# City of San Diego

**CONTRACTOR'S NAME**: Ahrens Mechanical
**ADDRESS**: 10975 San Diego Mission Road, San Diego, CA 92108-2431
**TELEPHONE NO.**: 619-487-9036 **FAX NO.:**
**CITY CONTACT:** Rosa I. Riego, Senior Contract Specialist, Email: RRiego@sandiego.gov
Phone No. (619) 533-3426
G. Torres / M. Jirjis Nakasha / N. Alkuree

# BIDDING DOCUMENTS

e - Bidding

## FOR

## MBC PIPE GALLERY REPLACEMENT

BID NO.: **K-25-2380-DBB-3**
SAP NO. (WBS/IO/CC): **B-21148**
CLIENT DEPARTMENT: **2000**
COUNCIL DISTRICT: **6**
PROJECT TYPE: **BO**

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

- THE CITY'S SUBCONTRACTING PARTICIPATION REQUIREMENTS FOR SLBE PROGRAM
- PREVAILING WAGE RATES: STATE ☒ FEDERAL ☐
- APPRENTICESHIP

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

- PHASED-FUNDING

**BID DUE DATE:**

**2:00 PM**
**MARCH 27, 2025**

**CITY OF SAN DIEGO'S ELECTRONIC BIDDING SITE, PLANETBIDS**

http://www.sandiego.gov/cip/bidopps/

## ENGINEER OF WORK

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

| | | |
|---|---|---|
| 1) Registered Engineer | 2/3/2025<br>Date | Seal: |
| 2) For City Engineer | 02/03/2025<br>Date | Seal: |

## TABLE OF CONTENTS

# REQUIRED DOCUMENTS SCHEDULE DURING BIDDING AND AWARDING

The Bidder's attention is directed to the City's Municipal Code §22.0807(d)(2) for important information regarding grounds for debarment for failure to submit required documentation.

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

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

| ITEM | DOCUMENT TO BE SUBMITTED | WHEN DUE | FROM |
|---|---|---|---|
| 1. | Bid Bond (PDF via PlanetBids) | At Time of Bid | ALL BIDDERS |
| 2. | Contractor's Certification of Pending Actions | At Time of Bid | ALL BIDDERS |
| 3. | Mandatory Disclosure of Business Interests | At Time of Bid | ALL BIDDERS |
| 4. | Debarment and Suspension Certification for Prime Contractors | At Time of Bid | ALL BIDDERS |
| 5. | Debarment and Suspension Certification for Subcontractors, Suppliers & Mfgrs | At Time of Bid | ALL BIDDERS |
| 6. | Bid Bond (Original) | By 5PM 1 working day after bid opening | ALL BIDDERS |
| 7. | SLBE Good Faith Effort Documentation | By 5PM 3 working days after bid opening | ALL BIDDERS |
| 8. | Form AA60 – List of Work Made Available | By 5PM 3 working days after bid opening with Good Faith Effort (GFE) documentation | ALL BIDDERS |
| 9. | Phased Funding Schedule Agreement (when required) | Within 10 working days of the Notice of Intent to Award | AWARDED BIDDER |
| 10. | If the Contractor is a Joint Venture:<br>• Joint Venture Agreement<br>• Joint Venture License | Within 10 working days of receipt by bidder of contract forms | AWARDED BIDDER |
| 11. | Payment & Performance Bond, Certificates of Insurance & Endorsements | Within 10 working days of receipt by bidder of contract forms and NOI | AWARDED BIDDER |

| ITEM | DOCUMENT TO BE SUBMITTED | WHEN DUE | FROM |
|---|---|---|---|
| 12. | In-Use Off-Road Diesel Fueled Fleet Regulation (OFF-ROAD REGULATION) Compliance | Within 10 working days of receipt by bidder of contract forms and NOI | AWARDED BIDDER |
| 13. | Signed Contract Agreement Page | Within 3 working days of receipt by bidder of Contract Agreement | AWARDED BIDDER |
| 14. | Listing of "Other Than First Tier" Subcontractors | Within 10 working days of receipt by bidder of contract forms | AWARDED BIDDER |

## NOTICE INVITING BIDS

1. **SUMMARY OF WORK:** This is the City of San Diego's (City) solicitation process to acquire Construction services for **MBC Pipe Gallery Replacement.** For additional information refer to Attachment A.

2. **FULL AND OPEN COMPETITION:** This solicitation is subject to full and open competition and may be bid by Contractors on the City's approved Prequalified Contractors List. For information regarding the Contractors Prequalified list visit the City's web site: http://www.sandiego.gov.

3. **ESTIMATED CONSTRUCTION COST:** The City's estimated construction cost for this project is **$2,180,000.00.**

4. **BID DUE DATE AND TIME ARE: March 27, 2025** at **2:00 PM**.

5. **PREVAILING WAGE RATES APPLY TO THIS CONTRACT:** Refer to Attachment D.

6. **LICENSE REQUIREMENT**: To be eligible for award of this contract, Prime contractor must possess the following licensing classification: **A OR C-34**

7. **SUBCONTRACTING PARTICIPATION PERCENTAGES**: Subcontracting participation percentages apply to this contract.

   **7.1.** The City has incorporated **mandatory** SLBE-ELBE subcontractor participation percentages to enhance competition and maximize subcontracting opportunities. For the purpose of achieving the mandatory subcontractor participation percentages, a recommended breakdown of the SLBE and ELBE subcontractor participation percentages based upon certified SLBE and ELBE firms has also been provided to achieve the mandatory subcontractor participation percentages:

   1. SLBE participation **8.6%**
   2. ELBE participation **13.7%**
   3. Total mandatory participation **22.3%**

   **7.2.** The current list of Certified SLBE/ELBE Firms to be used for outreach for this project is posted to the Documents tab on PlanetBids.

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

   **7.3.1.** Attend the Mandatory Pre-Bid Site Visit as described herein.

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

   **7.3.3.** Submit Good Faith Effort (GFE) documentation, saved in searchable Portable Document Format (PDF), demonstrating the Bidder made a good faith effort to conduct outreach to and include SLBE-ELBE Subcontractors as required in this solicitation by 5PM 3 Working Days after the Bid opening if the overall mandatory participation percentage is not met.

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

## 8. NON-MANDATORY PRE-BID MEETING AND MANDATORY PRE-BID SITE VISIT:

### 8.1. ONLINE PRE-BID MEETING:

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

The Pre-Bid Meeting will be held on **Thursday, March 13, 2025,** at **10:00 AM** (PDT) at:

**Microsoft Teams** Need help?

**Join the meeting now**
Meeting ID: 268 341 592 250
Passcode: iv3fe3CY

**Dial in by phone**

+1 945-468-5511,,538884851# United States, Dallas
Find a local number
Phone conference ID: 538 884 851#
For organizers: Meeting options | Reset dial-in PIN

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

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

**8.2. PRE-BID SITE VISIT:** All those wishing to submit a Bid **MUST** visit the Work Site with the Engineer. The purpose of the Site visit is to acquaint Bidders with the Site conditions. To request a sign language or oral interpreter for this visit, call the Purchasing & Contracting Department, Public Works Division at (619) 533-3450 at least 5 Working Days prior to the meeting to ensure availability. Failure to attend the **Mandatory** Pre-Bid Site Visit may result in the Design-Builder's Bid being deemed non-responsive. The Pre-Bid Site Visit is scheduled as follows:

| | |
|---|---|
| **Time:** | **9:00 AM** |
| **Date:** | **March 17, 2025** |
| **Location:** | **5240 Convoy St, San Diego, CA, 92111** |
| | **(Meet the Project Manager at the Large Conference Room)** |

## 9. AWARD PROCESS:

**9.1.** The Award of this contract is contingent upon the Contractor's compliance with all conditions of Award as stated within these documents and within the Notice of Intent to Award.

**9.2.** Upon acceptance of bids and determination of the apparent low bidder, the City will prepare the contract documents for execution within approximately 21 days of the date of the bid opening. The City will then award the contract upon receipt of properly signed Contract, bonds, and insurance documents.

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

**9.4.** The low Bid will be determined by the Base Bid.

**9.5.** Once the low Bid has been determined, the City may, at its sole discretion, award the contract for the Base Bid alone.

## 10. SUBMISSION OF QUESTIONS:

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

Rosa I. Riego at RRiego@sandiego.gov

**10.2.** Questions received less than 14 days prior to the date for opening of Bids may not be considered.

**10.3.** Questions or clarifications deemed by the City to be material shall be answered via issuance of an addendum and posted to the City's online bidding service.

**10.4.** Only questions answered by formal written addenda shall be binding. Oral and other interpretations or clarifications shall be without legal effect. It is the Bidder's responsibility to be informed of any addenda that have been issued and to include all such information in its Bid.

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

## 1. PREQUALIFICATION OF CONTRACTORS:

**1.1.** Contractors submitting a Bid must be pre-qualified for the total amount proposed, including all alternate items, prior to the date of submittal. Bids from contractors who have not been pre-qualified as applicable and Bids that exceed the maximum dollar amount at which contractors are pre-qualified may be deemed **non-responsive** and ineligible for award.

**1.2.** The completed application must be submitted online no later than 2 weeks prior to the bid opening.

**1.3.** **Joint Venture Bidders Cumulative Maximum Bidding Capacity:** For projects with an engineer's estimate of $30,000,000 or greater, Joint Ventures submitting bids may be deemed responsive and eligible for award if the cumulative maximum bidding capacity of the individual Joint Venture entities is equal to or greater than the total amount proposed.

**1.3.1.** Each of the entities of the Joint Venture must have been previously prequalified at a minimum of $15,000,000.

**1.3.2.** Bids submitted with a total amount proposed of less than $30,000,000 are not eligible for Cumulative Maximum Bidding Capacity prequalification. To be eligible for award in this scenario, the Joint Venture itself or at least one of the Joint Venture entities must have been prequalified for the total amount proposed.

**1.3.3.** Bids submitted by Joint Ventures with a total amount proposed of $30,000,000 or greater on a project with an engineer's estimate of less than $30,000,000 are not eligible for Cumulative Maximum Bidding Capacity prequalification.

**1.3.4.** The Joint Venture designated as the Apparent Low Bidder shall provide evidence of its corporate existence and furnish good and approved bonds in the name of the Joint Venture within 14 Calendar Days of receipt by the Bidder of a form of contract for execution.

**1.4.** Complete information and links to the on-line prequalification application are available at:

http://www.sandiego.gov/cip/bidopps/prequalification

**1.5.** Due to the City's responsibility to protect the confidentiality of the contractors' information, City staff will not be able to provide information regarding contractors' prequalification status over the telephone. Contractors may access real-time information about their prequalification status via their vendor profile on PlanetBids.™

2. **ELECTRONIC FORMAT RECEIPT AND OPENING OF BIDS:** Bids will be received in electronic format (eBids) EXCLUSIVELY at the City of San Diego's electronic bidding (eBidding) site, at: http://www.sandiego.gov/cip/bidopps/ and are due by the date, and time shown on the cover of this solicitation.

**2.1.** **BIDDERS MUST BE PRE-REGISTERED** with the City's bidding system and possess a system-assigned Digital ID in order to submit and electronic bid.

**2.2.** The City's bidding system will automatically track information submitted to the site including IP addresses, browsers being used and the URLs from which information was submitted. In addition, the City's bidding system will keep a history of every login instance including the time of login, and other information about the user's computer configuration such as the operating system, browser type, version, and more. Because of these security features, Contractors who disable their browsers' cookies will not be able to log in and use the City's bidding system.

**2.3.** The City's electronic bidding system is responsible for bid tabulations. Upon the bidder's or proposer's entry of their bid, the system will ensure that all required fields are entered. **The system will not accept a bid for which any required information is missing.** This includes all necessary pricing, subcontractor listing(s) and any other essential documentation and supporting materials and forms requested or contained in these solicitation documents.

**2.4.** **BIDS REMAIN SEALED UNTIL BID DEADLINE.** eBids are transmitted into the City's bidding system via hypertext transfer protocol secure (https) mechanism using SSL 128-256 bit security certificates issued from Verisign/Thawte which encrypts data being transferred from client to server. Bids submitted prior to the "Bid Due Date and Time" are not available for review by anyone other than the submitter who has until the "Bid Due Date and Time" to change, rescind or retrieve its proposal should it desire to do so.

**2.5.** **BIDS MUST BE SUBMITTED BY BID DUE DATE AND TIME**. Once the bid deadline is reached, no further submissions are accepted into the system. Once the Bid Due Date and Time has lapsed, bidders, proposers, the general public, and City staff are able to immediately see the results on line. City staff may then begin reviewing the submissions for responsiveness, EOCP compliance and other issues. The City may require any Bidder to furnish statement of experience, financial responsibility, technical ability, equipment, and references.

**2.6.** **RECAPITULATION OF THE WORK**. Bids shall not contain any recapitulation of the Work. Conditional Bids may be rejected as being non-responsive. Alternative proposals will not be considered unless called for.

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

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

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

**3. ELECTRONIC BID SUBMISSIONS CARRY FULL FORCE AND EFFECT:**

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

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

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

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

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

shall be free to release the information when required in accordance with the PRA, pursuant to any other applicable law, or by order of any court or government agency, and the Contractor will hold the City harmless for release of this information.

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

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

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

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

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

**7. INSURANCE REQUIREMENTS:**

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

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

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

| Title | Edition | Document Number |
|---|---|---|
| Standard Specifications for Public Works Construction ("The GREENBOOK") http://www.greenbookspecs.org/ | 2021 | ECPI010122-01 |
| City of San Diego Standard Specifications for Public Works Construction ("The WHITEBOOK")* https://www.sandiego.gov/ecp/edocref/greenbook | 2021 | ECPI010122-02 |
| City of San Diego Standard Drawings* https://www.sandiego.gov/ecp/edocref/standarddraw | 2021 | ECPI010122-03 |
| Citywide Computer Aided Design and Drafting (CADD) Standards https://www.sandiego.gov/ecp/edocref/drawings | 2018 | PWPI010119-04 |
| California Department of Transportation (CALTRANS) Standard Specifications https://dot.ca.gov/programs/design/july-2023-ccs-standard-plans-and-standard-specifications | 2023 | ECPD092023-05 |

| Title | Edition | Document Number |
|---|---|---|
| CALTRANS Standard Plans<br>https://dot.ca.gov/programs/design/july-2023-ccs-standard-plans-and-standard-specifications | 2023 | ECPD092023-06 |
| California Manual on Uniform Traffic Control Devices Revision 8 (CA MUTCD Rev 8)<br>https://dot.ca.gov/programs/safety-programs/camutcd | 2014 | ECPD032324-07 |
| **NOTE**: *Available online under Engineering Documents and References at: https://www.sandiego.gov/ecp/edocref/<br>***Electronic updates to the Standard Drawings may also be found in the link above | | |

**9.** **CITY'S RESPONSES AND ADDENDA:** The City, at its discretion, may respond to any or all questions submitted in writing via the City's eBidding web site in the **form of an addendum**. No other responses to questions, oral or written shall be of any force or effect with respect to this solicitation. The changes to the Contract Documents through addenda are made effective as though originally issued with the Bid. The Bidders shall acknowledge the receipt of Addenda at the time of bid submission.

**10.** **CITY'S RIGHTS RESERVED:** The City reserves the right to cancel the Notice Inviting Bids at any time, and further reserves the right to reject submitted Bids, without giving any reason for such action, at its sole discretion and without liability. Costs incurred by the Bidder(s) as a result of preparing Bids under the Notice Inviting Bids shall be the sole responsibility of each bidder. The Notice Inviting Bids creates or imposes no obligation upon the City to enter a contract.

**11.** **CONTRACT PRICING:** This solicitation is for a Lump Sum contract with Unit Price provisions as set forth herein. The Bidder agrees to perform construction services for the City of San Diego in accordance with these contract documents for the prices listed below. The Bidder further agrees to guarantee the Contract Price for a period of 120 days from the date of Bid opening. The duration of the Contract Price guarantee may be extended, by mutual consent of the parties, by the number of days required for the City to obtain all items necessary to fulfill all contractual conditions.

**12.** **SUBCONTRACTOR INFORMATION:**

**12.1.** **LISTING OF SUBCONTRACTORS**. In accordance with the requirements provided in the "Subletting and Subcontracting Fair Practices Act" of the California Public Contract Code, the Bidder shall provide the **NAME** and **ADDRESS** of each Subcontractor who will perform work, labor, render services or who specially fabricates and installs a portion [type] of the work or improvement, in an amount in excess of 0.5% of the Contractor's total Bid. The Bidder shall also state within the description, whether the subcontractor is a **CONSTRUCTOR**, **CONSULTANT** or **SUPPLIER**. The Bidder shall state the **DIR REGISTRATION NUMBER** for all subcontractors and shall further state within the description, the **PORTION** of the work which will be performed by each subcontractor under this Contract. The Contractor shall list only one Subcontractor for each portion of the Work. The **DOLLAR VALUE** of the total Bid to be performed

shall be stated for all subcontractors listed. Failure to comply with this requirement may result in the Bid being rejected as **non-responsive** and ineligible for award. The Bidder's attention is directed to the Special Provisions – Section 3-2, "Self-Performance", which stipulates the percent of the Work to be performed with the Bidders' own forces. The Bidder shall list all SLBE, ELBE, DBE, DVBE, MBE, WBE, OBE, SDB, WoSB, HUBZone, and SDVOSB Subcontractors for which Bidders are seeking recognition towards achieving any mandatory, voluntary (or both) subcontracting participation goals.

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

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

**12.3.** **LISTING OF SUBCONTRACTORS OR SUPPLIERS FOR ALTERNATES.** For subcontractors or suppliers to be used on alternate items, bidder shall use the provided **"Subcontractors For Alternates"** form and shall indicate for each alternate subcontract whether it is an additive or deductive alternate; the subcontractor's name, location, phone number, email address, CA license number, and DIR registration number; whether the subcontractor is a designer, constructor or supplier; the type of work the subcontractor will be performing; and the dollar value of the subcontract for that alternate item. Failure to comply with this requirement may result in the bid being rejected as nonresponsive and ineligible for award.

