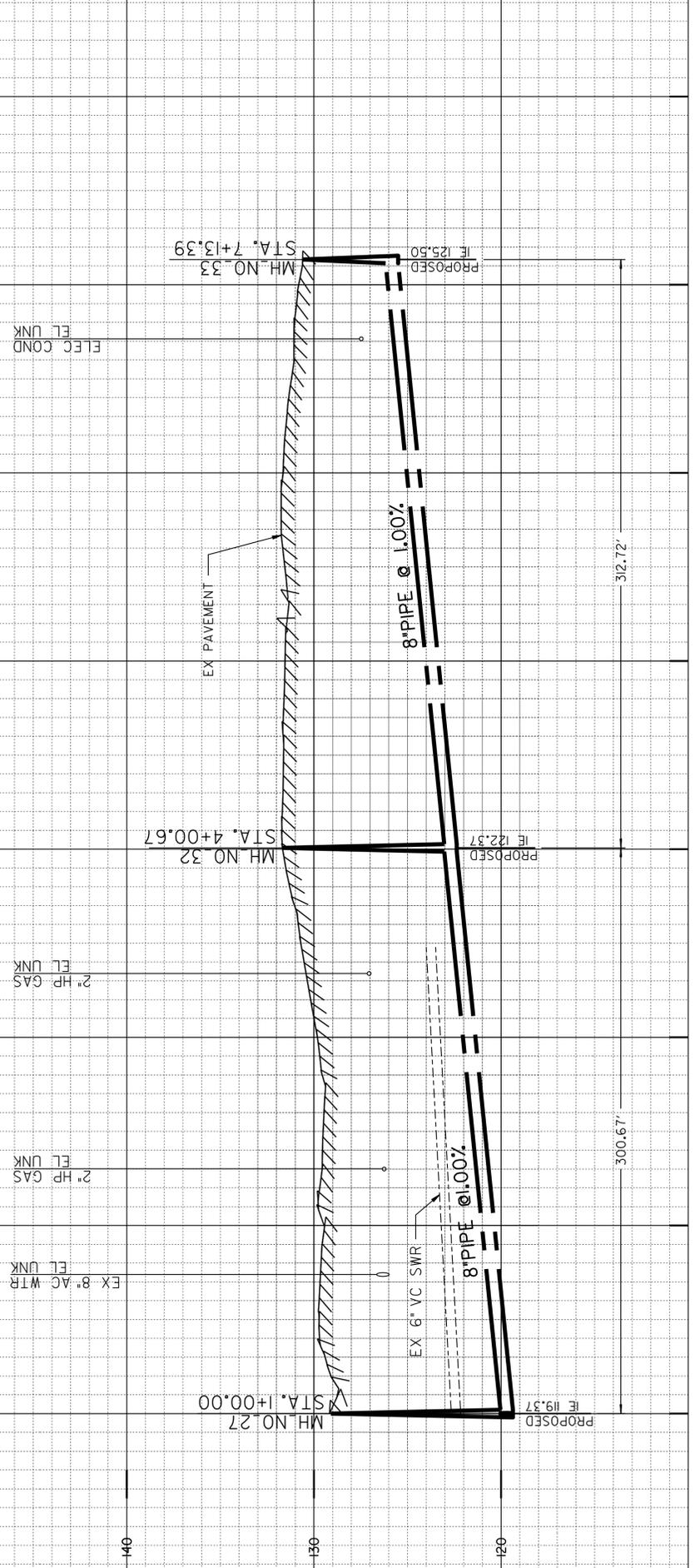
# SILVERADO ST

ESTIMATED ARCHAEOLOGICAL MONITORING LIMITS (INCLUDES MAIN, LATERALS, AND OTHER TRENCHING ACTIVITIES)		
BEGIN STATION	END STATION	APPROXIMATE LF
STA. 1+00.00	STA. 7+13.39	613.39

ACTUAL LIMITS SHALL BE DETERMINED BY THE PI/MONITOR(S) PRIOR TO CONSTRUCTION AND SHALL BE CONSISTENT WITH THE PROJECT'S MITIGATION AND MONITORING PROGRAM (MMRP).

SCALE  
1"=40' HORIZ.  
1"=4' VERT.

SILVERADO ST

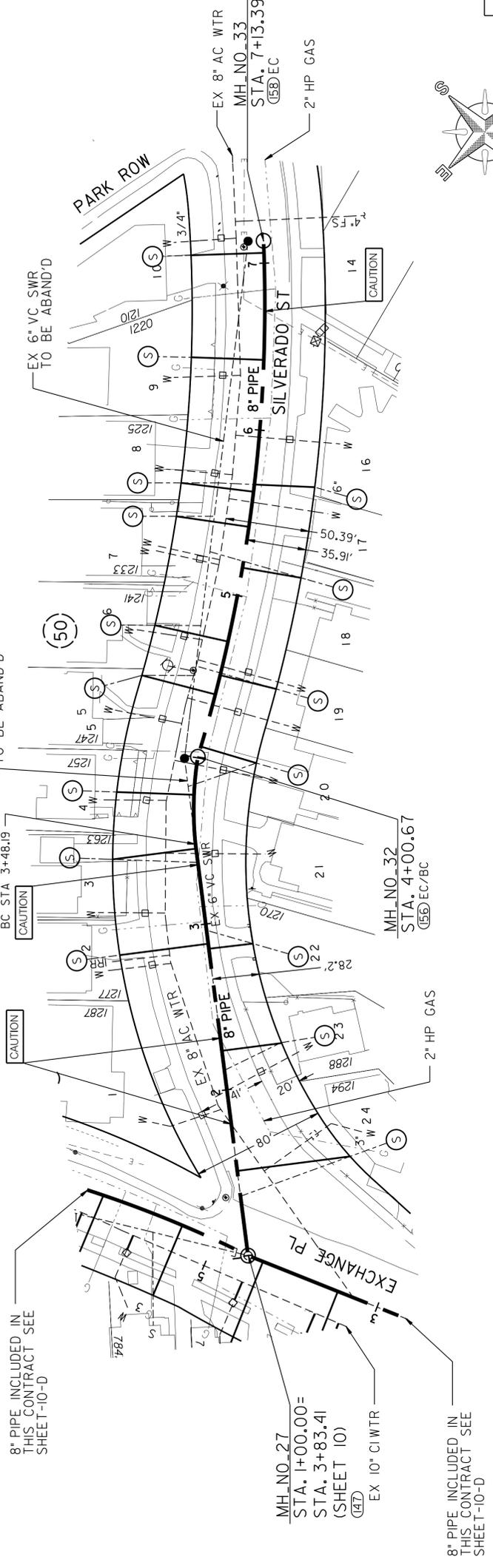


0+00 1+00 2+00 3+00 4+00 5+00 6+00 7+00 8+00

REFERENCE:  
WATER: I2567-10-D  
SEWER: 581-12-L  
STORM DRAIN:  
GAS: 45-227  
ELECTRIC: 248-1683, 248-1686  
CABLE TV: LJO6  
TELEPHONE: LJO304  
IMPROVEMENTS: 383-L  
100' SCALE/FIELD BOOK: A105  
THOMAS BROS.: 1227

RETIREMENTS:  
6" - VC - 590' - 1963  
MH: 4X3, 3, 1963  
4" LATERAL - 15 - (VC) - 1963  
6" LATERAL - 1 - (VC) - 1963

LA JOLLA PARK  
MAP 352



C-11

SEWER AND WATER GROUP 820  
SILVERADO ST

STA 1+00 TO STA 7+13.39

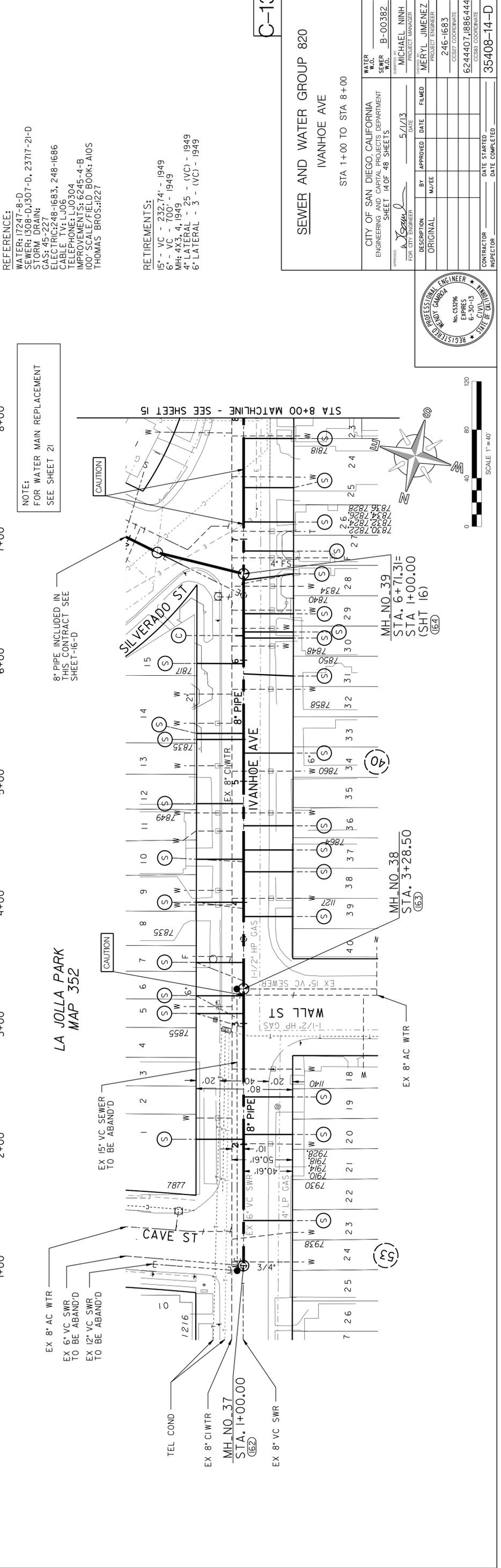
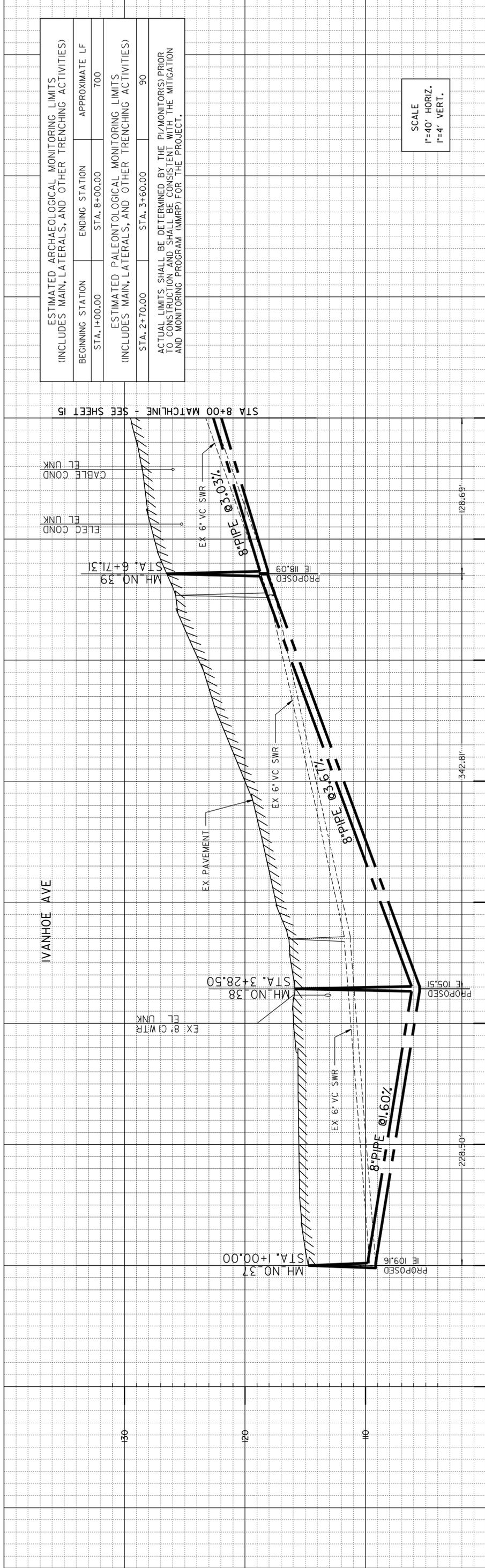
CITY OF SAN DIEGO, CALIFORNIA ENGINEERING AND CAPITAL PROJECTS DEPARTMENT SHEET 12 OF 48 SHEETS		WATER W.D. SEWER W.D. NO. B-00382	
FOR CITY ENGINEER		DATE	5/1/13
BY	APPROVED	DATE	FILED
DESCRIPTION ORIGINAL	M/EE		
PROJECT MANAGER MICHAEL NINH		PROJECT ENGINEER MERYL JIMENEZ	
CS27 COORDINATE 246-1683		CS88 COORDINATE 6244407.1886444	
CONTRACTOR		DATE STARTED	
INSPECTOR		DATE COMPLETED	
		35408-12-D	





ESTIMATED ARCHAEOLOGICAL MONITORING LIMITS (INCLUDES MAIN, LATERALS, AND OTHER TRENCHING ACTIVITIES)		
BEGINNING STATION	ENDING STATION	APPROXIMATE LF
STA. 1+00.00	STA. 8+00.00	700
ESTIMATED PALEONTOLOGICAL MONITORING LIMITS (INCLUDES MAIN, LATERALS, AND OTHER TRENCHING ACTIVITIES)		
STA. 2+70.00	STA. 3+60.00	90
ACTUAL LIMITS SHALL BE DETERMINED BY THE P/MONITOR(S) PRIOR TO CONSTRUCTION AND SHALL BE CONSISTENT WITH THE MITIGATION AND MONITORING PROGRAM (MMRP) FOR THE PROJECT.		

SCALE  
1"=40' HORIZ.  
1"=4' VERT.



REFERENCE:  
WATER: I7247-8-D  
SEWER: I508-D, I507-D, 23717-21-D  
STORM DRAIN:  
GAS: 45-227  
ELECTRIC: 248-1683, 248-1686  
CABLE TV: LJO6  
TELEPHONE: LJO304  
IMPROVEMENTS: 6245-4-B  
100' SCALE/FIELD BOOK: A105  
THOMAS BROS.: I227

RETIREMENTS:  
15" - VC - 232.74' - 1949  
6" - VC - 700' - 1949  
MH: 4X3, 4, 1949  
4" LATERAL - 25 - (VC) - 1949  
6" LATERAL - 3 - (VC) - 1949

NOTE:  
FOR WATER MAIN REPLACEMENT  
SEE SHEET 21

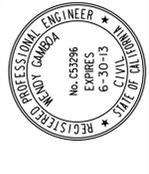
LA JOLLA PARK  
MAP 352



C-13

SEWER AND WATER GROUP 820  
IVANHOE AVE  
STA 1+00 TO STA 8+00

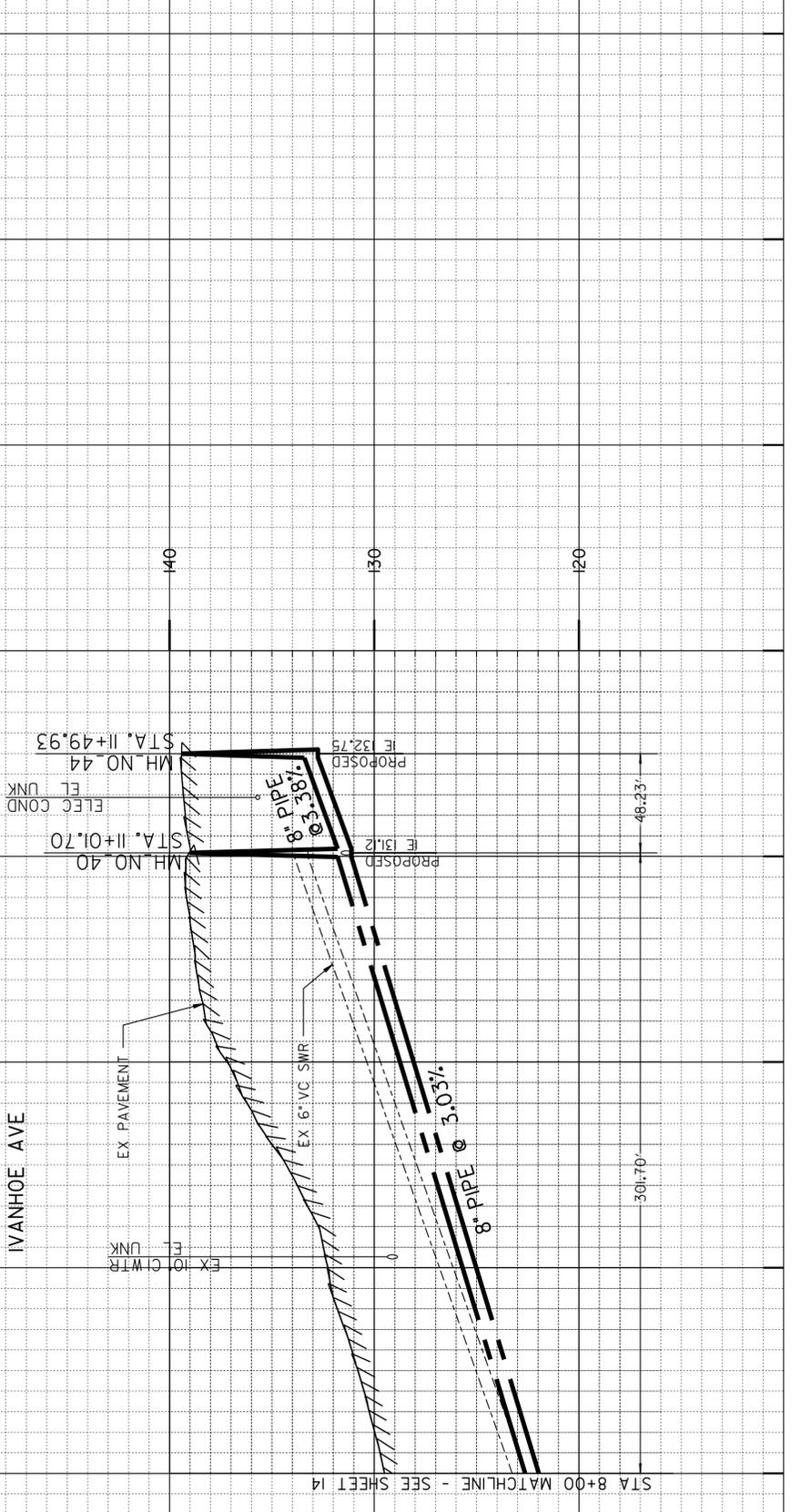
CITY OF SAN DIEGO CALIFORNIA ENGINEERING AND CAPITAL PROJECTS DEPARTMENT SHEET 14 OF 48 SHEETS	DATE 5/1/13	FILED	WATER W.D. SEWER W.D. NO. B-00382
APPROVED BY <i>Michael Ninh</i> FOR CITY ENGINEER	DATE 5/1/13	PROJECT MANAGER MICHAEL NINH	
DESCRIPTION ORIGINAL	DATE	PROJECT ENGINEER MERYL JIMENEZ	
		CS27 COORDINATE 246-1683	
		CS88 COORDINATE 624407.1886444	
CONTRACTOR	DATE STARTED	INSPECTOR	DATE COMPLETED
			35408-14-D



# IVANHOE AVE

ESTIMATED ARCHAEOLOGICAL MONITORING LIMITS (INCLUDES MAIN, LATERALS, AND OTHER TRENCHING ACTIVITIES)		
BEGIN STATION	END STATION	APPROXIMATE LF
STA. 8+00.00	STA. 11+49.43	3+49.43

ACTUAL LIMITS SHALL BE DETERMINED BY THE PI/MONITOR(S) PRIOR TO CONSTRUCTION AND SHALL BE CONSISTENT WITH THE PROJECT'S MITIGATION AND MONITORING PROGRAM (MMRP).



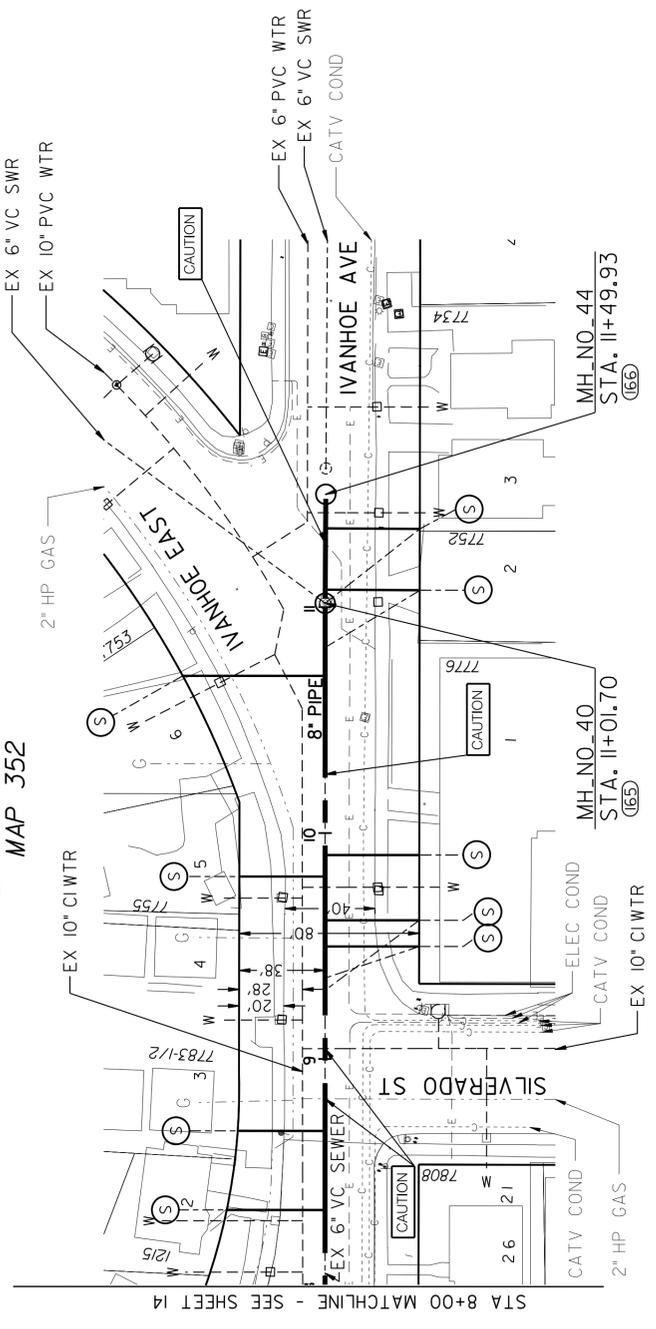
8+00 9+00 10+00 11+00 12+00 13+00 14+00 15+00

LA JOLLA PARK  
MAP 352

NOTE:  
FOR WATER MAIN REPLACEMENT  
SEE SHEET 22

REFERENCE:  
WATER: 26338-26-D  
SEWER: 1507-D(e),  
STORM DRAIN:  
GAS: 45-227  
ELECTRIC: 248-1683, 248-1686  
CABLE TV: LJO6  
TELEPHONE: LJO304  
IMPROVEMENTS: 2133-I-D  
100' SCALE/FIELD BOOK: A105  
THOMAS BROS.: 1227

RETIREMENTS:  
6" - VC - 301.63' - 1949  
MH: 4X3, 1, 1949  
4" LATERAL - 9 - (VC) - 1949

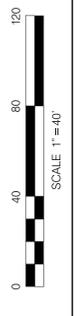
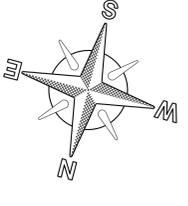
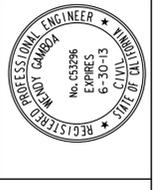


STA 8+00 MATCHLINE - SEE SHEET 14

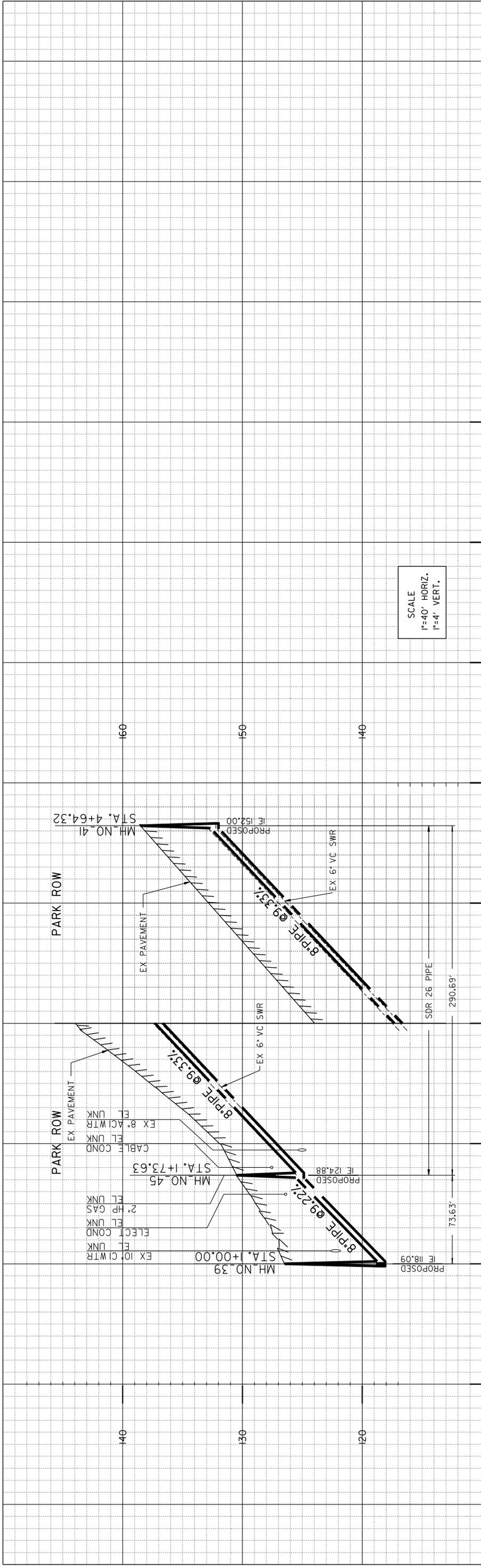
C-14

SEWER AND WATER GROUP 820  
IVANHOE AVE  
STA 8+00 TO STA 11+49.93

CITY OF SAN DIEGO, CALIFORNIA ENGINEERING AND CAPITAL PROJECTS DEPARTMENT SHEET 15 OF 48 SHEETS		WATER W.D. SEWER W.D. NO. B-00382	
DESIGNED BY FOR CITY ENGINEER	DATE 5/1/13	PROJECT MANAGER MICHAEL NINH	
DESCRIPTION ORIGINAL	BY M/EE	APPROVED DATE	FILED DATE
CONTRACTOR	INSPECTOR	DATE STARTED	DATE COMPLETED
			35408-15-D



# PARK ROW

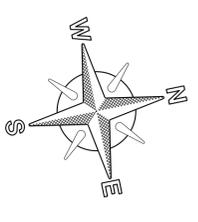
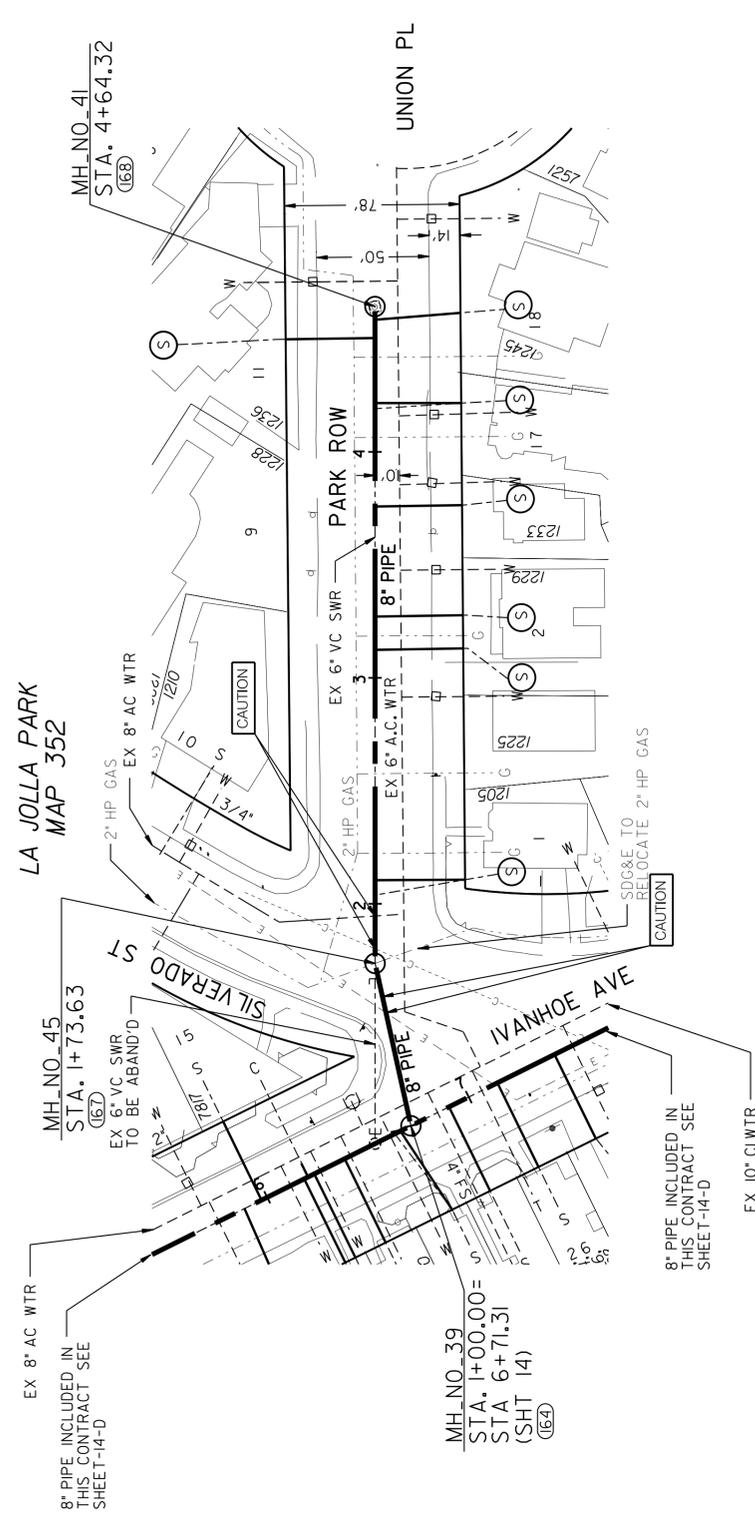


SCALE  
H=40' HORIZ.  
V=4' VERT.

0+00 1+00 2+00 3+00 4+00 5+00 6+00 7+00

REFERENCE:  
WATER: 12567-13-D  
SEWER: 26338-26-D, 581-12-L  
STORM DRAIN:  
GAS: 45-227  
ELECTRIC: 248-1683, 248-1686  
CABLE TV: LJO6  
TELEPHONE: LJO304  
IMPROVEMENTS: NONE  
100' SCALE/FIELD BOOK: A105  
THOMAS BROS.: 1227

RETIREMENTS:  
6" - VC - 370.43' - 1971  
MH: 4X3, 1, 1971  
4" LATERAL - 7 - (VC) - 1971



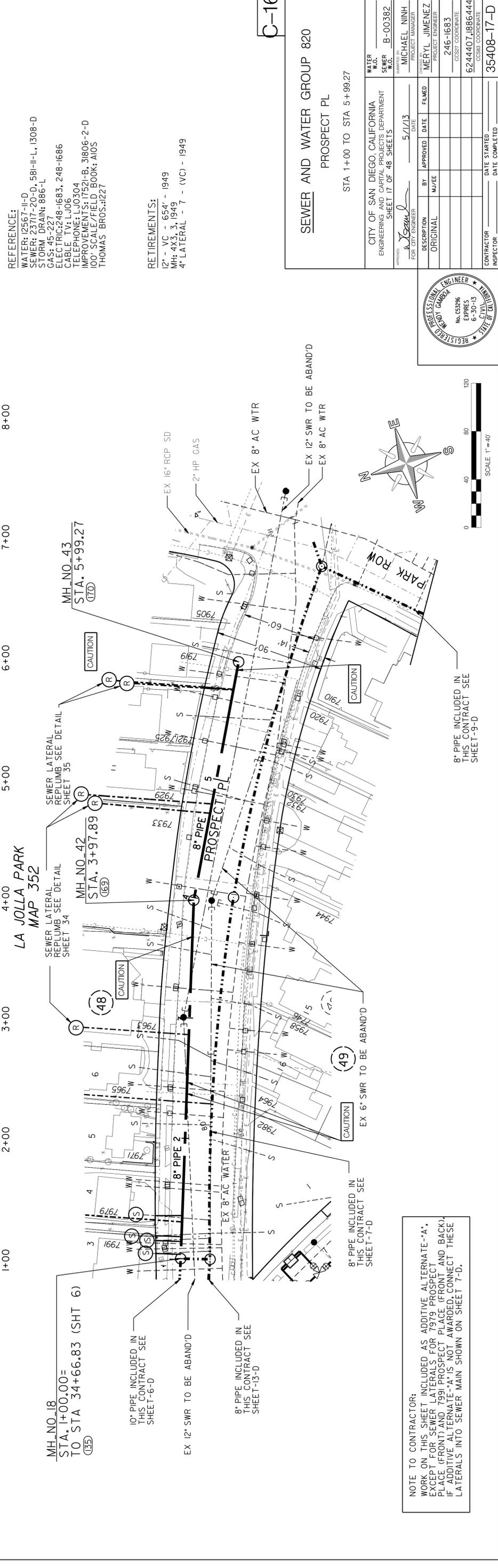
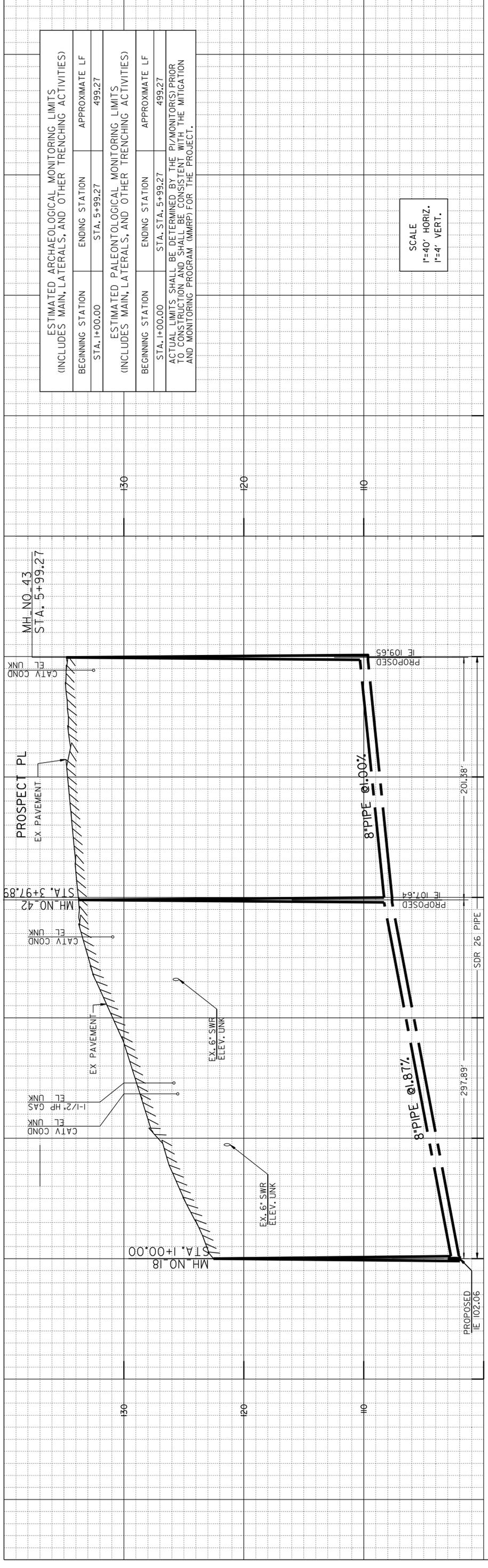
C-15

SEWER AND WATER GROUP 820  
PARK ROW

STA 1+00 TO STA 4+64.32

CITY OF SAN DIEGO, CALIFORNIA ENGINEERING AND CAPITAL PROJECTS DEPARTMENT SHEET 16 OF 48 SHEETS		WATER W.O. NO. B-00382
APPROVED BY: <i>[Signature]</i>	DATE: 5/1/13	PROJECT MANAGER: MICHAEL NINH
DESCRIPTION: ORIGINAL	BY: M/TEE	DATE: FILMED
	APPROVED DATE	PROJECT ENGINEER: MERYL JIMENEZ
		246-1683
		6244407.1886444
		35408-16-D
CONTRACTOR	DATE STARTED	
INSPECTOR	DATE COMPLETED	





ESTIMATED ARCHAEOLOGICAL MONITORING LIMITS (INCLUDES MAIN, LATERALS, AND OTHER TRENCHING ACTIVITIES)	
BEGINNING STATION	ENDING STATION
STA. 1+00.00	STA. 5+99.27
APPROXIMATE LF 499.27	
ESTIMATED PALEONTOLOGICAL MONITORING LIMITS (INCLUDES MAIN, LATERALS, AND OTHER TRENCHING ACTIVITIES)	
BEGINNING STATION	ENDING STATION
STA. 1+00.00	STA. 5+99.27
APPROXIMATE LF 499.27	

ACTUAL LIMITS SHALL BE DETERMINED BY THE PI(MONITOR(S)) PRIOR TO CONSTRUCTION AND SHALL BE CONSISTENT WITH THE MITIGATION AND MONITORING PROGRAM (MMRP) FOR THE PROJECT.

SCALE  
1"=40' HORIZ.  
1"=4' VERT.

REFERENCE:  
WATER: I2567-II-D  
SEWER: 23717-20-D, 581-II-L, 1308-D  
STORM DRAIN: 886-L  
GAS: 45-227  
ELECTRIC: 248-1683, 248-1686  
CABLE TV: LJO6  
TELEPHONE: LJO304  
IMPROVEMENTS: I7521-B, 31806-2-D  
100' SCALE/FIELD BOOK: AIOS  
THOMAS BROS.: I227

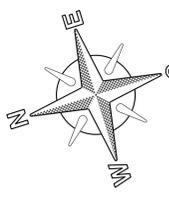
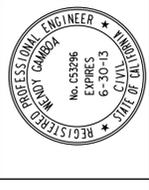
RETIREMENTS:  
12" - VC - 654' - 1949  
MH: 4X3, 3, 1949  
4" LATERAL - 7 - (VC) - 1949

**C-16**

SEWER AND WATER GROUP 820  
PROSPECT PL

STA 1+00 TO STA 5+99.27

CITY OF SAN DIEGO, CALIFORNIA ENGINEERING AND CAPITAL PROJECTS DEPARTMENT SHEET 17 OF 48 SHEETS	WATER W.D. SEWER W.D. NO. B-00382
FOR CITY ENGINEER	PROJECT MANAGER
DATE	5/1/13
BY	APPROVED
DATE	FILED
DESCRIPTION	M/TEE
ORIGINAL	
CONTRACTOR	DATE STARTED
INSPECTOR	DATE COMPLETED



NOTE TO CONTRACTOR:  
WORK ON THIS SHEET INCLUDED AS ADDITIVE ALTERNATE-A\*, EXCEPT FOR SEWER LATERALS FOR 7979, PROSPECT PLACE (FRONT AND BACK), PROSPECT PLACE (FRONT AND BACK). IF ADDITIVE ALTERNATE-A\* IS NOT AWARDED, CONNECT THESE LATERALS INTO SEWER MAIN SHOWN ON SHEET 7-D.