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

**14.** **AWARD:**

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

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

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

**15. SUBCONTRACT LIMITATIONS:** The Bidder's attention is directed to Standard Specifications for Public Works Construction, Section 3-2, "SELF-PERFORMANCE" in The GREENBOOK and as amended in the SSP which requires the Contractor to self-perform not less than the specified amount. Failure to comply with this requirement shall render the bid **non-responsive** and ineligible for award.

**16. AVAILABILITY OF PLANS AND SPECIFICATIONS:** Contract Documents may be obtained by visiting the City's website: http://www.sandiego.gov/cip/. Plans and Specifications for this contract are also available for review in the office of the City Clerk or Purchasing & Contracting Department, Public Works Division.

**17. ONLY ONE BID PER CONTRACTOR SHALL BE ACCEPTED:** No person, firm, or corporation shall be allowed to make, file, or be interested in more than one (1) Bid for the same work unless alternate Bids are called for. A person, firm or corporation who has submitted a sub-proposal to a Bidder, or who has quoted prices on materials to a Bidder, is not hereby disqualified from submitting a sub-proposal or quoting prices to other Bidders or from submitting a Bid in its own behalf. Any Bidder who submits more than one bid will result in the rejection of all bids submitted.

**18. SAN DIEGO BUSINESS TAX CERTIFICATE:** The Contractor and Subcontractors, not already having a City of San Diego Business Tax Certificate for the work contemplated shall secure the appropriate certificate from the City Treasurer, Civic Center Plaza, First floor and submit to the Contract Specialist upon request or as specified in the Contract Documents. Tax Identification numbers for both the Bidder and the listed Subcontractors must be submitted on the City provided forms within these documents.

**19. BIDDER'S GUARANTEE OF GOOD FAITH (BID SECURITY) FOR DESIGN-BID-BUILD CONTRACTS:**

**19.1.** For bids $250,000 and above, bidders shall submit Bid Security at bid time. Bid Security shall be in one of the following forms: a cashier's check, or a properly certified check upon some responsible bank; or an approved corporate surety bond payable to the City of San Diego for an amount of not less than 10% of the total bid amount.

**19.2.** This check or bond, and the monies represented thereby, will be held by the City as a guarantee that the Bidder, if awarded the contract, will in good faith enter into the contract and furnish the required final performance and payment bonds.

**19.3.** The Bidder agrees that in the event of the Bidder's failure to execute this contract and provide the required final bonds, the money represented by the cashier's or certified check will remain the property of the City; and the Surety agrees that it will pay to the City the damages, not exceeding the sum of 10% of the amount of the Bid, that the City may suffer as a result of such failure.

**19.4.** At the time of bid submission, bidders must upload and submit an electronic PDF copy of the aforementioned bid security. Whether in the form of a cashier's check, a properly certified check or an approved corporate surety bond payable to the City of San Diego, the bid security must be uploaded to the City's eBidding system. By 5PM, 1 working day after the bid opening date, all bidders must provide the City with the original bid security.

**19.5.** Failure to submit the electronic version of the bid security at the time of bid submission AND failure to provide the original by 5PM, 1 working day after the bid opening date shall cause the bid to be rejected and deemed **non-responsive**.

Original Bid Bond shall be submitted to:
Purchasing & Contracting Department, Public Works Division
1200 3rd Ave., Suite 200, MS 56P
San Diego, California, 92101
To the Attention of the Contract Specialist on the Front Page of this solicitation.

## 20. AWARD OF CONTRACT OR REJECTION OF BIDS:

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

**20.2.** Bidders shall complete ALL eBid forms as required by this solicitation. Incomplete eBids will not be accepted.

**20.3.** The City reserves the right to reject any or all Bids, to waive any informality or technicality in Bids received, and to waive any requirements of these specifications as to bidding procedure.

**20.4.** Bidders will not be released on account of their errors of judgment. Bidders may be released only upon receipt by the City within 3 Working Days of the bid opening, written notice from the Bidder which shows proof of honest, credible, clerical error of a material nature, free from fraud or fraudulent intent; and of evidence that reasonable care was observed in the preparation of the Bid.

**20.5.** A bidder who is not selected for contract award may protest the award of a contract to another bidder by submitting a written protest in accordance with the San Diego Municipal Code.

**20.6.** The City of San Diego will not discriminate in the award of contracts with regard to race, religion creed, color, national origin, ancestry, physical handicap, marital status, sex or age.

**20.7.** Each Bid package properly signed as required by these specifications shall constitute a firm offer which may be accepted by the City within the time specified herein.

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

## 21. BID RESULTS:

**21.1.** The availability of the bids on the City's eBidding system shall constitute the public announcement of the apparent low bidder. In the event that the apparent low bidder

is subsequently deemed non-responsive or non-responsible, a notation of such will be made on the eBidding system. The new ranking and apparent low bidder will be adjusted accordingly.

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

## 22. THE CONTRACT:

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

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

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

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

**22.5.** The award of the Contract is contingent upon the satisfactory completion of the above-mentioned items and becomes effective upon the signing of the Contract by the Mayor or designee and approval as to form by the City Attorney's Office. If the Apparent Low Bidder does not execute the Contract or submit required documents and information, the City may award the Contract to the next lowest responsible and reliable Bidder who shall fulfill every condition precedent to award. A corporation designated as the Apparent Low Bidder shall furnish evidence of its corporate existence and evidence that the officer signing the Contract and bond for the corporation is duly authorized to do so.

**23. EXAMINATION OF PLANS, SPECIFICATIONS, AND SITE OF WORK:** The Bidder shall examine carefully the Project Site, the Plans and Specifications, other materials as described in the Special Provisions, Section 3-9, "TECHNICAL STUDIES AND SUBSURFACE DATA", and the proposal forms (e.g., Bidding Documents). The submission of a Bid shall be conclusive evidence that the Bidder has investigated and is satisfied as to the conditions to be encountered, as to the character, quality, and scope of work, the quantities of materials to be furnished, and as to the requirements of the Bidding Documents Proposal, Plans, and Specifications.

**24. CITY STANDARD PROVISIONS:** This contract is subject to the following standard provisions. See The WHITEBOOK for details.

**24.1.** The City of San Diego Resolution No. R-277952 adopted on May 20, 1991 for a Drug-Free Workplace.

**24.2.** The City of San Diego Resolution No. R-282153 adopted on June 14, 1993 related to the Americans with Disabilities Act.

**24.3.** The City of San Diego Municipal Code §22.3004 for Contractor Standards.

**24.4.** The City of San Diego's Labor Compliance Program and the State of California Labor Code §§1771.5(b) and 1776.

**24.5.** Sections 1777.5, 1777.6, and 1777.7 of the State of California Labor Code concerning the employment of apprentices by contractors and subcontractors performing public works contracts.

**24.6.** The City's Equal Benefits Ordinance (EBO), Chapter 2, Article 2, Division 43 of The San Diego Municipal Code (SDMC).

**24.7.** The City's Information Security Policy (ISP) as defined in the City's Administrative Regulation 90.63.

**25. PRE-AWARD ACTIVITIES:**

**25.1.** The contractor selected by the City to execute a contract for this Work shall submit the required documentation as specified herein and in the Notice of Intent to Award. Failure to provide the information as specified may result in the Bid being rejected as **non-responsive.**

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

Bond No. 2350540
Premium: $34,056
Premium will be adjusted
based on final contract amount

# PERFORMANCE BOND, LABOR AND MATERIALMEN'S BOND

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

Ahrens Mechanical, a corporation, as principal, and Swiss Re Corporate Solutions America Insurance Corporation, 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 **Three Million Two Hundred Forty Thousand Eight Hundred Dollars and Zero Cents ($3,240,800.00)** for the faithful performance of the annexed contract, and in the sum of **Three Million Two Hundred Forty Thousand Eight Hundred Dollars and Zero Cents ($3,240,800.00)** for the benefit of laborers and materialmen designated below.

**Conditions:**

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

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

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

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

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

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

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

**CONTRACTOR**
Ahrens Mechanical

By: _____

Print Name: GREGORY S. AHRENS

Date: 5/21/2025

**THE CITY OF SAN DIEGO**

By: _____

Print Name: Stephen Samara
Principal Contract Specialist
Purchasing & Contracting Department

Date: 6/25/2025

**SURETY**
Swiss Re Corporate Solutions America Insurance Corporation

By: _____

Print Name: Anne Wright
Attorney-In-Fact

Date: 5/20/2025

777 S. Figueroa Street Suite 3700, Los Angeles, CA 90017
Local Address of Surety

(213) 457-6195
Local Phone Number of Surety

$34,056
Premium

2350540
Bond Number

**APPROVED AS TO FORM**
**Heather Ferbert, City Attorney**

By: _____

Print Name: Bonny Hsu
Deputy City Attorney

Date: 6/27/25

## SWISS RE CORPORATE SOLUTIONS

SWISS RE CORPORATE SOLUTIONS AMERICA INSURANCE CORPORATION ("SRCSAIC")
SWISS RE CORPORATE SOLUTIONS PREMIER INSURANCE CORPORATION ("SRCSPIC")
WESTPORT INSURANCE CORPORATION ("WIC")

## GENERALPOWEROF ATTORNEY

KNOW ALL MEN BY THESE PRESENTS, THAT SRCSAIC, a corporation duly organized and existing under laws of the State of Missouri, and having its principal office in the City of Kansas City, Missouri, and SRCSPIC, a corporation organized and existing under the laws of the State of Missouri and having its principal office in the City of Kansas City, Missouri, and WIC, organized under the laws of the State of Missouri, and having its principal office in the City of Kansas City, Missouri, each does hereby make, constitute and appoint:

MATTHEW C. GAYNOR, ANDY ROBERTS, ANNE WRIGHT, and BRITTNEY THOMPSON

JOINTLY or SEVERALLY

Its true and lawful Attorney(s)-in-Fact, to make, execute, seal and deliver, for and on its behalf and as its act and deed, bonds or other writings obligatory in the nature of a bond on behalf of each of said Companies, as surety, on contracts of suretyship as are or may be required or permitted by law, regulation, contract or otherwise, provided that no bond or undertaking or contract or suretyship executed under this authority shall exceed the amount of:

FIFTY MILLION ($50,000,000.00) DOLLARS

This Power of Attorney is granted and is signed by facsimile under and by the authority of the following Resolutions adopted by the Boards of Directors of both SRCSAIC and SRCSPIC at meetings duly called and held on the 18th of November 2021 and WIC by written consent of its Executive Committee dated July 18, 2011.

"RESOLVED, that any two of the President, any Managing Director, any Senior Vice President, any Vice President, the Secretary or any Assistant Secretary be, and each or any of them hereby is, authorized to execute a Power of Attorney qualifying the attorney named in the given Power of Attorney to execute on behalf of the Corporation bonds, undertakings and all contracts of surety, and that each or any of them hereby is authorized to attest to the execution of any such Power of Attorney and to attach therein the seal of the Corporation; and it is

FURTHER RESOLVED, that the signature of such officers and the seal of the Corporation may be affixed to any such Power of Attorney or to any certificate relating thereto by facsimile, and any such Power of Attorney or certificate bearing such facsimile signatures or facsimile seal shall be binding upon the Corporation when so affixed and in the future with regard to any bond, undertaking or contract of surety to which it is attached."

SWISS RE CORPORATE SOLUTIONS AMERICA INSURANCE CORPORATION SEAL 1973 MISSOURI

SWISS RE CORPORATE SOLUTIONS PREMIER INSURANCE CORPORATION SEAL MISSOURI

By _____
David Satory, Senior Vice President of SRCSAIC & Senior Vice President of SRCSPIC & Senior Vice President of WIC

By _____
Gabriel Jacquez, Senior Vice President of SRCSAIC & Senior Vice President of SRCSPIC & Senior Vice President of WIC

WESTPORT INSURANCE CORPORATION CORPORATE SEAL MISSOURI

IN WITNESS WHEREOF, SRCSAIC, SRCSPIC, and WIC have caused their official seals to be hereunto affixed, and these presents to be signed by their authorized officers

this 27TH day of MARCH, 20 2025

**Swiss Re Corporate Solutions America Insurance Corporation**
**Swiss Re Corporate Solutions Premier Insurance Corporation**
**Westport Insurance Corporation**

State of Illinois
County of Cook ss

On this 27TH day of MARCH, 20 2025, before me, a Notary Public personally appeared David Satory, Senior Vice President of SRCSAIC and Senior Vice President of SRCSPIC and Senior Vice President of WIC and Gabriel Jacquez, Senior Vice President of SRCSAIC and Senior Vice President of SPCSPIC and Senior Vice President of WIC, personally known to me, who being by me duly sworn, acknowledged that they signed the above Power of Attorney as officers of and acknowledged said instrument to be the voluntary act and deed of their respective companies.

Karen M. Szweda, Notary

I, Jeffrey Goldberg, the duly elected Senior Vice President and Assistant Secretary of SRCSAIC and SRCSPIC and WIC, do hereby certify that the above and foregoing is a true and correct copy of a Power of Attorney given by said SRCSAIC and SRCSPIC and WIC, which is still in full force and effect.
IN WITNESS WHEREOF, I have set my hand and affixed the seals of the Companies this 20th day of May, 20 25.

OFFICIAL SEAL
KAREN M SZWEDA
Notary Public, State of Illinois
Commission No 978628
My Commission Expires September 26, 2027

Jeffrey Goldberg, Senior Vice President &
Assistant Secretary of SRCSAIC and
SRCSPIC and WIC

# ACKNOWLEDGMENT

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

State of California
County of San Diego )

On May 20, 2025 before me, Brittney Thompson, Notary Public
(insert name and title of the officer)

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

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

WITNESS my hand and official seal.

Signature _____ **(Seal)**

BRITTNEY THOMPSON
Notary Public - California
San Diego County
Commission # 2499180
My Comm. Expires Sep 7, 2028

# ATTACHMENTS

## ATTACHMENT A

## SCOPE OF WORK

## SCOPE OF WORK

**1.** **SCOPE OF WORK:** Construction of the MBC Pipe Gallery Replacement project involves the replacement of existing reclaimed water lines. The project consists of removing and replacing approximately 347 LF of existing 3-Inch pipe, 792 LF of existing 4-Inch pipe, 1859 LF of existing 6-Inch pipe, and 1113 LF of existing 8-Inch pipe with new epoxy-lined steel pipes within the pipe gallery, buildings 76, 70, 60 and Grit Room at the Metropolitan Biosolids Center. The project will also replace existing copper tubing with new copper tubing. The pipeline installation will include new pipe hangers, supports, butterfly valves, ball valves, and associated appurtenances. The construction also includes the replacement of two pressure-reducing manifold systems in Building 70.

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

**1.1.1.** The Notice Inviting Bids and Plans numbered **0100464-01-D** through **0100464-43-D**, inclusive.

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

See **Appendix E – Location Map**

**3.** **CONTRACT TIME:** The Contract Time for completion of the Work shall be **232 Working Days**.

**ATTACHMENT B**

**PHASED FUNDING PROVISIONS**

Not Applicable

## PHASED FUNDING PROVISIONS

### 1. PRE-AWARD

**1.1.** Within 10 Working Days of the Notice of Intent to Award, the Contractor must contact the Project Manager to discuss fund availability for each phase and shall also submit the following:

**1.1.1.** Construction Cost Loaded Schedule in accordance with 6-1, "CONSTRUCTION SCHEDULE AND COMMENCEMENT OF THE WORK" and 7-3, "PAYMENT".

**1.2.** Contractor's failure to perform any of the following may result cancelling the award of the Contract:

**1.2.1.** Meeting with the City's Project Manager to discuss the Phased Funding Schedule.

**1.2.2.** Agreeing to a Phased Funding Schedule within **thirty** days of meeting with the City's Project Manager.

### 2. POST-AWARD

**2.1.** Do not start any construction activities for the next phase until the Notice to Proceed (NTP) has been issued by the City. The City will issue a separate NTP for each phase.

**2.2.** The City may issue the NTP for a subsequent phase before the completion of the preceding phase.

## PHASED FUNDING SCHEDULE AGREEMENT

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

**BID NUMBER:**_____

**CONTRACT OR TASK TITLE:**_____

**CONTRACTOR:**_____

| Funding Phase | Phase Description | Phase Start | Phase Finish | Not-to-Exceed Amount |
|---|---|---|---|---|
| 1 | | | | $ |
| 2 | | | | $ |
| 3 | | | | $ |
| | | | **Contract Total** | $ |



**Notes:**

1) WHITEBOOK section 7-3.10, "Phased Funding Compensation" applies.
2) The total of all funding phases shall be equal to the TOTAL BID PRICE as shown on BID SCHEDULE 1 - PRICES.
3) This PHASED FUNDING SCHEDULE AGREEMENT will be incorporated into the CONTRACT and shall only be revised by written modifications to the CONTRACT.

**CITY OF SAN DIEGO**

PRINT NAME:_____
**Construction Senior Engineer**

Signature:_____

Date:_____

PRINT NAME:_____
**Design Senior Engineer**

Signature:_____

Date:_____

**CONTRACTOR**

PRINT NAME:_____

Title:_____

Signature:_____

Date:_____

## ATTACHMENT C

## EQUAL OPPORTUNITY CONTRACTING PROGRAM

## EQUAL OPPORTUNITY CONTRACTING PROGRAM (EOCP)

SECTION A - GENERAL REQUIREMENTS

**A. INTRODUCTION.**

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

**B. GENERAL.**

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

**C. DEFINITIONS.**

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

c) **Minority Business Enterprise (MBE)** - A certified business that is at least fifty-one percent (51%) owned by one or more minority individuals, or, in the case of a publicly owned business at least fifty-one percent (51%) of the stock is owned by one or more minority individuals; and (2) whose daily business operations are managed and directed by one or more minorities owners. Minorities include the groups with the following ethnic origins: African, Asian Pacific, Asian Subcontinent, Hispanic, Native Alaskan, Native American, and Native Hawaiian.

d) **Women Business Enterprise (WBE)** - A certified business that is at least fifty-one percent (51%) owned by a woman or women, or, in the case of a publicly owned business at least fifty-one percent (51%) of the stock is owned by one or more women; and (2) whose daily business operations are managed and directed by one or more women owners.

e) **Disadvantaged Business Enterprise (DBE)** - a certified business that is at least fifty-one percent (51%) owned by socially and economically disadvantaged individuals, or, in the case of a publicly owned business at least fifty-one percent (51%) of the stock is owned by one or more socially and economically disadvantaged individuals; and (2) whose daily business operations are managed and directed by one or more socially and economically disadvantaged owners.

f) **Disabled Veteran Business Enterprise (DVBE)** - A certified business that is at least fifty-one percent (51%) owned by one or more disabled veterans; and (2) business operations must be managed and controlled by one or more disabled veterans. Disabled Veteran is a veteran of the U.S. military, naval, or air service; the veteran must have a service-connected disability of at least 10% or more; and the veteran must reside in California.

g) **Other Business Enterprise (OBE)** - Any business which does not otherwise qualify as a Minority, Woman, Disadvantaged, or Disabled Veteran Business Enterprise.

h) **Small Business Enterprise (SBE)** - A for-profit business that is independently owned and operated; that is not a subsidiary or franchise of another business and whose gross annual receipts do not exceed the amount set by the City Manager and that meets all other criteria set forth in regulations implementing Municipal Code Chapter 2, Article 2, Division 36. The City Manager shall review the threshold amount for SBEs on an annual basis and adjust as necessary to reflect changes in the marketplace. A business certified as a Micro Business (MB) or a Disabled Veteran Business Enterprise (DVBE) by the State of California and that has provided proof of such certification to the City Manager shall be deemed to be an SBE.