8" PIPE INCLUDED IN THIS CONTRACT SEE SHEET-9-D

8" PIPE INCLUDED IN THIS CONTRACT SEE SHEET-7-D

10" PIPE INCLUDED IN THIS CONTRACT SEE SHEET-6-D

MH\_NO\_18  
STA. 1+00.00=  
TO STA 34+66.83 (SHT 6)

# SEWER AND WATER GROUP 820 SEWER ABANDONMENT



## LEGEND

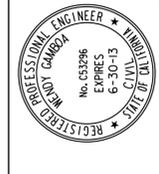
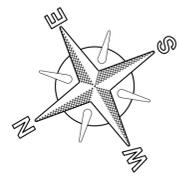
IMPROVEMENTS	SYMBOL
PROPOSED SEWER MAIN	—○—
SEWER MANHOLE	○
EX SEWER MAIN	- - -
EX SEWER LATERAL	S - - -
REPLUMB SEWER LATERAL WITH C.O.	P.L. —○— (R)
4" SEWER LATERAL WITH C.O. UNLESS OTHERWISE SPECIFIED	P.L. —○— (S)
EX SEWER MAIN TO BE SLURRY FILLED AND ABANDONED	- - - X - - -
EX MANHOLE TO BE ABANDONED	●
CONCRETE PLUG FOR EX SEWER MAIN	—E—

NOTE: SEE COVER SHEET FOR STANDARD DRAWINGS AND SPECIFICATION REFERENCES

RETIREMENTS:  
 6" - CONCRETE SEWER - 826' - 1993  
 MH: 4X3.3, 1993  
 4" LATERAL - 10 - (VC) - 1993

C-17

<b>SEWER &amp; WATER GROUP 820</b>	
COAST WALK SEWER ABANDONMENT (ADDITIVE ALTERNATE A)	
CITY OF SAN DIEGO CALIFORNIA ENGINEERING AND CAPITAL PROJECTS DEPARTMENT SHEET 18 OF 48 SHEETS	WATER WBS B-0010 SEWER WBS B-00382
APPROVED BY: <i>[Signature]</i> FOR CITY ENGINEER	DATE: 5/1/13
PROJECT MANAGER: MICHAEL NINH	
DESCRIPTION: ORIGINAL	APPROVED DATE: FILMED
M/FE: MERYL JIMENEZ	PROJECT ENGINEER
	246-1683
	CS27 COORDINATE
	6244407, 1886444
	CS88 COORDINATE
CONTRACTOR: _____	DATE STARTED: _____
INSPECTOR: _____	DATE COMPLETED: 35408-18-D



ABANDONMENT WORK ON THIS SHEET IS INCLUDED IN ADDITIVE ALTERNATE A

CONTRACTOR'S NOTE:  
 ALL WORK SHALL BE DONE MANUALLY ON FOOT. NO POWERED EQUIPMENT SHALL BE ALLOWED WITHIN COAST WALK.

CONTRACTOR'S NOTE:  
 SEE SHEETS 6, 7, 8 & 17 FOR SEWER MAINS REPLACEMENT





SCALE  
1"=40' HORIZ.  
1"=4' VERT.

REFERENCE:

WATER: 23717-20-D, 32498-05-D,  
STORM DRAIN: NONE  
GAS: 45-227  
ELECTRIC: 248-1683, 248-1686  
CABLE TV: LJ06  
TELEPHONE: LJO304  
IMPROVEMENTS: NONE  
100' SCALE/FIELD BOOK: A105  
THOMAS BROS.: 1227  
HGL: EX 270 PROPOSED 370

NOTE:  
ALL WATER SERVICES  
SHALL BE OPERATING UNDER  
LA JOLLA HERMOSA  
370 PRESSURE ZONE.

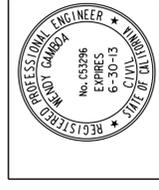
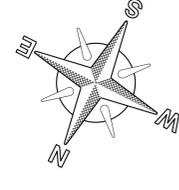
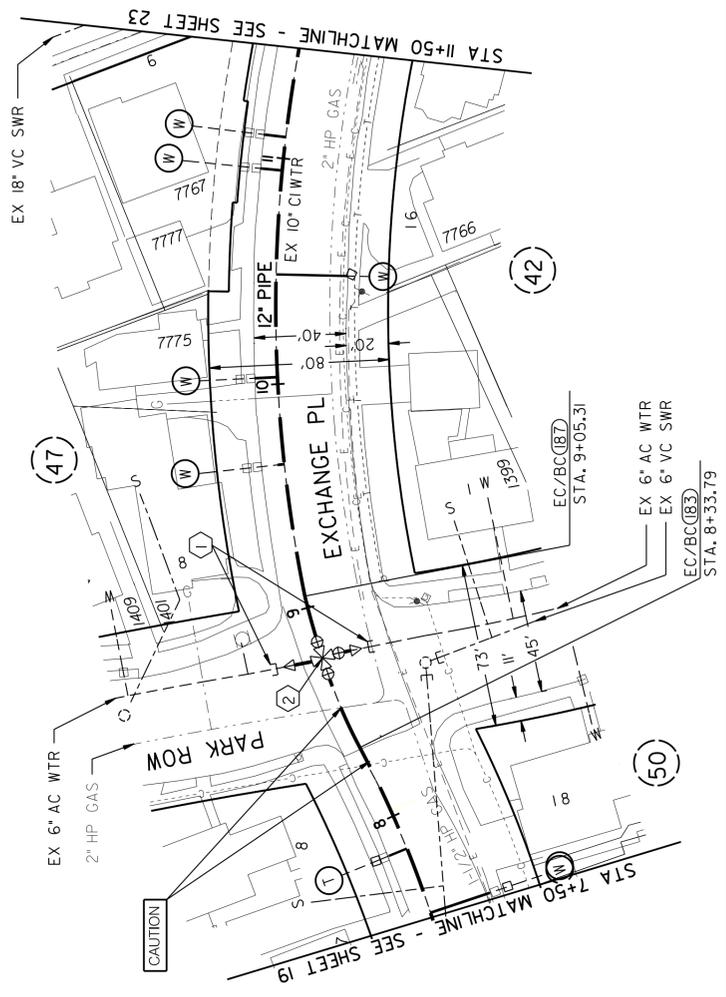
NOTE:  
THE CONSTRUCTION ON THIS  
SHEET SHALL BE PHASE I

NOTE:  
EXCHANGE PL SHALL BE HIGHLIGHTED  
PRIOR TO CONSTRUCTION

① (B5)  
BY CITY FORCES  
AND OF CONTRACTOR  
STA 8+76.84 10' RT, LT  
TEMP CUT & PLUG EXISTING 6" AC WTR MAIN  
RECONNECT AFTER NEW MAIN  
HAS BEEN ACCEPTED

② (B5)  
BY CONTRACTOR  
FURNISH AND INSTALL  
1-12"x8" CROSS (F.F.F.MJ)  
2-8"x6" REDUCER 3' LT, RT  
2-12" CV (F.MJ) AHD, BK  
1-8" GV (F.MJ), RT

LA JOLLA PARK  
MAP 352



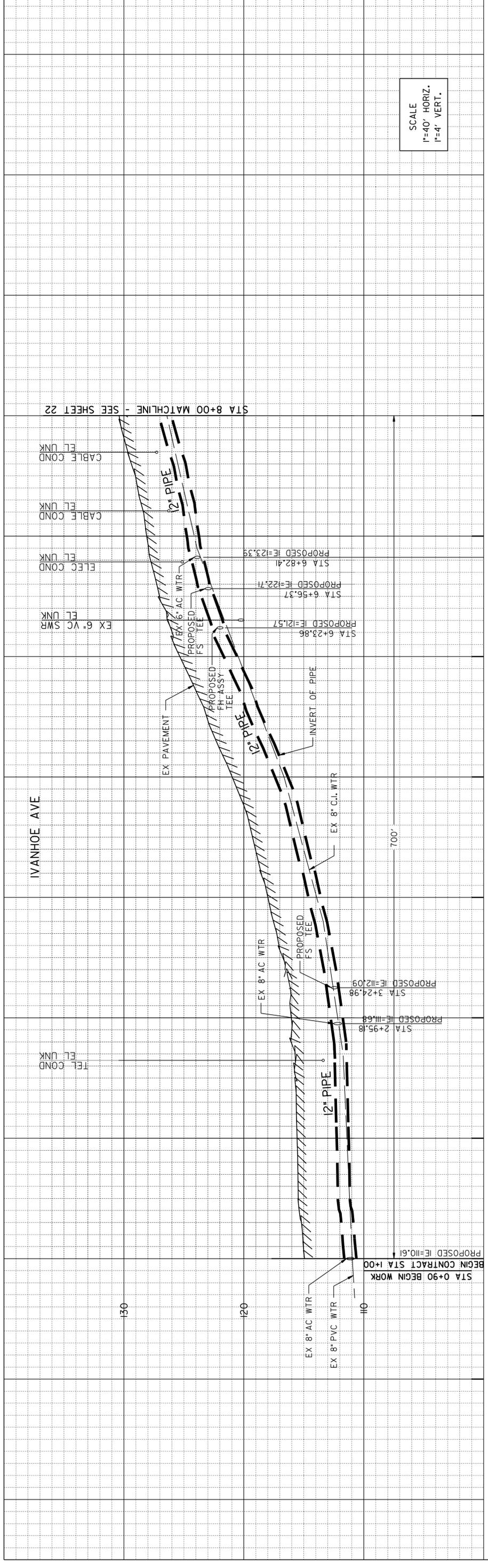
SEWER AND WATER GROUP 820  
EXCHANGE PL

STA 7+50 TO STA 11+50.00

C-19

CITY OF SAN DIEGO CALIFORNIA ENGINEERING AND CAPITAL PROJECTS DEPARTMENT SHEET 20 OF 48 SHEETS	WATER W.D. B-0010 SEWER
APPROVED BY: <i>Michael Nin</i> FOR CITY ENGINEER	DATE: 5/1/13
PROJECT MANAGER: MICHAEL NINH	
DESCRIPTION: ORIGINAL	BY: APPROVED DATE FILMED
	M/TEE
	PROJECT ENGINEER: MERYL JIMENEZ
	246-1683
	CS27 COORDINATE
	6244407.1886444
	CS88 COORDINATE
CONTRACTOR: _____	DATE STARTED: _____
INSPECTOR: _____	DATE COMPLETED: _____

35408-20-D



SCALE  
1"=40' HORIZ.  
1"=4' VERT.

- (1) (200) BY CITY FORCES AND OF CONTRACTOR  
IVANHOE AVE SHALL BE HIGHLIGHTED PRIOR TO CONSTRUCTION  
STA 1+00.00 10' BK & LT  
1-12"x8" TEE (F, MJ, F)  
1-12"x8" REDUCER 3" BK  
1-8" GV (MJ, F) LT  
1-12" GV (MJ, F) AHD
- (2) (099) BY CONTRACTOR FURNISH AND INSTALL  
STA 1+00.00  
1-12"x8" TEE (F, MJ, F)  
1-12"x8" REDUCER 3" BK  
1-8" GV (MJ, F) LT  
1-12" GV (MJ, F) AHD
- (3) (200) BY CONTRACTOR FURNISH AND INSTALL  
STA 2+95.18  
1-12"x8" TEE (MJ, MJ, F)  
1-8" GV (F, MJ) RT
- (4) (200) BY CITY FORCES AND OF CONTRACTOR  
STA 2+95.18 10' RT  
CUT & PLUG EX. 8" AC WTR MAIN  
RECONNECT AFTER NEW MAIN HAS BEEN ACCEPTED
- (5) (20) BY CONTRACTOR FURNISH AND INSTALL  
STA 3+24.98  
1-12"x6" TEE (MJ, F)  
1-6" FIRE SERVICE, LT
- (6) BY CONTRACTOR FURNISH AND INSTALL  
STA 6+12.12  
1-12" GV (MJ)  
1-12"x6" TEE (MJ, MJ, F)  
1-6" FH ASSY, (3 PORT), LT  
BY CONTRACTOR FURNISH AND INSTALL  
STA 6+23.86  
1-12"x6" TEE (MJ, MJ, F)  
1-4" FIRE SERVICE  
BY CONTRACTOR FURNISH AND ASSEMBLY, RT
- (7) (20) BY CONTRACTOR FURNISH AND INSTALL  
STA 6+12.12  
1-12" GV (MJ)  
1-12"x6" TEE (MJ, MJ, F)  
1-6" FH ASSY, (3 PORT), LT
- (8) (20) BY CONTRACTOR FURNISH AND INSTALL  
STA 6+56.37 (MJ, MJ, F)  
1-12"x8" TEE (MJ, MJ, F)  
1-8" GV (MJ, F) LT
- (9) (20) BY CONTRACTOR FURNISH AND INSTALL  
STA 6+82.41  
1-12"x8" TEE (MJ, MJ, F)  
1-8" GV (MJ, F) LT

NOTE:  
IVANHOE AVE SHALL BE HIGHLIGHTED PRIOR TO CONSTRUCTION  
BEGIN CONTRACT STA 1+00  
PROPOSED IE=110.61

NOTE:  
THE CONSTRUCTION ON THIS SHEET SHALL BE PHASE 2

NOTE:  
8" SEWER INCLUDED IN THIS CONTRACT. SEE SHEET 14

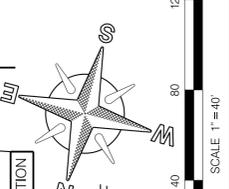
REFERENCE:  
WATER: 17247-8-D,  
SEWER: 23717-21-D, 1307-D, 1308-D  
STORM DRAIN:  
GAS: 45-227  
ELECTRIC: 248-1683, 248-1686  
CABLE TV: LJO6  
TELEPHONE: LJO304  
IMPROVEMENTS: 6245-4-B  
100' SCALE/FIELD BOOK: A105  
THOMAS BROS. #227  
HGL: 270/370

RETIREMENTS:  
8" - CI - 700' - 1967  
FH (2-PORT) - 1  
FH (3-PORT) - 0  
1" SERVICE - 24 - (CI) - 1967  
2" SERVICE - 1 - (CI) - 1967

(10) (20) BY CITY FORCES AND OF CONTRACTOR  
STA 6+82.41 10' LT  
CUT & PLUG EX. 8" AC WTR MAIN  
RECONNECT AFTER NEW MAIN HAS BEEN ACCEPTED

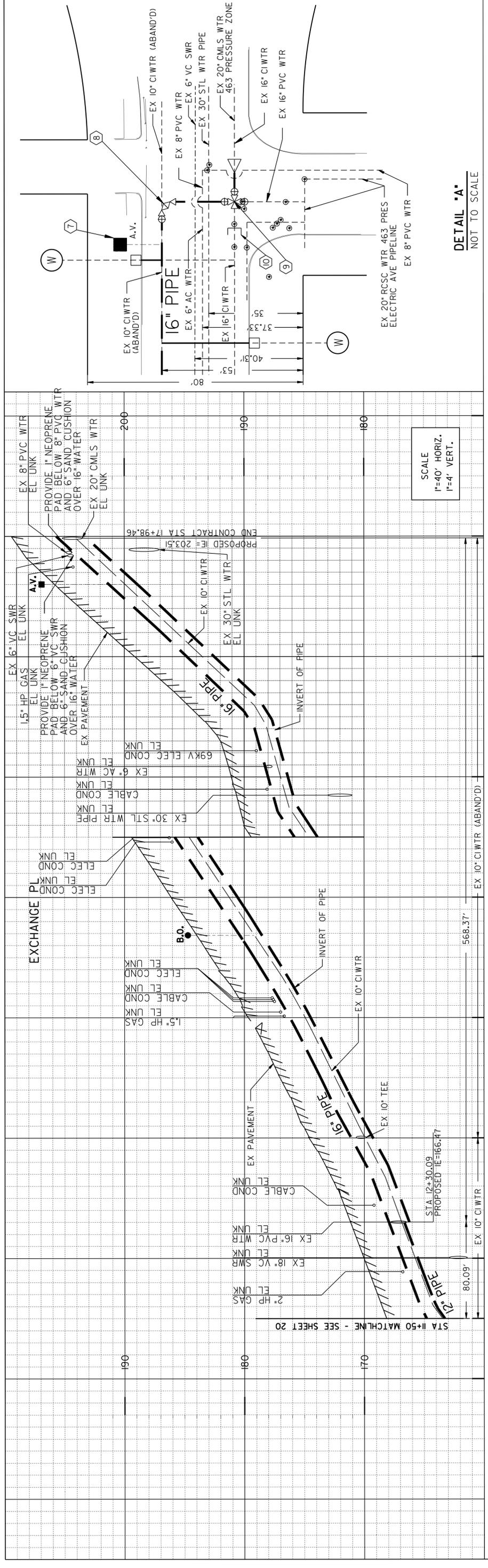
SEWER AND WATER GROUP 820  
IVANHOE AVE  
STA 1+00 TO STA 8+00

CITY OF SAN DIEGO CALIFORNIA ENGINEERING AND CAPITAL PROJECTS DEPARTMENT SHEET 21 OF 48 SHEETS	WATER W.D. B-0010 SEWER W.D. B-00382
APPROVED BY: <i>[Signature]</i> FOR CITY ENGINEER	DATE: 5/1/13
DESCRIPTION: ORIGINAL	BY: APPROVED DATE FILED
M/TEE	
PROJECT MANAGER: MICHAEL NINH	
PROJECT ENGINEER: MERYL JIMENEZ	
246-1683	
CS27 COORDINATE	
6244407.1886444	
CS88 COORDINATE	
CONTRACTOR: _____	DATE STARTED: _____
INSPECTOR: _____	DATE COMPLETED: _____



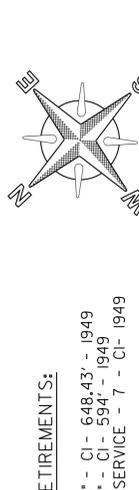
C-20





**DETAIL 'A'**  
NOT TO SCALE

**REFERENCE:**  
WATER: 32498-05-D, 26331-16-D, 4011-W, 4015-W, 10373-D  
SEWER: 13369-26-D,  
STORM DRAIN: NONE  
GAS: 45-185, 45-186, 45-187, 45-188  
ELECTRIC: 248-1686A, 248-1686B  
CABLE TV: NONE  
IMPROVEMENTS: IJ0202bd, IJ0202cc, IJ0202cc  
TELEPHONE: NONE  
100' SCALE/FIELD BOOK: A10S  
THOMAS BROS.: 1227-F6  
HGL: LA JOLLA HERMOSA HGL=370/463



**RETIREMENTS:**  
10" - CI - 648.43' - 1949  
16" - CI - 594' - 1949  
1" SERVICE - 7 - CI - 1949

SEWER AND WATER GROUP 820 EXCHANGE PL		STA 11+50 TO STA 17+98.46
CITY OF SAN DIEGO CALIFORNIA ENGINEERING AND CAPITAL PROJECTS DEPARTMENT SHEET 23 OF 48 SHEETS	WATER W.D. B-0010 SEWER	
APPROVED FOR CITY ENGINEER	DATE 5/1/13	
DESCRIPTION ORIGINAL	BY M/FE	APPROVED DATE FILED
		PROJECT ENGINEER
		PROJECT MANAGER
		246-1683
		CCS27 COORDINATE
		6244407.1886444
		CCS5 COORDINATE
CONTRACTOR	DATE STARTED	35408-23-D
INSPECTOR	DATE COMPLETED	

**NOTE:**  
THE CONSTRUCTION ON THIS SHEET SHALL BE PHASE 1.

**CONTRACTOR'S NOTE:**  
ALL WATER SERVICES SOUTHEAST OF NEW PRS SHALL BE OPERATING UNDER 463 PRESSURE ZONE, ALL NEW PRS SHALL BE OPERATING UNDER 370 PRESSURE ZONE

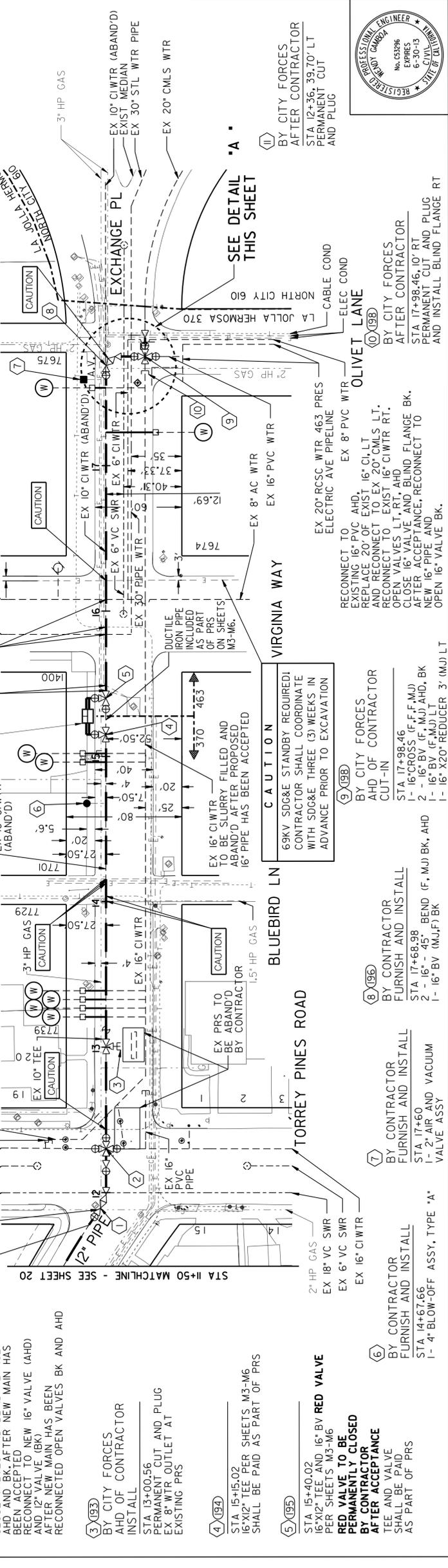
**CONTRACTOR'S NOTE:**  
USE EXTREME CAUTION WHEN WORKING DUE TO LOW OVERHEAD UTILITY LINES.

**NOTE:**  
CLOSE PROP \*RED\* VALVE BEFORE RECONNECTIONS AND AFTER NEW MAIN HAS BEEN ACCEPTED

**NOTE:**  
NEW PRS SEE SHEETS M3 TO M6 (ABAND'D)

**NOTE:**  
EX 16" CIWTR TO BE ABAND'D AFTER PROPOSE 16" PIPE HAS BEEN ACCEPTED.

**NOTE:**  
EX 16" CIWTR TO BE ABAND'D AFTER NEW MAIN HAS BEEN RECONNECTED OPEN VALVES BK AND AHD



**DETAIL 'A'**  
SEE DETAIL THIS SHEET

BY CITY FORCES AHD OF CONTRACTOR CUT- IN  
STA 12+30.11  
1-16" CROSS (F)  
3-16" BV (F, F) (AHD, LT, RT)  
1-16" X12" REDUCER (BK)  
1-12" GV (F, MJ) BK  
CONNECT TO EX 16" PVC WTR (LT) AND EX 16" CIWTR (RT)  
CLOSE VALVES AND BLIND FLANGE AHD AND BK AFTER NEW MAIN HAS BEEN ACCEPTED  
RECONNECT TO NEW 16" VALVE (AHD) AND 12" VALVE (BK)  
AFTER NEW MAIN HAS BEEN RECONNECTED OPEN VALVES BK AND AHD

BY CITY FORCES AHD OF CONTRACTOR INSTALL  
STA 13+00.56  
PERMANENT CUT AND PLUG EX 8" WTR OUTLET AT EXISTING PRS

BY CITY FORCES AHD OF CONTRACTOR FURNISH AND INSTALL  
STA 14+67.66  
1- 4" BLOW-OFF ASSY, TYPE "A"

BY CONTRACTOR FURNISH AND INSTALL  
STA 17+60  
1- 2" AIR AND VACUUM VALVE ASSY

BY CONTRACTOR FURNISH AND INSTALL  
STA 17+68.98  
2 - 16" BV (F, MJ) AHD, BK  
1 - 16" BV (MJ, F) BK

BY CITY FORCES AHD OF CONTRACTOR CUT-IN  
STA 17+98.46  
2 - 16" CROSS (F, F, MJ)  
1 - 16" BV (F, MJ) AHD, BK  
1 - 16" X20 REDUCER 3" (MJ) LT

BY CITY FORCES AHD OF CONTRACTOR PERMANENT CUT AND PLUG  
STA 12+36, 39, 70' LT

BY CITY FORCES AHD OF CONTRACTOR PERMANENT CUT AND PLUG  
STA 17+98.46, 10' RT

**CAUTION**  
69KV SDG&E STANDBY REQUIRED! CONTRACTOR SHALL COORDINATE WITH SDG&E THREE (3) WEEKS IN ADVANCE PRIOR TO EXCAVATION

**CAUTION**  
EX 16" CIWTR TO BE SLURRY FILLED AND ABAND'D AFTER PROPOSED 16" PIPE HAS BEEN ACCEPTED

**CAUTION**  
EX PRS TO BE ABAND'D BY CONTRACTOR

**CAUTION**  
EX 16" CIWTR TO BE ABAND'D AFTER PROPOSED 16" PIPE HAS BEEN ACCEPTED

**CAUTION**  
EX 16" CIWTR TO BE ABAND'D AFTER PROPOSED 16" PIPE HAS BEEN ACCEPTED

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**CAUTION**  
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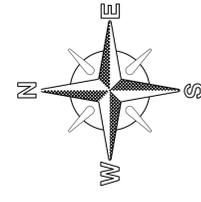
**CAUTION**  
EX 16" CIWTR TO BE ABAND'D AFTER PROPOSED 16" PIPE HAS BEEN ACCEPTED

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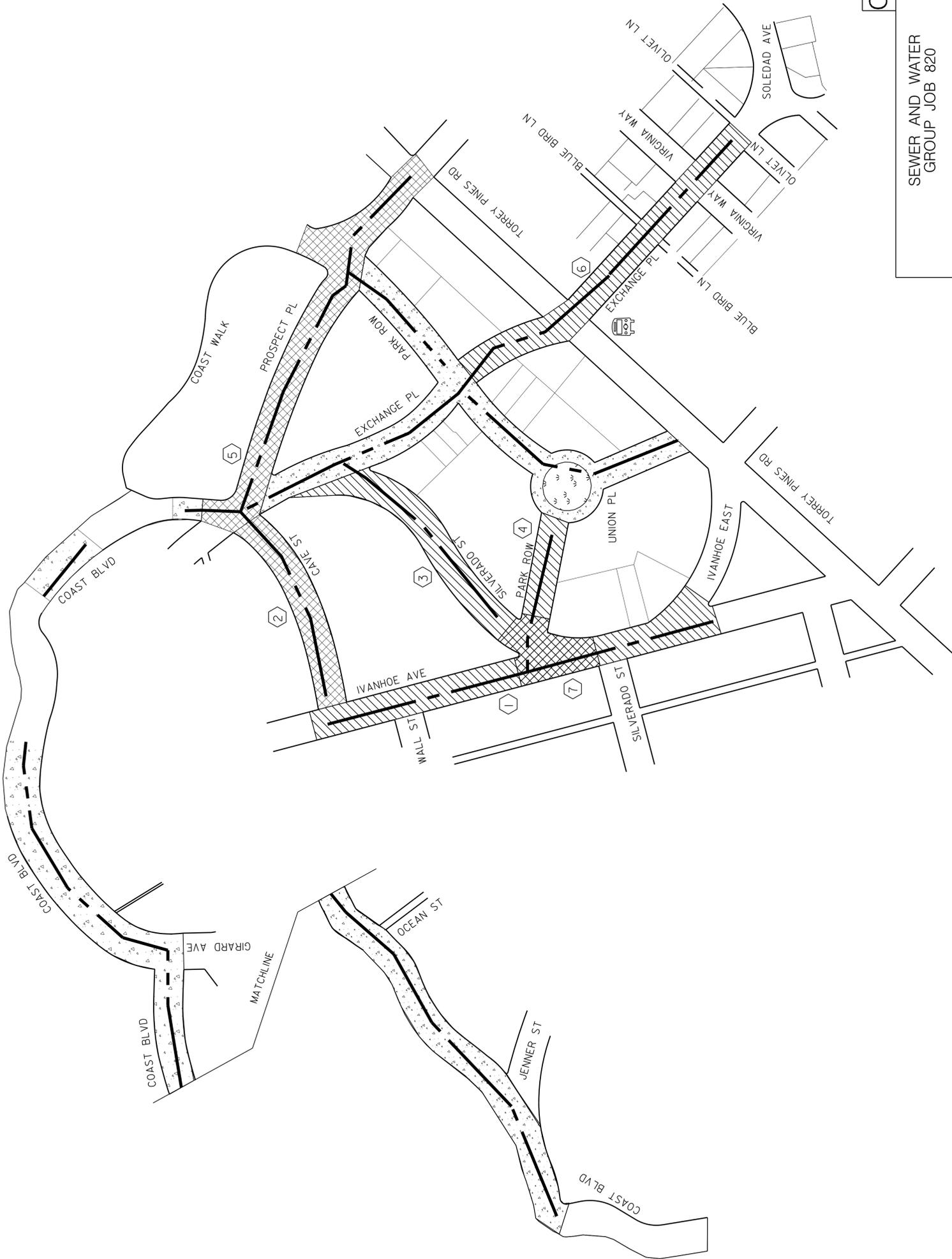
C-23

SEWER AND WATER  
GROUP JOB 820  
STREET RESURFACING

CITY OF SAN DIEGO, CALIFORNIA ENGINEERING AND CAPITAL PROJECTS DEPARTMENT SHEET 24 OF 48 SHEETS	WATER SEWER SHEET NO. B-00382	B-0010 B-00382
APPROVED BY: <i>M. Jimenez</i>	DATE: 5/1/13	PROJECT MANAGER: MICHAEL NINH
FOR CITY ENGINEER	BY: MERTYL JIMENEZ	PROJECT ENGINEER
DESCRIPTION: ORIGINAL	DATE FILMED:	DATE:
	DATE:	DATE:
	DATE:	DATE:
	DATE:	DATE:
CONTRACTOR: _____	DATE STARTED: _____	DATE COMPLETED: _____
INSPECTOR: _____		35408-24-D



NO SCALE



**LEGEND**

- APPROXIMATE SCOPE OF WORK
- ▨ APPROXIMATE LOCATION OF SLURRY SEAL
- ▩ APPROX. LIMITS OF RESURFACE 1/2" AC OVERLAY AND GRINDING PER SDG-106
- ▧ EX. PCC PAVEMENT
- GRASS
- LOCATION PER PAVING SCHEDULE NOTES (THIS SHEET)
- ⊡ EXISTING BUS STOP

**PAVING SCHEDULE NOTES**

NO.	LOCATION	RESTORATION REQUIRED	LENGTH	WIDTH	APPROX. AREA
1	IVANHOE AVENUE	SLURRY SEAL	1142'	41'	46822'
2	CAVE STREET	1/2" AC OVERLAY	800'	50'	40000'
3	SILVERADO STREET	SLURRY SEAL	690'	43'	29670'
4	PARK ROW	SLURRY SEAL	390'	50'	19500'
5	PROSPECT PLACE	1/2" AC OVERLAY	1024'	VARIES	55964'
6	EXCHANGE PLACE	SLURRY SEAL	860'	41'	35260'
7	IVANHOE AVENUE	1-1/2" AC OVERLAY	214'	41'	8774'
TOTAL AREA OF SLURRY SEAL					131,252 SF
TOTAL AREA OF RESURFACE AC					104,738 SF



# WORK BY CITY FORCES

# WORK BY CITY FORCES

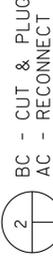
## LEGEND

- EXISTING WATER MAIN
- PRESSURE ZONE BOUNDARY
- PROPOSED WATER MAIN
- FIRE HYDRANT TO REMAIN IN SERVICE DURING CONSTRUCTION
- FIRE HYDRANT TO BE REPLACED
- RED VALVE



BC --- BEFORE CONTRACTOR  
AC --- AFTER CONTRACTOR

### WORK BY CITY FORCES



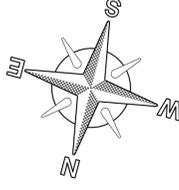
PHASE 1



PHASE 2

TABLE B  
CONTRACTOR FURNISH MATERIALS  
FOR CITY FORCES WORK

SHEET NO.	16" BUTTERFLY VALVE	16"x12" RED.	16"x20" RED.	16" CROSS
23	6	1	1	2



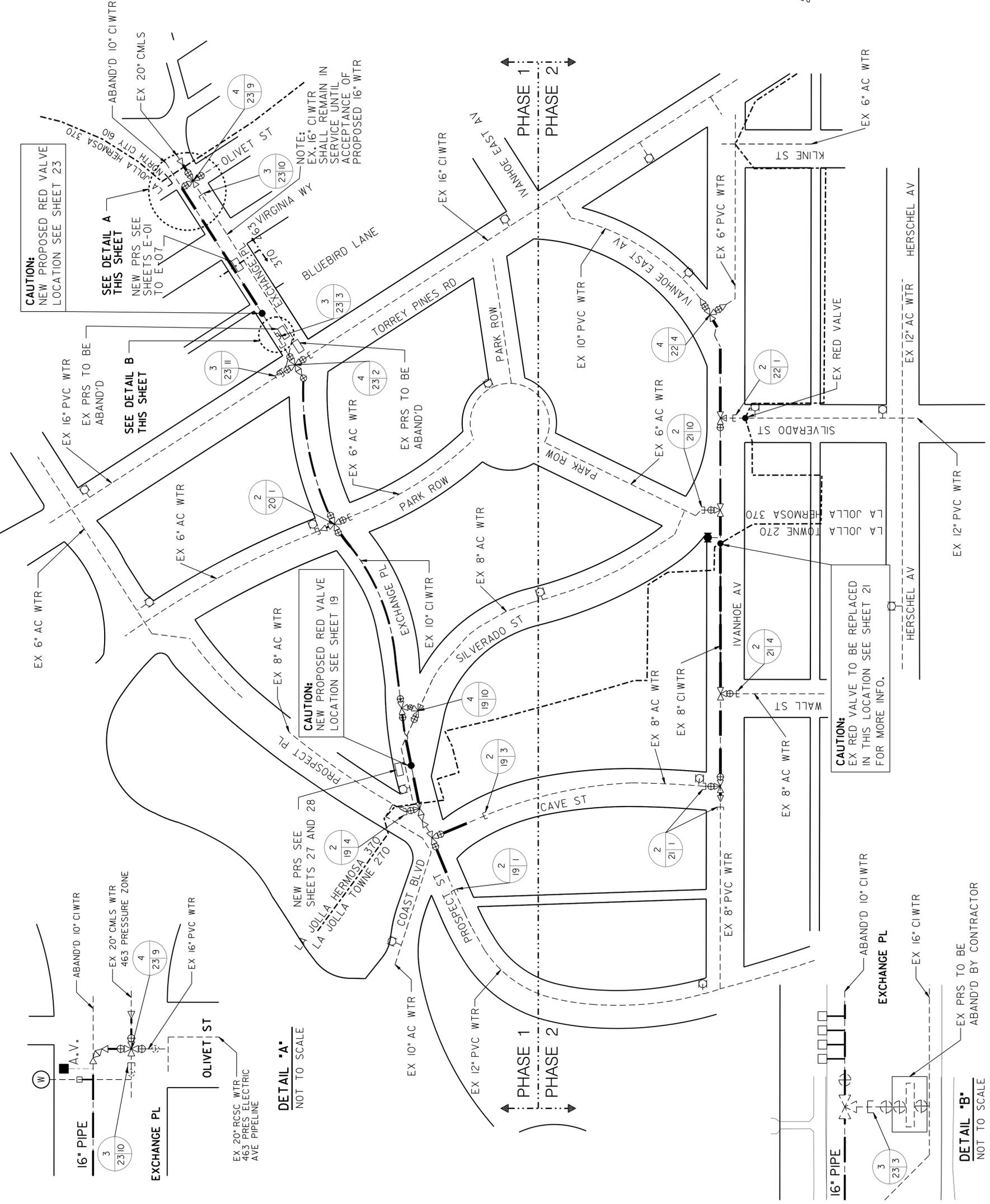
NO SCALE

WORK BY CITY FORCES  
WATER AND SEWER MAIN REPLACEMENT  
SEWER AND WATER GROUP 820

CITY OF SAN DIEGO CALIFORNIA  
ENGINEERING AND CAPITAL PROJECTS DEPARTMENT  
SHEET 26 OF 48 SHEETS

APPROVED: *[Signature]* DEPUTY DIRECTOR  
DATE: 5/1/13

BY: *[Signature]* PROJECT MANAGER  
DATE:   
FILED:   
PROJECT ENGINEER: MERYL JIMENEZ  
246-1683  
COORDINATOR: MICHAEL NINH  
6244407.1886444  
COORDINATOR: CS387  
CONTRACTOR: DATE STARTED: 35408-26-D  
INSPECTOR: DATE COMPLETED:



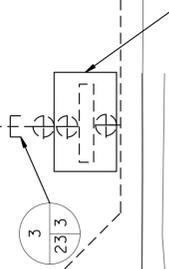
**CAUTION:**  
NEW PROPOSED RED VALVE  
LOCATION SEE SHEET 23

**SEE DETAIL A**  
THIS SHEET  
NEW PRS SEE  
SHEETS E-01  
TO E-07

**SEE DETAIL B**  
THIS SHEET

**CAUTION:**  
NEW PROPOSED RED VALVE  
LOCATION SEE SHEET 19

**CAUTION:**  
EX RED VALVE TO BE REPLACED  
IN THIS LOCATION SEE SHEET 21  
FOR MORE INFO.

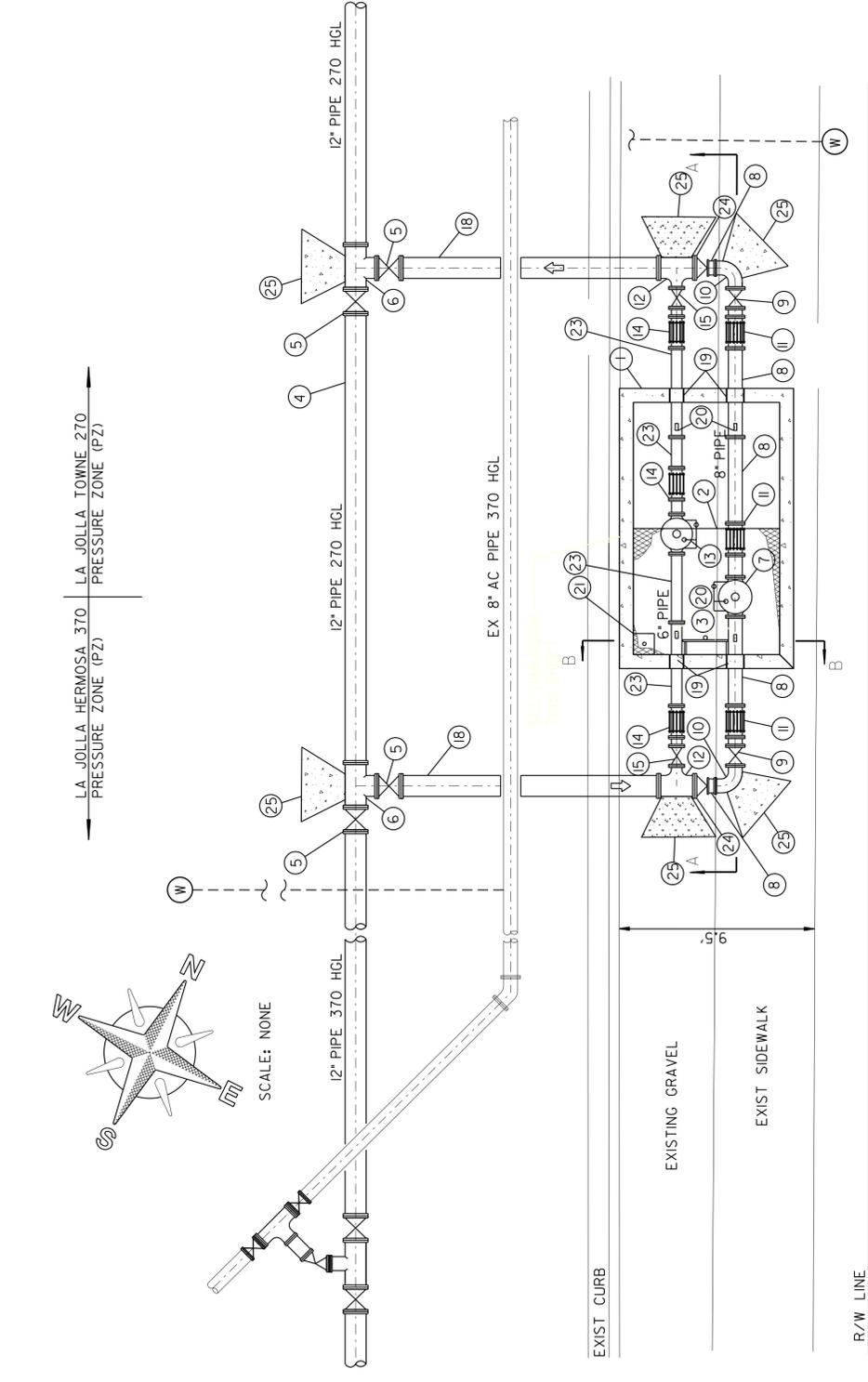


NOTES TO CONTRACTOR:

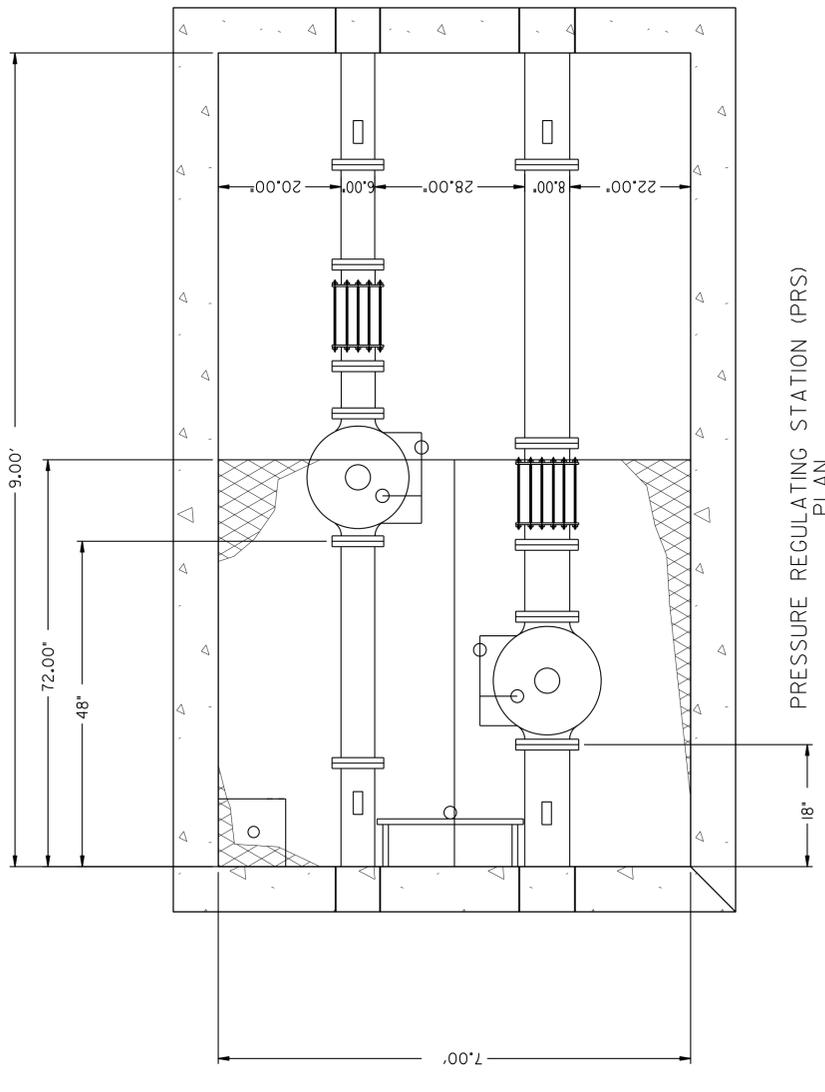
1. BEFORE TESTING CONTRACTOR TO CLOSE RED VALVE. ONCE INSTALLED ENSURE LID IS PAINTED RED.
2. R.E. TO CERTIFY THAT RED VALVE IS CLOSED AND CAP/COVER PAINTED RED.
3. BURIED VALVES SHALL BE PROVIDED WITH 2-INCH SO. OPERATING NUT AND VALVE WELL PER SDW-153
4. VALVES AND APPURTENANCES SHALL BE DESIGNED FOR A MINIMUM WORKING PRESSURE OF 200 PSI
5. EXPOSED PIPING IN VAULT SHALL HAVE A MINIMUM DUCTILE IRON THICKNESS OF 1/4 INCH
6. 8" & 12" GATE VALVES, PIPES & FITTINGS ALONG PROPOSED 12" AND 8" WATER MAINS BEFORE CURB LINE SHALL BE PAID SEPARATELY BY BID ITEMS. ALL OTHER WORK BETWEEN CURBLINE AND R/W LINE FOR THE PRESSURE REDUCING STATION ON THIS SHEET SHALL BE PAID BY BID ITEM FOR PRESSURE REDUCING STATION.
7. CONTRACTOR SHALL REMOVE AND DISPOSE OF MANHOLE COVER AND PIPES, AND SALVAGE ALL PRS INSTRUMENTS INSIDE EXISTING PRS VAULT. CONTRACTOR TO NOTIFY PUD WATER SYSTEM OPS. (619) 527-7602 FORTY EIGHT (48) HOURS IN ADVANCE OF ABANDONMENT TO OBTAIN DELIVERY LOCATION FOR SALVAGED PRS INSTRUMENTS.
8. EXISTING PRS CONCRETE VAULT SHALL BE BACKFILLED WITH 2 SACK CEMENT SLURRY TO FILL ALL VOIDS UP TO TWENTY FOUR INCHES (24") FROM FINISHED GRADE OR AS REQUIRED IN SCHEDULE J, SDG-113.
9. PRS ABANDONMENT SHALL BE PAID PER SEPARATE BID ITEM. REFER TO CONTRACT SPECIFICATIONS.
10. PROVIDE 2 NEW 8" AND 6" CLA-VAL PRESSURE REDUCING CONTROL VALVE, AS INDICATED.
11. PROVIDE NEW PRESSURE REDUCING VALVES WITH CRD FLOW CONTROL PILOT CONTROL VALVE STEAM INDICATOR AND CHECK FEATURE
12. INSTALL CRD AS SHOWN ON PLANS.
13. PROVIDE SUBMITTAL FOR NEW VALVE AND ACCESSORIES. FOR CITY APPROVAL.
14. BURIED VALVES SHALL BE PROVIDED BY WATER OPS. CLA-VAL (OR EQUALS ) REPRESENTATIVE TO ADJUST SET POINTS AND WATER OPS TO CERTIFY SETTINGS.
15. CONCRETE FLATTOP DESIGNED TO SUPPORT MAXIMUM LOAD FROM HS-20 HIGHWAY LOADING.
16. CONCRETE STRUCTURE SHALL BE DESIGNED ASTM C-857 AND 858--- UNDERGROUND PRE-CAST CONCRETE UTILITY STRUCTURES. ALL CONCRETE SHALL HAVE A MINIMUM 28 DAYS COMPRESSIVE STRENGTH OF 4,000 PSI. ALL REINFORCING STEEL SHALL BE ASTM A615 DEFORMED BARS WITH MINIMUM YIELD STRENGTH OF 60,000 PSI.