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

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

1. **Nondiscrimination in Contracting Ordinance.**

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

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

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

b) **Disclosure of Discrimination Complaints.** As part of its Bid or Proposal, you shall provide to the City a list of all instances within the past 10 years where a complaint was filed or pending against you in a legal or administrative proceeding alleging that you discriminated against your employees, Subcontractors, vendors, or suppliers, and a description of the status or resolution of that complaint, including any remedial action taken.

c) Upon the City's request, You agree to provide to the City, within 60 Calendar Days, a truthful and complete list of the names of all Subcontractors and Suppliers that you have used in the past 5 years on any of your Contracts that were undertaken within the San Diego County, including the total dollar amount paid by you for each Subcontract or supply Contract.

d) You further agree to fully cooperate in any investigation conducted by the City pursuant to the City's Nondiscrimination in Contracting Ordinance, Municipal Code §§22.3501 through 22.3517. You understand and agree that violation of this clause shall be considered a material breach of the Contract and may result in remedies being ordered against you up to and including contract termination, debarment, and other sanctions for the violation of the provisions of the Nondiscrimination in Contracting Ordinance. You further understand and agree that the procedures, remedies, and sanctions provided for in the Nondiscrimination in Contracting Ordinance apply only to violations of the Ordinance.

## E. EQUAL EMPLOYMENT OPPORTUNITY OUTREACH PROGRAM.

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

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

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

2. If the Contract is competitively solicited, the selected Bidder shall submit a Work Force Report (Form BB05) within 10 Working Days after receipt by the Bidder to the City for approval as specified in the Notice of Intent to Award letter.

3. The selected Bidder shall submit an Equal Employment Opportunity Plan if a Work Force Report is submitted and if the City determines that there are under-representations when compared to County Labor Force Availability data.

4. If the selected Bidder submits an Equal Employment Opportunity Plan, it shall include the following assurances:

   a) You shall maintain a working environment free of discrimination, harassment, intimidation, and coercion at all Sites and in all facilities at which your employees are assigned to Work.

   b) You shall review your EEO Policy annually with all on-Site supervisors involved in employment decisions.

   c) You shall disseminate and review your EEO Policy with all employees at least once a year, post the policy statement and EEO posters on all company bulletin boards and job sites, and document every dissemination, review, and posting with a written record to identify the time, place, employees present, subject matter, and disposition of meetings.

   d) You shall review, at least annually, all supervisors' adherence to and performance under the EEO Policy and maintain written documentation of these reviews.

   e) You shall discuss your EEO Policy Statement with Subcontractors with whom you anticipate doing business, including the EEO Policy Statement in your Subcontracts, and provide such documentation to the City upon request.

f) You shall document and maintain a record of all Bid solicitations and outreach efforts to and from Subcontractors, contractor associations, and other business associations.

g) You shall disseminate your EEO Policy externally through various media, including the media of people of color and women, in advertisements to recruit. Maintain files documenting these efforts and provide copies of these advertisements to the City upon request.

h) You shall disseminate your EEO Policy to union and community organizations.

i) You shall provide immediate written notification to the City when any union referral process has impeded your efforts to maintain your EEO Policy.

j) You shall maintain a current list of recruitment sources, including those outreaching to people of color and women, and provide written notification of employment opportunities to these recruitment sources with a record of the organizations' responses.

k) You shall maintain a current file of names, addresses and phone numbers of each walk-in applicant, including people of color and women, and referrals from unions, recruitment sources, or community organizations with a description of the employment action taken.

l) You shall encourage all present employees, including people of color and women employees, to recruit others.

m) You shall maintain all employment selection process information with records of all tests and other selection criteria.

n) You shall develop and maintain documentation for on-the-job training opportunities, participate in training programs, or both for all of your employees, including people of color and women, and establish apprenticeship, trainee, and upgrade programs relevant to your employment needs.

o) You shall conduct, at least annually, an inventory and evaluation of all employees for promotional opportunities and encourage all employees to seek and prepare appropriately for such opportunities.

p) You shall ensure that the company's working environment and activities are non-segregated except for providing separate or single-user toilets and necessary changing facilities to assure privacy between the sexes.

**F. SUBCONTRACTING.**

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

2. For Subcontractor participation level requirements, see the Contract Documents where applicable.

3. For the purposes of achieving the mandatory Subcontractor participation percentages, City percentage calculations will not account for the following:

   a) "Field Orders" and "City Contingency" Bid items.

   b) Alternate Bid items.

   c) Allowance Bid items designated as "EOC Type II".

4. Allowance Bid items designated as "EOC Type I" will be considered as part of the Base Bid and will be included in the percentage calculation.

5. Each joint venture partner shall be responsible for a clearly defined Scope of Work. In addition, an agreement shall be submitted and signed by all parties identifying the extent to which each joint venture partner shares in ownership, control, management, risk, and profits of the joint venture.

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

1. You shall comply with the Subletting and Subcontracting Fair Practices Act, Public Contract Code §§4100 through 4113, inclusive.

2. You shall list all Subcontractors who will receive more than 0.5% of the total Bid amount or $10,000, whichever is greater on the form provided in the Contract Documents (Subcontractors list).

3. The Subcontractors list shall include the Subcontractor's name, telephone number including area code, physical address, Scope of Work, the dollar amount of the proposed Subcontract, the California contractor license number, the Public Works contractor registration number issued pursuant to Section 1725.5 of the Labor Code, and the Subcontractor's certification status with the name of the certifying agency.

4. The listed Subcontractor shall be appropriately licensed pursuant to Contractor License Laws.

5. For Design-Build Contracts, refer to the RFQ and RFP for each Project or Task Order.

## H. SUBCONTRACTOR AND SUPPLIER SUBSTITUTIONS.

1. Listed Subcontractors and Suppliers shall not be substituted without the Express authorization of the City or its duly authorized agent.

2. Request for Subcontractor or Supplier substitution shall be made in writing to Purchasing & Contracting Department, Public Works Division, Attention Contract Specialist, 1200 3rd Ave., Suite 200, MS 56P, San Diego, CA 92101 with a copy to the Engineer.

3. The request shall include a thorough explanation of the reason(s) for the substitution, including dollar amounts and a letter from each substituted Subcontractor or Supplier stating that they (the Subcontractors or Suppliers) release all interest in working on the Project and written confirmation from the new Subcontractor or Supplier stating that they agree to work on the Project along with the dollar value of the Work to be performed.

4. Written approval of the substitution request shall be received by you or from the City or its authorized officer prior to any unlisted Subcontractor or Supplier performing Work on the Project.

5. Substitution of Subcontractors and Suppliers without authorization shall subject you to those penalties set forth in Public Contract Code §4110.

6. Requests for Supplier substitution shall be made in writing at least 10 Days prior to the provision of materials, supplies, or services by the proposed Supplier and shall include proof of written notice to the originally listed Supplier of the proposed substitution.

7. A Contractor whose Bid is accepted shall not:

    a) Substitute a person as Subcontractor or Supplier in place of the Subcontractor or Supplier listed in the original bid, except that the City, or it's duly authorized officer, may consent to the substitution of another person as a Subcontractor or Supplier in any of the following situations:

        i. When the Subcontractor or Supplier listed in the Bid, after having a reasonable opportunity to do so, fails or refuses to execute a written Contract for the scope of work specified in the subcontractor's bid and at the price specified in the subcontractor's bid, when that written contract, based upon the general terms, conditions, plans, and specifications for the project involved or the terms of the subcontractor's written bid, is presented to the subcontractor by the prime contractor.

        ii. When the listed Subcontractor or Supplier becomes insolvent or the subject of an order for relief in bankruptcy.

        iii. When the listed Subcontractor or Supplier fails or refuses to perform his or her subcontract.

        iv. When the listed Subcontractor fails or refuses to meet bond requirements as set forth in Public Contract Code §4108.

v. When you demonstrate to the City or it's duly authorized officer, subject to the provisions set forth in Public Contract Code §4107.5, that the name of the Subcontractor was listed as the result of an inadvertent clerical error.

vi. When the listed Subcontractor is not licensed pursuant to Contractor License Law.

vii. When the City, or it's duly authorized officer, determines that the Work performed by the listed Subcontractor or that the materials or supplies provided by the listed Supplier are substantially unsatisfactory and not in substantial accordance with the Plans and specifications or that the Subcontractor or Supplier is substantially delaying or disrupting the progress of the Work.

viii. When the listed Subcontractor is ineligible to work on a public works project pursuant to §§1777.1 or 1777.7 of the Labor Code.

ix. When the City or its duly authorized agent determines that the listed Subcontractor is not a responsible contractor.

b) Permit a Contract to be voluntarily assigned or transferred or allow it to be performed by anyone other than the original Subcontractor, Supplier listed in the original Bid without the consent of the City, or it's duly authorized officer.

c) Other than in the performance of "Change Orders" causing changes or deviations from the Contract, sublet or subcontract any portion of the Work, or contract for materials or supplies in excess of 0.5% of your total bid or $10,000, whichever is greater, as to which his or her original Bid did not designate a Subcontractor or Supplier.

8. Following receipt of notice from you of the proposed substitution of a Subcontractor or Supplier, the listed Subcontractor or Supplier who has been so notified shall have 5 Working Days within which to submit written objections to the substitution to the Contract Specialist with a copy to the Engineer. Failure to file these written objections shall constitute the listed Subcontractor or Supplier's consent to the substitution. If written objections are filed, the City shall give notice in writing of at least 5 Working Days to the listed Subcontractor or Supplier of a hearing by the City on your request for substitution.

## I. PROMPT PAYMENT.

1. You or your Subcontractors shall pay to any subcontractor, not later than 7 Calendar Days of receipt of each progress payment, unless otherwise agreed to in writing, the respective amounts allowed you on account of the Work performed by the Subcontractors, to the extent of each Subcontractor's interest therein. In cases of Subcontractor performance deficiencies, you shall

make written notice of any withholding to the Subcontractor with a copy to the Contracts Specialist. Upon correction of the deficiency, you shall pay the Subcontractor the amount previously withheld within 14 Calendar Days after payment by the City.

2. Any violation of California Business and Professions Code, §7108.5 concerning prompt payment to Subcontractors shall subject the violating Contractor or Subcontractor to the penalties, sanctions, and other remedies of that section. This requirement shall not be construed to limit or impair any contractual, administrative, or judicial remedies otherwise available to you or your Subcontractor in the event of a dispute involving late payment or nonpayment by the Prime Contractor, deficient subcontract performance, or noncompliance by a Subcontractor.

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

1. The City will hold retention from you and will make prompt and regular incremental acceptances of portions, as determined by the Engineer, of the Work and pay retention to you based on these acceptances.

2. You or your Subcontractors shall return all monies withheld in retention from a Subcontractor within 30 Calendar Days after receiving payment for Work satisfactorily completed and accepted including incremental acceptances of portions of the Work by the City.

3. Federal law (49CFR26.29) requires that any delay or postponement of payment over 30 Calendar Days may take place only for good cause and with the City's prior written approval. Any violation of this provision by you or your Subcontractor shall subject you or your Subcontractor to the penalties, sanctions, and other remedies specified in §7108.5 of the Business and Professions Code.

4. These requirements shall not be construed to limit or impair any contractual, administrative, or judicial remedies otherwise available to you or your Subcontractor in the event of a dispute involving late payment or nonpayment by you, deficient subcontract performance, or noncompliance by a Subcontractor.

**K. CERTIFICATION.**

1. The City accepts certifications of DBE, DVBE, MBE, SMBE, SWBE, or WBE by any of the following certifying agencies:

   a) Current certification by the State of California Department of Transportation (CALTRANS) as DBE, SMBE, or SWBE.

   b) Current MBE, WBE, or DVBE certification from the California Public Utilities Commission.

   c) DVBE certification is received from the State of California's Department of General Services, Office of Small and Minority Business.

   d) Current certification by the City of Los Angles as DBE, WBE, or MBE.

e) Subcontractors' valid proof of certification status (copies of MBE, WBE, DBE, or DVBE certifications) shall be submitted as required.

**L. CONTRACT RECORDS AND REPORTS.**

1. You shall maintain records of all subcontracts and invoices from your Subcontractors and Suppliers for work on this project. Records shall show name, telephone number including area code, and business address of each Subcontractor, Supplier, and joint venture partner, and the total amount actually paid to each firm. Project relevant records, regardless of tier, may be periodically reviewed by the City.

2. You shall retain all records, books, papers, and documents pertinent to the Contract for a period of not less than 5 years after Notice of Completion and allow access to said records by the City's authorized representatives.

3. You shall submit the following reports using the City's web-based contract compliance (Prism® portal):

   a. **Monthly Payment.** You shall submit Monthly Payment Reporting by the 10$^{th}$ day of the subsequent month. Incomplete and/or delinquent reporting may cause payment delays, non-payment of invoices, or both.

4. The records maintained under item 1, described above, shall be consolidated into a Final Summary Report, certified as correct by an authorized representative of the Contractor. The Final Summary Report shall include all subcontracting activities and be sent to the EOCP Program Manager prior to Acceptance. Failure to comply may result in assessment of liquidated damages or withholding of retention. The City will review and verify 100% of subcontract participation reported in the Final Summary Report prior to approval and release of final retention to you. In the event your Subcontractors are owed money for completed Work, the City may authorize payment to subcontractor via a joint check from the withheld retention.

## EQUAL OPPORTUNITY CONTRACTING PROGRAM (EOCP)

SECTION B - SLBE-ELBE SUBCONTRACTING REQUIREMENTS

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

### A. GENERAL.

1. It is the City's policy to encourage greater availability, capacity development, and contract participation by SLBE and ELBE firms in City contracts. This policy is, in part, intended to further the City's compelling interest to stimulate economic development through the support and empowerment of the local community, ensure that it is neither an active nor passive participant in marketplace discrimination, and promote equal opportunity for all segments of the contracting community.

2. The City is committed to maximizing subcontracting opportunities for all qualified and available firms.

3. This policy applies to City-funded construction contracts. Bidders shall be fully informed of this policy as set forth in these specifications. Mandatory or voluntary subcontracting percentages, Bid Discounts, and restricted competitions are specified in the Contract Documents.

4. You shall make subcontracting opportunities available to a broad base of qualified Subcontractors and shall achieve the minimum SLBE-ELBE Subcontractor participation identified for your project.

5. Failure to subcontract the specified minimum (mandatory) percentages of the Bid to qualified available SLBE-ELBE Subcontractors will cause a Bid to be rejected as non-responsive unless the Bidder has demonstrated compliance with the affirmative steps as specified in the City's document titled "Small Local Business (SLBE) Program, INSTRUCTIONS FOR BIDDERS COMPLETING THE GOOD FAITH EFFORT SUBMITTAL" and has submitted documentation showing that all required positive efforts were made prior to the Bid submittal due date. The required Good Faith Effort (GFE) documentation shall be submitted to the Contract Specialist. The instructions for completing the good faith effort submittal can be found on the City's website:

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

6. The current list of certified SLBE-ELBE firms and information for completing the GFE submittal can be found on the City's EOC Department website:

   http://www.sandiego.gov/eoc/programs/slbe

7. These requirements may be waived, at the City's sole discretion, on projects deemed inappropriate for subcontracting participation.

**B. DEFINITIONS.**

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

   a) **Bid Discount** – Additional inducements or enhancements in the bidding process that are designed to increase the chances for the selection of SLBE firms in competition with other firms.

   b) **Commercially Useful Function** – An SLBE-ELBE performs a commercially useful function when it is responsible for the execution of the Work and is carrying out its responsibilities by actually performing, managing, and supervising the Work involved. To perform a commercially useful function, the SLBE-ELBE shall also be responsible, with respect to materials and supplies used on the Contract, for negotiating price, determining quantity and quality, ordering the material, and installing (where applicable) and paying for the material itself.

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

   c) **Good Faith Efforts (GFE)** – Documentation of the Bidder's intent to comply with SLBE Program goals and procedures included in the City's SLBE Program, Instructions for Completing Good Faith Effort Submittal available from the City's EOCP website or the Contract Specialist.

   d) **Independently Owned, Managed, and Operated** – Ownership of a SLBE-ELBE firm shall be direct, independent, and by individuals only. Business firms that are owned by other businesses or by the principals or owners of other businesses that cannot themselves qualify under the SLBE-ELBE eligibility requirements shall not be eligible to participate in the Program. Moreover, the day-to-day management of the SLBE-ELBE firm shall be direct and independent of the influence of any other businesses that cannot themselves qualify under the SLBE-ELBE eligibility requirements.

   e) **Joint Venture** – An association of two or more persons or business entities that is formed for the single purpose of carrying out a single defined business enterprise for which purpose they combine their capital, efforts, skills, knowledge, or property. Joint ventures shall be established by written agreement to qualify for this program.

f) **Local Business Enterprise ("LBE")** – A firm having a Principal Place of Business and a Significant Employment Presence in San Diego County, California that has been in operation for 12 consecutive months and a valid business tax certificate. This definition is subsumed within the definition of Small Local Business Enterprise.

g) **Minor Construction Program** – A program developed for bidding exclusively among SLBE-ELBE Construction firms.

h) **Principal Place of Business** – A location wherein a firm maintains a physical office and through which it obtains no less than 50% of its overall customers or sales dollars.

i) **Protégé** – A firm that has been approved and is an active participant in the City's Mentor-Protégé Program and that has signed the required program participation agreement and has been assigned a mentor.

j) **Significant Employee Presence** – No less than 25% of a firm's total number of employees are domiciled in San Diego County.