DESCRIPTION

1. 9'x7' (INSIDE DIMENSION) PRECAST CONCRETE VAULT. CONTRACTOR TO PROVIDE SHOP DRAWING PRIOR TO MANUFACTURING
2. 7'x6" DUAL-LEAF ACCESS HATCH BILCO JD-H20 SPRING ASSISTED HINGED ALUMINUM HATCH OR EQUAL WITH HATCH DRAIN TO DAYLIGHT LADDER W/LADDER UP SAFETY POST
3. 12" WATER MAIN AND SS ANCHOR BOLTS, SEE DETAIL 3, SHEET 28
4. 12" GATE VALVE (4 EA), (F, MJ) (NORMALLY CLOSED VALVE)
5. 12"x12" TEE (2 EA), (MJ, F)
6. 8" PRESSURE REDUCING VALVE, SEE NOTES THIS SHEET
7. 8" DI SPOOL FLG x PLAIN END (5 EA)
8. 12" GATE VALVE (2 EA), (F, MJ)
9. 8"~90° BEND (2 EA) (F)
10. 8" FLEXIBLE COUPLING W/THRUST RESTRAINTS-SEE DETAIL 2, SHEET 28
11. 12"x6" TEE (2 EA), (F, MJ)
12. 6" PRESSURE REDUCING VALVE, SEE NOTES THIS SHEET
13. 6" FLEXIBLE COUPLING W/THRUST RESTRAINTS-SEE DETAIL 2, SHEET 28
14. 6" GATE VALVE (2 EA) (F)
15. ADJUSTABLE PIPE SUPPORTS (4) - SEE DETAIL 1, SHEET 28
16. VALVE BOX - VALVE WELL TYPE "A"
17. 12" PVC C-900 CL 305, DR 14
18. "LINK SEAL" TYPE WALL PENETRATION DEVICE, SEE DETAIL 5, SHEET 28
19. PRESSURE GAUGE SEE DETAIL 4, SHEET 28
20. 18"X18" SUMP WITH CAST IRON GRATE
21. 6" DI FLG SPOOL (4 EA) (FLG x PE)
22. 12" X 8" REDUCER AND 8" SPOOL
23. THRUST BLOCK



PRESSURE REGULATING STATION (PRS) PLAN  
SCALE: NONE



PRESSURE REGULATING STATION (PRS) PLAN  
SCALE: NONE

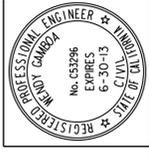
SECTION A-A  
SCALE: NONE

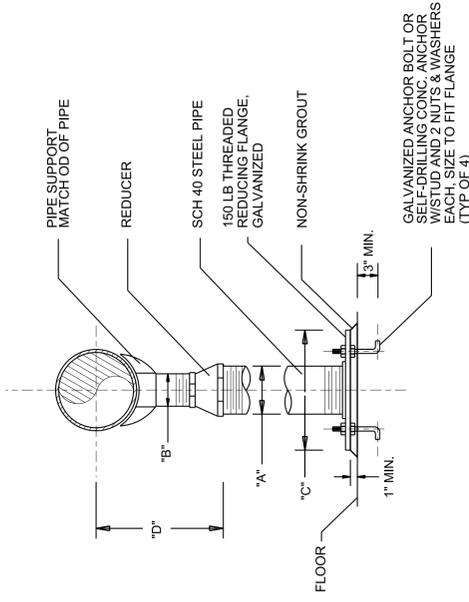
SECTION B-B  
SCALE: NONE

M-1

SEWER & WATER GROUP 820  
PRS NO. 1 PLAN  
PRESSURE REGULATING STATION

CITY OF SAN DIEGO CALIFORNIA ENGINEERING AND CAPITAL PROJECTS DEPARTMENT SHEET 27 OF 48 SHEETS	WATER NO. B-0010
APPROVED BY: <i>Michael Ninh</i> FOR CITY ENGINEER	DATE: 5/1/13
DESCRIPTION: ORIGINAL	FILED: M-1
PROJECT ENGINEER: MICHAEL NINH	CONTROL CERTIFICATION: MERYL JIMENEZ
DATE: 5/1/13	DATE STARTED: -
DATE COMPLETED: -	DATE COMPLETED: -
CONTRACTOR: -	INSPECTOR: -
SEE SHEETS	LABORER COORDINATES
35408-27-D	

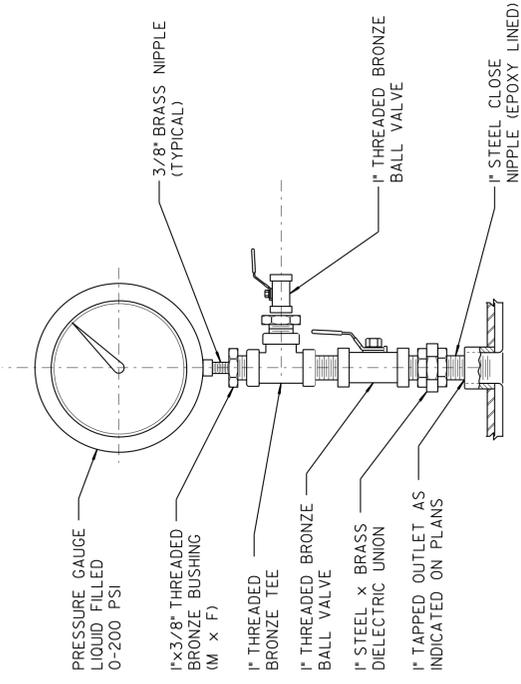




ADJUSTABLE PIPE SUPPORT  
APPROXIMATE DIMENSIONS IN INCHES

SUPPORTED PIPE SIZE	A		B		C		D	
	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.
4	3	2-1/2	9	10-1/4	14-0			
6	3	2-1/2	9	11-5/8	15-1/4			
8	3	2-1/2	9	13-5/8	16-1/2			
10	3	2-1/2	9	14-5/8	18-1/4			
12	3	2-1/2	9	15-5/8	19-3/4			

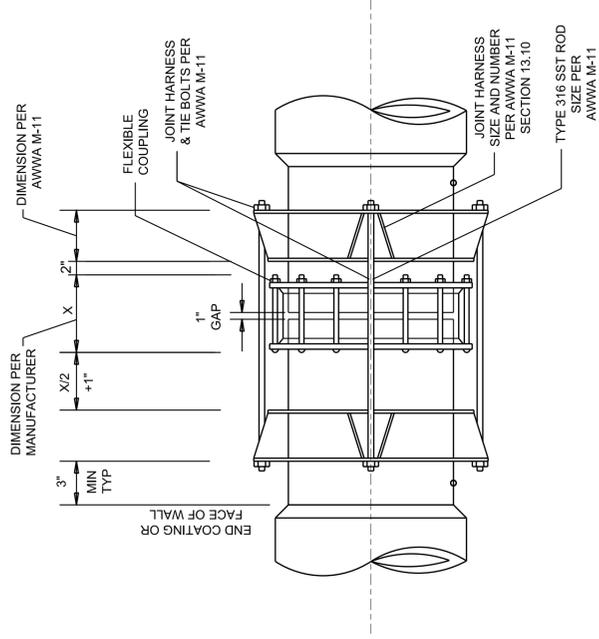
**DETAIL 1**  
ADJUSTABLE PIPE SUPPORT  
N.T.S.



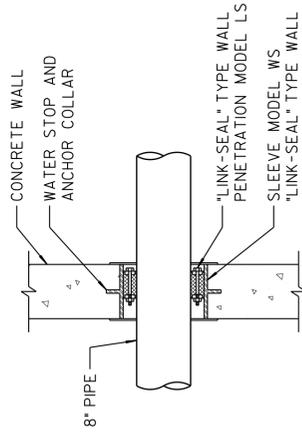
SECTION PRESSURE GAUGE  
AND SENSING DETAIL  
NO SCALE

3  
47

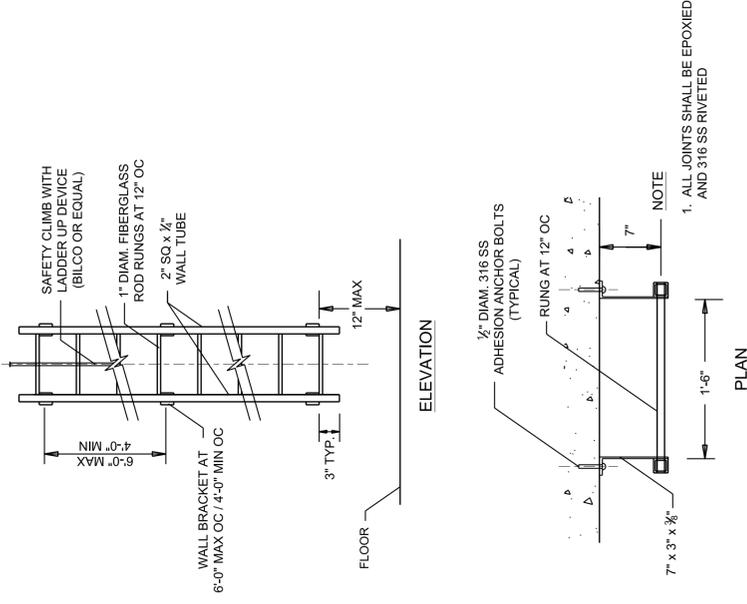
**DETAIL 4**  
SECTION PRESSURE GAUGE AND SENSING DETAIL  
N.T.S.



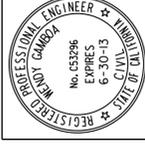
**DETAIL 2**  
FLEXIBLE COUPLING WITH/THRU RESTRAINTS  
N.T.S.



**DETAIL 5**  
"LINK-SEAL" WALL PENETRATION DEVICE  
N.T.S.



**DETAIL 3**  
FIBERGLASS REINFORCED PLASTIC (FRP) LADDER  
N.T.S.



CITY OF SAN DIEGO, CALIFORNIA ENGINEERING AND CAPITAL PROJECTS DEPARTMENT SHEET 28 OF 48 SHEETS	APPROVED BY <i>Michael Ninh</i> FOR CITY ENGINEER	DATE 5/1/13	FILED	WATER NO. B-0010
DESCRIPTION ORIGINAL	DRAWN M/JEE	APPROVED DATE	PROJECT MANAGER MICHAEL NINH	
			PROJECT ENGINEER MERYL JIMENEZ	
			CONTROL CERTIFICATION	
			SEE SHEETS	
CONTRACTOR	INSPECTOR	DATE STARTED	DATE COMPLETED	35408-28-D

SEWER & WATER GROUP 820  
MISCELLANEOUS DETAILS FOR PRS NO. 1

M-2

THRUST TABLE FOR 16" AND LARGER WATER MAINS

SHEET NO.	PIPE STATIONING	DIAM. OF PIPE	TYPE OF BLOCK	TYPE OF APPURTENANCE	DESIGN PRESSURE	TOTAL THRUST	ASSUMED SOIL CAPACITY	MINIMUM BEARING AREA (sq.ft.), SEE NOTE 3 BELOW
23	12+30.09	PVC / 16"	THRUST	16" CROSS	88 lb/sq.in.	20,925 lb	1200 lb/sq.ft.	26.15
23	12+30.09	PVC / 16"	THRUST	16" TO 12" REDUCER	88 lb/sq.in.	8,883 lb	1200 lb/sq.ft.	11.10
23	17+68.95	PVC / 16"	THRUST	16" 45 DEG HORIZ BEND	88 lb/sq.in.	14,796 lb	1200 lb/sq.ft.	18.50
23	17+68.95	PVC / 16"	THRUST	16" 45 DEG HORIZ BEND	88 lb/sq.in.	14,796 lb	1200 lb/sq.ft.	18.50
23	17+98.43	PVC / 16"	THRUST	16" CROSS	88 lb/sq.in.	20,925 lb	1200 lb/sq.ft.	26.16
23	17+98.43	PVC / 16"	THRUST	20" TO 16" REDUCER	88 lb/sq.in.	11,321 lb	1200 lb/sq.ft.	14.15

THE SPECIFIC WEIGHT OF CONCRETE IS 140 LB/CU.FT. AND SAFETY FACTOR = 1.5

NOTES:

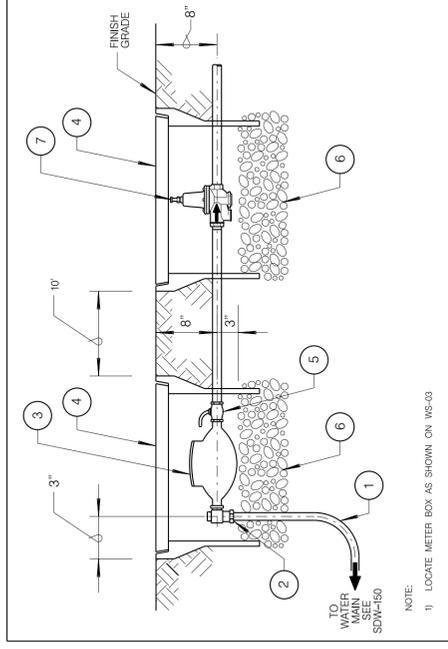
- FOR ADDITIONAL THRUST BLOCKS, ANCHOR BLOCKS, DETAILS AND NOTES SEE SDW-151.
- REFER TO SPECIFICATIONS SECTION 306-1.2.1.4 FOR ADDITIONAL REQUIREMENTS.
- FOR ESTIMATING THE QUANTITY FOR THRUST BLOCKS, THE DEPTH OF THE THRUST BLOCKS SHALL BE HALF OF THE TRENCH WIDTH PLUS 12" EMBEDMENT.

PROPOSED 1" WATER SERVICE AND PRESSURE REDUCING VALVE (PRV) INSTALLATION TABLE

SHEET NO.	PROPERTY ADDRESS	QUANTITY	NEW 1" WATER SERVICE	1" PRV	COMMENTS/CONFLICTS
1	7847 EXCHANGE PL, SAN DIEGO	2	YES	YES	EX. SERVICE 270 HGL
2	7817 EXCHANGE PL, SAN DIEGO	1	YES	YES	EX. SERVICE 270 HGL
3	7824 EXCHANGE PL, SAN DIEGO	1	YES	YES	EX. SERVICE 270 HGL
4	7282 EXCHANGE PL, SAN DIEGO	2	YES	YES	EX. SERVICE 270 HGL
5	7855 EXCHANGE PL, SAN DIEGO	1	YES	YES	EX. SERVICE 270 HGL
6	1287 EXCHANGE PL, SAN DIEGO	1	YES	YES	EX. SERVICE 270 HGL
7	7880 EXCHANGE PL, SAN DIEGO	1	YES	YES	EX. SERVICE 270 HGL
8	1296 EXCHANGE PL, SAN DIEGO	1	TRANSFER ONLY	YES	EX. SERVICE 270 HGL
9	7818 EXCHANGE PL, SAN DIEGO	1	YES	YES	EX. SERVICE 270 HGL
10	7775 EXCHANGE PL, SAN DIEGO	2	YES	YES	EX. SERVICE 270 HGL
11	7766 EXCHANGE PL, SAN DIEGO	1	YES	YES	EX. SERVICE 270 HGL
12	7819 EXCHANGE PL, SAN DIEGO	1	TRANSFER ONLY	YES	EX. SERVICE 270 HGL
13	7767 EXCHANGE PL, SAN DIEGO	2	YES	YES	EX. SERVICE 270 HGL

PRV NOTES:

- THE CONTRACTOR SHALL COORDINATE WITH THE ENGINEER TO DETERMINE THE BEST LOCATION TO FURNISH AND INSTALL THE PRIVATE PRESSURE REDUCING VALVE PER DETAIL 'A' MIDDLE THIS SHEET.

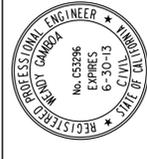


ITEM NO	SIZE AND DESCRIPTION	ITEM NO	SIZE AND DESCRIPTION
1	USE COPPER TUBING TYPE #6 SOFT FOR 1/2 INCH SERVICES ONLY. NO INTERMEDIATE JOINTS PERMITTED WITHIN THE FIRST 10 FEET OF THE VALVE. USE LOCKWASHERS AND LOCKWASHER NUTS WITH LOCKING CLAMP AND STAINLESS STEEL BOLT ONLY. NO SWEAT JOINTS ARE ALLOWED. USE LOCKWASHER, DISC AND METER COUPLING ATTACHED. TURNISH AND INSTALL BRONZE PROPERTY VALVE USE SPACER FOR METER	4	METER BOX WITH 1/2" X 2" X 18" EXACT LOCATION SHALL BE DETERMINED BY ENGINEER. METER SHALL BE LOCKABLE, FURNISHED AND INSTALLED BY THE WATER AGENCY OF JURISDICTION
2	WATER METER FURNISHED & INSTALLED BY THE WATER AGENCY OF JURISDICTION	5	3/8" ROOF 4" TO 6" DEEP
3	WATER METER FURNISHED & INSTALLED BY THE WATER AGENCY OF JURISDICTION	6	3/8" ROOF 4" TO 6" DEEP
	DETAIL A - 1" WATER SERVICE AND PRESSURE REDUCING VALVE INSTALLATION	7	PRESSURE REDUCING VALVE (PRV) FURNISHED & INSTALLED BY CONTRACTOR

SEWER AND WATER GROUP 820  
MISCELLANEOUS DETAILS SHEET

C-26

CITY OF SAN DIEGO CALIFORNIA ENGINEERING AND CAPITAL PROJECTS DEPARTMENT SHEET 29 OF 48 SHEETS	WATER W.D. B-0010 SEWER W.D. _____ DATE: _____
APPROVED BY: <i>[Signature]</i> FOR CITY ENGINEER	DATE: 5/1/13
PROJECT MANAGER: MICHAEL NINH	DATE: _____
PROJECT ENGINEER: MERYL JIMENEZ	DATE: _____
DATE: _____	DATE: _____
DATE: _____	DATE: _____
DATE: _____	DATE: _____
CONTRACTOR: _____	DATE STARTED: _____
INSPECTOR: _____	DATE COMPLETED: _____



# HORIZONTAL ALIGNMENT REPORT – SEWER

Horizontal and Vertical Alignment Review Report  
 Report Created: 11/28/2012  
 Time: 5:10pm  
 Project: psewer  
 Description: prop sewer  
 File Name: B00382 B00110 Sewer & Water Group 820 (LJ))  
 Design\Drafting Add\1\psewer.rtg  
 Last Revised: EEdusada 11/28/2012 5:09:27 PM  
 Input Grid Factor: 1.00000000 Note: All units in this report are in feet unless specified otherwise.

Element: Linear  
 PI ( 118 ) 27 + 45.64 1890564.20 6248065.65  
 PI ( 119 ) 27 + 55.62 1890557.11 6248072.67  
 Tangential Direction: 135\*16'27.54"  
 Tangential Length: 9.98  
 Element: Linear  
 PI ( 119 ) 27 + 55.62 1890557.11 6248072.67  
 PI ( 120 ) 27 + 65.56 1890550.04 6248079.67  
 Tangential Direction: 135\*16'27.54"  
 Tangential Length: 9.94

PT ( 133 ) 32 + 56.03 1890124.38 6248282.88  
 Radius: 391.96  
 Delta: 15\*53'39.31" Right  
 Degree of Curvature (Chord): 14\*39'27.47"  
 Length: 108.73  
 Tangent: 54.72  
 Chord: 108.38  
 Middle Ordinate: 3.76  
 External: 3.80  
 Tangent Direction: 171\*23'53.93"  
 Radial Direction: 261\*23'53.93"  
 Chord Direction: 179\*20'43.58"  
 Radial Direction: 277\*17'33.23"  
 Tangent Direction: 187\*17'33.23"

PI ( ) 5 + 44.42 1889797.21 6248815.94  
 CC ( 142 ) 1888450.57 6247964.35  
 PT ( 137 ) 6 + 36.50 1889710.34 6248929.34  
 Radius: 1586.89  
 Delta: 10\*17'15.95" Right  
 Degree of Curvature (Arc): 3\*36'38.05"  
 Length: 284.93  
 Tangent: 142.85  
 Chord: 284.55  
 Middle Ordinate: 6.39  
 External: 6.42  
 Tangent Direction: 117\*09'52.82"  
 Radial Direction: 207\*09'52.82"  
 Chord Direction: 122\*18'30.79"  
 Radial Direction: 217\*27'08.76"  
 Tangent Direction: 127\*27'08.76"

Element: Linear  
 PI ( 152 ) 12 + 17.57 1889055.08 6248379.13  
 POE ( 153 ) 14 + 47.67 1888943.92 6248470.54  
 Tangential Direction: 156\*35'34.71"  
 Tangential Length: 230.10  
 Horizontal Alignment: 1.3 Silverado St  
 Horizontal Description: Silverado St sta  
 Horizontal Style: Default  
 Station Northing Easting

Horizontal Alignment: 1.01  
 Horizontal Description: Coast Blvd 1  
 Horizontal Style: Default  
 Station Northing Easting  
 Element: Linear  
 POB ( 100 ) 1 + 00.00 1889585.69 6245836.84  
 PI ( 101 ) 3 + 80.23 1889648.85 6246109.87  
 Tangential Direction: 76\*58'29.72"  
 Tangential Length: 280.23

Element: Linear  
 PI ( 120 ) 27 + 65.56 1890550.04 6248079.67  
 PI ( 121 ) 27 + 75.47 1890543.00 6248086.64  
 Tangential Direction: 135\*16'27.54"  
 Tangential Length: 9.91  
 Element: Linear  
 PI ( 121 ) 27 + 75.47 1890543.00 6248086.64  
 PI ( 122 ) 27 + 95.16 1890529.01 6248100.50  
 Tangential Direction: 135\*16'27.54"  
 Tangential Length: 19.69

Element: Linear  
 PI ( 133 ) 32 + 56.03 1890124.38 6248282.88  
 PI ( 134 ) 33 + 47.62 1890035.25 6248303.98  
 Tangential Direction: 166\*40'35.60"  
 Tangential Length: 91.59  
 Element: Linear  
 PI ( 134 ) 33 + 47.62 1890035.25 6248303.98  
 PI ( 135 ) 34 + 66.64 1889993.77 6248415.54  
 Tangential Direction: 110\*23'55.10"  
 Tangential Length: 119.02

Element: Linear  
 PT ( 137 ) 6 + 36.50 1889710.34 6248929.34  
 PI ( 143 ) 7 + 64.67 1889712.45 6249007.48  
 Tangential Direction: 88\*27'15.44"  
 Tangential Length: 78.17  
 Element: Linear  
 PI ( 143 ) 7 + 64.67 1889712.45 6249007.48  
 POE ( 144 ) 10 + 20.51 1889548.92 6249204.24  
 Tangential Direction: 129\*43'50.90"  
 Tangential Length: 255.84

Element: Circular  
 PC ( 154 ) 3 + 48.19 1889541.97 6248267.06  
 PI ( ) 3 + 74.58 1889521.47 6248250.44  
 CC ( 155 ) 1889667.91 6248111.69  
 PRC ( 156 ) 4 + 00.67 1889505.98 6248229.08  
 Radius: 200.00  
 Delta: 15\*02'00.87" Right  
 Degree of Curvature (Chord): 28\*57'18.09"  
 Length: 52.48  
 Tangent: 26.39  
 Chord: 52.33  
 Middle Ordinate: 1.72  
 External: 1.73  
 Tangent Direction: 219\*01'36.57"  
 Radial Direction: 309\*01'36.57"  
 Chord Direction: 226\*32'37.00"  
 Radial Direction: 324\*03'37.44"  
 Tangent Direction: 234\*03'37.44"

Element: Linear  
 PI ( 101 ) 3 + 80.23 1889648.85 6246109.87  
 PI ( 102 ) 7 + 11.27 1889883.28 6246343.59  
 Tangential Direction: 44\*54'48.11"  
 Tangential Length: 331.04  
 Element: Linear  
 PI ( 102 ) 7 + 11.27 1889883.28 6246343.59  
 PI ( 103 ) 10 + 25.21 1890073.89 6246593.05  
 Tangential Direction: 52\*37'00.14"  
 Tangential Length: 313.94

Element: Linear  
 PI ( 122 ) 27 + 95.16 1890529.01 6248100.50  
 PI ( 123 ) 28 + 14.73 1890515.11 6248114.27  
 Tangential Direction: 135\*16'27.54"  
 Tangential Length: 19.40  
 Element: Linear  
 PI ( 124 ) 28 + 34.13 1890501.33 6248127.92  
 Tangential Direction: 135\*16'27.54"  
 Tangential Length: 4.89

Element: Linear  
 PI ( 135 ) 34 + 66.64 1889993.77 6248415.54  
 POE ( 136 ) 34 + 91.11 1889970.57 6248407.78  
 Tangential Direction: 198\*30'08.89"  
 Tangential Length: 24.46  
 Horizontal Alignment: 1.1 Park Row Prospect  
 Horizontal Description: Park Row Prospect  
 Horizontal Style: Default  
 Station Northing Easting

Element: Linear  
 POB ( 145 ) 1 + 00.00 1889994.29 6248348.18  
 PI ( 146 ) 1 + 42.82 1889959.33 6248323.47  
 Tangential Direction: 215\*15'01.43"  
 Tangential Length: 42.82  
 Element: Linear  
 PI ( 146 ) 1 + 42.82 1889959.33 6248323.47  
 PC ( 147 ) 3 + 83.41 1889738.41 6248418.75  
 Tangential Direction: 156\*40'07.70"  
 Tangential Length: 240.59

Element: Circular  
 PRC ( 156 ) 4 + 00.67 1889505.98 6248229.08  
 PI ( ) 5 + 58.51 1889431.59 6248089.86  
 CC ( 157 ) 1888684.28 6248668.14  
 PT ( 158 ) 7 + 13.39 1889315.50 6247982.92  
 Radius: 931.65  
 Delta: 19\*13'55.53" Left  
 Degree of Curvature (Chord): 6\*09'10.37"  
 Length: 312.72  
 Tangent: 157.85  
 Chord: 311.25  
 Middle Ordinate: 13.09  
 External: 13.28  
 Tangent Direction: 241\*52'57.39"  
 Radial Direction: 331\*52'57.39"  
 Chord Direction: 232\*15'59.62"  
 Radial Direction: 312\*39'01.85"  
 Tangent Direction: 222\*39'01.85"

Element: Linear  
 PI ( 103 ) 10 + 25.21 1890073.89 6246593.05  
 PI ( 104 ) 12 + 22.40 1890192.62 6246750.49  
 Tangential Direction: 77\*17'07.46"  
 Tangential Length: 85.69  
 Element: Linear  
 PI ( 104 ) 12 + 22.40 1890192.62 6246750.49  
 PI ( 105 ) 13 + 08.09 1890211.48 6246834.07  
 Tangential Direction: 77\*17'07.46"  
 Tangential Length: 85.69

Element: Linear  
 PI ( 125 ) 28 + 39.02 1890497.85 6248131.36  
 PI ( 126 ) 28 + 43.95 1890494.35 6248134.83  
 Tangential Direction: 135\*16'27.54"  
 Tangential Length: 4.93  
 Element: Linear  
 PI ( 126 ) 28 + 43.95 1890494.35 6248134.83  
 PI ( 127 ) 28 + 39.02 1890497.85 6248127.92  
 Tangential Direction: 135\*16'27.54"  
 Tangential Length: 4.89

Element: Linear  
 PI ( 137 ) 1 + 00.00 1889710.34 6248929.34  
 PI ( ) 2 + 68.57 1889565.57 6248842.98  
 CC ( 138 ) 1890068.95 6248328.17  
 PT ( 139 ) 4 + 30.84 1889475.99 6248700.19  
 Radius: 700.00  
 Delta: 27\*04'45.73" Right  
 Degree of Curvature (Arc): 8\*11'06.40"  
 Length: 330.84  
 Tangent: 168.57  
 Chord: 327.77  
 Middle Ordinate: 19.45  
 External: 20.01  
 Tangent Direction: 210\*49'00.09"  
 Radial Direction: 300\*49'00.09"  
 Chord Direction: 224\*21'22.96"  
 Radial Direction: 327\*53'45.82"  
 Tangent Direction: 237\*53'45.82"

Element: Circular  
 PC ( 147 ) 3 + 83.41 1889738.41 6248418.75  
 PI ( ) 5 + 43.59 1889586.60 6248469.88  
 CC ( 148 ) 1889961.06 6249079.84  
 PT ( 149 ) 6 + 36.50 1889710.34 6248929.34  
 Radius: 697.57  
 Delta: 25\*51'57.46" Left  
 Degree of Curvature (Chord): 8\*14'13.35"  
 Length: 314.92  
 Tangent: 160.19  
 Chord: 312.25  
 Middle Ordinate: 17.70  
 External: 18.16  
 Tangent Direction: 161\*23'13.56"  
 Radial Direction: 251\*23'13.56"  
 Chord Direction: 148\*27'14.83"  
 Radial Direction: 225\*31'16.10"  
 Tangent Direction: 135\*31'16.10"

Element: Linear  
 PI ( 150 ) 7 + 52.56 1889435.72 6248622.16  
 PI ( 151 ) 10 + 69.49 1889199.79 6248410.55  
 Tangential Direction: 122\*15'51.81"  
 Tangential Length: 316.93  
 Element: Linear  
 PI ( 149 ) 6 + 36.50 1889710.34 6248929.34  
 PI ( 150 ) 7 + 52.56 1889435.72 6248622.16  
 Tangential Direction: 132\*25'00.46"  
 Tangential Length: 54.24

Element: Linear  
 PI ( 105 ) 13 + 08.09 1890211.48 6246834.07  
 PI ( 106 ) 15 + 24.91 1890223.02 6247050.58  
 Tangential Direction: 86\*56'59.43"  
 Tangential Length: 216.82  
 Element: Linear  
 PI ( 106 ) 15 + 24.91 1890223.02 6247050.58  
 PI ( 107 ) 17 + 53.87 1890430.41 6247147.61  
 Tangential Direction: 25\*04'21.20"  
 Tangential Length: 228.96

Element: Linear  
 PI ( 127 ) 28 + 48.90 1890490.83 6248138.31  
 PI ( 128 ) 28 + 58.84 1890483.77 6248145.31  
 Tangential Direction: 135\*16'27.54"  
 Tangential Length: 9.94  
 Element: Linear  
 PI ( 127 ) 28 + 48.90 1890490.83 6248138.31  
 PI ( 128 ) 28 + 58.84 1890483.77 6248145.31  
 Tangential Direction: 135\*16'27.54"  
 Tangential Length: 9.94

Horizontal Alignment: 1.1a Prospect PI South  
 Horizontal Description: Prospect PI South  
 Horizontal Style: Default  
 Station Northing Easting  
 Element: Circular  
 PC ( 136 ) 1 + 00.00 1889970.57 6248407.78  
 PI ( ) 2 + 51.20 1889929.35 6248553.25  
 CC ( 140 ) 1888379.34 6247956.88  
 PCC ( 141 ) 4 + 01.57 1889862.43 6248688.84  
 Radius: 1653.88  
 Delta: 10\*26'50.09" Right  
 Degree of Curvature (Arc): 3\*27'51.57"  
 Length: 301.57  
 Tangent: 151.20  
 Chord: 301.15  
 Middle Ordinate: 6.87  
 External: 6.90  
 Tangent Direction: 105\*49'15.31"  
 Radial Direction: 195\*49'15.31"  
 Chord Direction: 111\*02'40.36"  
 Radial Direction: 206\*16'05.40"  
 Tangent Direction: 116\*16'05.40"

Element: Linear  
 PI ( 150 ) 7 + 52.56 1889435.72 6248622.16  
 PI ( 151 ) 10 + 69.49 1889199.79 6248410.55  
 Tangential Direction: 122\*15'51.81"  
 Tangential Length: 316.93  
 Element: Linear  
 PI ( 151 ) 10 + 69.49 1889199.79 6248410.55  
 PI ( 152 ) 12 + 17.57 1889055.08 6248379.13  
 Tangential Direction: 192\*14'50.59"  
 Tangential Length: 148.08

Element: Linear  
 PI ( 152 ) 12 + 17.57 1889055.08 6248379.13  
 POE ( 153 ) 14 + 47.67 1888943.92 6248470.54  
 Tangential Direction: 156\*35'34.71"  
 Tangential Length: 230.10  
 Horizontal Alignment: 1.3 Silverado St  
 Horizontal Description: Silverado St sta  
 Horizontal Style: Default  
 Station Northing Easting

Element: Linear  
 PI ( 107 ) 17 + 53.87 1890430.41 6247147.61  
 PI ( 108 ) 20 + 28.32 1890583.79 6247375.19  
 Tangential Direction: 56\*01'12.96"  
 Tangential Length: 274.44  
 Element: Linear  
 PI ( 108 ) 20 + 28.32 1890583.79 6247375.19  
 PI ( 109 ) 21 + 42.87 1890587.47 6247489.68  
 Tangential Direction: 88\*09'45.84"  
 Tangential Length: 114.55

Element: Linear  
 PI ( 129 ) 28 + 68.31 1890477.04 6248151.97  
 PI ( 130 ) 30 + 59.53 1890316.77 6248256.27  
 Tangential Direction: 146\*56'46.74"  
 Tangential Length: 191.22  
 Element: Linear  
 PI ( 130 ) 30 + 59.53 1890316.77 6248256.27  
 PI ( 131 ) 31 + 47.29 1890232.76 6248281.64  
 Tangential Direction: 163\*11'54.65"  
 Tangential Length: 87.76

Element: Linear  
 PI ( 150 ) 7 + 52.56 1889435.72 6248622.16  
 PI ( 151 ) 10 + 69.49 1889199.79 6248410.55  
 Tangential Direction: 122\*15'51.81"  
 Tangential Length: 316.93  
 Element: Linear  
 PI ( 151 ) 10 + 69.49 1889199.79 6248410.55  
 PI ( 152 ) 12 + 17.57 1889055.08 6248379.13  
 Tangential Direction: 192\*14'50.59"  
 Tangential Length: 148.08

Element: Linear  
 PI ( 152 ) 12 + 17.57 1889055.08 6248379.13  
 POE ( 153 ) 14 + 47.67 1888943.92 6248470.54  
 Tangential Direction: 156\*35'34.71"  
 Tangential Length: 230.10  
 Horizontal Alignment: 1.3 Silverado St  
 Horizontal Description: Silverado St sta  
 Horizontal Style: Default  
 Station Northing Easting

Element: Linear  
 PI ( 152 ) 12 + 17.57 1889055.08 6248379.13  
 POE ( 153 ) 14 + 47.67 1888943.92 6248470.54  
 Tangential Direction: 156\*35'34.71"  
 Tangential Length: 230.10  
 Horizontal Alignment: 1.3 Silverado St  
 Horizontal Description: Silverado St sta  
 Horizontal Style: Default  
 Station Northing Easting

Element: Linear  
 PI ( 109 ) 21 + 42.87 1890587.47 6247489.68  
 PI ( 110 ) 23 + 50.94 1890595.13 6247697.62  
 Tangential Direction: 87\*53'21.21"  
 Tangential Length: 208.07  
 Element: Linear  
 PI ( 110 ) 23 + 50.94 1890595.13 6247697.62  
 PI ( 111 ) 27 + 10.65 1890589.06 6248041.03  
 Tangential Direction: 135\*16'27.54"  
 Tangential Length: 34.99

Element: Linear  
 PI ( 130 ) 30 + 59.53 1890316.77 6248256.27  
 PI ( 131 ) 31 + 47.29 1890232.76 6248281.64  
 Tangential Direction: 163\*11'54.65"  
 Tangential Length: 87.76  
 Element: Circular  
 PC ( 131 ) 31 + 47.29 1890232.76 6248281.64  
 PI ( ) 32 + 02.01 1890178.65 6248289.82  
 CC ( 132 ) 1890174.13 6247894.08

Element: Linear  
 PI ( 150 ) 7 + 52.56 1889435.72 6248622.16  
 PI ( 151 ) 10 + 69.49 1889199.79 6248410.55  
 Tangential Direction: 122\*15'51.81"  
 Tangential Length: 316.93  
 Element: Linear  
 PI ( 151 ) 10 + 69.49 1889199.79 6248410.55  
 PI ( 152 ) 12 + 17.57 1889055.08 6248379.13  
 Tangential Direction: 192\*14'50.59"  
 Tangential Length: 148.08

Element: Linear  
 PI ( 152 ) 12 + 17.57 1889055.08 6248379.13  
 POE ( 153 ) 14 + 47.67 1888943.92 6248470.54  
 Tangential Direction: 156\*35'34.71"  
 Tangential Length: 230.10  
 Horizontal Alignment: 1.3 Silverado St  
 Horizontal Description: Silverado St sta  
 Horizontal Style: Default  
 Station Northing Easting

Element: Linear  
 PI ( 152 ) 12 + 17.57 1889055.08 6248379.13  
 POE ( 153 ) 14 + 47.67 1888943.92 6248470.54  
 Tangential Direction: 156\*35'34.71"  
 Tangential Length: 230.10  
 Horizontal Alignment: 1.3 Silverado St  
 Horizontal Description: Silverado St sta  
 Horizontal Style: Default  
 Station Northing Easting



CITY OF SAN DIEGO CALIFORNIA ENGINEERING AND CAPITAL PROJECTS DEPARTMENT SHEET 30 OF 48 SHEETS		WATER W.D. SEWER M.D. B-00382	
APPROVED: <i>Michael Ninh</i> FOR CITY ENGINEER		DATE: 5/1/13	PROJECT MANAGER: MICHAEL NINH
DESCRIPTION: ORIGINAL	BY: M/EE	APPROVED DATE: _____	FILED: _____
CONTRACTOR: _____	DATE STARTED: _____		
INSPECTOR: _____	DATE COMPLETED: _____		

## SEWER AND WATER GROUP 820 HORIZONTAL ALIGNMENT REPORT SEWER

# HORIZONTAL ALIGNMENT REPORT SEWER

Horizontal Alignment: 1.4 Cave st  
Horizontal Description: Cave St sta  
Horizontal Style: Default  
Station Northing Easting

Element: Linear  
POB ( 136 ) 1+00.00 1889970.57 6248407.78  
PI ( 145 ) 1+64.15 1889994.29 6248348.18  
Tangential Direction: 291\*42'27.36"  
Tangential Length: 64.15

Element: Linear  
PI ( 145 ) 1+64.15 1889994.29 6248348.18  
PI ( 159 ) 2+30.90 1890000.25 6248282.33  
Tangential Direction: 279\*26'37.56"  
Tangential Length: 66.76

Element: Linear  
PI ( 159 ) 2+30.90 1890000.25 6248282.33  
PI ( 160 ) 5+55.56 1889835.88 6248005.35  
Tangential Direction: 238\*33'17.97"  
Tangential Length: 324.66

Element: Linear  
PI ( 160 ) 5+55.56 1889835.88 6248005.35  
POE ( 161 ) 7+73.84 1889796.59 6247790.63  
Tangential Direction: 259\*37'48.24"  
Tangential Length: 218.28

Horizontal Alignment: 1.5 Ivanhoe Ave Rev 1  
Horizontal Description: Ivanhoe Ave Rev 1  
Horizontal Style: Default  
Station Northing Easting

Element: Linear  
POB ( 162 ) 1+00.00 1889777.60 6247712.66  
PI ( 163 ) 3+28.50 1889556.67 6247771.02  
Tangential Direction: 165\*12'15.54"  
Tangential Length: 228.50

Element: Linear  
PI ( 163 ) 3+28.50 1889556.67 6247771.02  
PI ( 164 ) 6+71.31 1889225.24 6247858.62  
Tangential Direction: 165\*11'37.90"  
Tangential Length: 342.81

Element: Linear  
PI ( 164 ) 6+71.31 1889225.24 6247858.62  
PI ( 165 ) 11+01.70 1888809.09 6247968.37  
Tangential Direction: 165\*13'33.61"  
Tangential Length: 430.38

Element: Linear  
PI ( 165 ) 11+01.70 1888809.09 6247968.37  
POE ( 166 ) 11+49.93 1888762.38 6247980.41  
Tangential Direction: 165\*32'43.71"  
Tangential Length: 48.23

Horizontal Alignment: 1.6 Park Row Ivanhoe rev1  
Horizontal Description: Park Row Ivanhoe rev1  
Horizontal Style: Default  
Station Northing Easting

Element: Linear  
POB ( 164 ) 1+00.00 1889225.24 6247858.62  
PI ( 167 ) 1+73.63 1889226.49 6247932.24  
Tangential Direction: 89\*01'36.25"  
Tangential Length: 73.63

Element: Linear  
PI ( 167 ) 1+73.63 1889226.49 6247932.24  
POE ( 168 ) 4+64.32 1889168.44 6248217.08  
Tangential Direction: 101\*31'09.00"  
Tangential Length: 290.69

Horizontal Alignment: 1.7 Prospect PlAlt Add  
Horizontal Description: Prospect PlAlt Add  
Horizontal Style: Default  
Station Northing Easting

Element: Linear  
POB ( 135 ) 1+00.00 1889993.77 6248415.54  
PI ( 169 ) 3+97.89 1889894.73 6248696.49  
Tangential Direction: 109\*25'05.11"  
Tangential Length: 297.89

Element: Linear  
PI ( 169 ) 3+97.89 1889894.73 6248696.49  
POE ( 170 ) 5+99.27 1889800.11 6248874.25  
Tangential Direction: 118\*01'35.70"  
Tangential Length: 201.38

Horizontal Alignment: 1.8 Exchange Place New  
Horizontal Description: 1.8 Exchange Place New  
Horizontal Style: Default  
Station Northing Easting

Element: Linear  
POB ( 171 ) 1+00.00 1890069.46 6248246.63  
PI ( 172 ) 1+67.70 1890016.71 6248289.06  
Tangential Direction: 141\*11'23.12"  
Tangential Length: 67.70

Element: Linear  
PI ( 172 ) 1+67.70 1890016.71 6248289.06  
PI ( 173 ) 2+28.52 1889970.67 6248328.80  
Tangential Direction: 139\*11'58.28"  
Tangential Length: 60.82

Element: Linear  
PI ( 173 ) 2+28.52 1889970.67 6248328.80  
PI ( 174 ) 2+38.52 1889961.72 6248333.26  
Tangential Direction: 153\*31'28.45"  
Tangential Length: 10.00

Element: Linear  
PI ( 174 ) 2+38.52 1889961.72 6248333.26  
PI ( 175 ) 3+01.13 1889905.51 6248360.85  
Tangential Direction: 153\*51'16.15"  
Tangential Length: 62.62

Element: Linear  
PI ( 175 ) 3+01.13 1889905.51 6248360.85  
PI ( 176 ) 3+22.13 1889886.67 6248370.12  
Tangential Direction: 153\*48'02.03"  
Tangential Length: 21.00

Element: Linear  
PI ( 176 ) 3+22.13 1889886.67 6248370.12  
PC ( 177 ) 4+05.02 1889812.19 6248406.51  
Tangential Direction: 153\*57'35.85"  
Tangential Length: 82.89

Element: Circular  
PC ( 177 ) 4+05.02 1889812.19 6248406.51  
PI ( 178 ) 4+79.00 1889743.65 6248434.36  
CC ( 178 ) 1887783.97 6243414.98  
PCC ( 179 ) 5+52.98 1889674.37 6248460.32  
Radius: 5387.86

Delta: 1\*34'24.31" Right  
Degree of Curvature (Chord): 1\*03'48.38"  
Length: 147.96  
Tangent: 73.98  
Chord: 147.95

Middle Ordinate: 0.51  
External: 0.51  
Tangent Direction: 157\*53'11.43"  
Radial Direction: 247\*53'11.43"  
Chord Direction: 158\*40'23.58"  
Radial Direction: 249\*27'35.74"  
Tangent Direction: 159\*27'35.74"

Element: Circular  
PCC ( 179 ) 5+52.98 1889674.37 6248460.32  
PI ( 1 ) 5+53.91 1889673.50 6248460.65  
CC ( 180 ) 1889512.48 6248028.24  
PRC ( 181 ) 5+54.83 1889672.63 6248460.97  
Radius: 461.41

Delta: 0\*13'49.00" Right  
Degree of Curvature (Chord): 12\*26'31.10"  
Length: 1.85  
Tangent: 0.93  
Chord: 1.85  
Middle Ordinate: 0.00  
External: 0.00

Tangent Direction: 159\*27'35.74"  
Radial Direction: 249\*27'35.74"  
Chord Direction: 159\*34'30.24"  
Radial Direction: 249\*41'24.74"  
Tangent Direction: 159\*41'24.74"

Element: Circular  
PRC ( 181 ) 5+54.83 1889672.63 6248460.97  
PI ( 1 ) 6+98.72 1889537.69 6248510.91  
CC ( 182 ) 1889832.79 6248893.69  
PRC ( 183 ) 8+33.79 1889455.06 6248628.70  
Radius: 461.41

Delta: 34\*38'21.72" Left  
Degree of Curvature (Chord): 12\*26'31.30"  
Length: 278.95  
Tangent: 143.89  
Chord: 274.72  
Middle Ordinate: 20.92  
External: 21.91

Tangent Direction: 159\*41'24.74"  
Radial Direction: 249\*41'24.74"  
Chord Direction: 142\*22'13.88"  
Radial Direction: 215\*03'03.02"  
Tangent Direction: 125\*03'03.02"

Element: Circular  
PRC ( 183 ) 8+33.79 1889455.06 6248628.70  
PI ( 1 ) 8+55.38 1889442.64 6248646.37  
CC ( 184 ) 1889271.16 6248489.43  
PCC ( 185 ) 8+76.84 1889427.09 6248661.34  
Radius: 224.79

Delta: 10\*58'23.89" Right  
Degree of Curvature (Chord): 25\*42'14.10"  
Length: 43.05  
Tangent: 21.59  
Chord: 42.99  
Middle Ordinate: 1.03  
External: 1.03

Tangent Direction: 125\*06'22.56"  
Radial Direction: 215\*06'22.56"  
Chord Direction: 130\*35'34.51"  
Radial Direction: 226\*04'46.46"  
Tangent Direction: 136\*04'46.46"

Element: Circular  
PCC ( 185 ) 8+76.84 1889427.09 6248661.34  
PI ( 1 ) 8+91.08 1889417.06 6248671.46  
CC ( 186 ) 1889188.14 6248424.66  
PCC ( 187 ) 9+05.31 1889406.22 6248680.70  
Radius: 336.33

Delta: 4\*51'03.09" Right  
Degree of Curvature (Chord): 17\*05'56.94"  
Length: 28.47  
Tangent: 14.25  
Chord: 28.47  
Middle Ordinate: 0.30  
External: 0.30

Tangent Direction: 134\*43'34.57"  
Radial Direction: 224\*43'34.57"  
Chord Direction: 137\*09'06.12"  
Radial Direction: 229\*34'37.67"  
Tangent Direction: 139\*34'37.67"

Element: Circular  
PCC ( 187 ) 9+05.31 1889406.22 6248680.70  
PI ( 1 ) 10+41.81 1889299.10 6248765.29  
CC ( 188 ) 1889010.86 6248180.06  
PT ( 189 ) 11+74.24 1889166.75 6248798.65  
Radius: 637.93

Delta: 24\*09'14.47" Right  
Degree of Curvature (Chord): 8\*59'26.76"  
Length: 268.93  
Tangent: 136.49

Chord: 266.94  
Middle Ordinate: 14.12  
External: 14.44  
Tangent Direction: 141\*42'07.04"  
Radial Direction: 231\*42'07.04"

Chord Direction: 153\*46'44.28"  
Radial Direction: 255\*51'21.51"  
Tangent Direction: 165\*51'21.51"  
Element: Linear  
PT ( 189 ) 11+74.24 1889166.75 6248798.65  
PI ( 190 ) 11+88.55 1889152.81 6248801.86  
Tangential Direction: 167\*00'07.53"

Tangential Length: 14.30  
Element: Linear  
PI ( 190 ) 11+88.55 1889152.81 6248801.86  
PI ( 191 ) 11+98.55 1889143.72 6248806.03  
Tangential Direction: 155\*20'37.65"

Tangential Length: 10.00  
Element: Linear  
PI ( 191 ) 11+98.55 1889143.72 6248806.03  
PI ( 192 ) 12+30.11 1889122.41 6248829.32  
Tangential Direction: 132\*27'49.87"

Tangential Length: 31.57  
Element: Linear  
PI ( 192 ) 12+30.11 1889122.41 6248829.32  
PI ( 193 ) 13+00.56 1889074.85 6248881.29  
Tangential Direction: 132\*27'51.42"

Tangential Length: 70.44  
Element: Linear  
PI ( 193 ) 13+00.56 1889074.85 6248881.29  
PI ( 194 ) 15+15.02 1888930.06 6249039.50  
Tangential Direction: 132\*27'51.42"

Tangential Length: 214.47  
Element: Linear  
PI ( 194 ) 15+15.02 1888930.06 6249039.50  
PI ( 195 ) 15+40.02 1888913.14 6249057.91  
Tangential Direction: 132\*34'16.83"

Tangential Length: 25.00  
Element: Linear  
PI ( 195 ) 15+40.02 1888913.14 6249057.91  
PI ( 196 ) 17+68.98 1888758.36 6249226.61  
Tangential Direction: 132\*32'08.90"

Tangential Length: 228.95  
Element: Linear  
PI ( 196 ) 17+68.98 1888758.36 6249226.61  
PI ( 197 ) 17+77.64 1888749.71 6249226.99  
Tangential Direction: 177\*29'59.32"

Tangential Length: 8.66  
Element: Linear  
PI ( 197 ) 17+77.64 1888749.71 6249226.99  
POE ( 198 ) 17+98.46 1888734.35 6249212.93  
Tangential Direction: 222\*29'29.13"

Tangential Length: 20.82  
Horizontal Alignment: Ivanhoe Ave wtr  
Horizontal Description: Ivanhoe Ave wtr  
Horizontal Style: Default  
Station Northing Easting

Element: Linear  
POB ( 199 ) 1+00.00 1889752.86 6247729.30  
PI ( 200 ) 2+95.18 1889564.09 6247778.94  
Tangential Direction: 165\*15'54.34"  
Tangential Length: 195.18

Element: Linear  
PI ( 200 ) 2+95.18 1889564.09 6247778.94  
PI ( 201 ) 3+24.98 1889535.28 6247786.53  
Tangential Direction: 165\*14'25.41"  
Tangential Length: 29.80

Element: Linear  
PI ( 201 ) 3+24.98 1889535.28 6247786.53  
PI ( 202 ) 6+23.86 1889246.37 6247863.10  
Tangential Direction: 165\*09'23.81"  
Tangential Length: 298.88

Element: Linear  
PI ( 202 ) 6+23.86 1889246.37 6247863.10  
PI ( 203 ) 6+56.37 1889214.95 6247871.42  
Tangential Direction: 165\*09'23.91"  
Tangential Length: 32.50

Element: Linear  
PI ( 203 ) 6+56.37 1889214.95 6247871.42  
PI ( 204 ) 6+82.41 1889189.78 6247878.10  
Tangential Direction: 165\*09'23.82"  
Tangential Length: 26.05

Element: Linear  
PI ( 204 ) 6+82.41 1889189.78 6247878.10  
PI ( 205 ) 8+25.50 1889051.47 6247914.75  
Tangential Direction: 165\*09'23.81"  
Tangential Length: 143.08

Element: Linear  
PI ( 205 ) 8+25.50 1889051.47 6247914.75  
PI ( 206 ) 8+76.37 1889002.29 6247927.79  
Tangential Direction: 165\*09'23.83"  
Tangential Length: 50.88

Element: Linear  
PI ( 206 ) 8+76.37 1889002.29 6247927.79  
PI ( 207 ) 10+54.43 1888830.17 6247973.40  
Tangential Direction: 165\*09'27.40"

Tangential Length: 178.06  
Element: Linear  
PI ( 207 ) 10+54.43 1888830.17 6247973.40  
PI ( 208 ) 10+64.43 1888822.22 6247979.46  
Tangential Direction: 142\*40'53.60"

Tangential Length: 10.00  
Element: Linear  
PI ( 208 ) 10+64.43 1888822.22 6247979.46  
POE ( 209 ) 10+99.83 1888797.48 6248004.79  
Tangential Direction: 134\*19'19.34"  
Tangential Length: 35.40

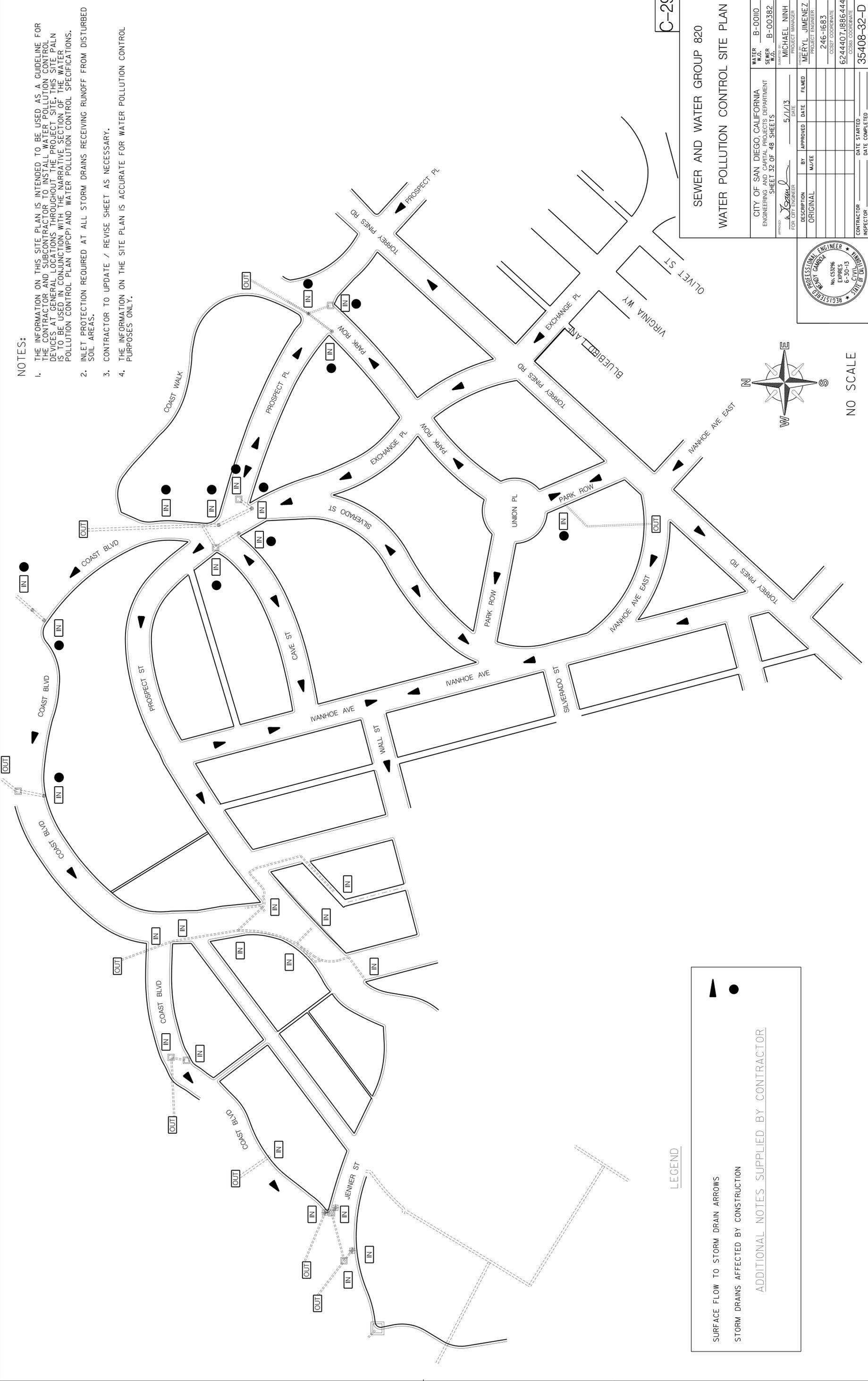
SEWER AND WATER GROUP 820  
HORIZONTAL ALIGNMENT REPORT  
SEWER AND WATER

CITY OF SAN DIEGO CALIFORNIA ENGINEERING AND CAPITAL PROJECTS DEPARTMENT SHEET 31 OF 48 SHEETS		WATER W.D. B-0010 SEWER W.D. B-00382
ISSUED BY: <i>M. Yezzer</i>	DATE: 5/1/13	PROJECT MANAGER: MICHAEL NINH
FOR CITY ENGINEER	BY: APPROVED DATE FILMED	PROJECT ENGINEER: MERYL JIMENEZ
DESCRIPTION: ORIGINAL	M/EE	246-1683
		CS27 COORDINATE
		6244407.1886444
		CS88 COORDINATE
CONTRACTOR	DATE STARTED	35408-31-D
INSPECTOR	DATE COMPLETED	



NOTES:

1. THE INFORMATION ON THIS SITE PLAN IS INTENDED TO BE USED AS A GUIDELINE FOR THE CONTRACTOR AND SUBCONTRACTOR TO INSTALL WATER POLLUTION CONTROL DEVICES AT GENERAL LOCATIONS THROUGHOUT THE PROJECT SITE. THIS SITE PLAN IS TO BE USED IN CONJUNCTION WITH THE NARRATIVE SECTION OF THE WATER POLLUTION CONTROL PLAN (WPCP) AND WATER POLLUTION CONTROL SPECIFICATIONS.
2. INLET PROTECTION REQUIRED AT ALL STORM DRAINS RECEIVING RUNOFF FROM DISTURBED SOIL AREAS.
3. CONTRACTOR TO UPDATE / REVISE SHEET AS NECESSARY.
4. THE INFORMATION ON THE SITE PLAN IS ACCURATE FOR WATER POLLUTION CONTROL PURPOSES ONLY.

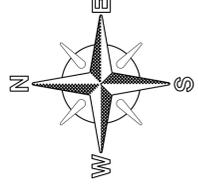


LEGEND

▲ SURFACE FLOW TO STORM DRAIN ARROWS

● STORM DRAINS AFFECTED BY CONSTRUCTION

ADDITIONAL NOTES SUPPLIED BY CONTRACTOR

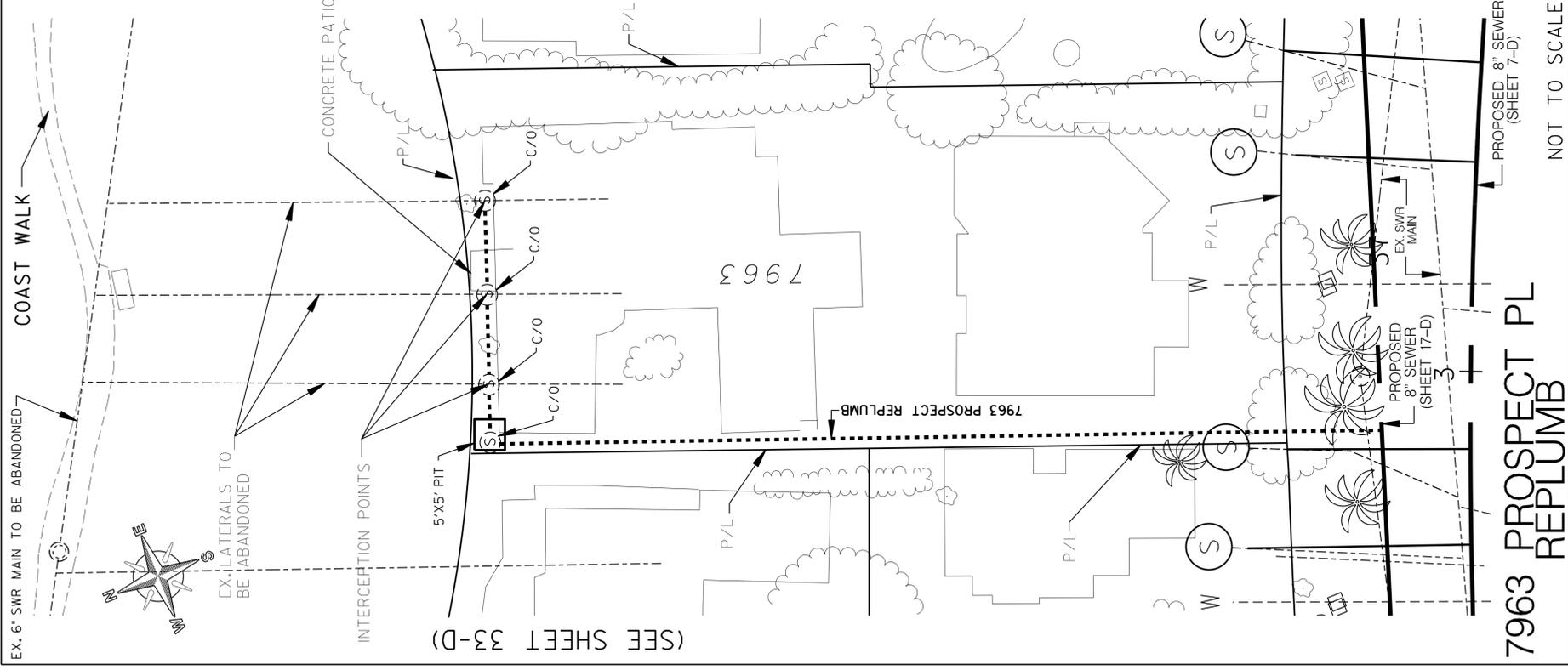


NO SCALE

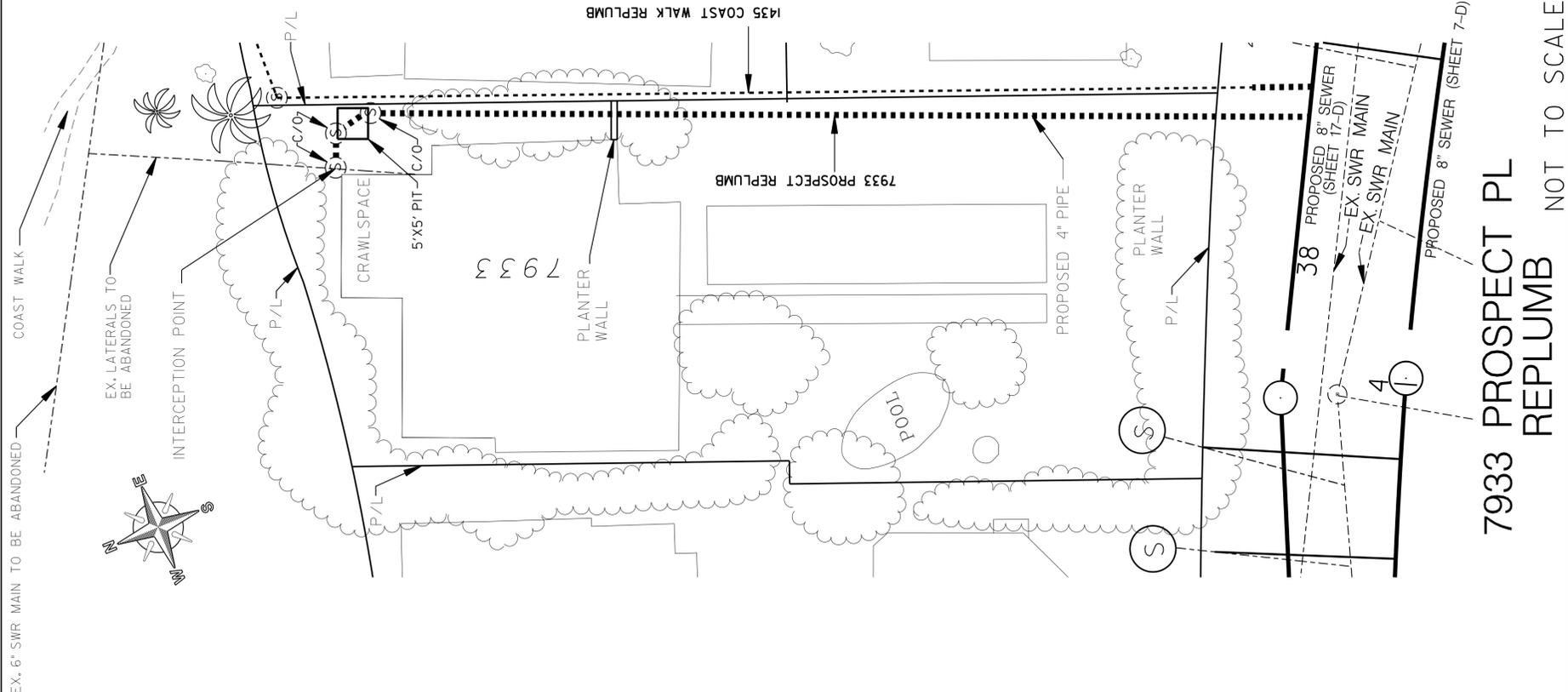


SEWER AND WATER GROUP 820		C-29	
WATER POLLUTION CONTROL SITE PLAN			
CITY OF SAN DIEGO CALIFORNIA ENGINEERING AND CAPITAL PROJECTS DEPARTMENT SHEET 32 OF 48 SHEETS	APPROVED BY: <i>M. Jimenez</i> FOR CITY ENGINEER	DATE: 5/1/13	WATER W.D. B-0010 SEWER W.D. B-00382
DESCRIPTION: ORIGINAL	BY: M/EE	APPROVED DATE: 5/1/13	PROJECT MANAGER: MICHAEL NINH
FILED	PROJECT ENGINEER: MERYL JIMENEZ	DATE	PROJ. NO.: 246-1683
			COORDINATE: 6244407.1886444
			COORDINATE: 35408-32-D
CONTRACTOR	DATE STARTED	DATE COMPLETED	

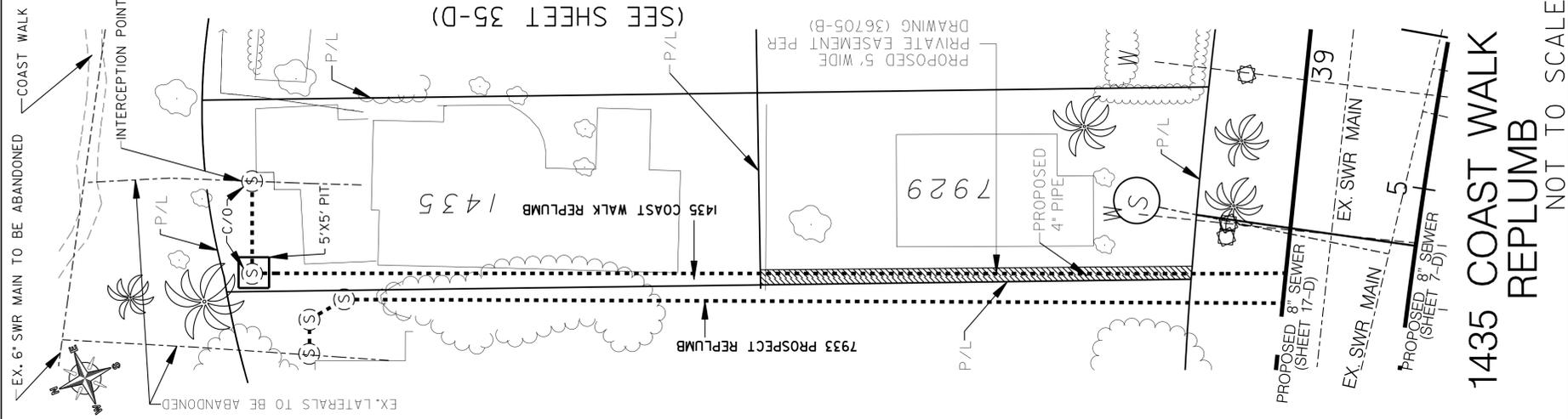




**7963 PROSPECT PL  
REPLUMB**  
NOT TO SCALE



**7933 PROSPECT PL  
REPLUMB**  
NOT TO SCALE



**1435 COAST WALK  
REPLUMB**  
NOT TO SCALE

- LEGEND**
- EXISTING LATERAL
  - PROPOSED 4" LATERAL
  - ..... REPLUMB
  - Ⓢ SEWER CLEAN OUT
  - Ⓞ EXISTING MANHOLE
  - ☁ SHRUBS
  - ☀ TREES
  - ▨ PRIVATE EASEMENT AREA
  - P/L PROPERTY LINE

**REPLUMBING GENERAL NOTES:**

1. CONTRACTOR SHALL REFER TO SECTION 4.6 IN THE GEOTECHNICAL INVESTIGATION BY SOUTHERN CALIFORNIA SOIL & TESTING, INC. DATED FEBRUARY 4, 2011, WHEN CHOOSING TRENCHLESS METHOD.
2. CONTRACTOR SHALL ANTICIPATE COBBLES BETWEEN 6 AND 12 INCHES IN DIAMETER FOR TRENCHLESS METHOD.
3. CONTRACTOR SHALL REPLACE ALL LANDSCAPE AND HARDSCAPE DAMAGED BY CONSTRUCTION. ALL EX. PAVEMENT SHALL BE REPLACED IN KIND. NO PARTIAL PANEL REPLACEMENT. WHOLE PANEL SHALL BE REMOVED AND REPLACED TO THE NEAREST DESIGNED COLD JOINT.
4. ALL EXISTING IRRIGATION PIPE SHALL BE RELOCATED AS NEEDED TO INSTALL SEWER LATERALS.

**7963 PROSPECT PLACE**

THE PROPOSED 4" SEWER LATERAL SHALL BE INSTALLED BY TRENCHLESS METHOD. OPEN TRENCH EXCAVATION SHALL BE LIMITED TO WORK CONNECTING EX. PIPE TO PROPOSED LATERAL IN TRENCHLESS PIT. REPLUMB PIPING AS SHOWN IS APPROX. 330'.

**7933 PROSPECT PLACE**

CONTRACTOR SHALL REROUTE ALL EX. SEWER PIPE IN CRAWLSPACE TO FLOW TOWARD S/E CORNER OF BUILDING AS SHOWN.

THE PROPOSED 4" SEWER LATERAL SHALL BE INSTALLED BY TRENCHLESS METHOD. OPEN TRENCH EXCAVATION SHALL BE LIMITED TO WORK CONNECTING EX. PIPE TO PROPOSED LATERAL IN TRENCHLESS PIT. REPLUMB PIPING AS SHOWN IS APPROX. 270'.

**1435 COAST WALK**

THE PROPOSED 4" SEWER LATERAL SHALL BE INSTALLED BY TRENCHLESS METHOD. OPEN TRENCH EXCAVATION SHALL BE TO WORK CONNECTING EX. PIPE TO PROPOSED LATERAL IN TRENCHLESS PIT. REPLUMB PIPING AS SHOWN IS APPROX. 290'.

C-31

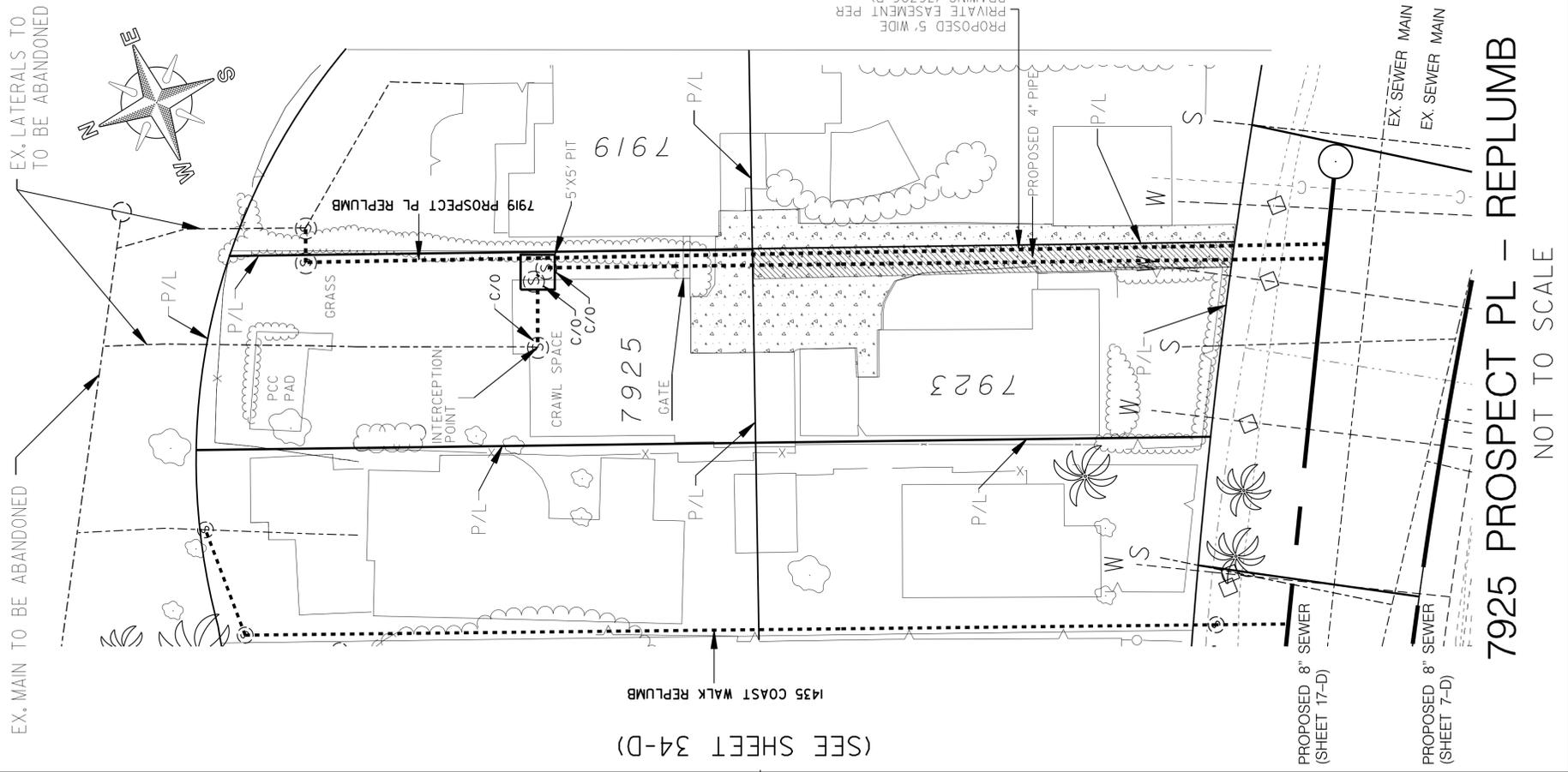
**SEWER AND WATER GROUP 820**  
SEWER REPLUMB DETAILS

CITY OF SAN DIEGO CALIFORNIA ENGINEERING AND CAPITAL PROJECTS DEPARTMENT SHEET 34 OF 48 SHEETS		WATER W.D. SEWER W.D. NO. B-00382	
APPROVED BY: <i>[Signature]</i>	DATE: 5/1/13	PROJECT MANAGER: MICHAEL NINH	PROJECT ENGINEER: MERYL JIMENEZ
DESCRIPTION: ORIGINAL	M/WR	DATE	FILED
CONTRACTOR	DATE STARTED	INSPECTOR	DATE COMPLETED
			35408-34-D



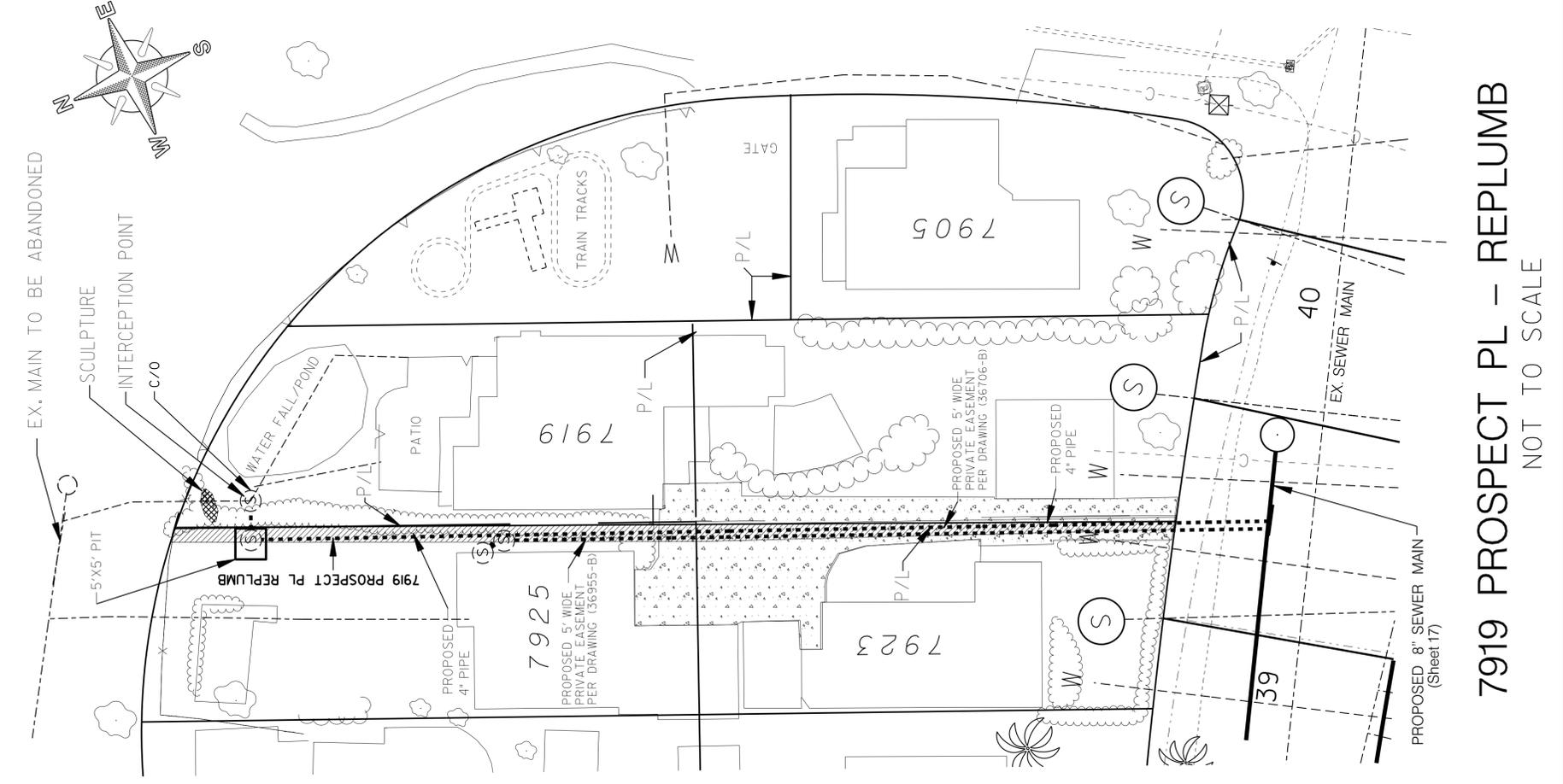
(SEE SHEET 34-D)

1435 COAST WALK REPLUMB



7925 PROSPECT PL - REPLUMB

NOT TO SCALE



7919 PROSPECT PL - REPLUMB

NOT TO SCALE

**LEGEND**

---	EXISTING LATERAL	AC DRIVEWAY
---	PROPOSED 4" LATERAL REPLUMB	P/L
---	SEWER CLEAN OUT	PROPERTY LINE
⊙	EXISTING MANHOLE	
☁	SHRUBS	
☀	TREES	
▨	PRIVATE EASEMENT AREA	

**REPLUMBING GENERAL NOTES:**

- CONTRACTOR SHALL REFER TO SECTION 4.6 IN THE GEOTECHNICAL INVESTIGATION BY SOUTHERN CALIFORNIA GEOTECHNICAL SOIL & TESTING, INC. DATED FEBRUARY 4, 2011, WHEN CHOOSING TRENCHLESS METHOD.
- CONTRACTOR SHALL ANTICIPATE COBBLES BETWEEN 6 AND 12 INCHES IN DIAMETER FOR TRENCHLESS METHOD.
- CONTRACTOR SHALL REPLACE ALL LANDSCAPE AND HARDSCAPE DAMAGED BY CONSTRUCTION, ALL EX. PAVEMENT SHALL BE REPLACED IN KIND, NO PARTIAL PANEL REPLACEMENT. WHOLE PANEL SHALL BE REMOVED AND REPLACED TO THE NEAREST DESIGNED COLD JOINT.
- ALL EXISTING IRRIGATION PIPE SHALL BE RELOCATED AS NEEDED TO INSTALL SEWER LATERALS.