## C. SUBCONTRACTOR PARTICIPATION.

1. For the purpose of satisfying subcontracting participation requirements, only 1st tier SLBE–ELBE Subcontractors will be recognized as participants in the Contract according to the following criteria:

   a) For credit to be allowed toward a respective participation level, all listed SLBE-ELBE firms shall have been certified by the Bid due date.

   b) The Subcontractor shall perform a commercially useful function for credit to be allowed toward subcontractor participation levels. The Subcontractor shall be required by you to be responsible for the execution of a distinct element of the Work and shall carry out its responsibility by actually performing and supervising its own workforce.

   c) If the Bidder is seeking the recognition of materials, supplies, or both towards achieving any mandatory subcontracting participation level, the Bidder shall indicate on Form AA40 – Named Equipment/Material Supplier List with the Bid the following:

      i. If the materials or supplies are obtained from a SLBE-ELBE manufacturer, the Bidder will receive 100% of the cost of the materials or supplies toward SLBE participation. For the purposes of counting SLBE-ELBE participation, a manufacturer is a firm that operates or maintains a factory or establishment that produces, on the premises, the materials, supplies, articles, or equipment required under the Contract and of the general character described by the specifications.

      ii. If the materials or supplies are obtained from a SLBE-ELBE supplier, the Bidder will receive 60% of the cost of the

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

iii. If the materials or supplies are obtained from a SLBE-ELBE, which is neither a manufacturer nor a supplier, the entire amount of fees or commissions charged for assistance in the procurement of the materials and supplies, fees or transportation charges for the delivery of materials or supplies required on a job site will be counted toward SLBE-ELBE participation, provided the fees are reasonable and not excessive as compared with fees customarily allowed for similar services. No portion of the cost of the materials and supplies themselves will be counted toward SLBE-ELBE participation.

d) If the Bidder is seeking the recognition of SLBE-ELBE Trucking towards achieving any mandatory subcontracting participation level, the Bidder shall indicate it on Form AA35 – List of Subcontractors with the Bid. The following factors will be evaluated in determining the credit to be allowed toward the respective participation level:

i. The SLBE-ELBE shall be responsible for the management and supervision of the entire trucking operation for which it is getting credit on a particular Contract and there shall not be a contrived arrangement for the purpose of counting SLBE-ELBE participation.

ii. The SLBE-ELBE shall itself own and operate at least 1 fully licensed, insured, and operational truck used on the Contract.

iii. The SLBE-ELBE receives credit for the total value of the transportation services it provides on the Contract using trucks it owns, insures, and operates using drivers it employs.

iv. The SLBE-ELBE may lease trucks from another SLBE-ELBE firm including an owner-operator who is certified as a SLBE-ELBE. The SLBE-ELBE who leases trucks from another SLBE-ELBE receives credit for the total value of the transportation services the lessee SLBE-ELBE provides on the contract.

v. The SLBE-ELBE may also lease trucks from a non-SLBE-ELBE firm, including an owner-operator. The SLBE-ELBE who leases trucks from a non-SLBE-ELBE is entitled to credit for the total value of transportation services provided by non-SLBE-ELBE lessees not to exceed the value of transportation services provided by SLBE-ELBE owned trucks on the contract. Additional participation by non-SLBE-ELBE lessees receive credit only for the fee or commission it receives as a result of the lease arrangement.

vi. A lease shall indicate that the SLBE-ELBE has exclusive use of and control over the truck. This does not preclude the leased truck from working for others during the term of the lease with the consent of the SLBE-ELBE so long as the lease gives the SLBE-ELBE absolute priority for use of the leased truck.

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

1. Contracts valued at $1,500,000 and above will be considered Major Public Works Contracts and will include a mandatory Subcontractor participation requirement for SLBE–ELBE firms.

   a) The Bidder shall achieve the mandatory Subcontractor participation requirement or demonstrate GFE.

   b) The Bidders shall indicate the participation on Forms AA35 - List of Subcontractors and AA40 - Named Equipment/Material Supplier List as applicable regardless of the dollar value.

   c) An SLBE-ELBE Bidder may count its own participation toward achieving the mandatory goal as long as the SLBE-ELBE Bidder performs 51% of the Contract Price.

2. Contracts Valued over $1,000,000 and under $1,500,000 will also be considered Major Public Works Contracts and will include the mandatory subcontractor participation requirements described above and the following:

   a) 5% bid discount for SLBE-ELBE firms.

   b) Non-certified Contractor will receive 5% bid discount if they achieve the specified mandatory Subcontracting participations.

   c) Bid discounts shall not apply if the award will result in a total contract cost of $50,000 in excess of the apparent lowest Bid.

d) In the event of a tie bid between a SLBE-ELBE Bidder and a non-SLBE-ELBE Bidder, the SLBE-ELBE Bidder will be awarded the Contract.

e) In the event of a tie bid between a discounted Bid and a non-discounted Bid, the discounted Bid will be awarded the Contract.

3. Contracts valued over $500,000 up to $1,000,000 will be considered Minor Public Works Contracts and will be awarded through a competitive Bid process open only to City certified SLBE-ELBE firms. If there are no bidders or no responsible bidders, the Contract will be made available to all Bidders and will be subject to requirements listed in items 1 and 2 for Major Public Works Contracts above.

4. Contracts valued at $500,000 and below will also be considered Minor Public Works Contracts and will be awarded through a competitive bid process open only to City certified ELBEs unless there are less than 2 firms available at which it will be awarded through a competitive process open only to the City certified SLBE-ELBE firms. If there are no bidders or no responsible bidders, the Contract will be made available to all Bidders and subject to requirements listed in items 1 and 2 for Major Public Works Contracts above.

**E. JOINT VENTURES.**

1. The City may allow for Joint Venture bid discounts on some Contracts. Contracts that allow for Joint Venture bid discounts will be designated in Bid documents. A firm that is bidding or competing for City Contracts may partner with a certified SLBE or ELBE to compete for Contracts as a Joint Venture.

2. A Joint Venture shall be between two entities with the same discipline or license as required by the City. Joint ventures will receive bid discounts depending on the SLBE or ELBE percentage of participation. To be eligible for a discount, a Joint Venture Agreement shall be approved by the City at the time of Bid submittal. The maximum allowable discount shall be 5%. The parties shall agree to enter in the relationship for the life of the projects.

3. Joint Venture shall submit a Joint Venture Management Plan, a Joint Venture Agreement, or both at least 2 weeks prior to the Bid due date. Copies of the Joint Venture applications are available upon request to the Contract Specialist. Each agreement or management plan shall include the following:

a) Detailed explanation of the financial contribution for each partner.

b) List of personnel and equipment used by each partner.

c) Detailed breakdown of the responsibilities of each partner.

d) Explanation of how the profits and losses will be distributed.

e) Description of the bonding capacity of each partner.

f) Management or incentive fees available for any one of the partners (if any).

4. Each Joint Venture partner shall perform a Commercially Useful Function. An SLBE or ELBE that relies on the resources and personnel of a non-SLBE or ELBE firm will not be deemed to perform a Commercially Useful Function.

5. Each Joint Venture partner shall possess licenses appropriate for the discipline for which a proposal is being submitted. If a Joint Venture is bidding on a single trade project, at the time of bid submittal, each Joint Venture partner shall possess the requisite specialty license for that trade bid.

6. The SLBE or ELBE partner shall clearly define the portion of the Work to be performed. This Work shall be of the similar type of Work the SLBE or ELBE partner performs in the normal course of its business. The Joint Venture Participation Form shall specify the Bid items to be performed by each individual Joint Venture partner. Lump sum Joint Venture participation shall not be acceptable.

7. Responsibilities of the SLBE or ELBE Joint Venture Partner:

   a) The SLBE or ELBE partner shall share in the control, management responsibilities, risks and profits of the Joint Venture in proportion with the level of participation in the project.

   b) The SLBE or ELBE partner shall perform Work that is commensurate with its experience.

   c) The SLBE or ELBE partner shall use its own employees and equipment to perform its portion of the Work.

   d) The Joint Venture as a whole shall perform Bid items that equal or exceed 50% of the Contract Price, excluding the cost of manufactured items, in order to be eligible for a Joint Venture discount.

**F. MAINTAINING PARTICIPATION LEVELS.**

1. Credit and preference points are earned based on the level of participation proposed prior to the award of the Contract. Once the Project begins you shall achieve and maintain the SLBE-ELBE participation levels for which credit and preference points were earned. You shall maintain the SLBE-ELBE percentages indicated at the Award of Contract and throughout the Contract Time.

2. If the City modifies the original Scope of Work, you shall make reasonable efforts to maintain the SLBE-ELBE participation for which creditor preference points were earned. If participation levels will be reduced, approval shall be received from the City prior to making changes.

3. You shall notify and obtain written approval from the City in advance of any reduction in subcontract scope, termination, or substitution for a designated SLBE-ELBE Subcontractor. Failure to do so shall constitute a material breach of the Contract.

4. If you fail to maintain the SLBE-ELBE participation listed at the time the Contract is awarded and have not received prior approval from the City, the City may declare you in default and will be considered grounds for debarment under Chapter 2, Article 2, Division 8, of the San Diego Municipal Code.

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

1. Documentation of your subcontracting efforts will be reviewed by EOCP to verify that you made subcontracting opportunities available to a broad base of qualified Subcontractors, negotiated in good faith with interested Subcontractors, and did not reject any bid for unlawful discriminatory reasons. The EOCP review is based on the federal "Six Good Faith Efforts" model.

2. The GFEs are required methods to ensure that all ELBE and SLBE firms have had the opportunity to compete for the City's Public Works procurements. The Six Good Faith Efforts, also known as affirmative steps, attract and utilize ELBE and SLBE firms:

   a) Ensure ELBE firms are made aware of contracting opportunities to the fullest extent practicable through outreach and recruitment activities.

   b) Make information of forthcoming opportunities available to SLBE-ELBE firms and arrange time for Contracts and establish delivery schedules, where requirements permit, in a way that encourages and facilitates participation by SLBE-ELBE firms in the competitive process. This includes posting solicitations for Bids or proposals to SLBE-ELBE firms for a minimum of 10 Working Days before the Bid or Proposal due date.

   c) Consider in the contracting process whether firms competing for large Contracts could subcontract with SLBE-ELBE firms.

   d) Encourage contracting with a consortium of ELBE-SLBE firms when a Contract is too large for one of these firms to handle individually.

   e) Use the services and assistance of the City's EOC Office and the SLBE-ELBE Directory.

   f) If you award subcontracts, require your Subcontractors to take the steps listed above.

**H. GOOD FAITH EFFORT DOCUMENTATION.**

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

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

**I. SUBCONTRACTOR SUBSTITUTION.**

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

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

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

**K. RESOURCES.**

1. The current list of certified SLBE-ELBE firms and information for completing the GFE submittal can be found on the City's EOC Department website:

   http://www.sandiego.gov/eoc/programs/slbe

## ATTACHMENT D

## PREVAILING WAGE

## PREVAILING WAGE

**1. PREVAILING WAGE RATES:** Pursuant to San Diego Municipal Code section 22.3019, construction, alteration, demolition, repair and maintenance work performed under this Contract is subject to State prevailing wage laws. For construction work performed under this Contract cumulatively exceeding $25,000 and for alteration, demolition, repair and maintenance work performed under this Contract cumulatively exceeding $15,000, the Contractor and its subcontractors shall comply with State prevailing wage laws including, but not limited to, the requirements listed below.

**1.1. Compliance with Prevailing Wage Requirements.** Pursuant to sections 1720 through 1861 of the California Labor Code, the Contractor and its subcontractors shall ensure that all workers who perform work under this Contract are paid not less than the prevailing rate of per diem wages as determined by the Director of the California Department of Industrial Relations (DIR). This includes work performed during the design and preconstruction phases of construction including, but not limited to, inspection and land surveying work.

**1.1.1.** Copies of such prevailing rate of per diem wages are on file at the City and are available for inspection to any interested party on request. Copies of the prevailing rate of per diem wages also may be found at http://www.dir.ca.gov/OPRL/DPreWageDetermination.htm. Contractor and its subcontractors shall post a copy of the prevailing rate of per diem wages determination at each job site and shall make them available to any interested party upon request.

**1.1.2.** The wage rates determined by the DIR refer to expiration dates. If the published wage rate does not refer to a predetermined wage rate to be paid after the expiration date, then the published rate of wage shall be in effect for the life of this Contract. If the published wage rate refers to a predetermined wage rate to become effective upon expiration of the published wage rate and the predetermined wage rate is on file with the DIR, such predetermined wage rate shall become effective on the date following the expiration date and shall apply to this Contract in the same manner as if it had been published in said publication. If the predetermined wage rate refers to one or more additional expiration dates with additional predetermined wage rates, which expiration dates occur during the life of this Contract, each successive predetermined wage rate shall apply to this Contract on the date following the expiration date of the previous wage rate. If the last of such predetermined wage rates expires during the life of this Contract, such wage rate shall apply to the balance of the Contract.

**1.2. Penalties for Violations.** Contractor and its subcontractors shall comply with California Labor Code section 1775 in the event a worker is paid less than the prevailing wage rate for the work or craft in which the worker is employed. This shall be in addition to any other applicable penalties allowed under Labor Code sections 1720 – 1861.

**1.3.** **Payroll Records.** Contractor and its subcontractors shall comply with California Labor Code section 1776, which generally requires keeping accurate payroll records, verifying and certifying payroll records, and making them available for inspection. Contractor shall require its subcontractors to also comply with section 1776. Contractor and its subcontractors shall submit weekly certified payroll records online via the City's web-based Labor Compliance Program. Contractor is responsible for ensuring its subcontractors submit certified payroll records to the City.

**1.3.1.** Contractor and their subcontractors shall also furnish records specified in Labor Code section 1776 directly to the Labor Commissioner in the manner required by Labor Code section 1771.4.

**1.4.** **Apprentices.** Contractor and its subcontractors shall comply with California Labor Code sections 1777.5, 1777.6 and 1777.7 concerning the employment and wages of apprentices. Contractor is held responsible for the compliance of their subcontractors with sections 1777.5, 1777.6 and 1777.7.

**1.5.** **Working Hours.** Contractor and their subcontractors shall comply with California Labor Code sections 1810 through 1815, including but not limited to: (i) restrict working hours on public works contracts to eight hours a day and forty hours a week, unless all hours worked in excess of 8 hours per day are compensated at not less than 1½ times the basic rate of pay; and (ii) specify penalties to be imposed on contractors and subcontractors of $25 per worker per day for each day the worker works more than 8 hours per day and 40 hours per week in violation of California Labor Code sections1810 through 1815.

**1.6.** **Required Provisions for Subcontracts.** Contractor shall include at a minimum a copy of the following provisions in any contract they enter into with a subcontractor: California Labor Code sections 1771, 1771.1, 1775, 1776, 1777.5, 1810, 1813, 1815, 1860 and 1861.

**1.7.** **Labor Code Section 1861 Certification.** Contractor in accordance with California Labor Code section 3700 is required to secure the payment of compensation of its employees and by signing this Contract, Contractor certifies that "I am aware of the provisions of Section 3700 of the California Labor Code which require every employer to be insured against liability for workers' compensation or to undertake self-insurance in accordance with the provisions of that code, and I will comply with such provisions before commencing the performance of the work of this Contract."

**1.8.** **Labor Compliance Program**. The City has its own Labor Compliance Program authorized in August 2011 by the DIR. The City will withhold contract payments when payroll records are delinquent or deemed inadequate by the City or other governmental entity, or it has been established after an investigation by the City or other governmental entity that underpayment(s) have occurred. For questions or assistance, please contact the City of San Diego's Prevailing Wage Unit at PWDPrevailingWage@sandiego.gov.

**1.9. Contractor and Subcontractor Registration Requirements.** This project is subject to compliance monitoring and enforcement by the DIR. A contractor or subcontractor shall not be qualified to bid on, be listed in a bid or proposal, subject to the requirements of section 4104 of the Public Contract Code, or engage in the performance of any contract for public work, unless currently registered and qualified to perform public work pursuant to Labor Code section 1725.5 It is not a violation of this section for an unregistered contractor to submit a bid that is authorized by Section 7029.1 of the Business and Professions code or by Section 10164 or 20103.5 of the Public Contract Code, provided the contractor is registered to perform public work pursuant to Section 1725.5 at the time the contract is awarded.

**1.9.1.** A Contractor's inadvertent error in listing a subcontractor who is not registered pursuant to Labor Code section 1725.5 in response to a solicitation shall not be grounds for filing a bid protest or grounds for considering the bid non-responsive provided that any of the following apply: (1) the subcontractor is registered prior to bid opening; (2) within twenty-four hours after the bid opening, the subcontractor is registered and has paid the penalty registration fee specified in Labor Code section 1725.5; or (3) the subcontractor is replaced by another registered subcontractor pursuant to Public Contract Code section 4107.

**1.9.2.** By submitting a bid or proposal to the City, Contractor is certifying that he or she has verified that all subcontractors used on this public work project are registered with the DIR in compliance with Labor Code sections 1771.1 and 1725.5, and Contractor shall provide proof of registration for themselves and all listed subcontractors to the City at the time of bid or proposal due date or upon request.

**1.10. Stop Order.** For Contractor or its subcontractors engaging in the performance of any public work contract without having been registered in violation of Labor Code sections 1725.5 or 1771.1, the Labor Commissioner shall issue and serve a stop order prohibiting the use of the unregistered contractors or unregistered subcontractor(s) on ALL public works until the unregistered contractor or unregistered subcontractor(s) is registered. Failure to observe a stop order is a misdemeanor.