**7919 PROSPECT PLACE**

THE PROPOSED 4" SEWER LATERAL SHALL BE INSTALLED BY TRENCHLESS METHOD.  
 CONTRACTOR SHALL REROUTE ALL EX. SEWER PIPE AND CONNECT INTO 7925 PROSPECT PL IN EASMENT AS SHOWN.  
 7919 PROSPECT PL PROPOSED SEWER LATERAL TO RUN PARALLEL WITH 7925 SEWER LATERAL.  
 IF NECESSARY, TEMPORARY RELOCATION/BRACING OF EXISTING HARDSCAPE FEATURES SUCH AS SCULPTURE AND ORNAMENTAL BOULDERS ETC... REPLUMB PIPING AS SHOWN IS APPROX. 290'.

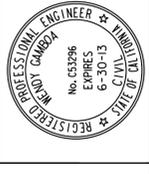
**7925 PROSPECT PLACE**

REPLUMB PIPING AS SHOWN IS APPROX. 220' (NOT INCLUDING CRAWL SPACE WORK)  
 THE PROPOSED 4" SEWER LATERAL SHALL BE INSTALLED BY TRENCHLESS METHOD.  
 CONTRACTOR SHALL REROUTE ALL EX. SEWER PIPE AS SHOWN INSIDE CRAWLSPACE TO FLOW TOWARDS N/E CORNER OF BUILDING.

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SEWER AND WATER GROUP 820  
 SEWER REPLUMB DETAILS

CITY OF SAN DIEGO CALIFORNIA ENGINEERING AND CAPITAL PROJECTS DEPARTMENT SHEET 35 OF 48 SHEETS		WATER W.D. SEWER NO. B-00382
APPROVED BY: <i>M. Jimenez</i> FOR CITY ENGINEER	DATE: 5/1/13	PROJECT MANAGER: MICHAEL NINH
DESCRIPTION: ORIGINAL	BY: M/BR	PROJECT ENGINEER: MERYL JIMENEZ
	APPROVED DATE:	FILED DATE:
CONTRACTOR:	DATE STARTED:	COORDINATE: 6244407.1886444
INSPECTOR:	DATE COMPLETED:	COORDINATE: 35408-35-D

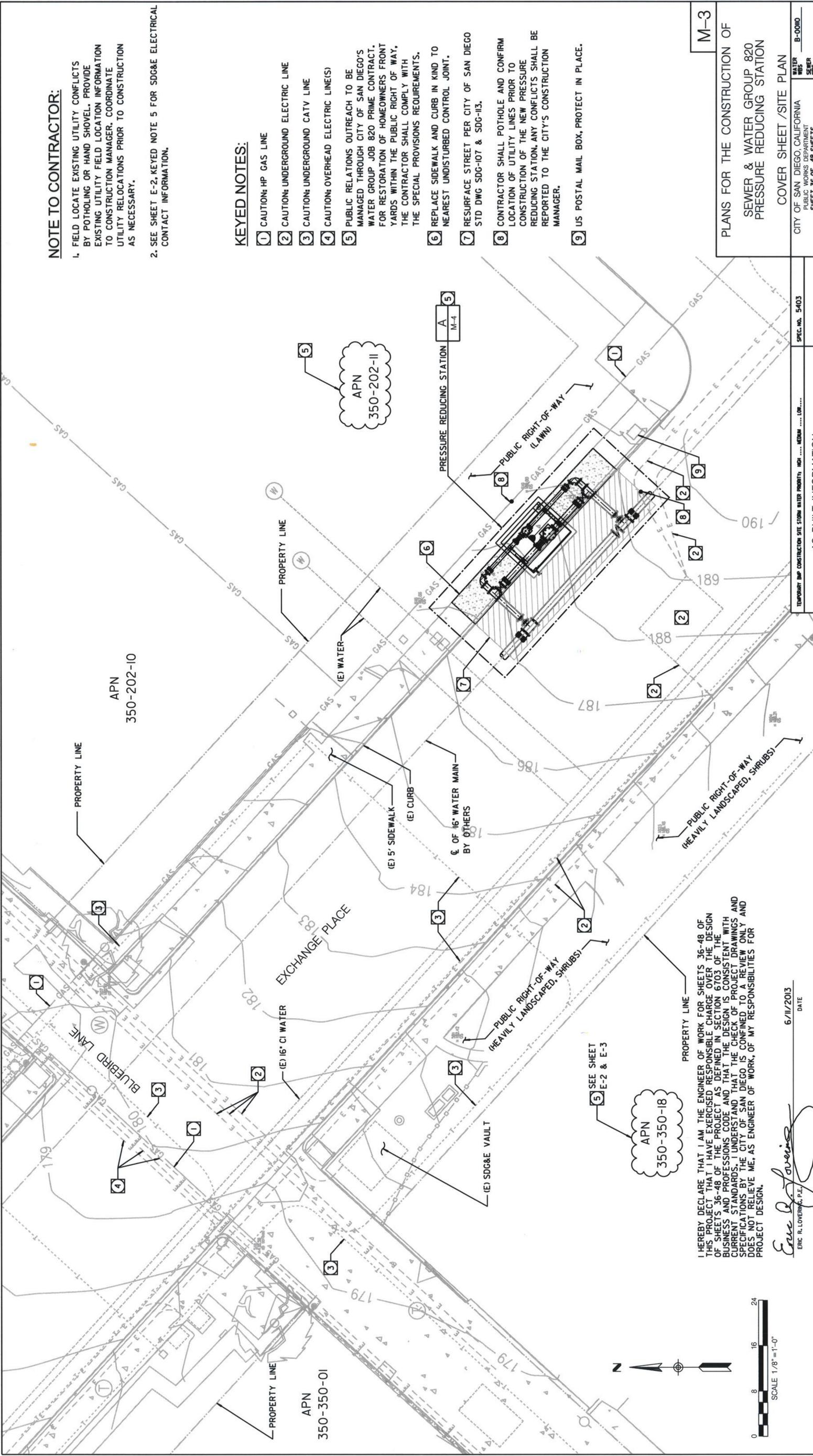


**NOTE TO CONTRACTOR:**

- FIELD LOCATE EXISTING UTILITY CONFLICTS BY POT-HOLING OR HAND SHOVEL. PROVIDE EXISTING UTILITY FIELD LOCATION INFORMATION TO CONSTRUCTION MANAGER. COORDINATE UTILITY RELOCATIONS PRIOR TO CONSTRUCTION AS NECESSARY.
- SEE SHEET E-2, KEYED NOTE 5 FOR SDG&E ELECTRICAL CONTACT INFORMATION.

**KEYED NOTES:**

- CAUTION: HP GAS LINE
- CAUTION: UNDERGROUND ELECTRIC LINE
- CAUTION: UNDERGROUND CATV LINE
- CAUTION: OVERHEAD ELECTRIC LINE(S)
- PUBLIC RELATIONS OUTREACH TO BE MANAGED THROUGH CITY OF SAN DIEGO'S WATER GROUP JOB 820 PRIME CONTRACT, FOR RESTORATION OF HOMEOWNERS FRONT YARDS WITHIN THE PUBLIC RIGHT OF WAY. THE CONTRACTOR SHALL COMPLY WITH THE SPECIAL PROVISIONS REQUIREMENTS.
- REPLACE SIDEWALK AND CURB IN KIND TO NEAREST UNDISTURBED CONTROL JOINT.
- RESURFACE STREET PER CITY OF SAN DIEGO STD DWG SDG-107 & SDG-113.
- CONTRACTOR SHALL POTHOLE AND CONFIRM LOCATION OF UTILITY LINES PRIOR TO CONSTRUCTION OF THE NEW PRESSURE REDUCING STATION. ANY CONFLICTS SHALL BE REPORTED TO THE CITY'S CONSTRUCTION MANAGER.
- US POSTAL MAIL BOX, PROTECT IN PLACE.



I HEREBY DECLARE THAT I AM THE ENGINEER OF WORK FOR SHEETS 36-48 OF THIS PROJECT THAT I HAVE EXERCISED RESPONSIBLE CHARGE OVER THE DESIGN OF SHEETS 36-48 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 IS CONFINED TO A REVIEW ONLY AND DOES NOT RELIEVE ME, AS ENGINEER OF WORK, OF MY RESPONSIBILITIES FOR PROJECT DESIGN.

*Eric R. Loving*  
 ERIC R. LOVING, P.E.  
 DATE: 6/11/2013



**M-3**

PLANS FOR THE CONSTRUCTION OF  
 SEWER & WATER GROUP 820  
 PRESSURE REDUCING STATION

COVER SHEET / SITE PLAN

CITY OF SAN DIEGO, CALIFORNIA  
 PUBLIC WORKS DEPARTMENT  
 SHEET 36 OF 48 SHEETS

APPROVED FOR CITY ENGINEER: MICHAEL, MMH  
 PROJECT MANAGER

PRINT NAME: MERYL JIMENEZ  
 PROJECT ENGINEER

DESCRIPTION: ORIGINAL  
 LRI

DATE: 6/11/13

FILED: 246-1683  
 CDS# COORDINATE

DATE STARTED: 1896-6244  
 DATE COMPLETED: 35408-36-D



TEMPORARY IMP CONSTRUCTION SITE STORM WATER PRIORITY: HIGH ... MEDIUM ... LOW ...

SPEC. NO. 5403

AS-BUILT INFORMATION	
MATERIALS	MANUFACTURER
WATER PIPE, DI CLASS 250	
WATER PIPE, DI CLASS 350	
PRESSURE REDUCING VALVES	
PRECAST VALVE VAULT	
BUTTERFLY VALVE	
GATE VALVES	

CITY OF SAN DIEGO  
 PUBLIC WORKS PROJECT

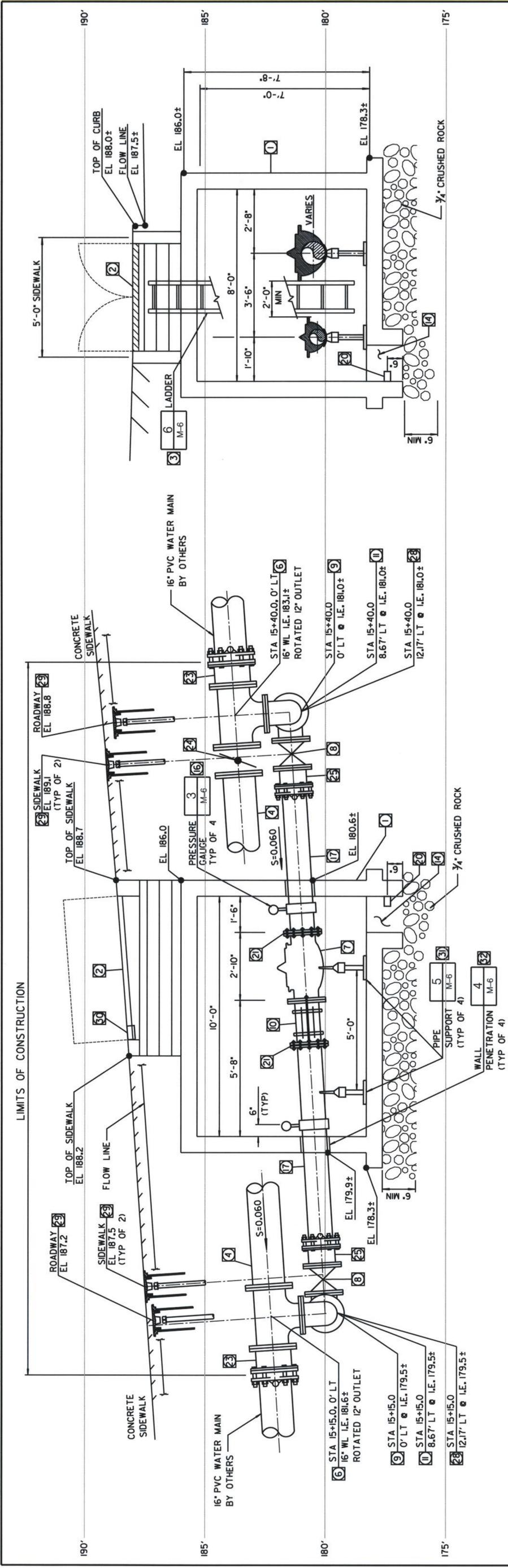
CONSTRUCTION CHANGE / ADDENDUM

CHANGE DATE	AFFECTED OR ADDED SHEET NUMBERS	APPROVAL NO.

WARNING: IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE.

CONSTRUCTION CHANGE / ADDENDUM	AFFECTED OR ADDED SHEET NUMBERS	APPROVAL NO.





VAULT SECTION B  
SCALE: 1/2" = 1'-0"

VAULT SECTION C  
SCALE: 1/2" = 1'-0"

KEYED NOTES

- 1 10'-0" x 8'-0" x 7'-0" (INSIDE DIMENSION) PRECAST CONCRETE VAULT, CONTRACTOR TO PROVIDE SHOP DRAWING PRIOR TO MANUFACTURING.
- 2 ALUMINUM CHECKER PLATE, FULL 6' X 4'-6" OPENING, CHANNEL FRAME, SPRING ASSISTED, HINGED COVER, H2O RATED, SEGMENTED INTO TWO PANELS 6' x 2'-3" DUAL-LEAF ACCESS HATCH BILCO JD-H2O SPRING ASSISTED.
- 3 VAULT LADDER W/ LADDER UP POST.
- 4 16" DI SPOOL (FLGxFLG).
- 5 16"x16"x12" TEE (FLGxFLGxFLG).
- 6 12" PRESSURE REDUCING VALVE, (FLGxFLG) W/ VALVE POSITION INDICATOR, CRD PILOT, CHECK FEATURE, AND RIGHT HAND CONTROLS.
- 7 12" GATE VALVE (FLGxFLG).
- 8 12" - 90° SHORT RADIUS ELBOW (FLGxFLG).
- 9 12" FLEXIBLE COUPLING WITH TIE-ROD THRUST RESTRAINT, ATTACH TIE-ROD TO 12" FLANGES WITH ROMAC HARNESS LUGS OR EQUAL.
- 10 12"x12"x12" TEE (FLGxFLGxFLG).
- 11 18"x18"x18" SUMP.

- 16 PRESSURE GAUGE W/ 1" OUTLET FOR 1/2" PRESSURE TUBING, SADDLE TAP CONNECTION TO PIPE.
- 17 12" DI SPOOL (FLGxPE).
- 18 FLOOD ALARM FLOAT SWITCH.
- 19 INSULATING FLANGE KIT.
- 20 16" RESTRAINED FLANGED COUPLING ADAPTER (FLxMJ) COMPATIBLE FOR PVC WITH DIP FLANGE, ROMAC RFCA-PVC-17.40 OR EQUAL.
- 21 16" BUTTERFLY VALVE, NORMALLY CLOSED RED-VALVE (FLGxFLG).
- 22 12" RESTRAINED FLANGED COUPLING ADAPTER (FLxMJ) FOR DIP, ROMAC RFCA-13.20, OR EQUAL.
- 23 12" x 8" - 90° REDUCING ELBOW (FLGxFLG).
- 24 GATE WELL WITH CAP PER SDW 153 AND 152, TYP FOR ALL 7 BURIED VALVES.
- 25 INTRUSION SWITCH, VAULT HATCH.
- 26 ADJUSTABLE PIPE SUPPORT.

WALL PENETRATION.



CHANGE	DATE	CONSTRUCTION CHANGE / ADDENDUM	APPROVAL NO.
		AFFECTED OR ADDED SHEET NUMBERS	

**WARNING**

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE.

**CITY OF SAN DIEGO**  
**PUBLIC WORKS PROJECT**

**LEE & RO, Inc.**  
San Diego, California

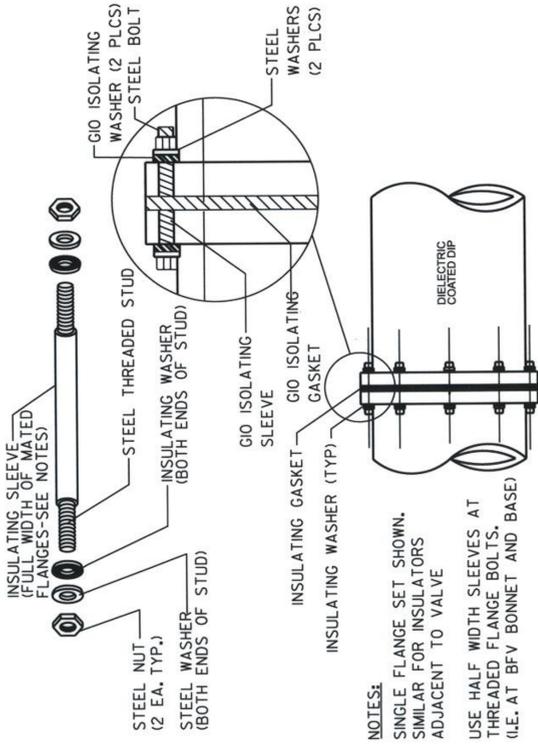
CONSULTANT

SCALE  
HORIZONTAL 1/2" = 1'-0"  
VERTICAL N/A

TEMP BMP CS/SMP.	SPEC. NO. 5403	M-5
SEWER & WATER GROUP 820 PRESSURE REDUCING STATION		
VAULT SECTIONS		
CITY OF SAN DIEGO, CALIFORNIA ENGINEERING AND CAPITAL PROJECTS DEPARTMENT SHEET 36 OF 48 SHEETS	WBS B-0010	WBS
APPROVED FOR CITY ENGINEER	DATE 10/11/13	DATE
DESCRIPTION ORIGINAL	BY MERYL JIMENEZ	FILED
LRI	246-1683	PROJECT ENGINEER
	1886-6244	JANET COOPER
		CSRB COORDINATOR
		DATE STARTED
		DATE COMPLETED
CONTRACTOR		35408-38-D
INSPECTOR		

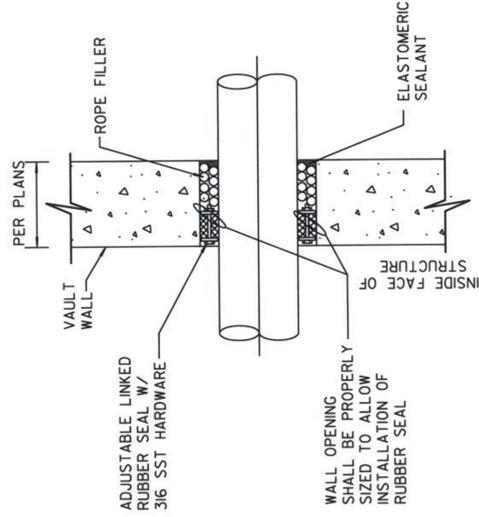
**CATHODIC PROTECTION NOTES:**

1. WAX TAPE COATING
  - A. ALL BURIED NON-DIELECTRICALLY COATED PIPE SECTIONS, NON-DIELECTRICALLY COATED PIPE SPECIALS AND BURIED INSULATING FLANGE KITS SHALL BE WAX TAPE COATED. WAX TAPE COATING SHALL BE IN ACCORDANCE WITH AWWA C27. THE FLANGE AND BOLT SURFACES SHALL BE PRIME COATED WITH A BLEND OF PETROLATUM, PLASTICIZER, INERT FILLERS AND CORROSION INHIBITOR A PASTE-LIKE CONSISTENCY. THE PRIMER SHALL BE TRENTON OR APPROVED EQUAL.
  - B. FLANGE COVERING MATERIAL SHALL BE A SYNTHETIC FELT TAPE SATURATED WITH A BLEND OF PETROLATUM, PLASTICIZERS AND CORROSION INHIBITORS THAT IS EASILY FORMABLE OVER IRREGULAR SURFACES. THE WAX SHALL BE TRENTON NO.1 OR APPROVED EQUAL.
  - C. THE PRIMED AND WAX-TAPE WRAPPED FLANGE SHALL BE WRAPPED WITH A PLASTIC TAPE COVERING CONSISTING OF THREE (3) LAYERS OF 50 GAUGE OR 10 MIL. POLYVINYLIDENE CHLORIDE HIGH CLING MEMBRANES WOUND TOGETHER AS A SINGLE SHEET. THE OUTER COVERING SHALL BE TRENTON OR APPROVED EQUAL.
  - D. THE PRIMED AND WAX-TAPE WRAPPED FLANGE SHALL BE WRAPPED WITH A PLASTIC TAPE COVERING CONSISTING OF THREE (3) LAYERS OF 50 GAUGE OR 10 MIL. POLYVINYLIDENE CHLORIDE HIGH CLING MEMBRANES WOUND TOGETHER AS A SINGLE SHEET. THE OUTER COVERING SHALL BE TRENTON OR APPROVED EQUAL.
2. INSULATING FLANGE KITS
  - A. INSULATING FLANGE GASKETS SHALL BE TYPE EGIO GLASS MATERIAL WITH A RECTANGULAR NITILE O-RING SEAL FOR OPERATING BETWEEN 20-DEG. AND 150-DEG. FAHRENHEIT. GASKETS SHALL BE SUITABLE FOR TEMPERATURE AND PRESSURE RATING OF THE PIPING SYSTEM IN WHICH THEY ARE INSTALLED.
  - B. INSULATING SLEEVES SHALL BE 1/32-INCH THICK TUBE, FULL LENGTH, GIO GLASS FOR OPERATING BETWEEN 20-DEG. AND 15-DEG. FAHRENHEIT. INSULATING FLANGE WASHERS ARE TO BE 1/8-INCH THICK. FOR INSTALLATIONS AT THREADED VALVE FLANGES, THE SLEEVES SHALL BE HALF LENGTH, OR APPROVED EQUAL.
  - C. INSULATING WASHERS SHALL BE 1/8-INCH THICK, GIO GLASS FOR OPERATING BETWEEN 20-DEG. AND 150-DEG. FAHRENHEIT.
  - D. STEEL WASHERS FOR INSULATING FLANGE KITS SHALL BE 1/8-INCH THICK CADMIUM PLATED STEEL TO BE PLACED BETWEEN THE NUT AND INSULATING WASHER.
  - E. INSULATING FLANGES SHALL BE INSPECTED, TESTED AND APPROVED BY THE CITY'S CORROSION ENGINEER (619)235-1940 BEFORE THE WAX TAPE IS APPLIED.
  - F. NO ELECTRICALLY CONDUCTIVE PIGMENTS OR PAINTS SHALL BE USED EITHER INTERNALLY OR EXTERNALLY ON THE BOLTS, WASHERS OR FLANGES.



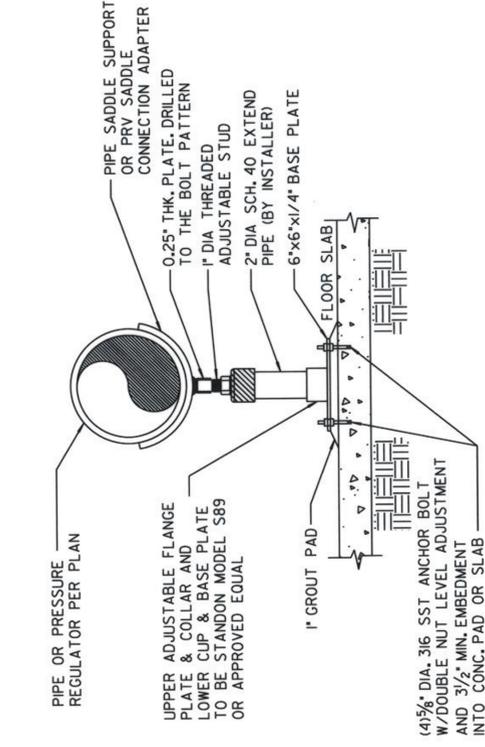
**IN-VAULT INSULATING FLANGE KIT**

DETAIL 1  
SCALE: NONE M-4



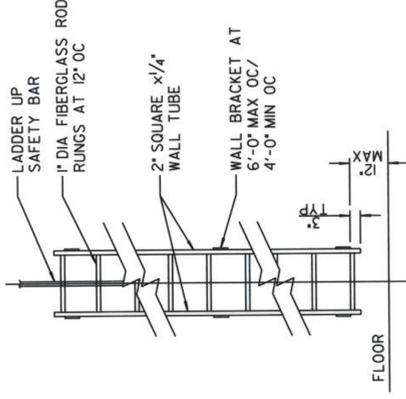
**WALL PENETRATION DETAIL (TYP)**

DETAIL 4  
SCALE: NONE M-5



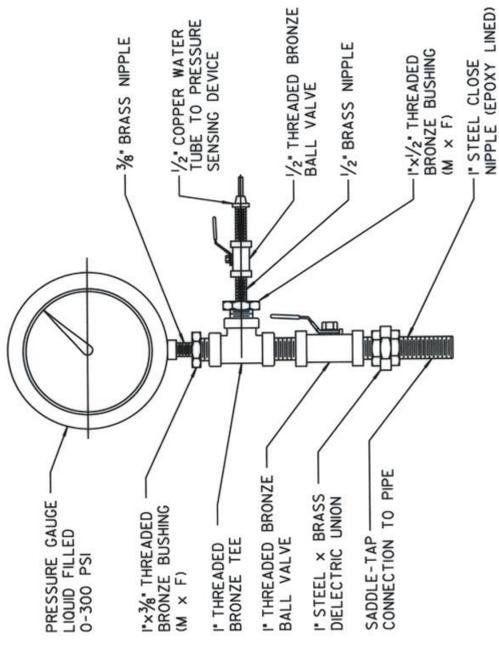
**ADJUSTABLE PIPE SUPPORT DETAIL**

DETAIL 5  
SCALE: NONE M-5



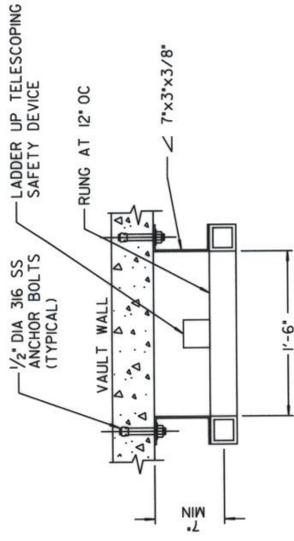
**VAULT LADDER**

DETAIL 6  
SCALE: NONE M-4



**SECTION PRESSURE GAUGE AND SENSING DETAIL**

DETAIL 3  
SCALE: NONE M-5



M-6

TEMP. IMP. CS/SRP. SPEC. NO. 5403

**SEWER & WATER GROUP 820 PRESSURE REDUCING STATION**

**DETAILS**

CITY OF SAN DIEGO, CALIFORNIA ENGINEERING AND CAPITAL PROJECTS DEPARTMENT SHEET 39 OF 48 SHEETS	WBS B-0010	APPROVED BY: <i>[Signature]</i> DATE: 6/14/13	REVISION ORIGINAL	DATE FILED	PROJECT ENGINEER MERYL JIMENEZ	LAMBERT COORDINATE 246-1683	CONTRACTOR 1886-6244	DATE STARTED	DATE COMPLETED 35408-39-D
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CONSULTANT

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San Diego, California

HORIZONTAL N/A  
VERTICAL N/A

SCALE

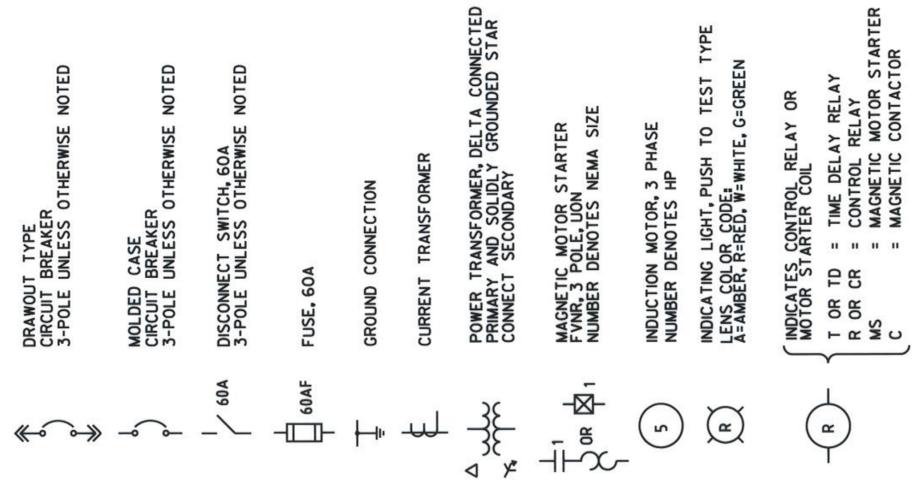


**CITY OF SAN DIEGO PUBLIC WORKS PROJECT**

WARNING  
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CHANGE DATE	CONSTRUCTION CHANGE / ADDENDUM	AFFECTED OR ADDED SHEET NUMBERS	APPROVAL NO.

### ELECTRICAL DIAGRAM LEGEND



DRAWOUT TYPE CIRCUIT BREAKER 3-POLE UNLESS OTHERWISE NOTED

MOLDED CASE CIRCUIT BREAKER 3-POLE UNLESS OTHERWISE NOTED

DISCONNECT SWITCH, 60A 3-POLE UNLESS OTHERWISE NOTED

FUSE, 60A

GROUND CONNECTION

CURRENT TRANSFORMER

POWER TRANSFORMER, DELTA CONNECTED PRIMARY AND SOLIDLY GROUND STAR CONNECT SECONDARY

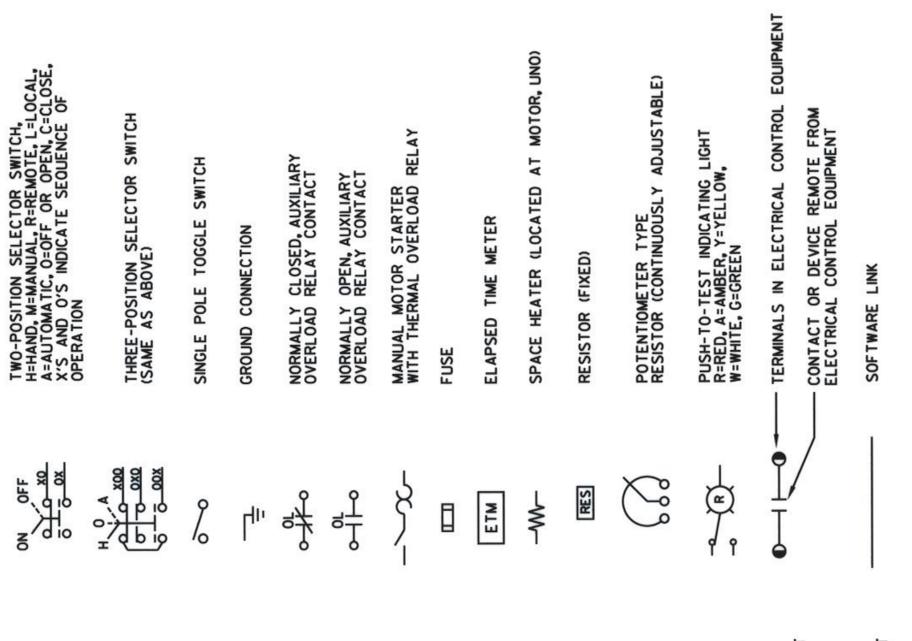
MAGNETIC MOTOR STARTER FVNR, 3 POLE, LON NUMBER DENOTES NEMA SIZE

INDUCTION MOTOR, 3 PHASE NUMBER DENOTES HP

INDICATING LIGHT, PUSH TO TEST TYPE LENS COLOR CODE: A=AMBER, R=RED, W=WHITE, G=GREEN

INDICATES CONTROL RELAY OR MOTOR STARTER COIL

T OR TD = TIME DELAY RELAY  
R OR CR = CONTROL RELAY  
MS = MAGNETIC MOTOR STARTER  
C = MAGNETIC CONTACTOR



TWO-POSITION SELECTOR SWITCH, H=HAND, M=MANUAL, R=REMOTE, L=LOCAL, A=AUTOMATIC, O=OFF OR OPEN, C=CLOSE, X'S AND O'S INDICATE SEQUENCE OF OPERATION

THREE-POSITION SELECTOR SWITCH (SAME AS ABOVE)

SINGLE POLE TOGGLE SWITCH

GROUND CONNECTION

NORMALLY CLOSED, AUXILIARY OVERLOAD RELAY CONTACT

NORMALLY OPEN, AUXILIARY OVERLOAD RELAY CONTACT

MANUAL MOTOR STARTER WITH THERMAL OVERLOAD RELAY

FUSE

ELAPSED TIME METER

SPACE HEATER (LOCATED AT MOTOR, UNO)

RESISTOR (FIXED)

POTENTIOMETER TYPE RESISTOR (CONTINUOUSLY ADJUSTABLE)

PUSH-TO-TEST INDICATING LIGHT R=RED, A=AMBER, Y=YELLOW, W=WHITE, G=GREEN

TERMINALS IN ELECTRICAL CONTROL EQUIPMENT CONTACT OR DEVICE REMOTE FROM ELECTRICAL CONTROL EQUIPMENT

SOFTWARE LINK

### ABBREVIATIONS

A	AMPERE (AMPS), ANALOG	NEW
AC	ALTERNATING CURRENT/ AIR CONDITIONING	N
AF	AMPS-FRAME	NEMA
AIC	AVAILABLE INTERRUPTING CURRENT	NC
AM	AMP METER	NF
AS	AMP SWITCH	NL
AT	AMPS-TRIP	NL
ATS	AUTOMATIC TRANSFER SWITCH	N/O
AUTO	AUTOMATIC	N/P
AWG	AMERICAN WIRE GAUGE	OC
BKR	BREAKER	P
BPS	BOOSTER PUMP STATION	PB
BSC	BARE STRANDED COPPER	PC
C	CONDUIT	PH
CID	CIRCUIT BREAKER	PNL
CKT	CURRENT INDICATING TRANSMITTER	PM
CO	CIRCUIT ONLY	RECEPT
CP	CONTROL PANEL	RTD
CPT	CURRENT POTENTIAL TRANSFORMER	RVAT
CR	CONTROL RELAY	S
CT	CURRENT TRANSFORMER	SW
CU	COPPER	SWBD
DC	DISCONNECT	SWGR
DCS	DISTRIBUTIVE CONTROL SYSTEM	TB
EB	ENCLOSED BREAKER	TD
ETM	ELAPSED TIME METER	TDI
(E)EXST	EXISTING	TEMP
E.G.	EQUIPMENT GROUND	TEMP
FBK	FEEDER BREAKER	TOU
FLA	FULL LOAD AMPS	TSP
FVNR	FULL VOLTAGE NON-REVERSING	TST
G-GND	GROUND	TT
GFI	GROUND FAULT INTERRUPTER	TVSS
GIW	GROUND FAULT INTERRUPTER, WEATHER PROOF	UG
HH	HAND HOLE	UN
HID	HIGH INTENSITY DISCHARGE (LAMP)	UPS
HMI	HUMAN MACHINE INTERFACE	V
HPS	HIGH PRESSURE SODIUM (LAMP)	VA
HTR	HEATER	VAC
HZ	HERTZ	VDC
I/O	INPUT/OUTPUT	VFD
J	JUNCTION BOX	VS
K	KIRK KEY INTERLOCK	W
KCM	THOUSAND CIRCULAR MILS (OR MCM)	WP
KV	KILOVOLT	XFMR
KVA	KILOVOLT AMPERES	
L	LINE	
LCP	LOCAL CONTROL PANEL	
LOS	LOCK-OUT STOP PUSH BUTTON	
LTG	LIGHTING	
MA	MILLIAMPERE	
MBK	MAIN BREAKER	
MCC	MOTOR CONTROL CENTER	
MCP	MOTOR CIRCUIT PROTECTION	
MH	MANHOLE	
MIC	MANUFACTURER'S INTERCONNECTING CABLE	
MOV	MOTOR OPERATED VALVE	
MS	MAGNETIC STARTER	
MTS	MANUAL TRANSFER SWITCH	

TEMP. MAP CS-50P. SPEC. NO. 5403

**E-1**

SEWER & WATER GROUP 820  
PRESSURE REDUCING STATION

ELECTRICAL LEGENDS, SYMBOLS, & ABBREVIATIONS

CITY OF SAN DIEGO, CALIFORNIA  
ENGINEERING AND CAPITAL PROJECTS DEPARTMENT  
SHEET 40 OF 48 SHEETS

WBS B-0010  
WBS

APPROVED BY: *[Signature]* DATE: 6/14/13

DESIGNED BY: MERYL JIMENEZ PROJECT ENGINEER

ORIGINAL LRI DATE FILED

246-1683  
1886-6244

CONTRACTOR: DATE STARTED: 35408-40-D  
INSPECTOR: DATE COMPLETED:



CONSULTANT

**LEE & RO, Inc.**  
San Diego, California

HORIZONTAL  
VERTICAL

SCALE

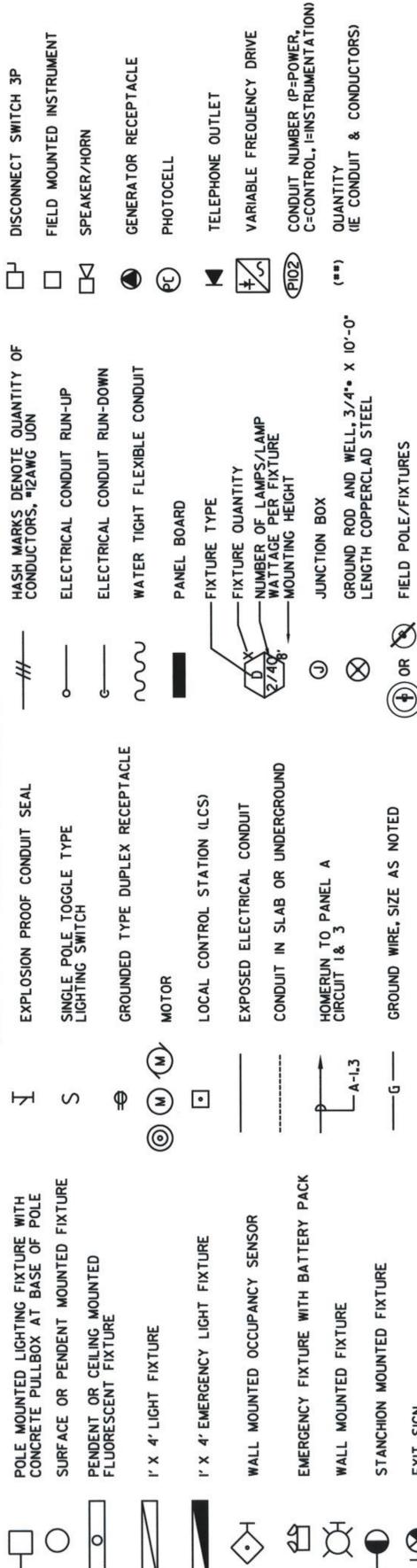


CITY OF SAN DIEGO  
PUBLIC WORKS PROJECT

WARNING  
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CHANGE	DATE	CONSTRUCTION CHANGE / ADDENDUM	AFFECTED OR ADDED SHEET NUMBERS	APPROVAL NO.