**1.11. List of all Subcontractors.** The Contractor shall provide the list of subcontractors (regardless of tier), along with their DIR registration numbers, utilized on this Contract prior to any work being performed; and the Contractor shall provide a complete list of all subcontractors with each invoice. Additionally, Contractor shall provide the City with a complete list of all subcontractors (regardless of tier) utilized on this contract within ten working days of the completion of the contract, along with their DIR registration numbers. The City shall withhold final payment to Construction Management Professional until at least thirty (30) days after this information is provided to the City.

**1.12. Exemptions for Small Projects.** There are limited exemptions for installation, alteration, demolition, or repair work done on projects of $25,000 or less. The Contractor shall still comply with Labor Code sections 1720 et. seq. The only recognized exemptions are listed below:

**1.12.1.** Registration. The Contractor will not be required to register with the DIR for small projects. (Labor Code section 1771.1).

**1.12.2.** Certified Payroll Records. The records required in Labor Code section 1776 shall be required to be kept and submitted to the City of San Diego, but will not be required to be submitted online with the DIR directly. The Contractor will need to keep those records for at least three years following the completion of the Contract. (Labor Code section 1771.4).

**1.12.3.** List of all Subcontractors. The Contractor shall not be required to hire only registered subcontractors and is exempt from submitting the list of all subcontractors that is required in section 1.11. above. (Labor code section 1773.3).

# ATTACHMENT E

# SUPPLEMENTARY SPECIAL PROVISIONS

# SUPPLEMENTARY SPECIAL PROVISIONS

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

1. The **2021 Edition** of the Standard Specifications for Public Works Construction (The "GREENBOOK").

2. The **2021 Edition** of the City of San Diego Standard Specifications for Public Works Construction (The "WHITEBOOK"), including the following:

   a) General Provisions (A) for all Construction Contracts.

---

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

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

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

| Holiday | Observed On |
|---|---|
| Juneteenth | June 19 |

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

**Normal Working Hours**: Normal Working Hours shall be **7:00 AM to 3:00 PM, Monday through Friday**, inclusive. Saturdays, Sundays, and City Holidays are excluded. Unless otherwise specified on the Traffic Control Permits.

## SECTION 3 – CONTROL OF THE WORK

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

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

**3-7.6.1 Use of Computer Aided Drafting and Design.** To the :"WHITEBOOK", Item 1, DELETE in its entirety and SUBSTITUTE the following:

1. Use Bentley Connect ORD Version 10.12 format with the ability to convert to AutoCAD for the preparation of Plans and As-Built drawings in accordance with the City's CADD Standards.

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

2. Other adjacent City projects are scheduled for construction for the same time period with in the facilty in the pipe gallery. See **Appendix F – Coordination Map** for the approximate location. Coordinate the Work with the adjacent projects as listed below:

   a) San Diego MBC Improvements Project, John Udan Construction Manager (619) 782-4791, Doug Mui Resident Engineer(619) 241-5883

   b) MBC Gas Detect System Replace Project, Gabriel Torres Project Manager (619) 533- 4630

   c) Storm Drain Diersion at the MBC Project, Gabriel Torres Project Manager (619) 533- 4630

## SECTION 4 - CONTROL OF MATERIALS

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

2. The specialty inspections required are listed as follows:

   a) Welding Inspection

   b) Structural Inspection

   c) Factory Witness Inspection

**4-6** **TRADE NAMES.** To the "WHITEBOOK", ADD the following:

11. You shall submit your list of proposed substitutions for an "equal" item **no later than 5 Working Days after the issuance of the Notice of Intent to Award** and on the City's Product Submittal Form available at:

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

## SECTION 5 – LEGAL RELATIONS AND RESPONSIBILITIES

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

**5-4** **INSURANCE.**

1. The insurance provisions herein shall not be construed to limit your indemnity and defense duties set forth in the Contract.

**5-4.1** **Policies and Procedures.**

1. You shall procure the insurance described below, at your sole cost and expense, to provide coverage against claims for loss including injuries to persons or damage to property, which may arise out of or in connection with the performance of the Work by you, your agents, representatives, officers, employees or Subcontractors.

2. Insurance coverage for property damage resulting from your operations is on a replacement cost valuation. The market value will not be accepted.

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

4. If you maintain broader coverage or higher limits than the minimums shown below, City requires and shall be entitled to the broader coverage or the higher limits maintained by you. Any available insurance proceeds in excess of the specified minimum limits of insurance and coverage shall be available to City.

5. Your payment for insurance shall be included in the Contract Price you bid. You are not entitled to any additional payment from the City to cover your insurance, unless the City specifically agrees to payment in writing. Do not begin any Work under this Contract or allow any Subcontractors to begin work, until you have provided, and the City has approved, all required insurance.

6. Policies of insurance shall provide that the City is entitled to 30 days advance written notice of cancellation or non-renewal of the policy or 10 days advance written notice for cancellation due to non-payment of premium. Maintenance of specified insurance coverage is a material element of the Contract. Your failure to maintain or renew coverage and to provide evidence of renewal during the term of the Contract may be treated by the City as a material breach of the Contract.

**5-4.2 Types of Insurance.**

**5-4.2.1 General Liability Insurance.**

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

2. The policy shall cover liability arising from premises and operations, XCU (explosions, underground, and collapse), independent contractors, products/completed operations, personal injury and advertising injury, bodily injury, property damage, and liability assumed under an insured's contract (including the tort liability of another assumed in a business contract).

3. There shall be no endorsement or modification limiting the scope of coverage for either "insured vs. insured" claims or contractual liability. You shall maintain the same or equivalent insurance for at least 10 years following completion of the Work.

4. All costs of defense shall be outside the policy limits. Policy coverage shall be in liability limits of not less than the following:

| General Annual Aggregate Limit | Limits of Liability |
|---|---|
| Other than Products/Completed Operations | $10,000,000 |
| Products/Completed Operations Aggregate Limit | $10,000,000 |
| Personal Injury Limit | $5,000,000 |
| Each Occurrence | $5,000,000 |

**5-4.2.2 Commercial Automobile Liability Insurance.**

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

2. All costs of defense shall be outside the limits of the policy.

**5-4.2.3 Workers' Compensation Insurance and Employers Liability Insurance.**

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

2. Statutory Limits shall be provided for Workers' Compensation Insurance as required by the state of California, and Employer's Liability Insurance with limits of no less than $1,000,000 per accident for bodily injury or disease.

3. By signing and returning the Contract, you certify that you are aware of the provisions of California's Workers' Compensation laws, including Labor Code section 3700, which requires every employer to be insured against liability for workers' compensation or to undertake self-insurance, and that you will comply with these provisions before commencing the Work.

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

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

2. You shall ensure the following:

   a) The policy retroactive date is on or before the date of commencement of the Project.

   b) The policy will be maintained in force for a period of three years after completion of the Project or termination of the Contract, whichever occurs last. You agree that, for the time period specified above, there will be no changes or endorsements to the policy that affect the specified coverage.

3. If professional engineering services are to be provided solely by the Subcontractor, you shall:

   1 Certify this to the City in writing, and

   2. Agree in writing to require the Subcontractor to procure Professional Liability coverage in accordance with the requirements set forth here.

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

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

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

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

**5-4.5** **Policy Endorsements.**

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

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

1. Ongoing operations performed by you or on your behalf,

2. your products,

3. your work, e.g., your completed operations performed by you on your behalf, or

4. premises owned, leased, controlled, or used by you.

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

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

**5-4.5.2** **Workers' Compensation Insurance and Employers Liability Insurance.**

**5-4.5.2.1** **Waiver of Subrogation.** The policy or policies shall be endorsed to provide that the insurer will waive all rights of subrogation against the City and its respective elected officials, officers, employees, agents, and representatives for losses paid under the terms of the policy or policies and which arise from Work performed by the Named Insured for the City.

**5-4.6** **Deductibles and Self-Insured Retentions.** You shall disclose deductibles and self-insured retentions to the City at the time the evidence of insurance is provided. The City may require you to purchase coverage with a lower retention or provide proof of ability to pay losses and related investigations, claim administration, and defense expenses within the retention. The policy language shall provide, or be endorsed to provide, that the self-insured retention may be satisfied by either the named insured or City.

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

**5-4.8** **Notice of Changes to Insurance.** You shall notify the City, in writing, 30 days prior to any material change to the policies of insurance provided under this Contract. This written notice is in addition to the requirements of paragraph 6 of Section 5-4.1.

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

**5-10.2.1 Public Notice by Contractor.** To the "WHITEBOOK", DELETE in its entirety and SUBSTITUTE with the following:

**5-10.2.1 Public Notice by Contractor.**

1. Post Project Identification Signs in accordance with 3-11.2, “Project Identification Signs”.
2. No less than 5 and no more than 10 Working Days in advance of Project construction activities and utility service interruptions, you shall notify all critical facilities, businesses, institutions, property owners, residents, or any other impacted stakeholders within a minimum 300-foot (90 m) radius of the Project i.e., work area and any other affected areas as shown on the “Notification of Planned Water Shutdown” when you perform the Work.
3. The notification process must be repeated for delays and long pauses in construction activities. Verbal and written notifications, such as door hangers, shall be sent to critical facilities (including but not limited to police stations, fire stations, hospitals, and schools). A copy of written notifications sent to any critical facility shall also be sent to the Engineer.
4. You shall keep records of the people contacted, along with the dates of notification, and shall provide the record e.g., time-stamped pictures of the notices, to the Engineer upon request. You shall identify all other critical facilities that need to be notified.
5. Verbal and written notifications shall also include specific impacts from the construction of the City facilities, e.g., fire hydrants, air vacuum and blow-off devices, pedestrian ramps, and sidewalks, e.g., the loss of parking, access, and impact to private property, e.g., landscaping.
6. Furnish and distribute public notices in the form of door hangers using the City’s format to all occupants and/or property owners along streets and all critical facilities such as police stations, fire stations, hospitals, and schools.
7. Where Work is to be performed at least 5 and at most 10 Working Days before starting construction, survey activities, or impacting the community as approved by the Engineer.
8. Within 5 Working Days of the completion or pausing of your construction activities where Work was performed, you shall distribute public notices in the form of door hangers, which outline the anticipated dates of Asphalt Resurfacing, Slurry Seal, Sidewalk, or Curb Ramp Work. Upon resuming construction activities, you shall redistribute door hangers.
9. “No Parking” signs shall be placed 72 hours before the scheduled construction activities and must include the name and phone number of the Contractor. The Contractor shall document the placement of the signs with time-stamped pictures.
10. Leave the door hanger notices on or at the front door of each dwelling and apartment unit and at each commercial building tenant abutting each street block segment.

11. Where the front doors of apartment units are inaccessible or occupants are unavailable, distribute the door hanger notices to the apartment manager or security officer and leave your contact information, such as business cards.

12. Provide time-stamped pictures of the notices to the Engineer.

13. Door Hanger Material: You shall use Blanks/USA brand, Item Number DHJ5B6WH, 1¼ inch (31.8 mm) Holes (removed), 2-up Jumbo Door Hanger in Bristol White, or approved equal.

14. Door hangers shall include the funding source if project is funded in part by State Gas Tax Revenue (SB1).

15. Mailed Notice Material: You shall use Cougar by Domtar, Item Number 2834, or approved equal.

16. For all Work on private property, contact each owner and occupant individually a minimum of 15 Working Days before the Work. If the Work has been delayed, re-notify owners and occupants of the new Work schedule, as directed by the Engineer.

17. A sample of public notices will be included in the Contract.

## SECTION 6 – PROSECUTION AND PROGRESS OF THE WORK

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

3. Refer to the Sample City Invoice in **Appendix D – Sample City Invoice** and use the format shown.

**ADD:**

**6-6.1.1** **Environmental Document.**

1. The City of San Diego has prepared a **Notice of Exemption** for **Metro Biosolids Center Gallery Pipeline Replacement,** Project No. **B-24118**, as referenced in the Contract Appendix. You shall comply with all requirements of the **Notice of Exemption** as set forth in **Appendix A.**

2. Compliance with the City's environmental document shall be included in the Contract Price, unless separate bid items have been provided.

**6-9** **LIQUIDATED DAMAGES**. To the "WHITEBOOK", item 2, DELETE in its entirety and SUBSTITUTE with the following:

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

| Contract Value | Liquidated Damages Daily Amount |
|---|---|
| Less than $200,001 | $1,000 |
| $200,001 to $500,000 | $1,500 |

| Contract Value | Liquidated Damages Daily Amount |
|---|---|
| $500,001 to $1,000,000 | $2,000 |
| $1,000,001 to $2,000,000 | $2,500 |
| $2,000,001 to $5,000,000 | $3,000 |
| $5,000,001 to $10,000,000 | $5,500 |
| $10,000,001 to $20,000,000 | $6,500 |
| Greater Than $20,000,000 | $7,000 |

## SECTION 7 – MEASUREMENT AND PAYMENT

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

4. The Unit Price per Linear Foot for **"New 3-Inch Piping"** shall include, and not be limited to, all work and components required for the construction of new 3-inch piping, including pipe, fittings, shop drawings, concrete coring, penetrating radar to locate rebar, expansion joints, factory and/or field epoxy lining and coating of pipe, pipe hangers and supports, couplings, connection to existing systems, saddles, match existing color, pipe labels, pressure testing, disinfection, scaffolding, coordination with Plant staff, and all other related components, as specified in the Plans and Contract Documents, and Technical specifications. The contractor shall account for pipe and pipe support installation heights of up to 20 ft. Welding and grinding shall only be performed outdoors away from the digesters (Class 1, Div 1& Div 2) areas per Appendix H, with approved a hot work permit. The contractor shall temporarily support adjacent pipes during the removal of existing supports and installation of new supports for each replacement phase as stated under 901-1.1.2.18 of the contract documents.

5. The Unit Price per Linear Foot for **"New 4-Inch Piping"** shall include, and not be limited to, all work and components required for the construction of new 4-inch piping, including pipe, fittings, shop drawings, concrete coring, penetrating radar to locate rebar, expansion joints, factory and/or field epoxy lining and coating of pipe, pipe hangers and supports, couplings, connection to existing systems, saddles, match existing color, pipe labels, pressure testing, disinfection, scaffolding, coordination with Plant staff, and all other related components, as specified in the Plans and Contract Documents, and Technical specifications. The contractor shall account for pipe and pipe support installation heights of up to 20 ft. Welding and grinding shall only be performed outdoors away from the digesters (Class 1, Div 1& Div 2) areas per Appendix H, with approved hot work permit. The contractor shall temporarily support adjacent pipes during the removal of existing supports and installation of new supports for each replacement phase as stated under 901-1.1.2.18 of the contract documents.

6. The Unit Price per Linear Foot for **"New 6-Inch Piping"** shall include, and not be limited to, all work and components required for the construction of new 6-inch piping, including pipe, fittings, shop drawings, concrete coring, penetrating radar to locate rebar, expansion joints, factory and/or field epoxy lining and coating of pipe, pipe hangers and supports, couplings, connection to existing systems, saddles, match existing color, pipe labels, pressure testing, disinfection, scaffolding, coordination with Plant staff, and all other related components, as specified in the Plans and Contract Documents, and Technical specifications. The contractor shall account for pipe and pipe support installation heights of up to 20 ft. Welding and grinding shall only be performed outdoors away from the digesters (Class 1, Div 1& Div 2) areas per Appendix H, with approved hot work permit. The contractor shall temporarily support adjacent pipes during the removal of existing supports and installation of new supports for each replacement phase as stated under 901-1.1.2.18 of the contract documents.

7. The Unit Price per Linear Foot for **"New 8-Inch Piping"** shall include, and not be limited to, all work and components required for the construction of new 8-inch piping, including pipe, fittings, shop drawings, concrete coring, penetrating radar to locate rebar, dielectric unions, expansion joints, factory and/or field epoxy lining and coating of pipe, pipe hangers and supports, couplings, connection to existing systems, connection to existing copper lines including materials, saddles, flush ports, paint to match existing color, pipe labels, pressure testing, disinfection, scaffolding, coordination with Plant staff, and all other related components, as specified in the Plans and Contract Documents, and Technical specifications. The contractor shall account for pipe and pipe support installation heights of up to 20 ft. Welding and grinding shall only be performed outdoors away from the digesters (Class 1, Div 1& Div 2) areas per Appendix H, with approved hot work permit. The contractor shall temporarily support adjacent pipes during the removal of existing supports and installation of new supports for each replacement phase as stated under 901-1.1.2.18 of the contract documents.

8. The Unit Price per Linear Foot for **"Demolish Existing 3-Inch Piping"** shall include, and not be limited to, all work and components required for the demolition of existing 3-inch piping, including removal and disposal of pipe, fittings, expansion joints, valves, pipe hangers and supports, couplings, and all other related components, to allow for placement of new pipe and material, as specified in the Plans and Contract Documents. The contractor shall coordinate with plant staff prior to removal. Cutting and open flame, demolition activities that create spark will require a hotwork permit, these activities are not permited near the digesters (Class 1, Div 1& Div 2) areas per Appendix H. The Contractor shall temporarily support adjacent pipes during the removal of existing supports and installation of new supports.

9. The Unit Price per Linear Foot for **"Demolish Existing 4-Inch Piping"** shall include, and not be limited to, all work and components required for the demolition of existing 4-inch piping, including removal and disposal of pipe, fittings, expansion joints, valves, pipe hangers and supports, couplings, and all other related components, to allow for placement of new pipe and material, as specified in the Plans and Contract Documents. The contractor shall coordinate with plant staff prior to removal. The Contractor shall temporarily support adjacent pipes during the removal of existing supports and installation of new supports.

10. The Unit Price per Linear Foot for **"Demolish Existing 6-Inch Piping"** shall include, and not be limited to, all work and components required for the demolition of existing 6-inch piping, including removal and disposal of all pipe, fittings, expansion joints, valves, pipe hangers and supports, couplings, and all other related components, to allow for placement of new pipe and material, as specified in the Plans and Contract Documents, and Technical specifications. The contractor shall coordinate with plant staff prior to removal. Cutting and open flame, demolition activities that create spark will require a hotwork permit, these activities are not permited near the digesters (Class 1, Div 1& Div 2) areas per Appendix H. The contractor shall temporarily support adjacent pipes during the removal of existing supports and installation of new supports for each replacement phase as stated under 901-1.1.2.18 of the contract documents.