### ELECTRICAL PLAN LEGEND



EXPLOSION PROOF CONDUIT SEAL

SINGLE POLE TOGGLE TYPE LIGHTING SWITCH

GROUND TYPE DUPLEX RECEPTACLE

MOTOR

LOCAL CONTROL STATION (LCS)

EXPOSED ELECTRICAL CONDUIT

CONDUIT IN SLAB OR UNDERGROUND

HOMERUN TO PANEL A CIRCUIT 1 & 3

GROUND WIRE, SIZE AS NOTED

POLE/ FIXTURE

FIELD MOUNTED INSTRUMENT

DISCONNECT SWITCH 3P

FIELD MOUNTED INSTRUMENT

SPEAKER/HORN

GENERATOR RECEPTACLE

PHOTOCELL

TELEPHONE OUTLET

VARIABLE FREQUENCY DRIVE

CONDUIT NUMBER (P=POWER, C=CONTROL, I=INSTRUMENTATION)

QUANTITY (IE CONDUIT & CONDUCTORS)

HASH MARKS DENOTE QUANTITY OF CONDUCTORS, \*IZAWG UNO

ELECTRICAL CONDUIT RUN-UP

ELECTRICAL CONDUIT RUN-DOWN

WATER TIGHT FLEXIBLE CONDUIT

PANEL BOARD

FIXTURE TYPE

FIXTURE QUANTITY

NUMBER OF LAMPS/LAMP WATTAGE PER FIXTURE

MOUNTING HEIGHT

JUNCTION BOX

GROUND ROD AND WELL, 3/4" x 10'-0"

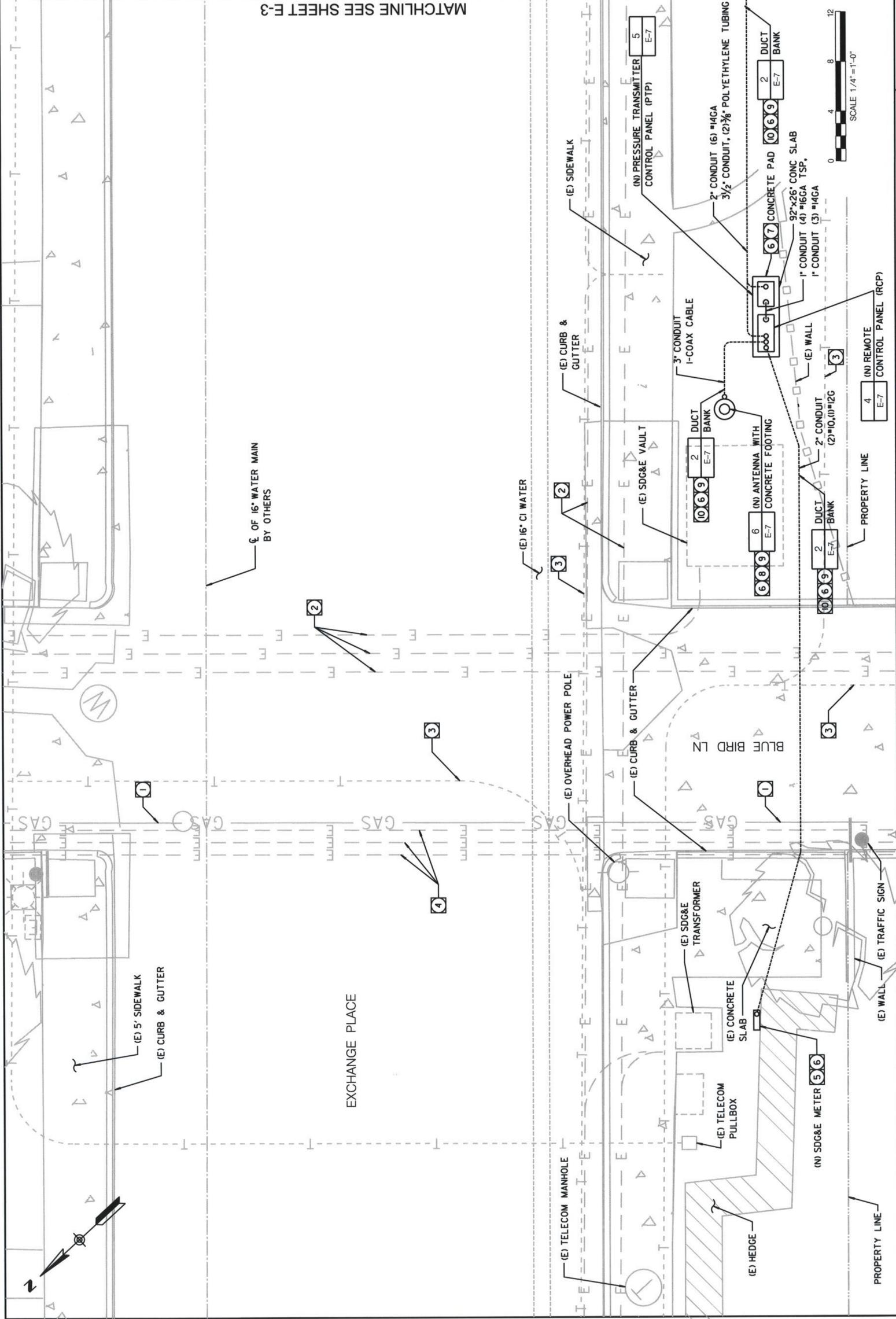
LENGTH COPPERCLAD STEEL

FIELD POLE/FIXTURES

**KEYED NOTES:**

- 1 CAUTION: HP GAS LINE
- 2 CAUTION: UNDERGROUND ELECTRIC LINE
- 3 CAUTION: UNDERGROUND CATV LINE
- 4 CAUTION: OVERHEAD ELECTRIC LINE(S)
- 5 CONTRACTOR SHALL TERMINATE CONDUCTORS AT PROPOSED SDG&E 20A/IP BREAKER. CONTACT BRENDA HARTT WITH SDG&E AT (858) 636-3974, BHARTT@SEMRAUTILITIES.COM TO COORDINATE METER INSTALLATION.
- 6 EXACT CONDUIT ROUTING TO BE DETERMINED ON THE FIELD. CONTRACTOR SHALL POTHOLE CROSSING UTILITIES AND PROVIDE INFORMATION TO THE CONSTRUCTION MANAGER PRIOR TO TRENCHING.
- 7 SEE SHEET E-7 FOR DIMENSIONS OF CONCRETE PAD.
- 8 EXACT CONDUIT ROUTING AND PLACEMENT OF ANTENNA SHALL DEPEND ON FIELD LOCATION OF EXISTING UTILITIES. CONTRACTOR SHALL COORDINATE RELOCATIONS IF NECESSARY.
- 9 FIELD LOCATE EXISTING UTILITY CONFLICTS BY POTHOLING OR HAND SHOVEL. PROVIDE EXISTING UTILITY FIELD LOCATION INFORMATION TO CONSTRUCTION MANAGER. COORDINATE UTILITY RELOCATIONS PRIOR TO CONSTRUCTION AS NECESSARY.
- 10 COMPLY WITH KEYED NOTE 5 ON SHEET M-3.

MATCHLINE SEE SHEET E-3



TEMP RMP CS/SWP. SPEC. NO. 5403 E-2

SEWER & WATER GROUP 820  
PRESSURE REDUCING STATION

ELECTRICAL SITE PLAN  
1 of 2

CITY OF SAN DIEGO, CALIFORNIA ENGINEERING AND CAPITAL PROJECTS DEPARTMENT SHEET 41 OF 48 SHEETS	WBS B-0010
APPROVED BY: <i>WJH</i> DATE: 6/14/15	WBS
FOR CITY ENGINEER: <i>WJH</i>	APPROVED BY: <i>WJH</i> DATE: 6/14/15
DESCRIPTION: ORIGINAL	BY: APPROVED DATE FILED
LRI	LRI
PROJECT ENGINEER: MICHAEL NINH	DATE: 6/14/15
PROJECT ENGINEER: MERYL JIMENEZ	DATE: 6/14/15
246-1683	DATE: 6/14/15
1886-6244	DATE: 6/14/15
CONTRACTOR: DATE STARTED	DATE COMPLETED
INSPECTOR: DATE COMPLETED	DATE COMPLETED

CONSULTANT

**LEE & RO, Inc.**  
San Diego, California

SCALE  
HORIZONTAL 1/4" = 1'-0"  
VERTICAL N/A

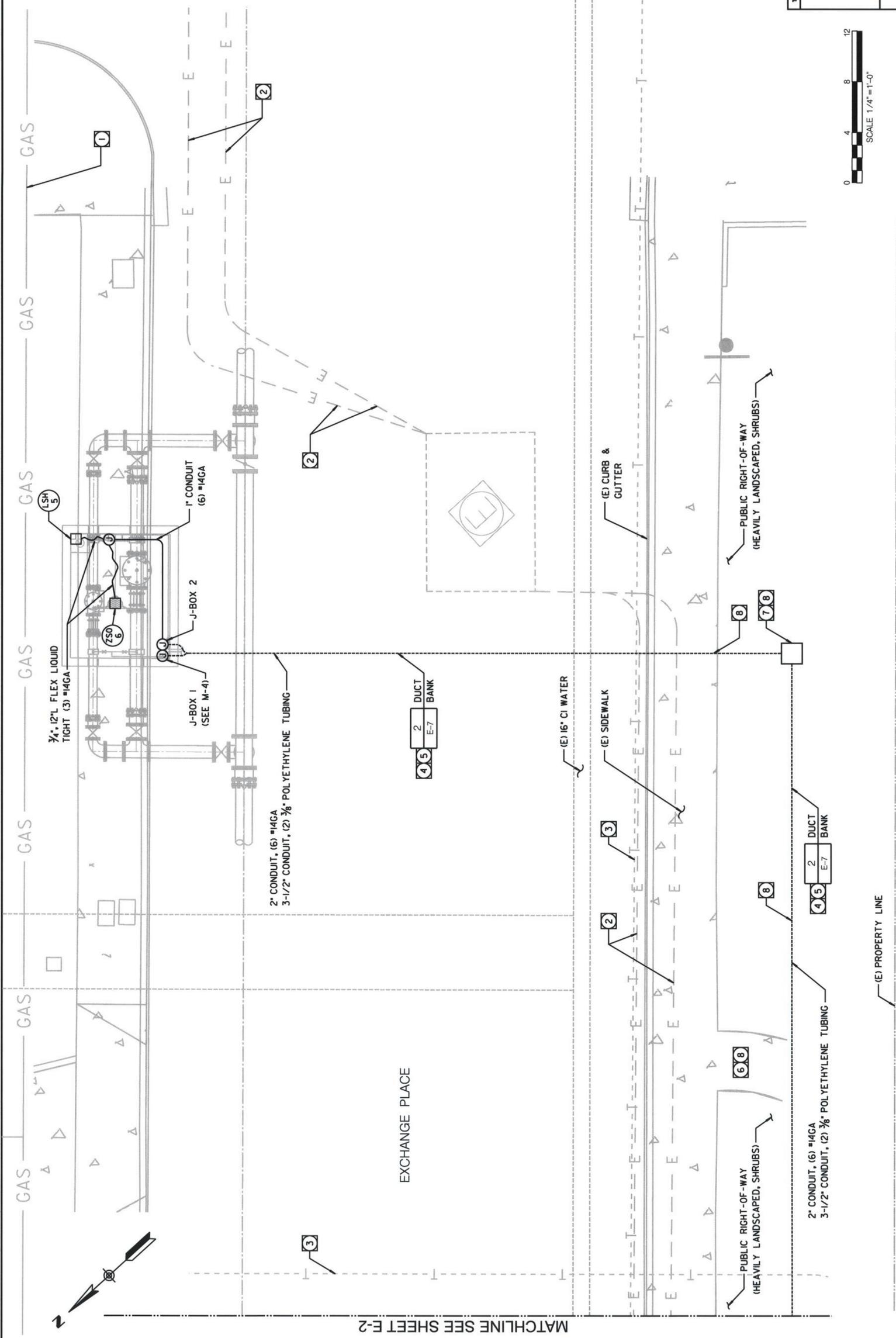
SCALE 1/4" = 1'-0"

CITY OF SAN DIEGO  
PUBLIC WORKS PROJECT

WARNING  
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CONSTRUCTION CHANGE / ADDENDUM	APPROVAL NO.
CHANGE DATE	AFFECTED OR ADDED SHEET NUMBERS

STATE OF CALIFORNIA  
PROFESSIONAL ENGINEER  
No. 87271  
EXPIRES 12/31/15



**KEYED NOTES:**

- 1 CAUTION: HP GAS LINE
- 2 CAUTION: UNDERGROUND ELECTRIC LINE
- 3 CAUTION: UNDERGROUND CATV LINE
- 4 EXACT CONDUIT ROUTING TO (N) PRS VAULT TO BE DETERMINED ON THE FIELD. CONTRACTOR SHALL POTHOLE CROSSING UTILITIES AND PROVIDE INFORMATION TO THE CONSTRUCTION MANAGER PRIOR TO TRENCHING.
- 5 FIELD LOCATE EXISTING UTILITY CONFLICTS BY POTHOLING OR HAND SHOVEL. PROVIDE EXISTING UTILITY FIELD LOCATION INFORMATION TO CONSTRUCTION MANAGER. COORDINATE UTILITY RELOCATIONS PRIOR TO CONSTRUCTION AS NECESSARY.
- 6 EXISTING PAVERS, RESTORE/REPLACE IN KIND.
- 7 NEW ELECTRICAL HANDHOLE.
- 8 COMPLY WITH KEYED NOTE 5 ON SHEET M-3.

TEMP BMP CS/SMP.	SPEC. NO.	5403	E-3
SEWER & WATER GROUP 820 PRESSURE REDUCING STATION			
ELECTRICAL SITE PLAN 2 of 2			
CITY OF SAN DIEGO, CALIFORNIA ENGINEERING AND CAPITAL PROGRAMS DEPARTMENT	WBS	B-0010	
SHEET 42 OF 48 SHEETS	WBS		
APPROVED	DATE	06/13	
FOR CITY ENGINEER	BY	APPROVED	DATE
DESCRIPTION	LRI	FILED	
ORIGINAL			
		246-1683	
		1886-6244	
CONTRACTOR	DATE STARTED		
INSPECTOR	DATE COMPLETED		



CONSULTANT



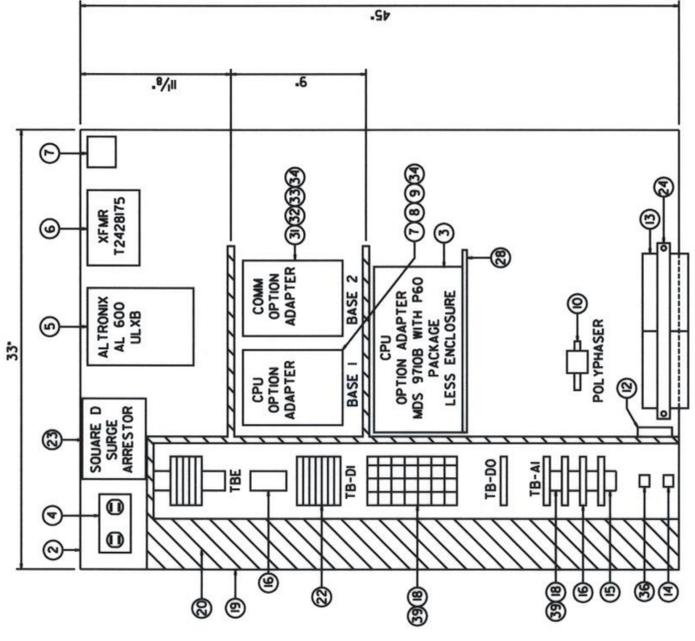
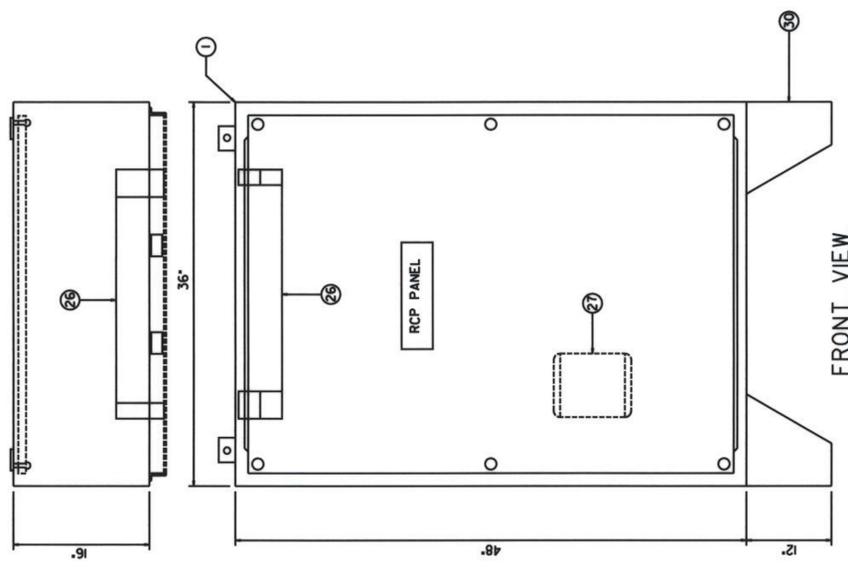
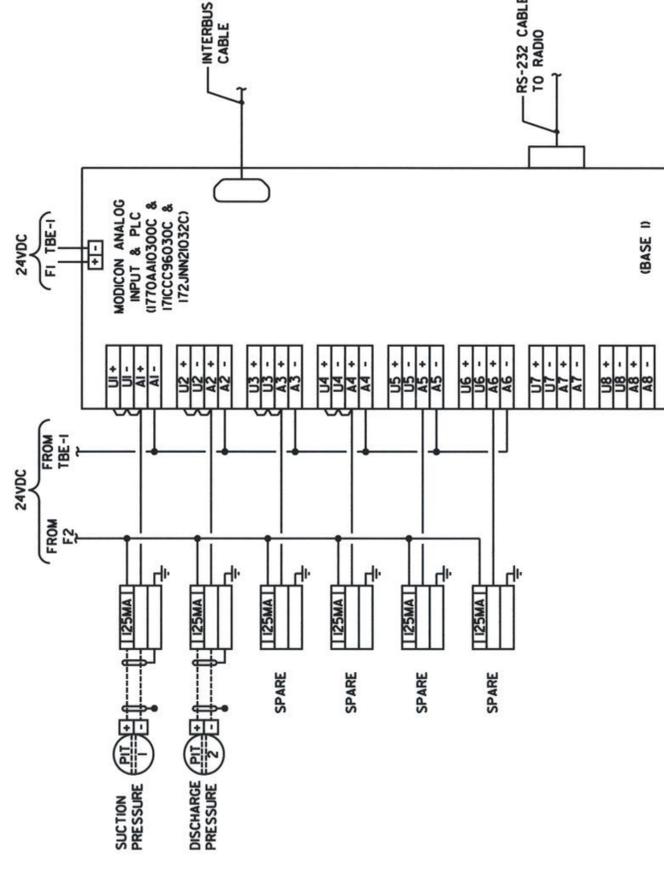
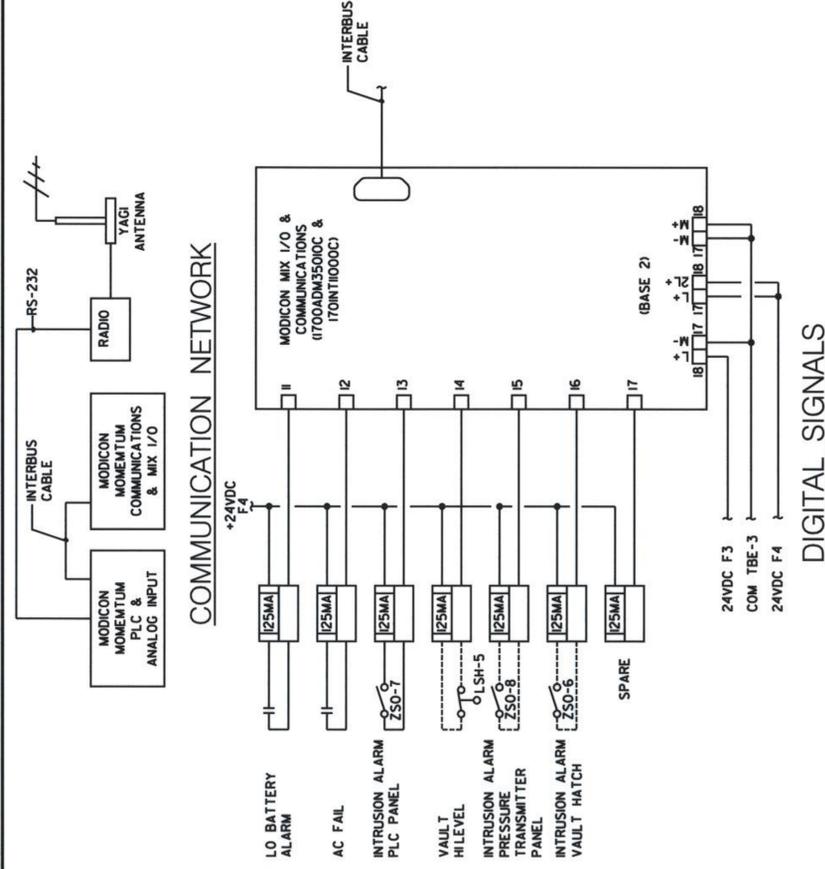
**LEE & RO, Inc.**  
San Diego, California

SCALE  
HORIZONTAL 1/4" = 1'-0"  
VERTICAL N/A

CITY OF SAN DIEGO PUBLIC WORKS PROJECT		 WARNING IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE.	
CONSTRUCTION CHANGE / ADDENDUM	APPROVAL NO.		
AFFECTED OR ADDED SHEET NUMBERS			
CHANGE DATE			

MATCHLINE SEE SHEET E-2





**REMOTE CONTROL PANEL**  
NO SCALE

**BILL OF MATERIAL SCHEDULE**

ITEM	MANUFACTURER	MODEL NO	DESCRIPTION
1	HOFFMAN	A-48H3665SLP3PTW	48"x36"x16" WHITE ENCLOSURE, NEMA 4X, 316SS1
2	HOFFMAN	A-48P36	45"x33" STEEL BACK PANEL
3	MDS	9700B/P60 PACKAGE W/ DIAGNOSTIC OPTION	900 MHZ RADIO 24DC POWER SUPPLY
4	PHOENIX CONTACT	EM/DUO/20/15 OFI	CONVENIENCE RECEPTACLE
5	ALTRONIX	AL 600LXB	POWER SUPPLY CHARGER
6	NOT USED	-	-
7	MODICON	170 AAI 03000C	AIBASE
8	MODICON	171 CCC 96030C	PLC PROCESSOR
9	MODICON	172 JNN 210 32C	OPTION ADAPTER
10	POLYPHASER	IS-B50LN-C2	LIGHTNING PROTECTOR
11	LIMIT SWITCH	802T-AP/802T-WIT	ALLEN BRADLEY
12	-	-	GROUND BAR
13	GNB (MARATHON)	M2V70	12 VDC BATTERY (70AH X2)
14	POTTER & BRUNFELD	CSL-38-30010	LOW VOLTAGE RELAY
15	PHOENIX	USLKG 5	GROUNDING TERMINAL BLOCK
16	PHOENIX	UK 5 N	I LEVEL TERMINAL BOX
17	PHOENIX	UK 4-TG	I LEVEL BASE TERMINAL BOX (FUSED)
18	PHOENIX	277423T	3 LEVEL TERMINAL BOX
19	PANDUIT	GIX4LG6	WIRING DUCT
20	PANDUIT	G2X4LG6	WIRING DUCT
21	ALLEN BRADLEY	195-DR1/1492-DR6	DIN RAIL 35MM
22	ALLEN BRADLEY	1492-GH	CIRCUIT BREAKERS
23	SQUARE D	TVS120L.C20	SURGE PROTECTOR
24	-	-	16 GAUGE BATTERY STRAP
25	-	-	16 GAUGE STAND OFF BRACKET
26	HOFFMAN	ALTDI	INTERIOR PANEL LIGHT
27	HOFFMAN	DAH001A	HEATER MOUNTED ON BACK OF DOOR
28	-	-	14 GAUGE SHELF FOR RADIO
29	NOT USED	-	-
30	HOFFMAN	AFK126SS	12" FLOOR STAND KIT PAINTED WHITE, 316SS1
31	MODICON	170ADM3500C	MIX I/O BASE
32	MODICON	170N11000C	COMMUNICATIONS MODULE
33	MODICON	170MCI00700	COMMUNICATIONS CABLE
34	MODICON	170XTS00000	TERMINAL STRIP
35	NOT USED	-	-
36	PHOENIX	5542754	24 VDC RELAY
37	NOT USED	-	-
38	NOT USED	-	-
39	PHOENIX	0921037	FUSES PLUG (DI AND DO ONL Y)
40	PHOENIX	0921011	FUSES PLUG (AI ONL Y)

**ANALOG SIGNALS**

CHANGE	DATE	CONSTRUCTION CHANGE / ADDENDUM AFFECTED OR ADDED SHEET NUMBERS	APPROVAL NO.

**WARNING**  
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**CITY OF SAN DIEGO**  
PUBLIC WORKS PROJECT

**CONSULTANT**  
**LEE & RO, Inc.**  
San Diego, California

HORIZONTAL  
VERTICAL

SCALE



**TEMP BMP CS/SHP.** SPEC. NO. 5403  
**E-5**

**SEWER & WATER GROUP 820**  
**PRESSURE REDUCING STATION**  
**REMOTE CONTROL PANEL**  
**SHEET 2 OF 2**

CITY OF SAN DIEGO, CALIFORNIA  
ENGINEERING AND CAPITAL PROJECTS DEPARTMENT  
SHEET 44 OF 48 SHEETS

APPROVED: *[Signature]* DATE: 4/11/13  
FOR CITY ENGINEER

DESIGNER: *[Signature]* DATE: 4/11/13  
BY: APPROVED DATE FILED  
ORIGINAL LRI

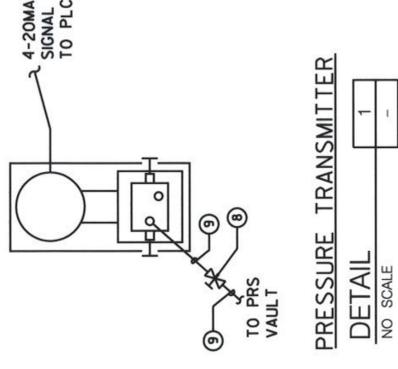
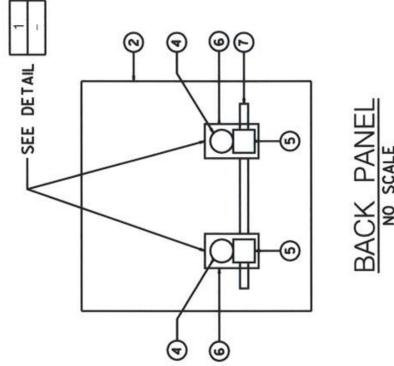
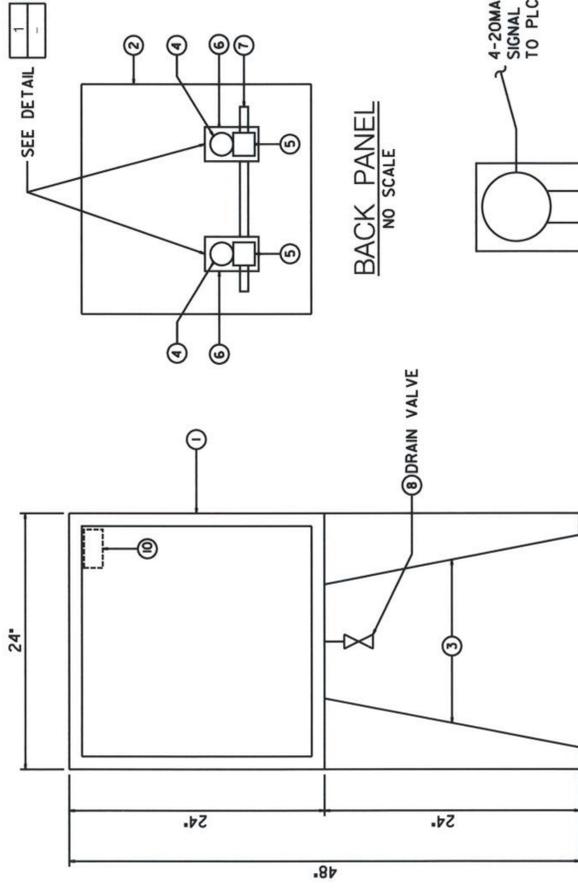
246-1683  
PROJECT ENGINEER  
MERYL JINEZ  
ASSOCIATE ENGINEER  
MICHAEL NINH

1886-6244  
JOB NO.  
LABORER COORDINATOR  
CONTRACTOR

35408-44-D  
DATE STARTED  
DATE COMPLETED  
INSPECTOR

BILL OF MATERIAL SCHEDULE

ITEM	MANUFACTURER	MODEL NO	DESCRIPTION
①	HOFFMAN	A-24H242SSL 3PTW	24"x24"x12" ENCLOSURE, NEMA 4X, 316SS
②	HOFFMAN	A-24P24	STEEL BACK PANEL
③	HOFFMAN	A-FK24I2SS	24" PANEL MOUNTING KIT, 316SS
④	SMAR	LD301	PRESSURE TRANSMITTER (4-20MA)
⑤	OLIVER VALVES	TYPE Y24C	2-WAY ISOLATION VALVE, 316SS, 600 PSI
⑥			MOUNTING BRACKET
⑦	UNISTRUT	-	CHANNEL & BOLTING
⑧			NEEDLE VALVE, BRASS
⑨			POLYETHYLENE TUBING
⑩	SENTROL	I13 SERIES	NON-CONTACT INTERLOCK/POSITION SWITCH



PRESSURE TRANSMITTER CONTROL PANEL  
NO SCALE

TEMP BMP CS/SFP. SPEC. NO. 5403 <b>E-6</b>	SEWER & WATER GROUP 820 PRESSURE REDUCING STATION PRESSURE TRANSMITTER CONTROL PANEL
CITY OF SAN DIEGO CALIFORNIA ENGINEERING AND CAPITAL PROJECTS DEPARTMENT SHEET 45 OF 48 SHEETS	WBS B-0010 WBS
APPROVED BY: <i>WJ</i> FOR CITY ENGINEER	DATE: 10/14/18
DESIGNED BY: MERYL JIMENEZ ORIGINAL	CHECKED BY: MERYL JIMENEZ PROJECT ENGINEER
DRAWN BY: MICHAEL NINH ASSOCIATE ENGINEER	DATE:
CONTRACTOR:	DATE STARTED:
INSPECTOR:	DATE COMPLETED:
PROJECT NO.: 246-1683 LAMBERT COORDINATE	CONTRACTOR NO.: 1886-6244 COSS COORDINATE
PROJECT NO.: 35408-45-D	CONTRACTOR NO.:

CONSULTANT

**LEE & RO, Inc.**  
San Diego, California

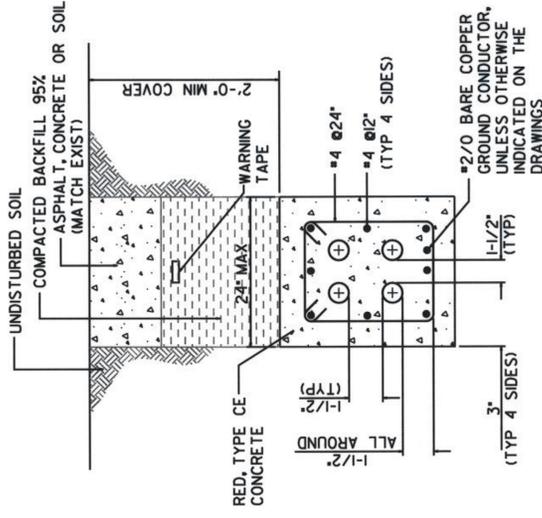
SCALE  
HORIZONTAL  
VERTICAL

CITY OF SAN DIEGO  
PUBLIC WORKS PROJECT

WARNING  
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE.

CONSTRUCTION CHANGE / ADDENDUM	APPROVAL NO.
CHANGE	DATE
AFFECTED OR ADDED SHEET NUMBERS	

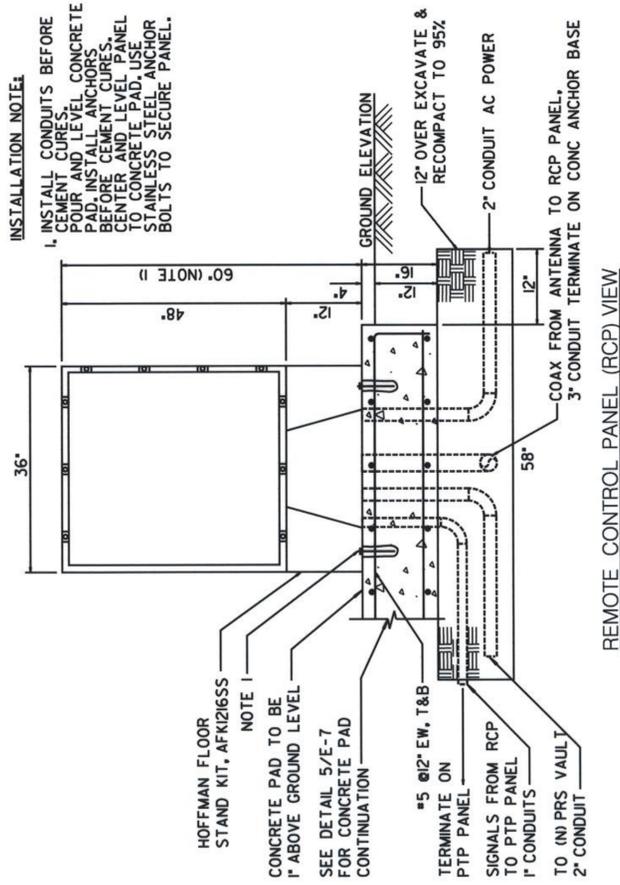




NOTES:  
1. DIMENSIONS ARE MINIMUM UNLESS OTHERWISE INDICATED ON THE DRAWINGS.

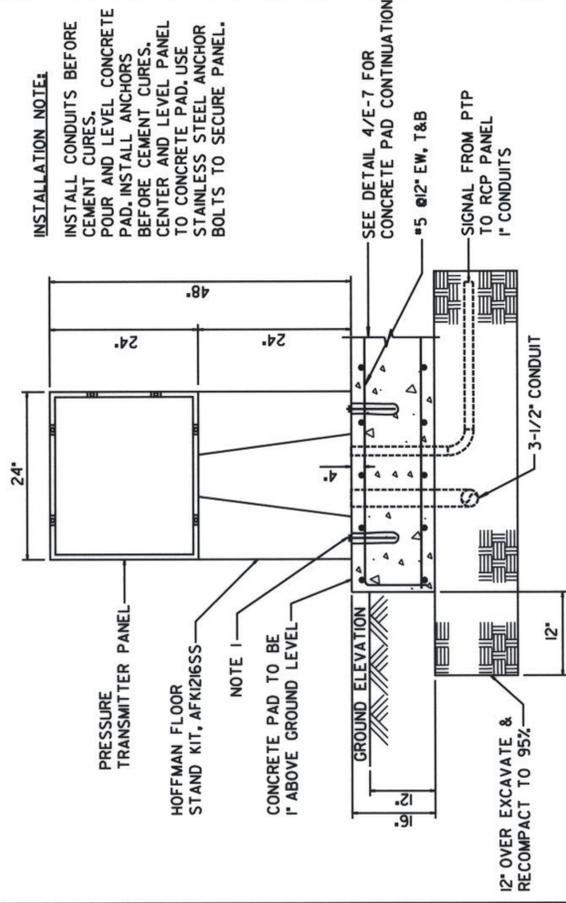
DUCT BANK  
TYPICAL DETAIL  
NO SCALE

2 E-2 (TYP)



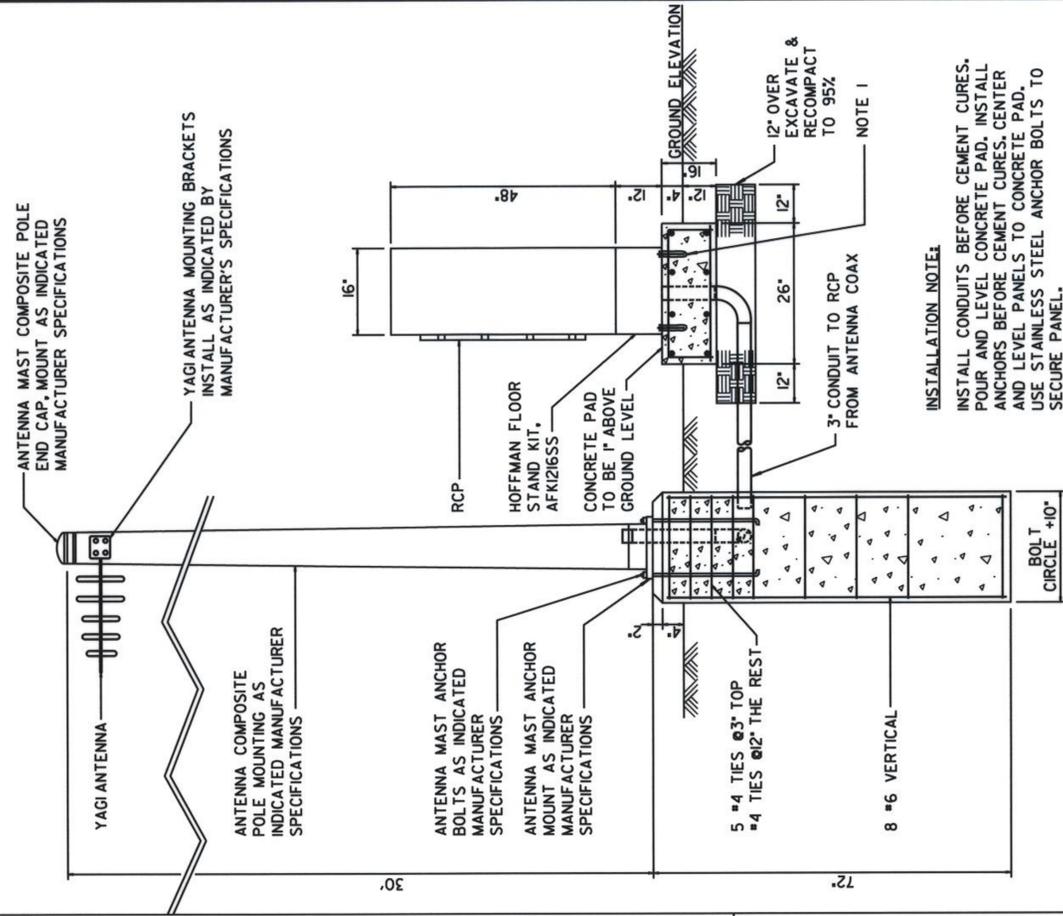
REMOTE CONTROL PANEL (RCP) VIEW  
DETAIL  
NO SCALE

4 E-2



PRESSURE TRANSMITTER PANEL (PTP) FRONT VIEW  
DETAIL  
NO SCALE

5 E-2



REMOTE CONTROL PANEL (RCP) AND ANTENNA BASE SIDEVIEW  
DETAIL  
NO SCALE

6 E-2

NOTE:  
1. MIN 41'-5/8" DIA 3/16 SST ALL TREADED ROD WITH 5' EMBED PER HILTI RE 500 OR SIMPSON SET-XP OR EQUAL PER MANUFACTURER SPECIFICATIONS

INSTALLATION NOTE:  
INSTALL CONDUITS BEFORE CEMENT CURES. POUR AND LEVEL CONCRETE PAD. INSTALL ANCHORS BEFORE CEMENT CURES. CENTER AND LEVEL PANELS TO CONCRETE PAD. USE STAINLESS STEEL ANCHOR BOLTS TO SECURE PANEL.