11. The Unit Price per Linear Foot for **"Demolish Existing 8-Inch Piping"** shall include, and not be limited to, all work and components required for the demolition of existing 8-inch piping, including removal and disposal of all pipe, fittings, expansion joints, valves, pipe hangers and supports, couplings, and all other related components, to allow for placement of new pipe and material, as specified in the Plans and Contract Documents, and Technical specifications. The contractor shall coordinate with plant staff prior to removal. Cutting and open flame, demolition activities that create spark will require a hotwork permit, these activities are not permited near the digesters (Class 1, Div 1& Div 2) areas per Appendix H. The contractor shall temporarily support adjacent pipes during the removal of existing supports and installation of new supports for each replacement phase as stated under 901-1.1.2.18 of the contract documents.

12. The Unit Price per Each for **"Pressure Reducing Manifold System"** shall include, and not be limited to, all work and components required for the construction of new piping, fittings, expansion joints, butterfly valves, globe valves, ball valves, air release valves, factory and/or field epoxy lining and coating of pipe, pipe hangers and supports, strainers, couplings, pressure reducing valves, lights, pressure transmitter, flow switch, coordination with plant staff, pressure testing, disinfection, and all other related components, as specified in the Plans and Contract Documents, and Technical specifications. The contractor shall coordinate with plant staff prior to removal. The

contractor shall replace one system at a time as stated under 901-1.1.2.18 of the contract documents. The contractor shall account for pipe and pipe support installation heights of up to 20 ft. Welding and grinding shall only be performed outdoors away from the digesters (Class 1, Div 1& Div 2) areas per Appendix H, with approved hot work permit. The magnetic flow meters are the only items covered under separate bid item.

13. The Unit Price per Each for **"Demolish Existing Pressure Reducing Manifold System"** shall include, and not be limited to, all work and components required for the demolition and disposal of all piping, fittings, expansion joints, butterfly valves, globe valves, ball valves, flow meters, pressure reducing valves, air release valves, pipe hangers and supports, couplings, lights, and all other related components, as specified in the Plans and Contract Documents, and Technical specifications. Cutting and open flame, demolition activities that create spark will require a hotwork permit. The contractor shall coordinate with plant staff prior to removal. The contractor shall replace one system at a time as stated under 901-1.1.2.18 of the contract documents.

14. The Lump Sum Bid Item for **"High-lining/ Bypass System"** shall include, and not be limited to, all work and materials, coordination with Plant staff, and all other related components, as specified in the Plans, Contract Documents, Technical Specifications and Construction Phasing under 901-1.1.2.18. The Bypass system shall be of the same size as the pipe being replaced. A bypass system will be required for all pipe replacements in the project.

15. The Unit Price per Each for **"Connection to Existing Copper Pipe (0.5-Inch to 1-Inch)"** shall include, and not be limited to, all work and components required for the reconnection to existing copper pipes, saddles, fittings, dielectric unions, ball valve, couplings, copper pipe (Type K) replacement 5 ft out from the main line, soldering, paint pipe to match existing color, pressure testing, tags, scaffolding, coordination with Plant staff, and all other related components, as specified in the Plans and Contract Documents, and Technical specifications. The contractor shall ventilate the area while soldering indoors. The contractor shall solder away from the digesters (Class 1, Div 1& Div 2) areas per Appendix H, with approved hot work permit.

16. The Unit Price per Each for **"Connection to Existing Copper Pipe (1.5-Inch)"** shall include, and not be limited to, all work and components required for the reconnection to existing copper pipes, saddles, fittings, dielectric unions, ball valve, couplings, copper pipe (Type K) replacement 5 ft out from the main line, soldering, paint pipe to match existing color, pressure testing, tags, scaffolding, coordination with Plant staff, and all other related components, as specified in the Plans and Contract Documents, and Technical specifications. The contractor shall ventilate the area while soldering indoors. The contractor shall ventilate the area while soldering indoors. The contractor shall solder away from the digesters (Class 1, Div 1& Div 2) areas per Appendix H, with approved hot work permit.

17. The Unit Price per Each for **"Connection to Existing Copper Pipe (2-Inch)"** shall include, and not be limited to, all work and components required for the reconnection to existing copper pipes, saddles, fittings, dielectric unions, ball valve, couplings, copper pipe (Type K) replacement 5 feet out from the main line, soldering, paint pipe to match existing color, pressure testing, tags, scaffolding, coordination with Plant staff, and all other related components, as specified in the Plans and Contract Documents, and Technical specifications. The contractor shall ventilate the area while soldering indoors. The contractor shall ventilate the area while soldering indoors. The contractor shall solder away from the digesters (Class 1, Div 1& Div 2) areas per Appendix H, with approved hot work permit.

18. The Unit Price per Each for **"Flush Port (1.5-Inch)"** shall include, and not be limited to, all work and components required for the Flush Port, saddles, fittings, dielectric unions, ball valve, hose quick connect, couplings, paint to match existing color, pressure testing, tags, scaffolding, coordination with Plant staff, and all other related components, as specified in the Plans and Contract Documents, and Technical specifications, Detail 1 on sheet 6.

19. The Unit Price per Each for **"3-Inch Butterfly Valve, Class 250"** shall include, and not be limited to, all work and components required for the procurement, installation, factory testing, coating, and all other related components, as specified in the Plans and Contract Documents.

20. The Unit Price per Each for **"4-Inch Butterfly Valve, Class 250"** shall include, and not be limited to, all work and components required for the procurement, installation, factory testing, coating, and all other related components, as specified in the Plans and Contract Documents.

21. The Unit Price per Each for **"6-Inch Butterfly Valve, Class 250"** shall include, and not be limited to, all work and components required for the procurement, installation, factory testing, coating, and all other related components, as specified in the Plans and Contract Documents.

22. The Unit Price per Each for **"8-Inch Butterfly Valve, Class 250"** shall include, and not be limited to, all work and components required for the procurement, installation, factory testing, coating, and all other related components, as specified in the Plans and Contract Documents.

23. The Unit Price per Each for **"6-Inch Electromagnetic Flow Meter"** shall include, and not be limited to, all work and components required for the procurement, installation, factory testing, coating, new 10 ft wiring connetion, and all other related components, as specified in the Plans and Contract Documents.

24. The Unit Price per Each for **"8-Inch Electromagnetic Flow Meter"** shall include, and not be limited to, all work and components required for the procurement, installation, factory testing, coating, new 10 ft wiring connection, and all other related components, as specified in the Plans and Contract Documents.

**7-3.9** **Field Orders**. To the "WHITEBOOK", DELETE in its entirety and SUBSTITUTE with the following:

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

**TABLE 7-3.9**
**FIELD ORDER LIMITS**

| Contract Price | Maximum Each Field Order Work Amount |
|---|---|
| Less than $1,000,001 | $10,000 |
| $1,000,001 to $5,000,000 | $20,000 |
| $5,000,001 to $10,000,000 | $25,000 |
| $10,000,001 to $30,000,000 | $40,000 |
| Greater than $30,000,000 | $70,000 |

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

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

## SECTION 209 – PRESSURE PIPE

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

1. PVC products, specifically type C900 and C905, as manufactured or distributed by J-M Manufacturing Company or JM Eagle shall not be used on the Contract for pressurized pipe.

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

**209-7.2** **Requirements.** To the "GREENBOOK"**,** Table 209-7.2, DELETE in its entirety and SUBSTITUTE with the following:

**TABLE 209-7.2**

| Function | Type | Materials/Method |
|---|---|---|
| Pipe Contents Identification | Pipe Color (Plastic Pipe or Polywrap[1]) | Blue for Potable Water.<br>Purple for Recycled Water.<br>Green for Sewage. |

| | | |
|---|---|---|
| | AND | |
| | Stenciling | Stenciling marked on pipe in contrasting color to background color of pipe stating: "POTABLE WATER",<br>"CAUTION RECYCLED WATER - DO NOT DRINK" or "CAUTION SEWER" as appropriate. |
| | | 5/8" (16 mm) high letters. |
| | | Repeated at 1 foot (300 mm) intervals. |
| | OR | |
| | Identification Tape | Polyethylene tape 6" (150 mm) wide and 4 mils (100 µm) minimum thickness with 2" (50 mm) high letters stating:<br>"POTABLE WATER", "CAUTION RECYCLED WATER - DO NOT DRINK" or "CAUTION SEWER" as appropriate.<br>For pipe > 12" (300 mm) diameter, use 12" (300 mm) wide tape. |
| | | Color - Blue With white letters for potable water,<br>Purple With white letters for recycled water,<br>Green with white letters for sewage. |
| | | Attached to top of pipe with adhesive tape. |
| Pipe Warning and Locating | Warning and Locating Tape | Polyethylene tape 6" (150 mm) Wide and 4 mils (100 µm) minimum thickness with 2"(50 mm) high letters stating:<br>"CAUTION: WATERLINE BURIED BELOW", "CAUTION RECLAIMED WATERLINE BURIED BELOW - DO NOT DRINK", or "CAUTION: SEWER BURIED BELOW" as appropriate.<br>For pipe > 12" (300 mm) diameter, use 12" (300 mm) wide tape. |
| | | Color - blue with black or white letters for potable water,<br>Purple With black or white letters for recycled water,<br>Green with black or white letters for sewage. |
| | | Place in pipe trench 18" (450 mm) above pipe. |
| | | Tape shall contain metallic strip that can be registered by magnetic field locating device. |
| | OR | |
| | Locating Wire | In lieu of installing metallic warning tape; non-metallic warning tape 18" (450 mm) above pipe and 10-gauge copper wire attached to top of pipe and accessibly terminated may be used. |

[1]Polywrap shall not be used as pipe color identification for plastic pipe.

## SECTION 306 – OPEN TRENCH CONDUIT CONSTRUCTION

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

2. Pressure testing of pipe and fittings at the lowest elevation shall be performed at 150% of the specified test pressure and no less than 100% of the specified test pressure at the highest elevation.

   a) Specified test pressure for Class 235 pipe shall be 150 psi and is tested at 225 psi.

   b) Specified test pressure for Class 305 pipe shall be 200 psi and is tested at 300 psi.

## SECTION 901-INSTALLATION AND CONNECTION

**901-1.1.2 High-lining Installation by the Contractor.** To the "WHITEBOOK", ADD the following:

18. Build the Project in accordance with the Plans and in phases as follows:

    a) The contractor shall plan the dual pipeline replacement in increments of no more than 400 linear feet at a time, including both PRW and UWLP lines. Contractor to maintain service of both pipelines at all times in all areas of the project. Shutdowns will only be performed to switch over to and from the bypass sytems. The contractor shall coordinate with the City prior to any shutdown.

    b) Once the pipelines have been isolated by the City, the contractor shall drain the lines.

    c) Complete the full replacement of both pipelines with the use of a dual bypass system in all areas of the project. The bypass system shall be installed so that it does not block vehicular traffic in the pipe gallery. Use the new in-line valves to facilitate the shutdowns and connect the bypass system to continue the replacement.

    d) The contractor shall perform four (4) separate phases of pipeline shutdowns, replacement and pressure testing for the dual mains (approximately 400 ft) with in the pipe gallery. Separate shutdowns are required for each manifold system in Area 70. MOPOs will be required for each shutdown phase.

## SECTION 1001 – CONSTRUCTION BEST MANAGEMENT PRACTICES (BMPs)

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

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

# TECHNICALS

**TECHNICAL SPECIFICATIONS**

**DIVISION 01**



**DIVISION 02**



**DIVISION 05**



**DIVISION 09**



**DIVISION 15**

## SECTION 01310 PROJECT COORDINATION

## PART 1 -- GENERAL

1.01 SUBMITTALS

A. Informational:

1. Maintenance of Plant Operations Plans (MOPO Plans).

a. Contractor shall develop a detailed plan for each maintenance of plant operation activity by unit process or facility that includes a detailed description of the outage, temporary provisions to maintain plant operations, procedural steps, list of equipment and materials, contingency plan, detailed hourly schedule, list of labor and equipment, and scheduling constraints. Plans shall be submitted to the Construction Manager and Owner for approval 45 days prior to planned activity. Plans must be approved a minimum of 10 days prior to the planned activity. In the absence of an approved work plan, scheduled activities will be postponed to provide a minimum 10-day advance notice of the Work. The Contractor will be solely responsible for any delays associated with failure to provide timely submittals for activities that impact plant operations.

b. The plan shall include the following steps for MOPOs:

1) Step 1: The Contractor shall identify the anticipated project MOPO (maintenance of plant operation) processes needed and provide list them on a MOPO log and in the Baseline Schedule. This list shall also identify shutdowns, diversions, or tie-ins as described in the Contract Documents. The MOPO duration and timing shall be shown in the Baseline Schedule. Date scheduled MOPOs to coincide with the appropriate construction activities.

2) Step 2: The Contractor shall request a Pre-MOPO Meeting with the Owner, Construction Manager, and Design Engineer to discuss the nature of the shutdown, diversion, or tie-in, and to gather the information necessary to complete the MOPO Form. The pre-MOPO meeting may be waived by the Owner or Construction Manager if the work is deemed to be minor.

3) Step 3: The Contractor completes the MOPO Form and shall submit for approval to the Construction Manager.

4) Step 4: The Construction Manager will distribute the MOPO Form for review by the Owner, Construction Manager, and Design Engineer. The MOPO Form shall be reviewed for completeness, accuracy, compliance with both the construction schedule, constraints defined in contract documents, and to ensure that the requested work does not negatively impact plant operations or other concurrent project activities. Additional information may be requested to better understand the nature of and method for completing the Work.

5) Step 5: Once the MOPO is agreed to by all parties, the MOPO will be finalized by signature. Copies are distributed to the Owner, Construction Manager, Design Engineer, and Contractor.

6) Step 6: The Contractor shall verify with the Construction Manager that everything is ready for the work described within the MOPO.

7) Step 7: The Contractor shall complete a Safety Checklist.

8) Step 8: The Contractor completes the work.

c. Step 9: The Contractor updates MOPO log weekly and distributes at the regularly scheduled construction progress meetings.

2. Photographs:

a. Digital Images: Submit one copy of DVD disc containing images within 5 days of being taken. Each image is to have a minimum file size of 1.4 Mb (1,400 Kb) so viewed resolution is high quality. The production of larger file sizes with higher resolution is encouraged.

3. Video Recordings: Submit one copy, including updated copy of project video log, within 5 days of being taken.

4. Time Lapse Construction Video: Submit one copy of cumulative time lapse video of construction site on the first working day of each month.

1.02 RELATED WORK AT SITE

A. Applications Software Development: Application software for the Distributed Control System (DCS) will be performed by the Distributed Control System Provider (DCSP). The DCSP will provide hardware and perform programming of the DCS applications software for certain portions of Process Instrumentation and Control Subsystem (PICS).

1.03 WORK SEQUENCING/CONSTRAINTS

A. The sequencing described herein is provided as guidance documentation for the Contractor. The Contractor shall comply with construction constraints which are stated in the Specifications The Contractor shall be responsible for the detailed development of sequencing planning and scheduling to meet with the Milestone and Completion requirements of the Work.

B. The Contractor shall supervise, direct, and cooperate fully with all subcontractors, manufacturers, fabricators, suppliers, distributors, installers, testing agencies, and all others whose services, materials or equipment are required to ensure completion of the Work within the Contract time.

1.04 FACILITY OPERATIONS

A. Continuous operation of Owner's facilities is of critical importance. Schedule and conduct activities to enable existing facilities to operate continuously, unless otherwise specified.

B. The Contractor shall be solely responsible for maintaining continued and uninterrupted operation of all facilities in the Project area, and shall prepare all required Maintenance of Plant Operation (MOPO) plans for all facilities affected by its work. The MOPO Plan shall detail how, but not limited to, the following elements that will allow the biosolids center to function continuously with appropriate capacity during construction:

    1. Sequence of construction activities, temporary works, and bypassing.

C. Perform Work continuously during critical connections and changeovers, and as required to prevent interruption of Owner's operations.

D. When necessary, plan, design, and provide various temporary services, utilities, connections, temporary piping and heating, access, and similar items to maintain continuous operations of Owner's facility.

E. Do not close lines, open or close valves, or take other action which would affect the operation of existing systems. The Contractor shall provide a written request for any valve operation from the Owner so that the operations staff can operate the valves. Requests shall be made 48 hours prior to the need for the valve operation.

F. Install and maintain bypass facilities and temporary connections required to keep Owner's wastewater treatment operations online. Sequences other than those specified will be considered upon written request to Owner and Engineer, provided they afford equivalent continuity of operations.

G. Do not proceed with Work affecting a facility's operation without obtaining Owner's and Engineer's advance written approval of the need for and duration of such Work.

H. Relocation of Existing Facilities:

    1. During construction, it is expected that minor relocations of Work will be necessary.

    2. Provide complete relocation of existing structures and Underground Facilities, including piping, utilities, equipment, structures, electrical conduit wiring, electrical duct bank, and other necessary items.

    3. Use only new materials for relocated facility. Match materials of existing facility, unless otherwise shown or specified.

    4. Perform relocations to minimize downtime of existing facilities.

    5. Install new portions of existing facilities in their relocated position prior to removal of existing facilities, unless otherwise accepted by Engineer.

I. Prior to any bypass, shutdown or testing of new equipment or process, the Contractor shall coordinate and sufficiently schedule and plan the Work with the Owner to prove the readiness and operational condition of the existing facility. This may include the Owner's operation of related valves, gates, etc., to verify system readiness.

## 1.05 ADJACENT FACILITIES AND PROPERTIES

A. Examination:

1. After Effective Date of the Agreement and before Work at Site is started, Contractor, Engineer, and affected property owners and utility owners shall make a thorough examination of pre-existing conditions including existing buildings, structures, and other improvements in vicinity of Work, as applicable, which could be damaged by construction operations.

2. Periodic reexamination shall be jointly performed to include, but not limited to, cracks in structures, settlement, leakage, and similar conditions.

B. Documentation:

1. Record and submit documentation of observations made on examination inspections in accordance with Article Construction Photographs and Article Audio-Video Recordings.

2. Such documentation shall be used as indisputable evidence in ascertaining whether and to what extent damage occurred as a result of Contractor's operations, and is for the protection of adjacent property owners, Contractor, and Owner.