E-7

TEMP IMP CS/SFP. SPEC. NO. 5403

SEWER & WATER GROUP 820  
PRESSURE REDUCING STATION

ELECTRICAL INSTALLATION DETAIL SHEET

CITY OF SAN DIEGO, CALIFORNIA ENGINEERING AND CAPITAL PROJECTS DEPARTMENT SHEET 46 OF 48 SHEETS	WBS B-0010
APPROVED BY: <i>[Signature]</i>	DATE: 6/14/18
FOR CITY ENGINEER: MICHAEL NINH ASSOCIATE ENGINEER	
DESCRIPTION: ORIGINAL	BY: APPROVED DATE FILED
PROJECT ENGINEER: MERYL JIMENEZ	
246-1683	
1886-6244	
CONTRACTOR: _____	DATE STARTED: _____
INSPECTOR: _____	DATE COMPLETED: _____



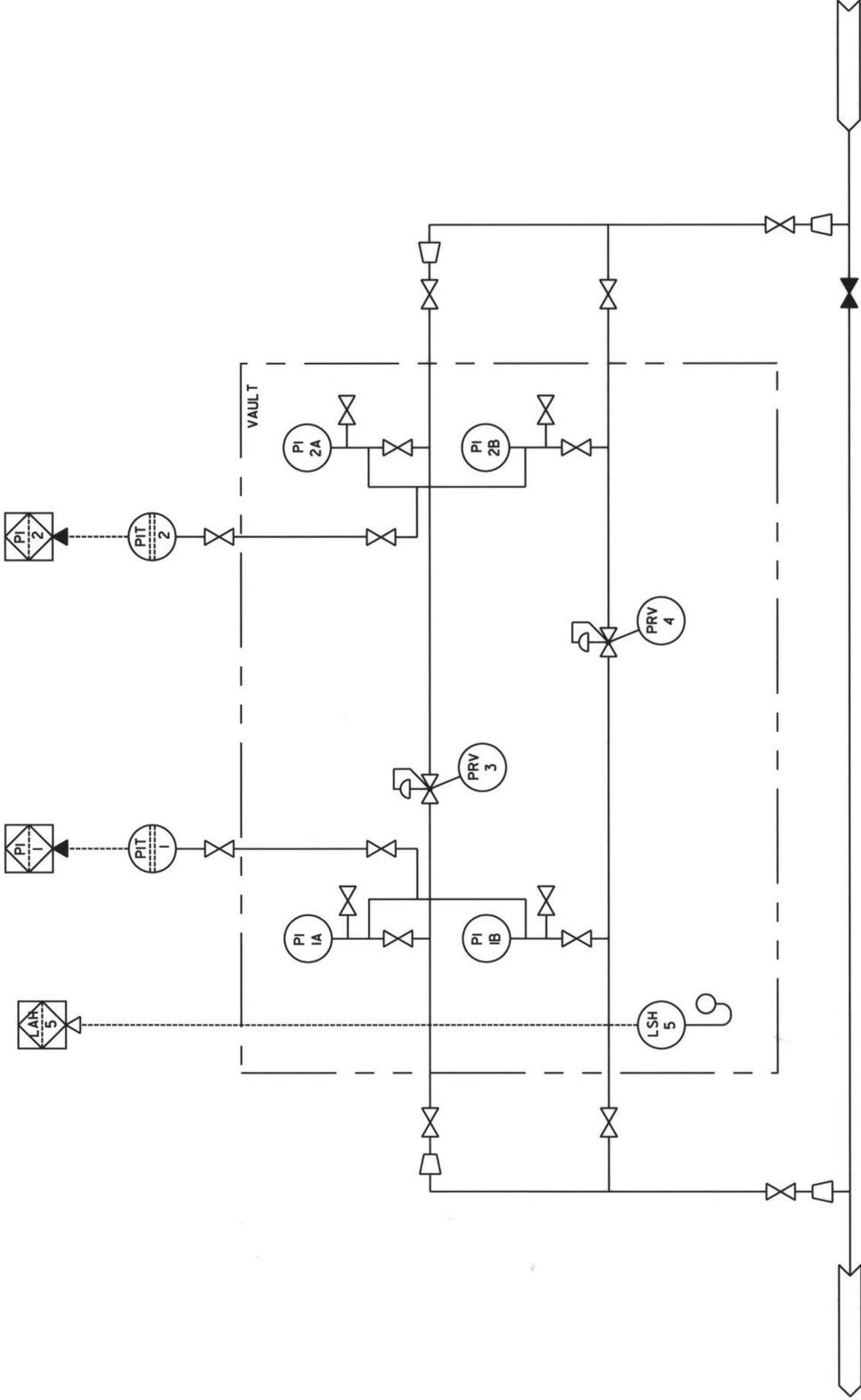
CONSULTANT  
**LEE & RO, Inc.**  
San Diego, California  
SCALE: HORIZONTAL VERTICAL

CITY OF SAN DIEGO  
PUBLIC WORKS PROJECT

CONSTRUCTION CHANGE / ADDENDUM	APPROVAL NO.
CHANGE DATE	AFFECTED OR ADDED SHEET NUMBERS

WARNING  
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE.





**PRESSURE REDUCING STATION**  
EXCHANGE PLACE

- ZSO 6 INTRUSION VAULT HATCH
- ZSO 7 INTRUSION PLC PANEL
- ZSO 8 INTRUSION PRESSURE TRANSMITTER PANEL
- ZS 9A LO BATTERY
- ZS 9B AC FAILURE

CONSTRUCTION CHANGE / ADDENDUM	APPROVAL NO.

**WARNING**  
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE.



**CITY OF SAN DIEGO**  
**PUBLIC WORKS PROJECT**

CONSULTANT  
**LEE & RO, Inc.**  
San Diego, California  
SCALE  
HORIZONTAL  
VERTICAL



TEMP BMP 15/SMP.	SPEC. NO. 5403	1-2
SEWER & WATER GROUP 820 PRESSURE REDUCING STATION PRS P&ID		
CITY OF SAN DIEGO CALIFORNIA ENGINEERING AND CAPITAL PROJECTS DEPARTMENT SHEET 48 OF 48 SHEETS	WBS B-0010	WBS
APPROVED FOR CITY ENGINEER: <i>NB</i>	DATE: 6/14/13	
DESCRIPTION: ORIGINAL	BY: LRI	DATE: FILED
PROJECT ENGINEER: MERYLL JIMENEZ	PROJECT NO.: 246-1683	
ASSOCIATE ENGINEER: MICHAEL NINK	LAMBERT COORDINATE: 1886-6244	
CONTRACTOR: _____	DATE STARTED: _____	
INSPECTOR: _____	DATE COMPLETED: _____	

**TRAFFIC CONTROL NOTES (STREET WITH ADT OF 5,000 AND OVER)**

- VALIDATION: THE TRAFFIC CONTROL PLAN IS NOT VALID UNTIL WORK DATES AND WORK HOURS ARE APPROVED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS FROM THE CITY OF SAN DIEGO. THE TRAFFIC CONTROL PERMIT COUNTER, 380 FLOOR DEVELOPMENT SERVICES CENTER, 1222 FIRST AVENUE, SAN DIEGO. THE CONTRACTOR SHALL OBTAIN A TRAFFIC CONTROL PERMIT A MINIMUM OF TWO (2) WORKING DAYS PRIOR TO STARTING WORK, AND A MINIMUM OF FIVE (5) DAYS IF WORK WILL AFFECT A BUS STOP OR AN EXISTING TRAFFIC SIGNAL, OR IF WORK WILL REQUIRE A ROAD OR ALLEY CLOSURE.
- CONTRACTOR SHALL NOTIFY THE CITY TRAFFIC ENGINEER AT (858)495-4741 A MINIMUM OF FIVE (5) WORKING DAYS PRIOR TO ANY CONSTRUCTION WORK AFFECTING TRAFFIC SIGNALS.
- STANDARDS: THE TRAFFIC CONTROL PLAN SHALL CONFORM TO THE MOST RECENT ADOPTED EDITION OF EACH OF THE FOLLOWING MANUALS:
 

DOCUMENT NO.	FILED	DESCRIPTION
PITS05040901	05-04-09	STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION (GREENBOOK), 2009 EDITION
PITS090110-1	09-01-10	CITY OF SAN DIEGO SUPPLEMENT, 2010 UPDATE
AEC1230163	12-31-06	CALIFORNIA DEPARTMENT OF TRANSPORTATION, MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD 2006)
AEC1230163	12-31-06	CITY OF SAN DIEGO STANDARD DRAWINGS INCLUDING REGIONAL STANDARD DRAWINGS
- NOTIFICATIONS: THE CONTRACTOR SHALL NOTIFY THE FOLLOWING AGENCIES A MINIMUM OF FIVE (5) WORKING DAYS PRIOR TO ANY EXCAVATION, CONSTRUCTION, OR TRAFFIC CONTROL AFFECTING THE AGENCIES LISTED BELOW:
 

• FIRE DEPARTMENT DISPATCH	(858)573-1300
• POLICE DEPARTMENT DISPATCH	(619)531-2000
• ENVIRONMENTAL SERVICES	(858)492-5060
• STREET DIVISION	(619)527-7500
• METROPOLITAN TRANSIT SYSTEM (MTS) (BUS STOPS)	(619)238-0100 EXT. 6451
• METROPOLITAN TRANSIT SYSTEM (MTS) (TAMAZONES)	(619)235-2644
• METROPOLITAN TRANSIT SYSTEM (MTS) (TROLLEY LINES)	(619)595-4930
• UNDERGROUND SERVICE ALERT	(800)422-4133

THE CONTRACTOR SHALL NOTIFY PROPERTY OWNERS AND TENANTS A MINIMUM OF FIVE (5) WORKING DAYS PRIOR TO CLOSURE OF DRIVEWAYS. THE CONTRACTOR SHALL POST SIGNS NOTIFYING THE PUBLIC A MINIMUM OF FIVE (5) WORKING DAYS PRIOR TO CLOSURE OF STREETS.
- THE CONTRACTOR SHALL NOTIFY ENGINEERING FIELD DIVISION AT (858)627-3200 AND ARRANGE FOR INSPECTION A MINIMUM OF FIVE (5) WORKING DAYS PRIOR TO STARTING WORK INVOLVING NIGHTTIME OR WEEKEND HOURS.
- POSTING PARKING RESTRICTIONS: THE CONTRACTOR SHALL POST TOW-AWAY/NO PARKING SIGNS TWENTY-FOUR (24) HOURS IN ADVANCE OF PARKING REMOVAL. SIGNS SHALL INDICATE SPECIFIC DATES, DATES AND TIMES OF RESTRICTIONS. PARKING METERS SHALL BE BAGGED WHERE APPLICABLE.
- EXCAVATIONS: EXCEPT WHEN OTHERWISE SHOWN ON THE PLANS, ALL TRENCHES SHALL BE BACKFILLED OR TRENCH-PLATED AT THE END OF EACH WORK DAY. AN ASPHALT RAMP SHALL BE PLACED AROUND EACH TRENCH PLATE TO PREVENT THE PLATE FROM BEING DISLODGED. CONTRACTOR SHALL MONITOR TRENCH PLATES DURING NON-WORKING HOURS TO ENSURE THAT THEY DO NOT BECOME DISLODGED. UPON COMPLETION OF EXCAVATION BACKFILL, THE CONTRACTOR SHALL PROVIDE A SATISFACTORY SURFACE FOR TRAFFIC. WHEN CONSTRUCTION OPERATIONS ARE NOT ACTIVELY IN PROGRESS, THE CONTRACTOR SHALL MAINTAIN ALL TRAVEL LANES, BIKE LANES, AND PEDESTRIAN WALKWAYS IN THE RIGHT-OF-WAY EXCEPT WHEN OTHERWISE SHOWN ON THE PLANS.
- COVERED PEDESTRIAN WALKWAY: THE CONTRACTOR SHALL CONTACT THE CITY RESIDENT ENGINEER AT (619)627-3200 FOR INSPECTION OF ANY COVERED PEDESTRIAN WALKWAY DURING CONSTRUCTION OF SUCH WALKWAY.
- RESTORATION OF ROADWAY: THE CONTRACTOR SHALL REPAIR OR REPLACE ALL EXISTING IMPROVEMENTS WITHIN THE RIGHT-OF-WAY NOT DESIGNATED FOR PERMANENT REMOVAL (TRAFFIC SIGNS, STRIPING, PAVEMENT MARKERS, PAVEMENT MARKINGS, LEGENDS, CURB MARKINGS, LOOP DETECTORS, TRAFFIC SIGNAL EQUIPMENT, ETC.) WHICH ARE DAMAGED OR REMOVED AS A RESULT OF OPERATIONS. REPAIRS AND REPLACEMENTS SHALL BE AT LEAST EQUAL TO EXISTING IMPROVEMENT.
- CHANGE IN WORK: THE CITY ENGINEER RESERVES THE RIGHT TO OBSERVE THESE TRAFFIC CONTROL PLANS IN OPERATION AND TO MAKE ANY CHANGES AS FIELD CHANGES WARRANT. ANY CHANGES SHALL BE DOCUMENTED AND SUPERCEDE THESE PLANS.

**IMPORTANT NOTICE**

Section 4216 of the Government Code requires a Dig Alert Identification Number be issued before a "Permit to Excavate" will be valid. For your Dig Alert ID Number Call Underground Service Alert Toll Free 1-800-422-4133 Two working days before you dig

**CONSTRUCTION CHANGE TABLE**

CHANGE	DATE	SHEET NUMBERS REVISED OR ADDED THIS CHANGE



**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 DESIGN PROFESSIONS ACT AND THAT THE DESIGN IS CONSISTENT WITH CURRENT STANDARDS.

I UNDERSTAND THAT THE CHECK OF PROJECT DRAWINGS AND A REVIEW ONLY AND DOES NOT RELIEVE ME AS ENGINEER OF WORK OF MY RESPONSIBILITIES FOR PROJECT DESIGN.

**ENGINEER OF WORK**

*John P. Keating*  
 JOHN P. KEATING R.C.E. 43595  
 DATE 7/25/12

**WORK TO BE DONE (SHEETS 2 TO 14)**

THE IMPROVEMENTS CONSIST OF THE FOLLOWING WORK TO BE DONE ACCORDING TO THESE PLANS AND THE SPECIFICATIONS AND STANDARD DRAWINGS OF THE CITY OF SAN DIEGO.

**STANDARD SPECIFICATIONS:**

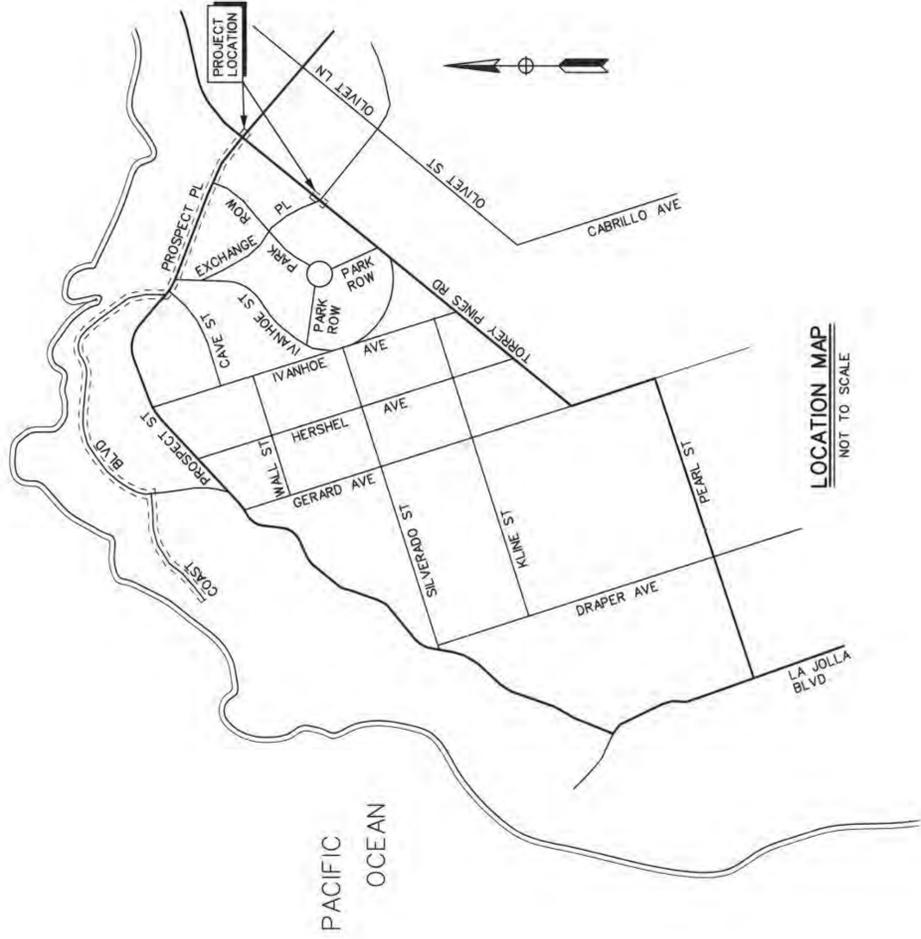
DOCUMENT NO.	FILED	DESCRIPTION
PITS05040901	05-04-09	STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION (GREENBOOK), 2009 EDITION
PITS090110-1	09-01-10	CITY OF SAN DIEGO SUPPLEMENT, 2010 UPDATE
AEC0925062	09-25-06	CALIFORNIA DEPARTMENT OF TRANSPORTATION, MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (CA MUTCD 2012)
AEC0925062	09-25-06	CALTRANS 2010 (U.S. CUSTOMARY SPECIFICATIONS)

**STANDARD DRAWINGS:**

DOCUMENT NO.	FILED	DESCRIPTION
AEC1230163	12-31-06	CITY OF SAN DIEGO STANDARD DRAWINGS INCLUDING REGIONAL STANDARD DRAWINGS
AEC1230163	12-31-06	CALTRANS 2010 U.S. CUSTOMARY UNIT STANDARD PLANS

**LEGEND (SHEETS 2 TO 14)**

ITEM	DESCRIPTION	SYMBOL
PROPOSED TEMPORARY ROADSIDE SIGN	STANDARD DRAWING	
TYPE II BARRICADE	STANDARD DRAWING	
TYPE II BARRICADE WITH SIGN	STANDARD DRAWING	
PORTABLE DELINEATOR	STANDARD DRAWING	
DIRECTION OF TRAVEL	STANDARD DRAWING	
FLASHING ARROW SIGN	STANDARD DRAWING	
WORK ZONE	STANDARD DRAWING	
TRAFFIC SIGNAL	STANDARD DRAWING	
FLAGGER	STANDARD DRAWING	



T-1

TRAFFIC CONTROL PLANS FOR THE CONSTRUCTION OF:

**SEWER AND WATER GROUP 820**

DATE	BY	APPROVED	DATE	FILED
07/30/2012	James Hernandez	[Signature]		

WATER	WAS	B-0010
SEWER	WBS	B-00382

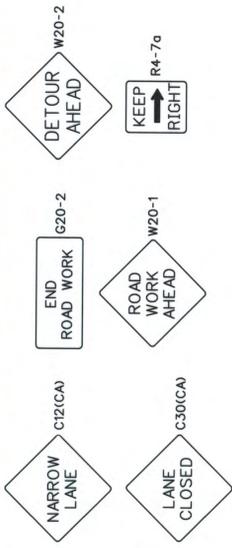
DESIGNED BY	CHECKED BY	DATE
James Hernandez	[Signature]	7/25/12

CONTRACTOR	INSPECTOR	DATE STARTED	DATE COMPLETED
Linscott, Law & Greenspan, Engineers	[Signature]		35408-101-D

**LINSOTT, LAW & GREENSPAN, ENGINEERS**  
 4542 Ruffner Street, Suite 100  
 San Diego, Ca 92111  
 (858)300-8810 (PH)  
 (858)300-8800 (FX)

LLC 3-076350-27.1  
 Design By: JSM  
 Drawn By: DVS  
 Checked By: JPK  
 7/25/12

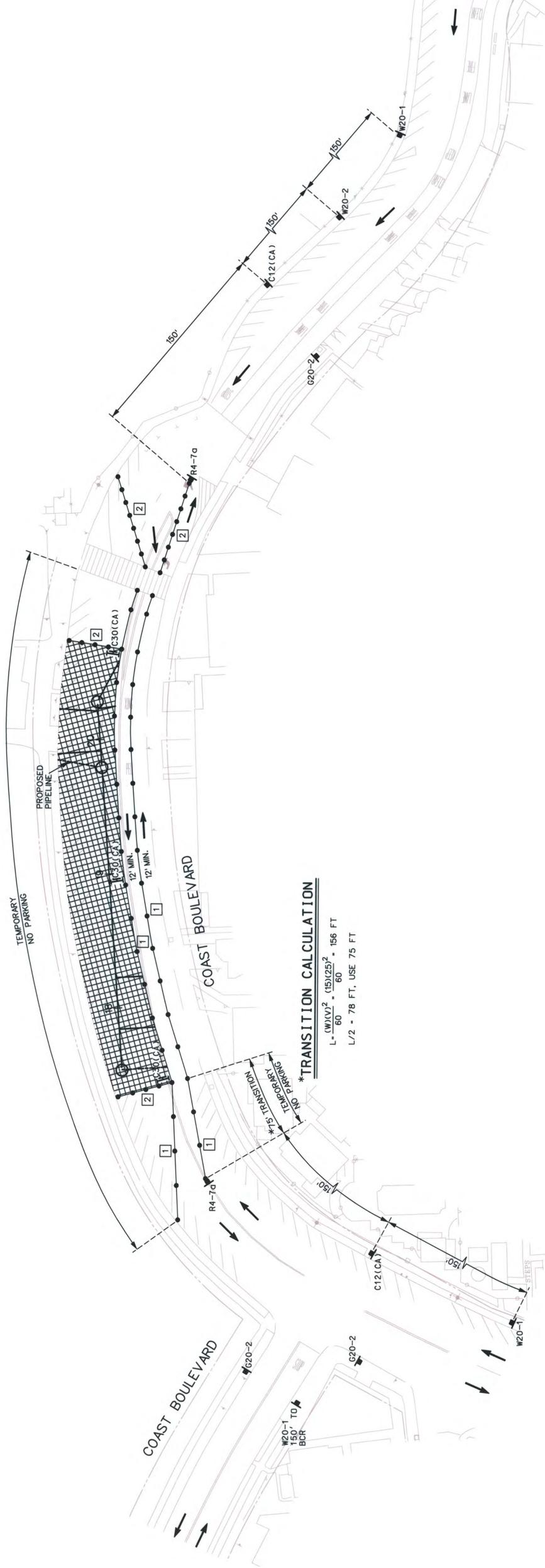
**TEMPORARY CONSTRUCTION SIGNS (THIS SHEET ONLY)**



**NOTES THIS SHEET**

- 1 DELINEATORS SHALL BE PLACED AT 25' INTERVALS.
- 2 DELINEATORS SHALL BE PLACED AT 10' INTERVALS.

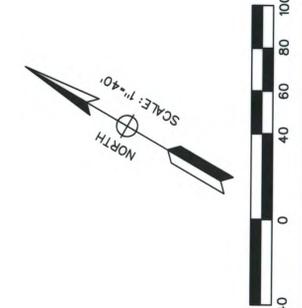
SEWERLINE CONSTRUCTION  
 WORK HOURS 8:30 AM TO 5:30 PM



**\* TRANSITION CALCULATION**

$$L = \frac{(W/V)^2}{60} = \frac{(15/25)^2}{60} = 156 \text{ FT}$$

L/2 = 78 FT. USE 75 FT



**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 AND CONSTRUCTION OF THIS PROJECT AND THAT THE DESIGN IS CONSISTENT WITH CURRENT STANDARDS AND THAT THE DESIGN UNDERSTANDS THAT THE CHECK OF PROJECT DRAWINGS AND SPECIFICATIONS BY THE CITY OF SAN DIEGO IS NOT A REVIEW ONLY AND DOES NOT RELIEVE ME AS ENGINEER OF WORK, OF MY RESPONSIBILITIES FOR PROJECT DESIGN.

**ENGINEER OF WORK**

JOHN F. KEATING R.C.E. 43595  
 7/25/12 DATE



**LINSKOTT, LAW & GREENSPAN, ENGINEERS**  
 4542 Ruffner Street, Suite 100  
 San Diego, Ca 92111  
 (858)300-8800 (PH)  
 (858)300-8810 (FX)

L.L.C. 3-076350-27.1  
 Drawn By: JSM  
 Checked By: JPK  
 7/25/12

**NOTE**  
 FOR TRAFFIC CONTROL GENERAL NOTES  
 AND LEGEND SEE SHEET 1.

T-2

TRAFFIC CONTROL PLANS FOR:

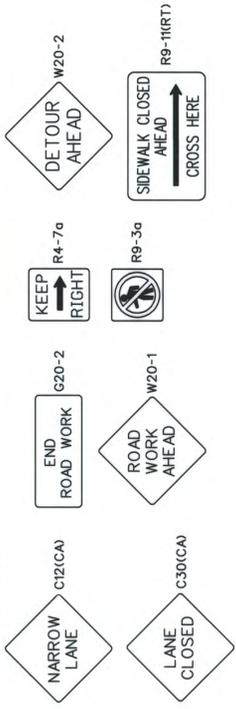
**SEWER AND WATER GROUP 820  
 COAST BOULEVARD**  
 (STAGE 1)

CITY OF SAN DIEGO, CALIFORNIA ENGINEERING AND CAPITAL PROJECTS DEPARTMENT SHEET 2 OF 14 SHEETS	WATER WBS B-0010
SEWER WBS B-00382	ASSOCIATE ENGINEER MICHAEL NINH
DATE: 07/20/12	PROJECT ENGINEER MERYL JIMENEZ
DESCRIPTION: ORIGINAL	DATE: 07/20/12
BY: L.L.G.	DATE: 07/20/12
APPROVED: [Signature]	DATE: 07/20/12
CONTROL CERTIFICATION 654407 08844	246-1883
LAMBERT COORDINATES	654407 08844
CONTRACTOR	DATE STARTED
INSPECTOR	DATE COMPLETED

35408-T02-D

**TRAFFIC CONTROL DESIGN SPEED**  
 COAST BOULEVARD = 25 MPH

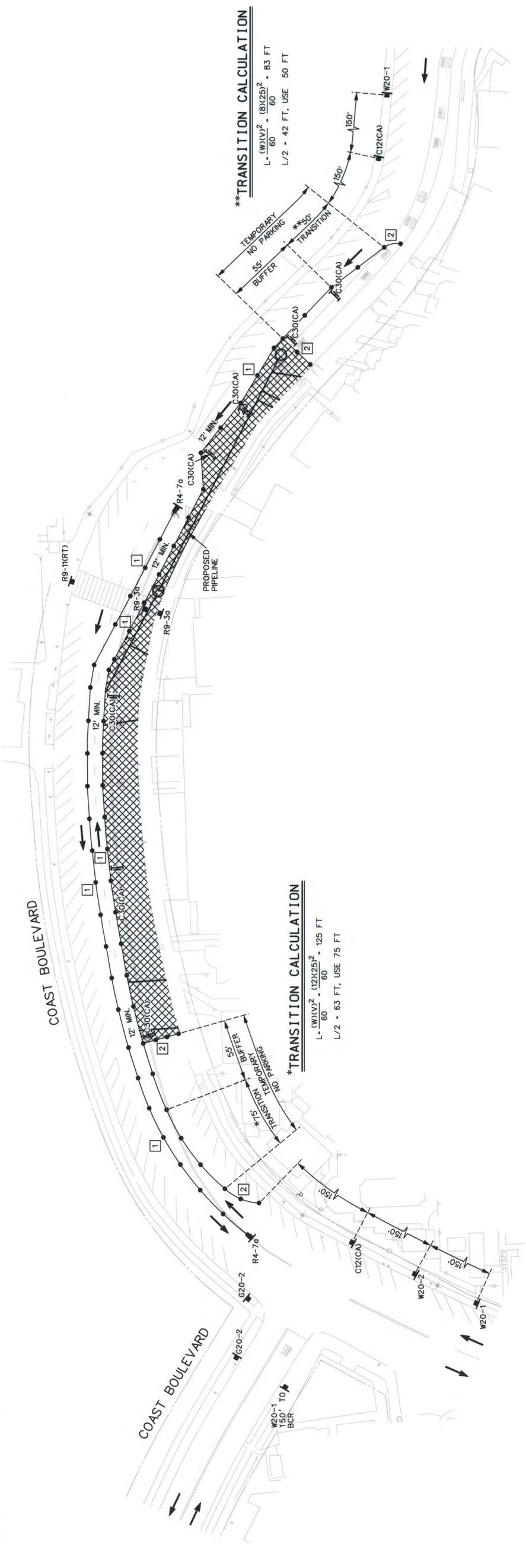
**TEMPORARY CONSTRUCTION SIGNS (THIS SHEET ONLY)**



**NOTES THIS SHEET**

- 1 DELINEATORS SHALL BE PLACED AT 25' INTERVALS.
- 2 DELINEATORS SHALL BE PLACED AT 10' INTERVALS.

**SEWERLINE CONSTRUCTION**  
 WORK HOURS 8:30 AM TO 5:30 PM



**\*\*TRANSITION CALCULATION**  
 $L = \frac{(W)(V)^2}{60} = \frac{(8)(25)^2}{60} = 83 \text{ FT}$   
 L/2 = 42 FT, USE 50 FT

**\*TRANSITION CALCULATION**  
 $L = \frac{(W)(V)^2}{60} = \frac{(12)(25)^2}{60} = 125 \text{ FT}$   
 L/2 = 63 FT, USE 75 FT

**NOTE**  
 FOR TRAFFIC CONTROL GENERAL NOTES  
 AND LEGEND SEE SHEET 1.

T-3

TRAFFIC CONTROL PLANS FOR:  
**SEWER AND WATER GROUP 820**  
**COAST BOULEVARD**  
 (STAGE 2)

CITY OF SAN DIEGO, CALIFORNIA ENGINEERING AND CAPITAL PROJECTS DEPARTMENT SHEET 3 OF 14 SHEETS	WATER WBS WBS WBS B-0010 B-00382
FOR CITY ENGINEER BY: <i>Michael Nini</i> DATE: 07/30/2012	ASSOCIATE ENGINEER MICHAEL NINI
DESCRIPTION ORIGINAL	PROJECT ENGINEER LAURELY JIMENEZ
LLG	206-1885
DATE STARTED	CONTROL CERTIFICATION 6244407, 1888444
DATE COMPLETED	LAMBERT COORDINATES 35408-T03-D

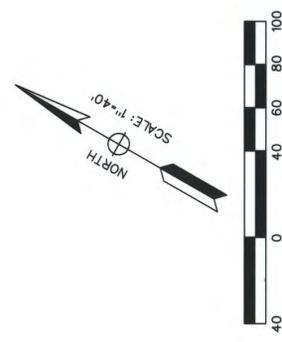
**LINSKOTT, LAW & GREENSPAN, ENGINEERS**  
 4542 Ruffner Street, Suite 100  
 San Diego, Ca 92111  
 (858)300-8800 (PH)  
 (858)300-8810 (FX)

LLG 3-076550-27-1  
 Design By: JSM  
 Drawn By: DVS  
 Checked By: JPK  
 7/25/12

**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 IS CONFINED TO TECHNICAL ONLY AND DOES NOT RELIEVE ME, AS ENGINEER OF WORK, OF MY RESPONSIBILITIES FOR PROJECT DESIGN.



**ENGINEER OF WORK**  
*John P. Keating*  
 JOHN P. KEATING  
 R.C.E. 43595  
 DATE: 7/25/12



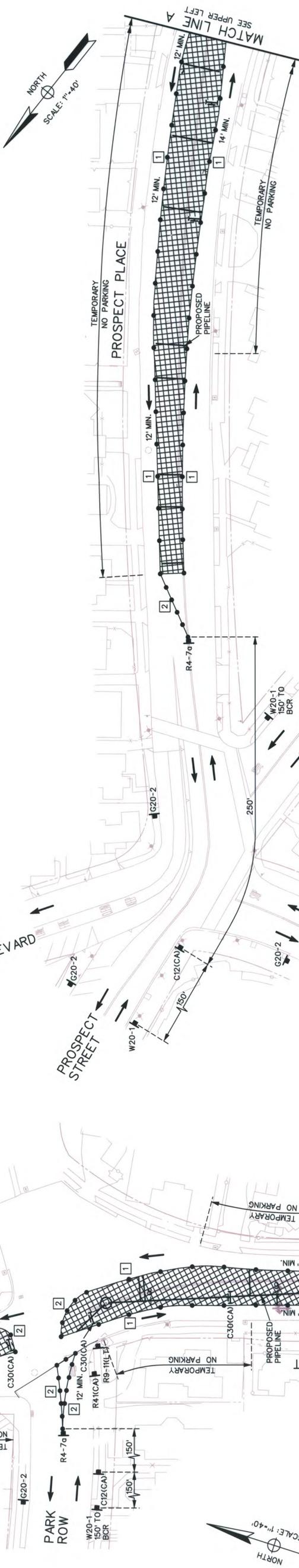
**TRAFFIC CONTROL DESIGN SPEED**  
**COAST BOULEVARD = 25 MPH**



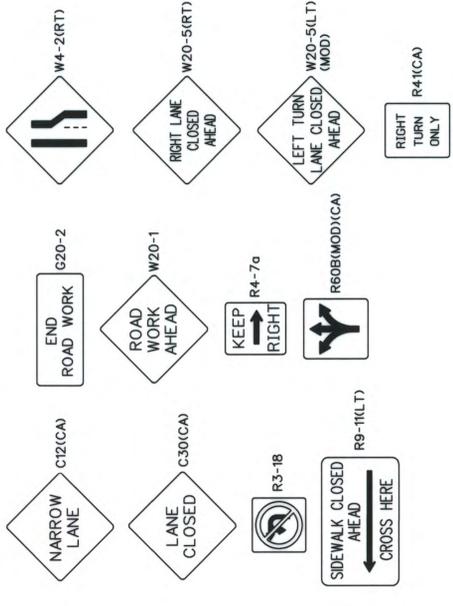
**SEWERLINE CONSTRUCTION**  
 WORK HOURS 8:30 AM TO 3:30 PM

**NOTES THIS SHEET**

- 1 DELINEATORS SHALL BE PLACED AT 25' INTERVALS.
- 2 DELINEATORS SHALL BE PLACED AT 10' INTERVALS.
- 3 CONTRACTOR SHALL COVER EXISTING R61-7(CA) AND R61-32(CA) TURN CONTROL SIGNS ON THE TRAFFIC SIGNAL MAST ARMS AT THE NORTHEAST AND SOUTHWEST CORNERS OF INTERSECTION DURING THIS STAGE OF CONSTRUCTION.



**TEMPORARY CONSTRUCTION SIGNS (THIS SHEET ONLY)**



**\*TRANSITION CALCULATION**  
 $L = \frac{W(V)^2}{60} = \frac{62(35)^2}{60} = 449 \text{ FT}$   
 USE 450 FT



**SEWER AND WATER GROUP 820**  
**PROSPECT PLACE**  
 (STAGE 2)

WATER WBS	B-0010
SEWER WBS	B-00382
ISSUED BY	MICHAEL NINNI
ASSOCIATE ENGINEER	
DATE	07/30/2012
FOR CITY ENGINEER	APPROVED
DESCRIPTION	ORIGINAL
BY	LLG
DATE	
FILED	
PROJECT ENGINEER	AMERYL JIMENEZ
DATE	
CONTROL CERTIFICATION	
CONTRACTOR	AMERYL JIMENEZ
DATE STARTED	
DATE COMPLETED	
CONTRACTOR COORDINATOR	AMERYL JIMENEZ
INSPECTOR	
PROJECT NUMBER	35408-105-D

**NOTE**  
 FOR TRAFFIC CONTROL GENERAL NOTES AND LEGEND SEE SHEET 1.

**LINSCOTT, LAW & GREENSPAN, ENGINEERS**  
 4542 Ruffner Street, Suite 100  
 San Diego, Ca 92111  
 (858)300-8800 (PH) (858)300-8810 (FX)

LLG 3-076305-27.1  
 TCS 6350-215102RP.DGN  
 Drawn BY: DVS  
 Checked BY: JPK  
 2/14/12

**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 IS AN ENGINEER OF WORK OF MY RESPONSIBILITIES FOR PROJECT DESIGN.

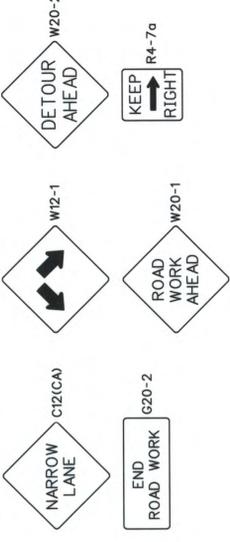
**ENGINEER OF WORK**

*John F. Keating*  
 JOHN F. KEATING R.C.E. 43595  
 DATE 7/25/12



**TRAFFIC CONTROL DESIGN SPEED**  
 PROSPECT PLACE - 25 MPH  
 TORREY PINES ROAD - 35 MPH

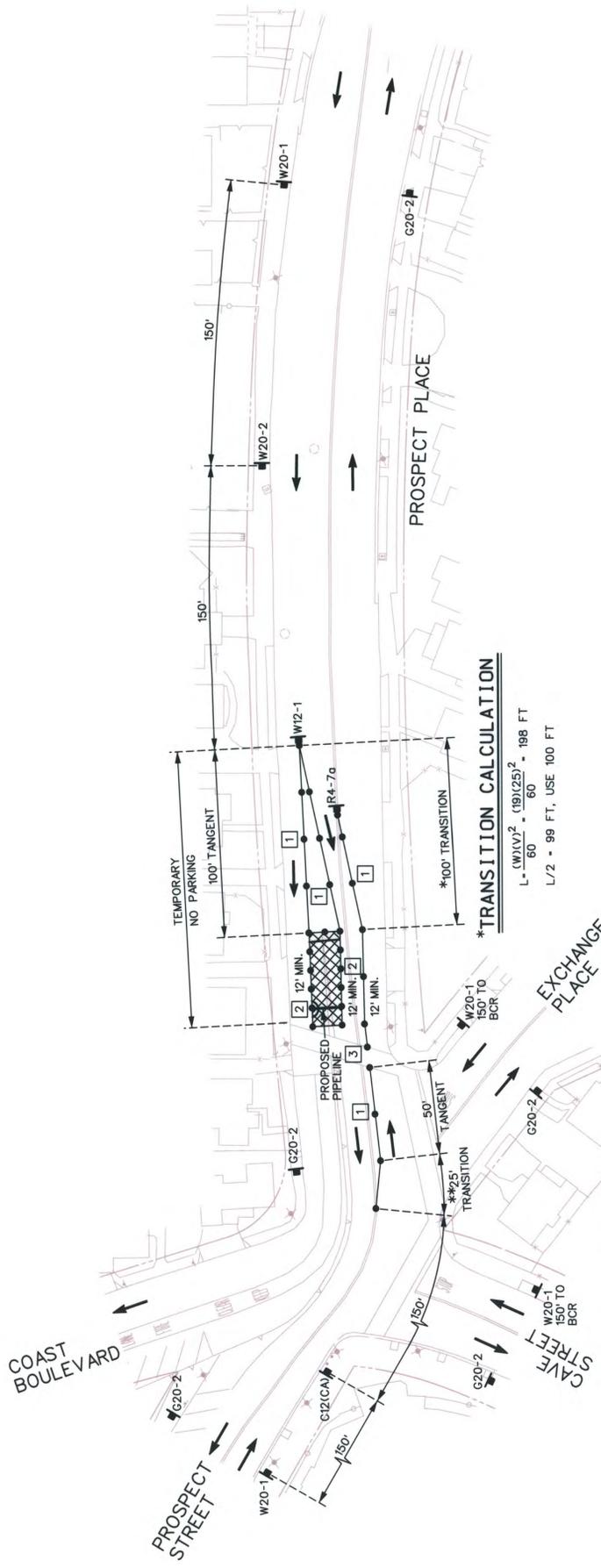
**TEMPORARY CONSTRUCTION SIGNS (THIS SHEET ONLY)**



**NOTES THIS SHEET**

- 1 DELINEATORS SHALL BE PLACED AT 25' INTERVALS.
- 2 DELINEATORS SHALL BE PLACED AT 10' INTERVALS.
- 3 CONTRACTOR SHALL MAINTAIN A 4' CLEAR PATH FOR PEDESTRIAN ACCESS.