## 1.06 CONSTRUCTION PHOTOGRAPHS

A. General:

1. Photographically document all phases of the Project including preconstruction, construction progress, and post-construction.

2. Engineer shall have right to select subject matter and vantage point from which photographs are to be taken.

B. Preconstruction and Post-Construction:

1. After Effective Date of the Agreement and before Work at Site is started, and again upon issuance of Substantial Completion, take a minimum of 60 photographs of Site and property adjacent to perimeter of Site.

2. Particular emphasis shall be directed to structures both inside and outside the Site.

3. Format: Digital, minimum resolution of 20 megapixel.

C. Construction Progress Photos:

1. Photographically demonstrate progress of construction, showing every aspect of Site and adjacent properties as well as interior and exterior of new or impacted structures.

2. Weekly: Take 50 photographs using digital, minimum resolution of 20 megapixel.

D. Documentation:

1. Digital Images:

a. Electronic image shall have date taken embedded into image.

b. Archive using a commercially available photo management system that provides listing of photographs including date, keyword description, and direction of photograph.

c. Label file folders or database records with Project and Owner's name, and month and year images were produced.

1.07 AUDIO-VIDEO RECORDINGS

A. Prior to beginning the Work on Site or of a particular area of the Work, videograph Site and property adjacent to Site.

B. In the case of preconstruction recording, no work shall begin in the area prior to Engineer's review and approval of content and quality of video for that area.

C. Particular emphasis shall be directed to physical condition of existing vegetation, structures, and pavements within site and areas adjacent to and within the right-of-way or easement, and on Contractor storage and staging areas.

D. Engineer shall have right to select subject matter and vantage point from which videos are to be taken.

E. Time Lapse Construction Video

1. Provide a continuous-sequence time lapse construction video of the MBC site beginning with mobilization and concluding with demobilization.

2. Location:

a. Select a position, approved by the Owner and Construction Manager, for the time lapse video camera that will remain fixed for the entire duration of construction.

b. Video camera location should provide maximum view of the entire Site from a public interest perspective.

c. Provide a pole-mounted camera to achieve adequate height for enhanced visibility of the Site.

3. Equipment:

a. Manufacturer: Time-Lapse Pro, iBEAM Construction Cameras, "or-equal."

b. Digital single-lens reflex video camera capable of 4K ultra HD time-lapse movies.

1) 8.3 to 18 megapixel images.

2) 4G LTE cellular communications.

3) Power interruption remote alert.

F. Video recording shall be by a professional commercial videographer, experienced in shooting exterior and interior construction videos. Video Format and Quality:

1. DVD format, with sound.

2. Video:

a. Produce bright, sharp, and clear images with accurate colors, free of distortion and other forms of picture imperfections.

b. Electronically and accurately display the month, day, year, and time of day of the recording.

3. Audio:

a. Audio documentation shall be done clearly, precisely, and at a moderate pace.

4. Indicate date, project name, and a brief description of the location of recording, including:

a. Facility name.

b. Street names or easements.

c. Addresses of private property.

d. Direction of coverage, including engineering stationing, if applicable.

G. Documentation:

1. DVD Label:

a. DVD number (numbered sequentially, beginning with 001).

b. Project name.

c. Applicable location.

d. Date and time of coverage.

2. Project Video Log: Maintain an ongoing log that incorporates above noted label information for DVDs on Project.

1.08 OWNER PERFORMED TESTING

A. General:

1. Owner performed tests does not:

a. Relieve Contractor of responsibility for providing adequate quality control measures.

b. Relieve Contractor of responsibility for damage to or loss of material before acceptance.

2. Contractor is responsible for additional costs associated with tests when Work is not ready for testing in accordance with the schedule previously identified and coordinated between Contractor and Construction Manager. Contractor and Construction Manager to coordinate schedule for all tests beforehand as directed by Construction Manager.

3. Contractor is responsible for associated costs for additional tests because of rejection of materials or Work that cannot be completed in the absence of acceptable test results as required by the Contract Documents.

4. Contractor shall provide access for all testing performed by Owner or Construction Manager.

5. Contractor shall notify the Construction Manager and Owner in advance of required tests no later than 48 hours prior to test.

6. Contractor shall provide access of construction documents at all times to personnel performing testing.

7. Contractor shall cooperate with Construction Manager and testing personnel and provide safe access to the Work in order to perform and complete the tests.

8. Contractor shall provide reasonable auxiliary services as requested by the Construction Manager and testing personnel. Auxiliary services include, but is not limited to:

   a. Providing access to the Work and furnishing incidental labor and facilities necessary to facilitate tests and assist the testing personnel in performing tests.

   b. Providing storage space for the exclusive use of testing personnel, such as area for storing test samples, curing concrete samples, and delivery of samples to testing laboratories if required by Construction Manager and testing personnel.

   c. Providing security and protection of samples and test equipment at the Project Site if required by the Construction Manager or testing personnel.

   d. Provide samples of materials to be tested in required quantities.

9. Owner performed test reports will be submitted to the Construction Manager, Contractor, Design Engineer, and Owner within 1 week of the test completion. Delays that may occur due to delays in Owner performed tests shall be negotiated between the Owner and Contractor.

1.09 SAFETY

A. An approved 'Site Specific Safety and Health Plan' including a 'Job Safety Analysis Report' is required from the Contractor and subcontractors for all work at MBC. Also, all workers for the Contractor or subcontractor are required to attend an MBC 'Site Specific Safety Training' class. Training is approximately 1 hour. These safety requirements shall be satisfied prior to commencing work.

1. The Contractor will be working in a Class 1, Division 1 area and shall meet all Cal-OSHA standards. All State of California rules and regulations will be strictly enforced. The work shall comply with the State of California General Safety Orders and the Construction Safety Orders regarding work in confined spaces (please refer to Drawings). The Contractor is advised to contact the local office of Cal-OSHA for information about the local safety regulations.

2. A comprehensive site-specific safety plan that covers all aspects of on-site construction operations and activities associated with the contract.

3. The plan must comply with applicable safety and health regulations and Owner safety requirements and must include an Emergency Action Plan.

4. The Contractor will allow 10 working days before the scheduled pre-construction meeting for safety plan review.

5. Acceptance of the Contractor's safety plan only signifies that the plan generally conforms to the requirements of the contract. It does not relieve the Contractor of the responsibility for providing employees with a safe and healthful work environment nor will it replace the requirement for Job Safety Analysis (JSA).

    a. A list of hazardous substances brought to the workplace with accompanying SDS.

    b. Documentation of site safety orientation for employees, subcontractors and visitors.

    c. Job Safety Analysis (JSA).

    d. Certifications and Proof of training when required by Owner.

6. Contractor shall provide blower induced ventilation to meet the requirements of Cal-OSHA. The blowers shall be in operation at all times work is in progress inside the digester. The Contractor shall provide emergency air packs for employees and inspectors.

**PART 2 -- PRODUCTS (NOT USED)**

**PART 3 -- EXECUTION (NOT USED)**

**- END OF SECTION 01310 -**

# SECTION 01453 - SPECIAL INSPECTION, OBSERVATION, AND TESTING

## PART 1 GENERAL

1.01 SUMMARY

A. This section covers requirements for Special Inspection, Observation, and Testing required in accordance with Chapter 17 of the 2022 CBC and is in addition to General Notes, Statement of Special Inspections, and Tables of Required Special Inspections shown on Drawings.

1.02 REFERENCES

B. The following is a list of standards which may be referenced in this section:

1. American Society of Civil Engineers (ASCE): 7, Minimum Design Loads for Buildings and Other Structures.
2. 2022 California Building Code (CBC) by California Building Standards Commission.
3. International Code Council (ICC):
    a. International Building Code (IBC).
    b. Evaluation Service (ICC-ES) Reports and Legacy Reports.

1.03 DEFINITIONS

A. Agencies and Personnel:

1. Agency Having Jurisdiction (AHJ): Permitting building agency; may be a federal, state, local, or other regional department, or individual including building official, fire chief, fire marshal, chief of a fire prevention bureau, labor department, or health department, electrical inspector; or others having statutory authority. AHJ may be Owner when authorized to be self-permitting by governmental permitting agency or when no governmental agency has authority.
2. Approved Agency: An established and recognized agency regularly engaged in conducting tests or furnishing inspection services, when such agency has been approved.
3. Registered Design Professional in Responsible Charge: An individual who is registered or licensed to practice their respective design profession as defined by statutory requirements of professional registration laws of state or jurisdiction in which Project is to be constructed.
4. Special Inspector: Qualified person employed by Owner who will demonstrate competence to the satisfaction of AHJ for inspection

of a particular type of construction or operation requiring Special Inspection.

B. Statement of Special Inspections: Detailed written procedure contained on Drawings establishing systems and components subject to Special Inspection, Observation, and Testing during construction, type and frequency of testing, extent and duration of Special Inspection, and reports to be completed and distributed by Special Inspector.

C. Special Inspection:
   1. Special Inspection: Inspection required of materials, installation, fabrication, erection, or placement of components and connections requiring special expertise to ensure compliance with approved Contract Documents and referenced standards.
   2. Special Inspection, Continuous: Full-time observation of work requiring Special Inspection by an approved Special Inspector who is present in area where the Work is being performed.
   3. Special Inspection, Periodic: Part-time or intermittent observation of the Work requiring Special Inspection by an approved Special Inspector who is present in area where the Work has been or is being performed, and at completion of the Work.

D. Nonstructural Components:

   1. Electrical Component Supports: Structural members or assemblies which transmit loads and forces from electrical equipment to structure, including braces, frames, legs, pedestals, and tethers, as well as elements forged or cast as part of component for anchorage.
   2. Mechanical and Plumbing Component Supports: Structural members or assemblies which transmit loads and forces from mechanical or plumbing equipment to structure, including braces, frames, skirts, legs, saddles, pedestals, snubbers, and tethers, as well as elements forged or cast as part of component for anchorage.

E. Professional Observation:

   1. Does not include or waive responsibility for required Special Inspection or inspections by building official.
   2. Requirements are indicated on Statement of Special Inspections provided on Drawings.
   3. Geotechnical Observation: Visual observation of formational materials exposed during grading and overexcavation of selected subgrade bearing surfaces and installation of deep foundation elements by a registered design professional for general conformance to Contract Documents.
   4. Structural Observation: Visual observation of structural system(s) by a registered design professional for general conformance to Contract Documents.
   5. Observation: Visual observation of selected by registered design professional for general conformance to Contract Documents.

1.04 STATEMENT OF SPECIAL INSPECTIONS REQUIREMENTS

A. Designated Systems for Inspection: Architectural, plumbing, mechanical, and electrical Components subject to Special Inspection under CBC Section 1705.12.5 and 1705.12.6 for Seismic Resistance.

B. Statement of Special Inspections:

1. As included and in support of building permit application, Project-specific requirements were prepared by Registered Design Professional in Responsible Charge. The following identifies elements of inspection, observation, and testing program to be followed in construction of the Work:
   a. Components that are subject to Special Inspection and Structural Observation for lateral load resistance.
   b. Special Inspection and testing required by CBC Section 1705 and other applicable sections and referenced standards therein.
   c. Type and frequency of Special Inspection required.
   d. Type and frequency of testing required.
   e. Required frequency and distribution of testing and Special Inspection reports to be distributed by Special Inspector to Construction Manager, Contractor, building official, and Owner.

C. Code required Special Inspection with associated testing as provided in Statement of Special Inspections and further provided in this section, is for benefit of Owner and does not:

1. Relieve Contractor of responsibility for providing adequate quality control measures.
2. Relieve Contractor of responsibility for damage to or loss of material before acceptance.
3. Constitute or imply acceptance.
4. Affect continuing rights of Owner after acceptance of completed Work.

D. The presence or absence of code required Special Inspector and Professional Observer does not relieve Contractor from Contract requirements.

E. Contractor is responsible for additional costs associated with Special Inspection and Testing when Work is not ready at time identified by Contractor and Special Inspectors and Professional Observer are onsite, but not able to provide contracted services.

F. Contractor is responsible for associated costs for additional Special Inspection and Testing by Special Inspectors and Professional Observers required because of rejection of materials of in place Work that cannot be made compliant to Contract Document without additional inspections and observation and testing.

**PART 2 PRODUCTS (NOT USED)**

## PART 3 EXECUTION

### 3.01 GENERAL

A. Requirements of the Statement of Special Inspections are provided by the Owner. All other testing and inspections, unless noted otherwise, are provided by Contractor.

B. Provide access to shop or Site for Special Inspection and Testing and Professional Observation requirements.

C. Notify Construction Manager and Design Engineer in advance of required Special Inspection and Professional Observation no later than 48 hours prior to date of Special Inspection.

D. Provide access for Special Inspector to construction documents.

E. Retain special inspection records onsite to be readily available for review.

F. Cooperate with Special Inspector and provide safe access to the Work to be inspected.

G. Provide reasonable auxiliary services as requested by the Special Inspector. Auxiliary services required include, but not limited to:
   1. Providing access to the Work and furnishing incidental labor and facilities necessary to facilitate inspections and tests to assist the Special Inspector in performing test/inspections.
   2. Providing storage space for the Special Inspector's exclusive use, such as for storing and curing concrete test samples and delivery of samples to testing laboratories.
   3. Providing the Special Inspector with access to all approved submittals.
   4. Providing security and protection of samples and test equipment at the Project Site.
   5. Provide samples of materials to be tested in required quantities.

H. When required by Registered Design Professional in Responsible Charge, provide access for plumbing, mechanical and electrical component inspections for those items requiring certification.

I. Materials and systems shall be inspected during placement where Continuous Special Inspection is required.

J. Where Periodic Special Inspection is indicated in the Statement of Special Inspections:
   1. Schedule inspections for either during or at completion of their placement or a combination or both.
   2. Schedule periodically inspected Work (either inspected during or after its placement) so that corrections can be completed and re-inspected before Work is inaccessible.
   3. Sampling a portion of the Work is not allowed. Schedules shall provide for inspection of all Work requiring periodic inspection.

**END OF SECTION 01453**

# SECTION 01610 - COMMON PRODUCT REQUIREMENTS

## GENERAL

### 1.01 DEFINITIONS

A. Products:

1. New items for incorporation in the Work, whether purchased by Contractor or Owner for the Project, or taken from previously purchased stock, and may also include existing materials or components required for reuse.

2. Includes the terms material, equipment, machinery, components, subsystem, system, hardware, software, and terms of similar intent and is not intended to change meaning of such other terms used in Contract Documents, as those terms are self-explanatory and have well recognized meanings in construction industry.

3. Items identified by manufacturer's product name, including make or model designation, indicated in manufacturer's published product literature, that is current as of the date of the Contract Documents.

B. DESIGN REQUIREMENTS

1. Where Contractor design is specified, design of installation, systems, equipment, and components, including supports and anchorage, shall be in accordance with provisions of the 2022 California Building Code (CBC) by California Building Standards Commission.

2. Wind: Basic wind speed, V: 107 mph (v-ultimate), with exposure Category C, and importance factor 1.

3. Seismic: Risk Category III, importance factor, I, of 1.25, Site Class Definition D, component factor of 1.5, Design Spectral Response (Sds) of 0.93 g, Design Spectral Response ($Sd_1$) of 0.63 g. and soil site class D, unless specified otherwise.

C. ENVIRONMENTAL REQUIREMENTS

1. Altitude: Provide materials and equipment suitable for installation and operation under rated conditions at 400 feet above sea level.

2. Provide equipment and devices installed outdoors or in unheated enclosures capable of continuous operation within an ambient temperature range of 36 degrees F to 91 degrees F.

D. PREPARATION FOR SHIPMENT

1. When practical, factory assemble products. Mark or tag separate parts and assemblies to facilitate field assembly. Cover machined and unpainted parts that may be damaged by the elements with strippable protective coating.

2. Package products to facilitate handling and protect from damage during shipping, handling, and storage. Mark or tag outside of each package or crate to indicate its purchase order number, bill of lading number, contents by name, name of Project and Contractor, equipment number, and approximate weight. Include complete packing list and bill of materials with each shipment.

3. Extra Materials, Special Tools, Test Equipment, and Expendables:

4. Furnish as required by individual Specifications.

5. Schedule:

    a. Ensure that shipment and delivery occur concurrent with shipment of associated equipment.

    b. Transfer to Owner shall occur immediately subsequent to Contractor's acceptance of equipment from Supplier.

    c. Packaging and Shipment:

        1) Package and ship extra materials and special tools to avoid damage during long term storage in original cartons insofar as possible, or in appropriately sized, hinged-cover, wood, plastic, or metal box.

        2) Prominently displayed on each package, the following:

            a) Manufacturer's part nomenclature and number, consistent with Operation and Maintenance Manual identification system.

            b) Applicable equipment description.

            c) Quantity of parts in package.

            d) Equipment manufacturer.

    d. Deliver materials to Site.

    e. Notify Construction Manager upon arrival for transfer of materials.

    f. Replace extra materials and special tools found to be damaged or otherwise inoperable at time of transfer to Owner.

    g. Request a minimum 7-day advance notice of shipment from manufacturer. Upon receipt of manufacturer's advance notice of shipment, promptly notify Construction Manager of anticipated date of equipment arrival

    h. Factory Test Results: Reviewed and accepted by Design Engineer before product shipment as required in individual Specification sections.

## 1.02 COMMON PRODUCT REQUIREMENTS

### A. DELIVERY AND INSPECTION

1. Deliver products in accordance with accepted current Progress Schedule and coordinate to avoid conflict with the Work and conditions at Site. Deliver anchor bolts and templates sufficiently early to permit setting prior to placement of structural concrete.

2. Deliver products in undamaged condition, in manufacturer's original container or packaging, with identifying labels intact and legible. Include on label, date of manufacture and shelf life, where applicable.

3. Unload products in accordance with manufacturer's instructions for unloading or as specified. Record receipt of products at Site. Promptly inspect for completeness and evidence of damage during shipment.

4. Remove damaged products from Site and expedite delivery of identical new undamaged products, and remedy incomplete or lost products to provide that specified, so as not to delay progress of the Work.

B. HANDLING, STORAGE, AND PROTECTION

1. Manufacturer's instructions for material requiring special handling, storage, or protection shall be provided prior to delivery of material.