**SEWERLINE CONSTRUCTION**  
 WORK HOURS 8:30 AM TO 3:30 PM



**\*\*TRANSITION CALCULATION**  
 $L = \frac{(W)(V)^2}{60} = \frac{(4)(25)^2}{60} = 42 \text{ FT}$   
 L/2 = 21 FT, USE 25 FT

**\*TRANSITION CALCULATION**  
 $L = \frac{(W)(V)^2}{60} = \frac{(19)(25)^2}{60} = 198 \text{ FT}$   
 L/2 = 99 FT, USE 100 FT

**NOTE**  
 FOR TRAFFIC CONTROL GENERAL NOTES AND LEGEND SEE SHEET 1.

T-6

TRAFFIC CONTROL PLANS FOR:

**SEWER AND WATER GROUP 820 PROSPECT PLACE**  
 (STAGE 3)

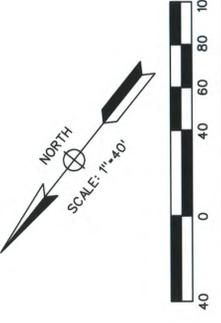
CITY OF SAN DIEGO, CALIFORNIA ENGINEERING AND CAPITAL PROJECTS DEPARTMENT	WATER WBS B-0010
SHEET 6 OF 14 SHEETS	SEWER WBS B-00382
DATE 07/20/2012	DESIGNED BY MICHAEL NISH
APPROVED BY MERTY JIMENEZ	PROJECT ENGINEER
DATE	CONTROL CERTIFICATION
BY LLG	246-888
LLG	08/07/1984
LLG	LAMBERT COORDINATES
DATE STARTED	35408-T06-D
DATE COMPLETED	

**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 AND CONSTRUCTION OF THIS PROJECT 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 IS CONFINED TO A REVIEW ONLY AND DOES NOT RELIEVE ME AS ENGINEER OF WORK, OF MY RESPONSIBILITIES FOR PROJECT DESIGN.

**ENGINEER OF WORK**

JOHN P. KEATING R.C.E. 43595  
 DATE 7/25/12



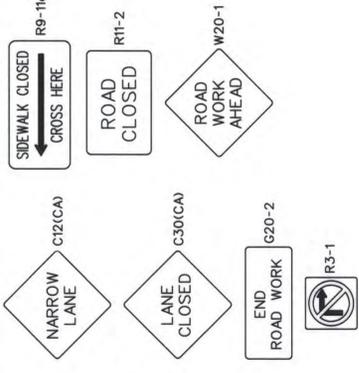
**TRAFFIC CONTROL DESIGN SPEED**  
 PROSPECT PLACE = 25 MPH

**LINSCOTT, LAW & GREENSPAN, ENGINEERS**  
 4542 Ruffner Street, Suite 100  
 San Diego, Ca 92111  
 (858)300-8800 (PH) (858)300-8810 (FX)

LLG 3-076350-27.1 TCE 6350-271G3PP.DGN 7/25/12  
 Designed By: JSM Drawn By: DVS Checked By: JFK

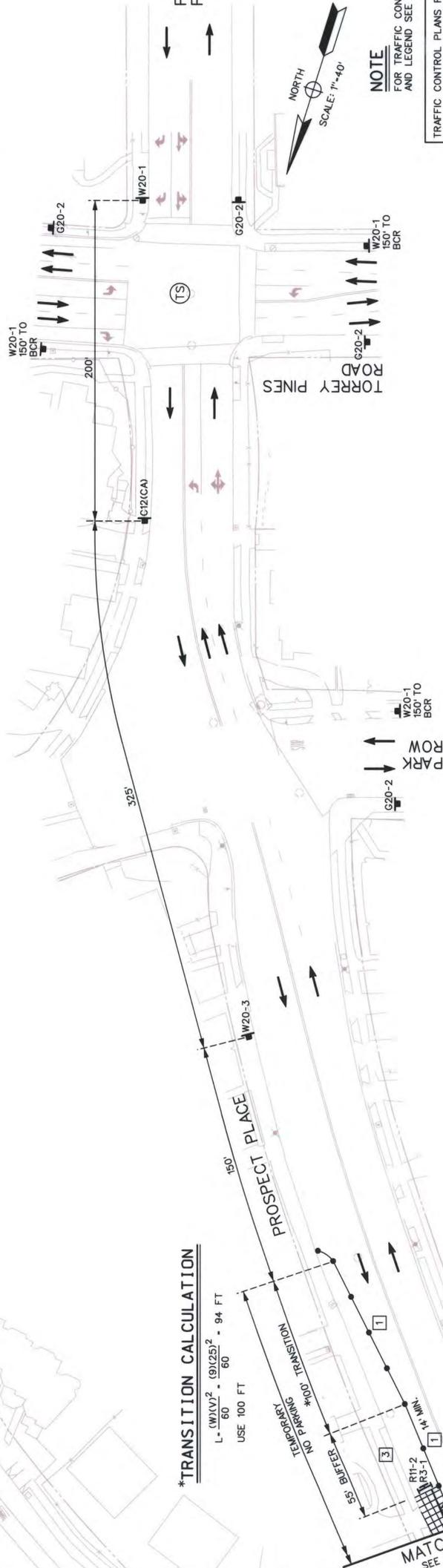
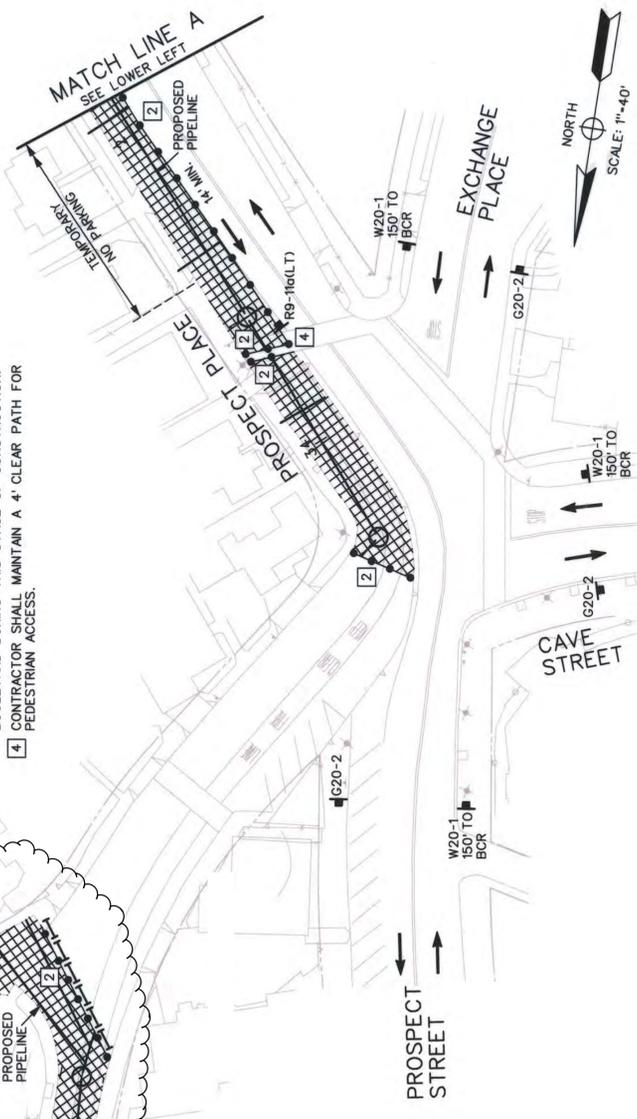


**TEMPORARY CONSTRUCTION SIGNS (THIS SHEET ONLY)**



- NOTES THIS SHEET**
- 1 DELINEATORS SHALL BE PLACED AT 25' INTERVALS.
  - 2 DELINEATORS SHALL BE PLACED AT 10' INTERVALS.
  - 3 PEDESTRIAN ACCESS SHALL BE MAINTAINED ON THE WEST SIDE OF PROSPECT PLACE AND COAST BOULEVARD DURING THIS STAGE OF CONSTRUCTION.
  - 4 CONTRACTOR SHALL MAINTAIN A 4' CLEAR PATH FOR PEDESTRIAN ACCESS.

**SEWERLINE CONSTRUCTION**  
 WORK HOURS 8:30 AM TO 5:30 PM



**\*TRANSITION CALCULATION**

$$L = \frac{(WV)^2}{60} + \frac{(9V/25)^2}{60} = 94 \text{ FT}$$

USE 100 FT

**NOTE**  
 FOR TRAFFIC CONTROL GENERAL NOTES AND LEGEND SEE SHEET 1.

T-8

TRAFFIC CONTROL PLANS FOR:  
**SEWER AND WATER GROUP 820**  
**PROSPECT STREET**  
 (STAGE 5)

WATER USER NUMBER	B-0010
SEWER USER NUMBER	B-00382
DATE	07/30/2012
APPROVED BY	LLG
DATE	
FILED	
DESCRIPTION	ORIGINAL
BY	LLG
DATE	
CONTROL CERTIFICATION	
CONTRACTOR	
DATE STARTED	
DATE COMPLETED	
INSPECTOR	
LABORER COORDINATES	35408-T08-D

**LINSKOTT, LAW & GREENSPAN, ENGINEERS**  
 4542 Ruffner Street, Suite 100  
 San Diego, Ca 92111  
 (858)300-8800 (PH)  
 (858)300-8810 (FX)

**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 IS CONFINED TO REVIEWING AND CHECKING FOR CONFORMANCE WITH THE WORK, OF MY RESPONSIBILITIES FOR PROJECT DESIGN.

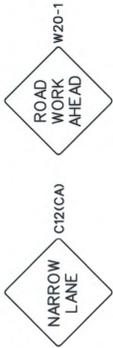
**ENGINEER OF WORK**

*John P. Keating*  
 JOHN P. KEATING R.C.E. 43595 DATE 7/25/12



**TRAFFIC CONTROL DESIGN SPEED**  
 PROSPECT PLACE - 25 MPH  
 TORREY PINES ROAD - 35 MPH

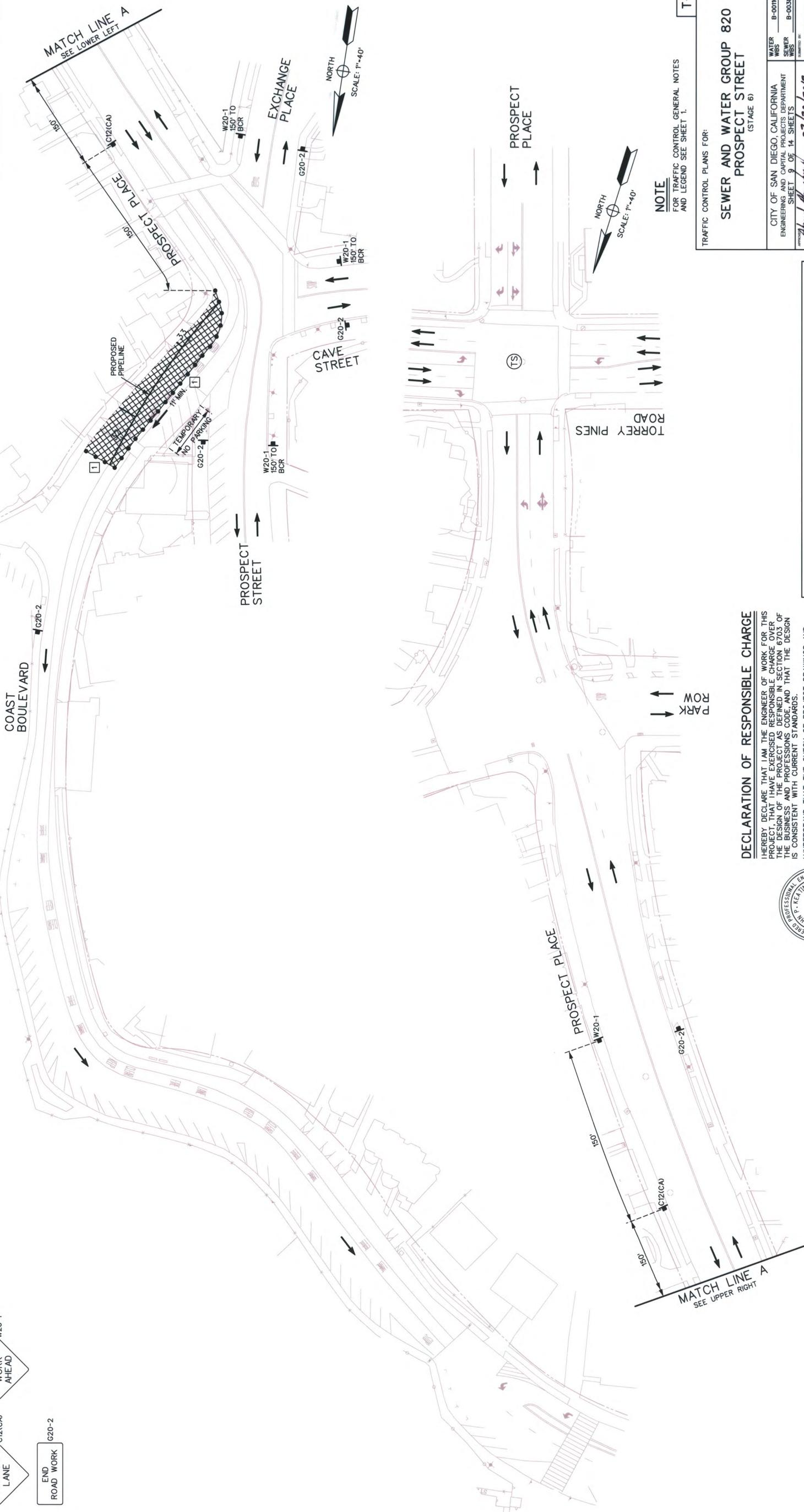
**TEMPORARY CONSTRUCTION SIGNS (THIS SHEET ONLY)**



**NOTES THIS SHEET**

1 DELINEATORS SHALL BE PLACED AT 10' INTERVALS.

**SEWERLINE CONSTRUCTION**  
 WORK HOURS 8:30 AM TO 5:30 PM.



**TRAFFIC CONTROL DESIGN SPEED**  
 COAST BOULEVARD = 15 MPH  
 PROSPECT PLACE = 25 MPH  
 TORREY PINES ROAD = 35 MPH



**ENGINEER OF WORK**

*John P. Keating*  
 JOHN P. KEATING R.C.E. 43595

**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 IS CONFINED TO THE TECHNICAL AND GRAPHIC ASPECT AS AN ENGINEER OF WORK, OF MY RESPONSIBILITIES FOR PROJECT DESIGN.

DATE 7/25/12

CHECKED BY: JPM DATE 7/25/12

**LINSCOTT LAW & GREENSPAN engineers**  
 LINSKOTT LAW & GREENSPAN  
 4542 Ruffner Street, Suite 100  
 San Diego, Ca 92111  
 (858) 300-8800 (PH)  
 (858) 300-8810 (FX)  
 TCB\_6350-275766P-00N  
 Drawn By: DVS  
 Checked By: JPK  
 7/25/12

**NOTE**  
 FOR TRAFFIC CONTROL GENERAL NOTES AND LEGEND SEE SHEET 1.

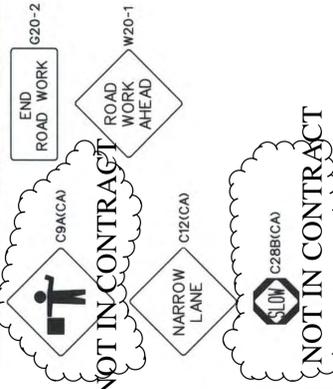
TRAFFIC CONTROL PLANS FOR:

**SEWER AND WATER GROUP 820**  
**PROSPECT STREET**  
 (STAGE 6)

WATER	B-0010
SEWER	B-00382
WBS	
DATE	07/30/2012
BY	LLG
DATE	
APPROVED	
DATE	
FILED	
DATE	
DESCRIPTION	ORIGINAL
BY	LLG
DATE	
APPROVED	
DATE	
FILED	
DATE	
CONTROL CERTIFICATION	
DATE	24P-1883
CONTROL CERTIFICATION	
DATE	05/4/07, 188444
CONTROL CERTIFICATION	
DATE	24P-1883
CONTROL CERTIFICATION	
DATE	05/4/07, 188444
CONTROL CERTIFICATION	
DATE	24P-1883
CONTRACTOR	
DATE STARTED	
INSPECTOR	
DATE COMPLETED	
CONTRACTOR	35408-109-D

T-9

TEMPORARY CONSTRUCTION SIGNS (THIS SHEET ONLY)



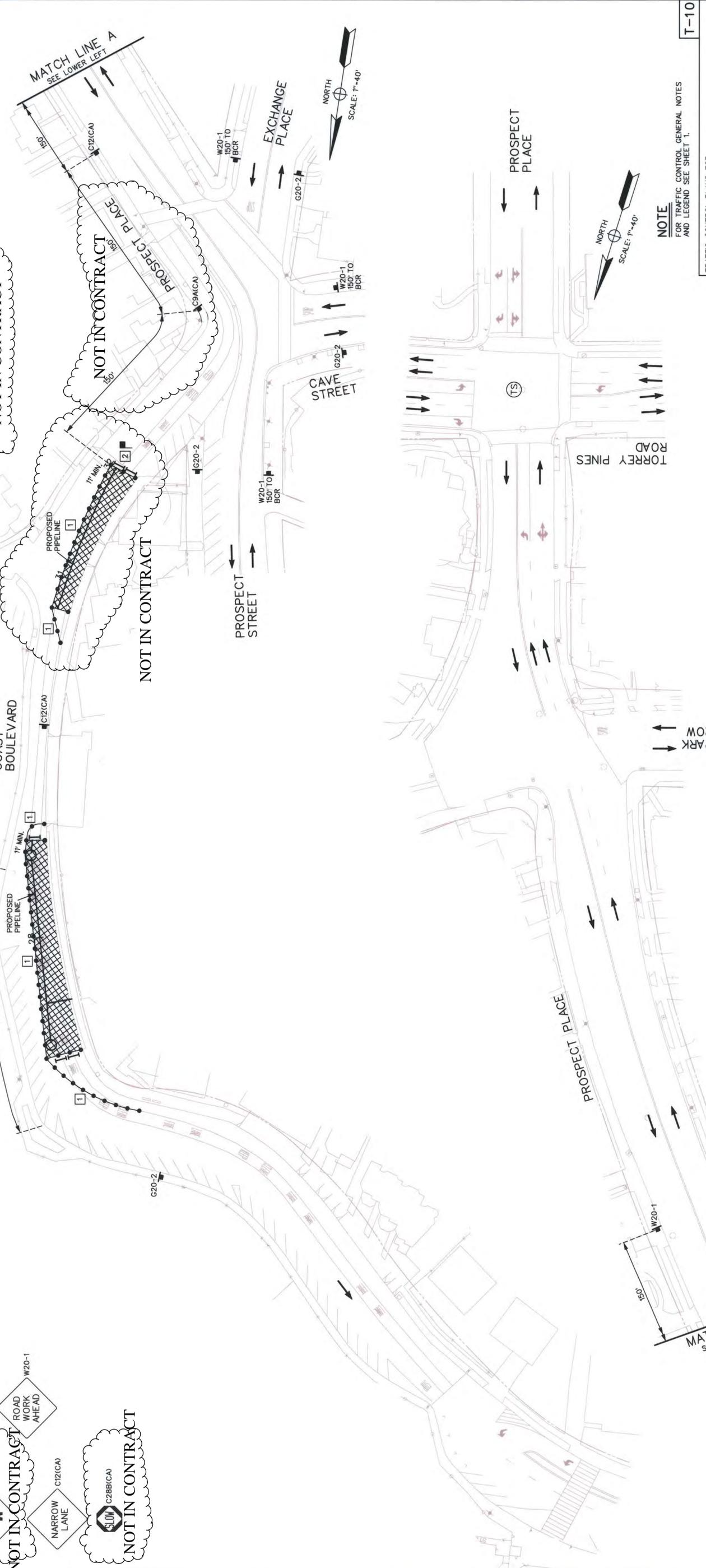
NOTES THIS SHEET

- 1 DELINEATORS SHALL BE PLACED AT 10' INTERVALS.
- 2 FLAGGER SHALL BE EQUIPPED WITH A HARD HAT, ORANGE VEST AND C28B(CA) PADDLE.

NOT IN CONTRACT

COAST BOULEVARD

TEMPORARY NO PARKING



NOTE  
FOR TRAFFIC CONTROL GENERAL NOTES  
AND LEGEND SEE SHEET 1.

T-10

TRAFFIC CONTROL PLANS FOR:  
**SEWER AND WATER GROUP 820**  
**PROSPECT STREET**  
(STAGE 7)

CITY OF SAN DIEGO, CALIFORNIA ENGINEERING AND CAPITAL PROJECTS DEPARTMENT SHEET 10 OF 14 SHEETS	DATE 07/30/2012	DATE 07/30/2012	DATE 07/30/2012	DATE 07/30/2012
FOR CITY ENGINEER <i>Michael Nini</i>	BY LLG	APPROVED LLG	DATE 07/30/2012	DATE 07/30/2012
FOR PROJECT ENGINEER MICHAEL NINI ASSOCIATE ENGINEER PROJECT ENGINEER MERYL JIMENEZ	DESCRIPTION ORIGINAL	BY LLG	DATE 07/30/2012	DATE 07/30/2012
WATER WBS B-0010	CONTROL CERTIFICATION 206-1885	INSPECTOR DATE STARTED	DATE COMPLETED	CONTRACTOR DATE COMPLETED
SEWER WBS B-00382	CONTROL CERTIFICATION 654447, 886444	INSPECTOR DATE STARTED	DATE COMPLETED	CONTRACTOR DATE COMPLETED
35408-T10-D				

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4542 Ruffner Street, Suite 100  
San Diego, Ca 92111  
(858)300-8800 (PH)  
(858)300-8810 (FX)

LLG 3-076350-27-1 T-10-4350-2751CTPP-10N  
Designed By: JSM Drawn By: DVS  
Checked By: JPK  
7/25/12

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 DESIGN AND CONSTRUCTION STANDARDS AND THAT THE DESIGN IS CONSISTENT WITH CURRENT STANDARDS.

I UNDERSTAND THAT THE CHECK OF PROJECT DRAWINGS AND SPECIFICATIONS BY ME OR ANY OTHER ENGINEER OR ARCHITECT IS A REVIEW ONLY AND DOES NOT RELIEVE THE ENGINEER OF WORK OF MY RESPONSIBILITIES FOR PROJECT DESIGN.

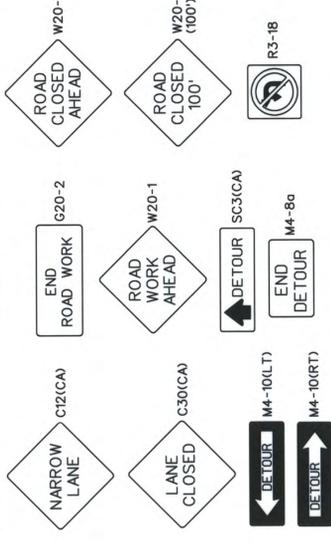
ENGINEER OF WORK

*John P. Keating*  
JOHN P. KEATING R.C.E. 43595  
DATE 7/25/12



TRAFFIC CONTROL DESIGN SPEED  
COAST BOULEVARD - 15 MPH  
PROSPECT PLACE - 25 MPH  
TORREY PINES ROAD - 35 MPH

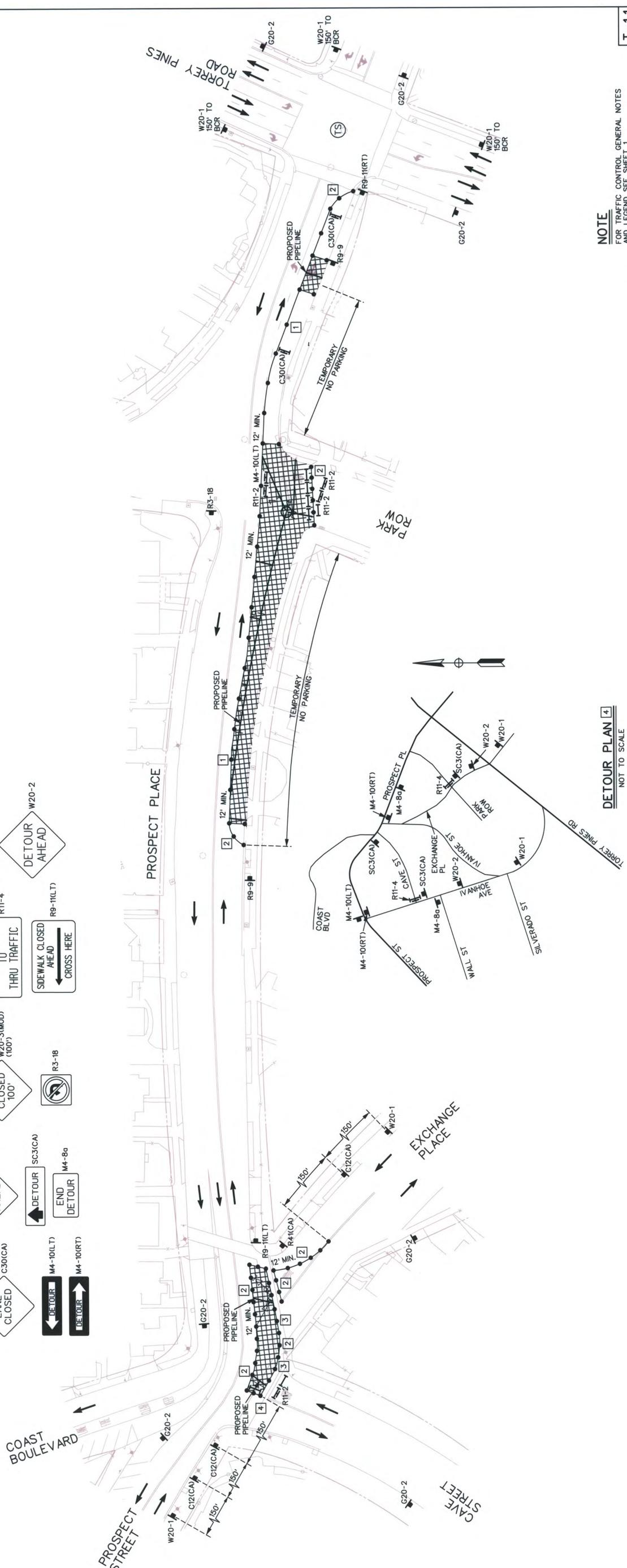
**TEMPORARY CONSTRUCTION SIGNS (THIS SHEET ONLY)**



**NOTES THIS SHEET**

- 1 DELINEATORS SHALL BE PLACED AT 25' INTERVALS.
- 2 DELINEATORS SHALL BE PLACED AT 10' INTERVALS.
- 3 CONTRACTOR SHALL MAINTAIN A 4' CLEAR PATH FOR PEDESTRIAN ACCESS.
- 4 SEE DETOUR PLAN THIS SHEET.

**SEWERLINE CONSTRUCTION**  
 WORK HOURS 8:30 AM TO 3:30 PM



**DETOUR PLAN 4**  
 NOT TO SCALE

**NOTE**  
 FOR TRAFFIC CONTROL GENERAL NOTES  
 AND LEGEND SEE SHEET 1.

T-11

TRAFFIC CONTROL PLANS FOR:

**SEWER AND WATER GROUP 820  
 PROSPECT PLACE**  
 (STAGE B)

CITY OF SAN DIEGO, CALIFORNIA ENGINEERING AND CAPITAL PROJECTS DEPARTMENT SHEET 11 OF 14 SHEETS	DATE 07/30/2012
WATER WBS B-0010 SEWER WBS B-00382	DATE
DESIGNED BY MICHAEL NINH	DATE
CHECKED BY MERYL JIMENEZ	DATE
APPROVED BY LLG	DATE
DESCRIPTION ORIGINAL	DATE
PROJECT ENGINEER	DATE
CONTROL CERTIFICATION	DATE
CONTRACTOR	DATE STARTED
INSPECTOR	DATE COMPLETED
	35408-T11-D

**LINSKOTT, LAW & GREENSPAN, ENGINEERS**  
 4542 Ruffner Street, Suite 100  
 San Diego, Ca 92111  
 (858)300-8800 (PH) (858)300-8810 (FX)

LLG 3-076350-27.1  
 Design By: JSM  
 Drawn By: DVS  
 Checked By: JPK  
 7/25/12

**DECLARATION OF RESPONSIBLE CHARGE**

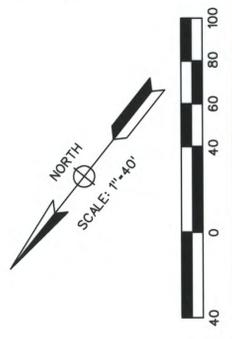
I HEREBY DECLARE THAT I AM THE ENGINEER OF WORK FOR THIS PROJECT, THAT I HAVE EXERCISED RESPONSIBLE CHARGE OF THE DESIGN AND CONSTRUCTION OF THE PROJECT AND THAT THE DESIGN IS CONSISTENT WITH CURRENT STANDARDS.

I UNDERSTAND THAT THE CHECK OF PROJECT DRAWINGS AND SPECIFICATIONS BY THE CITY OF SAN DIEGO IS CONFINED TO A REVIEW ONLY AND DOES NOT RELIEVE ME AS ENGINEER OF WORK, OF MY RESPONSIBILITIES FOR PROJECT DESIGN.



**ENGINEER OF WORK**

*John P. Keating*  
 JOHN P. KEATING  
 R.C.E. 43595  
 DATE 7/25/12

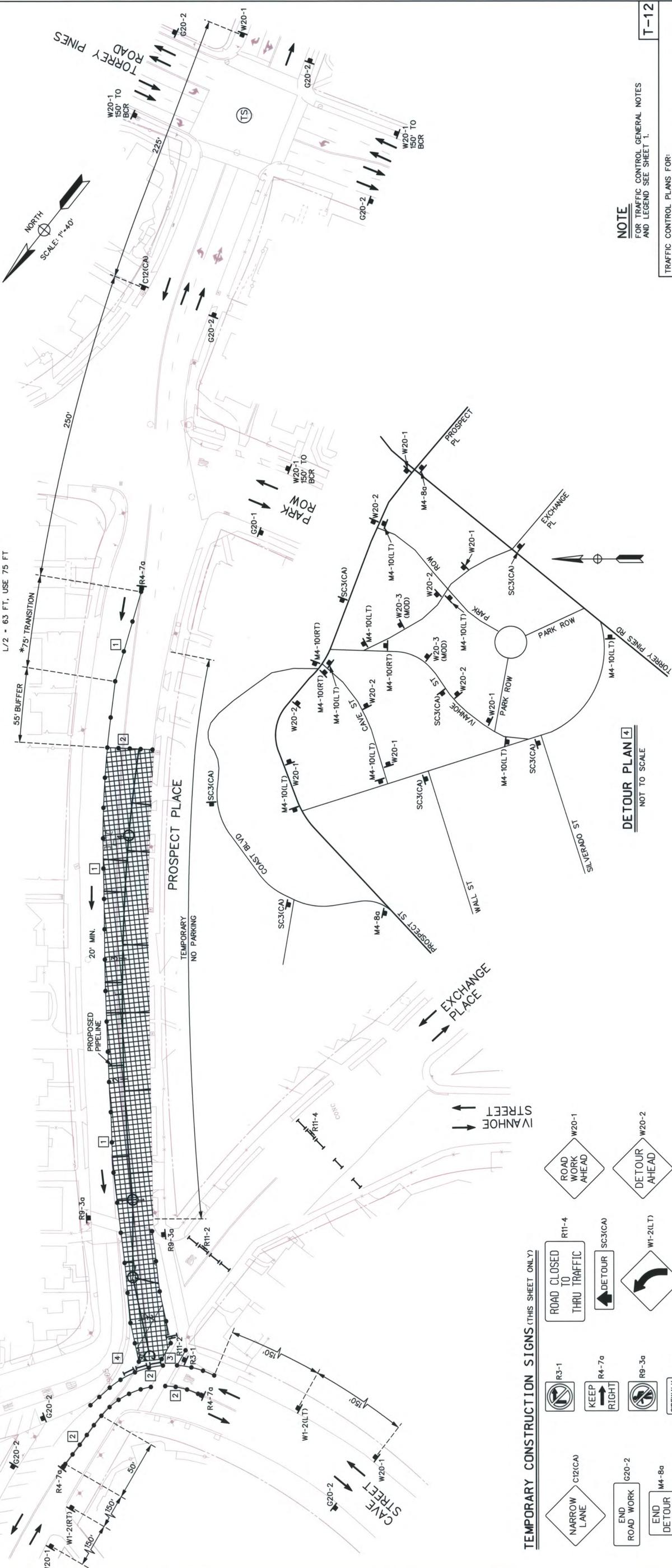


TRAFFIC CONTROL DESIGN SPEED  
 PROSPECT PLACE - 25 MPH

**SEWERLINE CONSTRUCTION**  
 WORK HOURS 8:30 AM TO 3:30 PM

- NOTES THIS SHEET**
- 1 DELINEATORS SHALL BE PLACED AT 25' INTERVALS.
  - 2 DELINEATORS SHALL BE PLACED AT 10' INTERVALS.
  - 3 CONTRACTOR SHALL MAINTAIN A 4' CLEAR PATH FOR PEDESTRIAN ACCESS.
  - 4 SEE DETOUR PLAN THIS SHEET.

**\*TRANSITION CALCULATION**  
 $L = \frac{(W1/V1)^2}{60} = \frac{(121/25)^2}{60} = 125 \text{ FT}$   
 $L/2 = 63 \text{ FT, USE } 75 \text{ FT}$



**NOTE**  
 FOR TRAFFIC CONTROL GENERAL NOTES AND LEGEND SEE SHEET T-1.

TRAFFIC CONTROL PLANS FOR:  
**SEWER AND WATER GROUP 820**  
**PROSPECT PLACE**  
 (STAGE 9)

CITY OF SAN DIEGO, CALIFORNIA ENGINEERING AND CAPITAL PROJECTS DEPARTMENT SHEET 12 OF 14 SHEETS	WATER WBS B-0010 SEWER WBS B-00382
APPROVED BY: <i>Michael M. ...</i> DATE: 07/30/2012	DESIGNED BY: MICHAEL NINH CHECKED BY: ASSOCIATE ENGINEER
ORIGINAL	PROJECT ENGINEER: MYRELL JIMENEZ
LLG	DATE FILMED
LLG	DATE
CONTRACTOR: LAMBERT COORDINATES	INSPECTOR: DATE STARTED
35408-T12-D	DATE COMPLETED

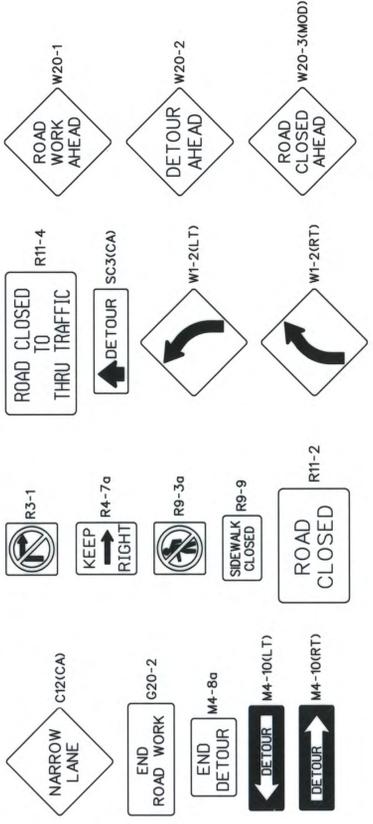
**LINSKOTT, LAW & GREENSPAN, ENGINEERS**  
 4542 Ruffner Street, Suite 100  
 San Diego, Ca 92111  
 (858)300-8800 (PH)  
 (858)300-8810 (FX)

LLC 3-076350-27.1  
 Dist. Grid BY: JSM  
 Drawn BY: DVS  
 Checked BY: JPK  
 7/25/12

**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 IS NOT A REVIEW ONLY AND DOES NOT RELIEVE ME AS ENGINEER OF WORK OF MY RESPONSIBILITIES FOR PROJECT DESIGN.

**ENGINEER OF WORK**  
*John P. Keating*  
 JOHN P. KEATING R.C.E. 43595  
 DATE: 7/25/12

**TEMPORARY CONSTRUCTION SIGNS (THIS SHEET ONLY)**



**TRAFFIC CONTROL DESIGN SPEED**  
**PROSPECT PLACE - 25 MPH**



**DETOUR PLAN 4**  
 NOT TO SCALE

**NOTES THIS SHEET**

- 1 DELINEATORS SHALL BE PLACED AT 25' INTERVALS.
- 2 DELINEATORS SHALL BE PLACED AT 10' INTERVALS.

**SEWERLINE CONSTRUCTION**  
 WORK HOURS 8:30 AM TO 3:30 PM

**\*TRANSITION CALCULATION**

$$L = (W/V)^2 \cdot (4135)^2 = 82 \text{ FT}$$

60' - 60

$$L/2 = 41 \text{ FT, USE 50 FT}$$

**\*\*TRANSITION CALCULATION**

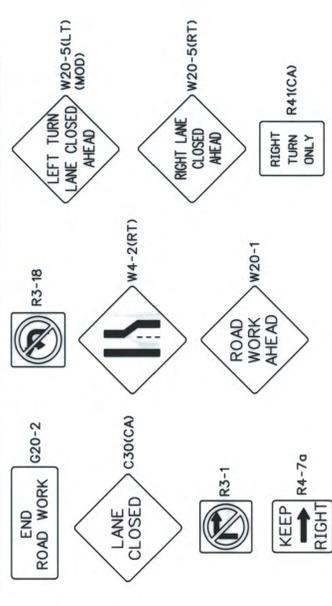
$$L = (W/V)^2 \cdot (7135)^2 = 142 \text{ FT}$$

60' - 60

USE 150 FT



**TEMPORARY CONSTRUCTION SIGNS (THIS SHEET ONLY)**



**NOTE**

FOR TRAFFIC CONTROL GENERAL NOTES AND LEGEND SEE SHEET 1.

T-13

TRAFFIC CONTROL PLANS FOR:

**SEWER AND WATER GROUP 820 EXCHANGE PLACE**  
(STAGE 1)

CITY OF SAN DIEGO, CALIFORNIA ENGINEERING AND CAPITAL PROJECTS DEPARTMENT SHEET 13 OF 14 SHEETS	WATER B-0010 SEWER WBS B-00382
APPROVED BY: <i>[Signature]</i> FOR CITY ENGINEER	DATE: 07/30/2012
BY: LLG	APPROVED DATE: FILMED
DESCRIPTION: ORIGINAL	DATE: DATE STARTED
PROJECT ENGINEER: ABERYL IANEZ	DATE COMPLETED: DATE COMPLETED
ASSOCIATE ENGINEER: MICHAEL NINH	CONTROL CERTIFICATION: 206-1885
PROJECT ENGINEER: ABERYL IANEZ	CONTROL CERTIFICATION: 6244407, 188444
CONTRACTOR: LAMBERT COORDINATES	CONTRACTOR: LAMBERT COORDINATES
INSPECTOR: DATE STARTED	INSPECTOR: DATE COMPLETED
	35408-T13-D

**LINSOTT, LAW & GREENSPAN, ENGINEERS**  
 4542 Ruffner Street, Suite 100  
 San Diego, Ca 92111  
 (858)300-8800 (PH)  
 (858)300-8810 (FX)

LLG 3-076550-27-1	TC13-6350-27101EP-DGN	7/25/12
Designed By: JSM	Drawn By: DVS	Checked By: JPK

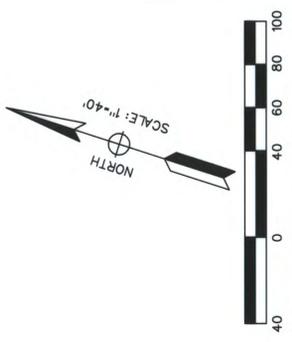
**DECLARATION OF RESPONSIBLE CHARGE**

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 IS CONFINED TO THE TECHNICAL ASPECTS OF THE DESIGN, AND NOT THE WORK, OF MY RESPONSIBILITIES FOR PROJECT DESIGN.

**ENGINEER OF WORK**

*[Signature]*  
 JOHN P. KEATING R.C.E. 43595 DATE 7/25/12



**TRAFFIC CONTROL DESIGN SPEED**  
 EXCHANGE PLACE - 25 MPH  
 TORREY PINES ROAD - 35 MPH