2. Arrange storage in a manner to provide easy access for inspection. Make periodic inspections of stored products to ensure that products are maintained under specified conditions, and free from damage or deterioration. Keep running account of products in storage to facilitate inspection and to estimate progress payments for products delivered, but not installed in the Work.

3. Store electrical, instrumentation, and control products, and equipment with bearings in weather-tight structures maintained above 60 degrees F. Protect electrical, instrumentation, and control products, and insulate against moisture, water, and dust damage. Connect and operate continuously space heaters furnished in electrical equipment.

4. Store fabricated products aboveground on blocking or skids, and prevent soiling or staining. Store loose granular materials in well-drained area on solid surface to prevent mixing with foreign matter. Cover products that are subject to deterioration with impervious sheet coverings; provide adequate ventilation to avoid condensation.

5. Store finished products that are ready for installation in dry and well-ventilated areas. Do not subject to extreme changes in temperature or humidity.

6. After installation, provide coverings to protect products from damage due to traffic and construction operations. Remove coverings when no longer needed.

7. Hazardous Materials: Prevent contamination of personnel, storage area, and Site. Meet requirements of product specification, codes, and manufacturer's instructions.

## PART 2 -- PRODUCTS

2.01 GENERAL

A. Provide manufacturer's standard materials suitable for service conditions, unless otherwise specified in the individual Specifications.

B. Where product specifications include a named manufacturer, with or without model number, and also include performance requirements, named manufacturer's products must meet the performance specifications.

C. Like items of products furnished and installed in the Work shall be end products of one manufacturer and of the same series or family of models to achieve standardization for appearance, operation and maintenance, spare parts and replacement, manufacturer's services, and implement same or similar process instrumentation and control functions in same or similar manner.

D. Do not use materials and equipment removed from existing premises, except as specifically permitted by Contract Documents.

E. Provide interchangeable components of the same manufacturer, for similar components, unless otherwise specified.

F. Equipment, Components, Systems, and Subsystems: Design and manufacture with due regard for health and safety of operation, maintenance, and accessibility, durability of parts, and shall comply with applicable OSHA, state, and local health and safety regulations.

2.02 COMMON PRODUCT REQUIREMENTS

A. Regulatory Requirement: Coating materials shall meet federal, state, and local requirements limiting the emission of volatile organic compounds and for worker exposure.

B. Safety Guards: Provide for all belt or chain drives, fan blades, couplings, or other moving or rotary parts. Cover rotating part on all sides. Design for easy installation and removal. Use 16-gauge or heavier; galvanized steel, aluminum coated steel, or galvanized or aluminum coated 1/2-inch mesh expanded steel. Provide galvanized steel accessories and supports, including bolts. For outdoors application, prevent entrance of rain and dripping water.

C. Authority Having Jurisdiction (AHJ):

1. Provide the Work in accordance with NFPA 70, National Electrical Code (NEC). Where required by the AHJ, material and equipment shall be labeled or listed by a nationally recognized testing laboratory or other organization acceptable to the AHJ in order to provide a basis for approval under NEC.

2. Materials and equipment manufactured within the scope of standards published by UL shall conform to those standards and shall have an applied UL listing mark.

D. Equipment Finish:

1. Provide manufacturer's standard finish and color, except where specific color is indicated.

2. If manufacturer has no standard color, provide equipment with finish as approved by Construction Manager.

E. Special Tools and Accessories: Furnish to Owner, upon acceptance of equipment, all accessories required to place each item of equipment in full operation. These accessory items include, but are not limited to, adequate oil and grease (as required for first lubrication of equipment after field testing), light bulbs, fuses, hydrant wrenches, valve keys, handwheels, chain operators, special tools, and other spare parts as required for maintenance.

F. Lubricant: Provide initial lubricant recommended by equipment manufacturer in sufficient quantity to fill lubricant reservoirs and to replace consumption during testing, startup, and operation until final acceptance by Owner.

G. Components and Materials in Contact with Water for Human Consumption: Comply with the requirements of the Safe Drinking Water Act and other applicable federal, state, and local requirements. Provide certification by manufacturer or an accredited certification organization recognized by the Authority Having Jurisdiction that components and materials comply with the maximum lead content standard in accordance with NSF/ANSI 61 and NSF/ANSI 372.

H. Use or reuse of components and materials without a traceable certification is prohibited.

2.03 FABRICATION AND MANUFACTURE

A. Manufacture parts to U.S.A. standard sizes and gauges.

B. Two or more items of the same type shall be identical, by the same manufacturer, and interchangeable.

C. Design structural members for anticipated shock and vibratory loads.

D. Use 1/4-inch minimum thickness for steel that will be submerged, wholly or partially, during normal operation.

E. Modify standard products as necessary to meet performance Specifications.

F. Lubrication System:

1. Require no more than weekly attention during continuous operation.

2. Convenient and accessible; oil drains with bronze or stainless steel valves and fill-plugs easily accessible from the normal operating area or platform. Locate drains to allow convenient collection of oil during oil changes without removing equipment from its installed position.

3. Provide constant-level oilers or oil level indicators for oil lubrication systems.

4. For grease type bearings, which are not easily accessible, provide and install stainless steel tubing; protect and extend tubing to convenient location with suitable grease fitting.

2.04 SOURCE QUALITY CONTROL

A. Where Specifications call for factory testing to be witnessed by Design Engineer, Owner, or Construction Manager, notify Construction Manager not less than 30 days prior to scheduled test date, unless otherwise specified.

B. Calibration Instruments: Bear the seal of a reputable laboratory certifying instrument has been calibrated within the previous 12 months to a standard endorsed by the National Institute of Standards and Technology (NIST).

C. Factory Tests: Perform in accordance with accepted test procedures and document successful completion.

**PART 3 – EXECUTION**

3.01 INSPECTION

A. Inspect materials and equipment for signs of pitting, rust decay, or other deleterious effects of storage. Do not install material or equipment showing such effects. Remove damaged material or equipment from the Site and expedite delivery of identical new material or equipment. Delays to the Work resulting from material or equipment damage that necessitates procurement of new products will be considered delays within Contractor's control.

3.02 MANUFACTURER'S CERTIFICATE OF COMPLIANCE

A. When so specified, a Manufacturer's Certificate of Compliance, a copy of which is attached to this section, shall be completed in full, signed by entity supplying the product, material, or service, and submitted prior to shipment of product or material or execution of the services.

B. Construction Manager may permit use of certain materials or assemblies prior to sampling and testing if accompanied by accepted certification of compliance.

C. Such form shall certify proposed product, material, or service complies with that specified. Attach supporting reference data, affidavits, and certifications as appropriate.

D. May reflect recent or previous test results on material or product, if acceptable to Design Engineer.

3.03 INSTALLATION

A. Equipment Drawings show general locations of equipment, devices, and raceway, unless specifically dimensioned.

B. No shimming between machined surfaces is allowed.

C. Install the Work in accordance with NECA Standard of Installation, unless otherwise specified.

D. Install the Equipment per Section 15020, Pipe Supports.

E. Repaint painted surfaces that are damaged prior to equipment acceptance.

F. Do not cut or notch any structural member or building surface without specific approval of Design Engineer.

G. Handle, install, connect, clean, condition, and adjust products in accordance with manufacturer's instructions, and as may be specified. Retain a copy of manufacturers' instruction at Site, available for review at all times.

H. For material and equipment specifically indicated or specified to be reused in the Work:

1. Use special care in removal, handling, storage, and reinstallation to assure proper function in the completed Work.

2. Arrange for transportation, storage, and handling of products that require offsite storage, restoration, or renovation. Include costs for such Work in the Contract Price.

3.04 FIELD FINISHING

A. In accordance with Section 09800, Protective Coating, and individual Specification sections.

3.05

ADJUSTMENT AND CLEANING

I. Perform required adjustments, tests, operation checks, and other startup activities.

3.06 LUBRICANTS

A. Fill lubricant reservoirs and replace consumption during testing, startup, and operation prior to acceptance of equipment by Owner.

3.07 ANCHOR BOLTS

A. Provide anchor bolts as specified in the specification sections and in accordance with Section 15020, Pipe Supports.

**- END OF SECTION 01610**

## SECTION 01780 - OPERATION AND MAINTENANCE DATA

## PART 1 -- GENERAL

1.01 SECTION INCLUDES

A. Detailed information for the preparation, submission, and Design Engineer's review of Operations and Maintenance (O&M) Data, as required by individual Specification sections.

1.02 DEFINITIONS

A. Preliminary Data: Initial and subsequent submissions for Design Engineer's review.

A. Final Data: Design Engineer-accepted data, submitted as specified herein.

B. Maintenance Operation: As used on Maintenance Summary Form is defined to mean any routine operation required to ensure satisfactory performance and longevity of equipment. Examples of typical maintenance operations are lubrication, belt tensioning, adjustment of pump packing glands, and routine adjustments.

1.03 SEQUENCING AND SCHEDULING

A. Equipment and System Data:

B. Preliminary Data:

1. Do not submit until Shop Drawing for equipment or system has been reviewed and approved by Design Engineer.

2. Submit prior to shipment date.

3. Final Data: Submit Instructional Manual Formatted data not less than 30 days prior to equipment or system field functional testing.

4. Record Data: Submit final Compilation Formatted and Electronic Media Formatted data prior to Substantial Completion of Project.

A. Materials and Finishes Data:

1. Preliminary Data: Submit at least 15 days prior to request for final inspection.

2. Final Data: Submit within 10 days after final inspection.

1.02 DATA FORMAT

A. Prepare preliminary data in the form of an instructional manual. Prepare final data in data compilation format and on electronic media.

B. Instructional Manual Format:

1. Binder: Commercial quality, permanent, three-ring or three-post binders with durable plastic cover.
2. Size: 8-1/2 inches by 11 inches, minimum.
3. Cover: Identify manual with typed or printed title “OPERATION AND MAINTENANCE DATA” and list:
4. Project title.
5. Include name of piece of equipment and equipment tag number.
6. Designate applicable system, equipment, material, or finish.
7. Identity of separate structure as applicable.
8. Identify volume number if more than one volume.
9. Identity of general subject matter covered in manual. Identity of equipment number and Specification section.
10. Spine:
11. Project title.
12. Identify volume number if more than one volume.
13. Title Page:
14. Contractor name, address, and telephone number.
15. Subcontractor, Supplier, installer, or maintenance contractor’s name, address, email address, and telephone number, as appropriate.
16. Identify area of responsibility of each.
17. Provide name and telephone number of local source of supply for parts and replacement.
18. Table of Contents:
19. Neatly typewritten and arranged in systematic order with consecutive page numbers.
20. Identify each product by product name and other identifying numbers or symbols as set forth in Contract Documents.
21. Paper: 20-pound minimum, white for typed pages.
22. Text: Manufacturer’s printed data, or neatly typewritten.
23. Three-hole punch data for binding and composition; arrange printing so that punched holes do not obliterate data.
24. Material shall be suitable for reproduction, with quality equal to original. Photocopying of material will be acceptable, except for material containing photographs. FAX and thermal copies are not acceptable.

C. Data Compilation Format:

1. Compile all Design Engineer-accepted preliminary O&M data into a hard-copy, hard-bound set.
2. Each set shall consist of the following:
3. Binder: Commercial quality, permanent, three-ring or three-post binders with durable plastic cover.
4. Cover: Identify each volume with typed or printed title “OPERATION AND MAINTENANCE DATA, VOLUME NO._____OF___”, and list:
5. Project title.
6. Contractor’s name, address, and telephone number.
7. If entire volume covers equipment or system provided by one Supplier include the following:

8. Identity of general subject matter covered in manual.
9. Identity of equipment number and Specification section.
10. Provide each volume with title page and typed table of contents with consecutive page numbers. Place contents of entire set, identified by volume number, in each binder.
11. Table of contents neatly typewritten, arranged in a systematic order:
12. Include list of each product, indexed to content of each volume.
13. Designate system or equipment for which it is intended.
14. Identify each product by product name and other identifying numbers or symbols as set forth in Contract Documents.
15. Section Dividers:
16. Heavy, 80-pound cover weight, tabbed with numbered plastic index tabs.
17. Divider Page:
18. For each separate product, or each piece of operating equipment, with typed description of product and major component parts of equipment.
19. List with Each Product:
20. Name, address, and telephone number of Subcontractor, Supplier, installer, and maintenance contractor, as appropriate.
21. Identify area of responsibility of each.
22. Provide local source of supply for parts and replacement.
23. Identity of separate structure as applicable.
24. Assemble and bind material, as much as possible, in same order as specified in the Contract Documents.

D. Electronic Media Format:

1. Portable Document Format (PDF):
2. After all preliminary data has been found to be acceptable to Design Engineer, submit Operation and Maintenance Data in PDF format on CD. Minimize the number of files in each manual. Files should not be broken up unless the size is greater than 1 GB.
3. Files to be exact duplicates of Design Engineer-accepted preliminary data. Arrange by specification number and name.
4. Files to be processed for optical character recognition, bookmarked, and viewable in most recent version of Adobe Acrobat.
5. Document properties requirements of each file shall be set as follows:
6. Title: Name of the system.
7. Author: Manufacturer’s name.
8. Subject: Equipment Service Manual.
9. Keywords: Equipment Tag Number, equipment type.
10. Initial View – Navigation Tab: Bookmarks Panel and Page.
11. Layout: Single Page.
12. Magnification: Fit Page.
13. Window Option: Show document title.
14. Security: No security.

1.05 SUBMITTALS

A. Informational:

1. Data Outline: Submit two copies and electronic copies of a detailed outline of proposed organization and contents of Final Data prior to preparation of Preliminary Data.
2. Preliminary Data:
3. Submit two copies and electronic copies for Design Engineer's review.
4. If data meets conditions of the Contract:
5. One copy will be returned to Contractor.
6. One copy will be forwarded to Resident Project Representative.
7. One copy will be retained in Engineer's file.
8. If data does not meet conditions of the Contract:
9. All copies will be returned to Contractor with Engineer's comments (on separate document) for revision.
10. Engineer's comments will be retained in Engineer's file.
11. Resubmit two copies revised in accordance with Engineer's comments.
12. Final Data: Submit two printed copies and an electronic copy in format specified herein. Record Data: Submit two printed copies and an electronic copy in format specified herein, incorporating all modifications made during testing and commissioning.

1.06 DATA FOR EQUIPMENT AND SYSTEMS

A. Content for Each Unit (or Common Units) and System:

1. Product Data:

a. Include only those sheets that are pertinent to specific product.
b. Clearly annotate each sheet to:
c. Identify specific product or part installed.
d. Identify data applicable to installation.
e. Delete references to inapplicable information.
f. Function, normal operating characteristics, and limiting conditions.
g. Performance curves, engineering data, nameplate data, and tests.
h. Complete nomenclature and commercial number of replaceable parts.
i. Original manufacturer's parts list, illustrations, detailed assembly drawings showing each part with part numbers and sequentially numbered parts list, and diagrams required for maintenance.
j. Spare parts ordering instructions.
k. Where applicable, identify installed spares and other provisions for future work (e.g., reserved panel space, unused components, wiring, terminals).
l. As-installed, color-coded piping diagrams.
m. Charts of valve tag numbers, with the location and function of each valve.

2. Drawings: Supplement product data with Drawings as necessary to clearly illustrate. Format:

a. Provide reinforced, punched, binder tab; bind in with text.
b. Reduced to 8-1/2 inches by 11 inches, or 11 inches by 17 inches folded to 8-1/2 inches by 11 inches.
c. Where reduction is impractical, fold and place in 8-1/2-inch by 11-inch envelopes bound in text.
d. Identify Specification section and product on Drawings and envelopes.
e. Relations of component parts of equipment and systems.
f. As-built control and flow diagrams.

g. Coordinate drawings with Project record documents to assure correct illustration of completed installation.

3. Instructions and Procedures: Within text, as required to supplement product data. Format:

a. Organize in consistent format under separate heading for each different procedure.
b. Provide logical sequence of instructions for each procedure.
c. Provide information sheet for Owner's personnel, including:
d. Proper procedures in event of failure.
e. Instances that might affect validity of guarantee or Bond.
f. Installation Instructions: Including alignment, adjusting, calibrating, and checking.
g. Operating Procedures:
h. Startup, break-in, routine, and normal operating instructions.
i. Test procedures and results of factory tests where required.
j. Regulation, control, stopping, and emergency instructions.
k. Description of operation sequence by control manufacturer.
l. Shutdown instructions for both short and extended duration.
m. Summer and winter operating instructions, as applicable.
n. Safety precautions.
o. Special operating instructions.
p. Maintenance and Overhaul Procedures:
q. Routine maintenance.
r. Guide to troubleshooting.
s. Disassembly, removal, repair, reinstallation, and re- assembly.
t. Guarantee, Bond, and Service Agreement.

4. Content for Each Electric or Electronic Item or System:

a. Description of Unit and Component Parts:
    1) Function, normal operating characteristics, and limiting conditions.
    2) Performance curves, engineering data, nameplate data, and tests.
b. Complete nomenclature and commercial number of replaceable parts.
c. Interconnection wiring diagrams, including control and lighting systems.
d. Circuit directories of panelboards.
e. Electrical service.
f. Control requirements and interfaces.
g. Communication requirements and interfaces.
h. List of electrical relay settings, and control and alarm contact settings.
i. Electrical interconnection wiring diagram, including as applicable, single-line, three-line, schematic and internal wiring, and external interconnection wiring.
j. As-installed control diagrams by control manufacturer.
k. Operating Procedures:
    1) Routine and normal operating instructions.
    2) Startup and shutdown sequences, normal and emergency.
    3) Safety precautions.

4) Special operating instructions.

l. Maintenance Procedures:

1) Routine maintenance.
2) Guide to troubleshooting.
3) Adjustment and checking.
4) List of relay settings, control and alarm contact settings.
5) Manufacturer's printed operating and maintenance instructions.
6) List of original manufacturer's spare parts, manufacturer's current prices, and recommended quantities to be maintained in storage.

m. Maintenance Summary:

1) Compile individual Maintenance Summary for each applicable equipment item, respective unit or system, and for components or sub-units.
2) Format:
3) Use Maintenance Summary Form bound with this section or electronic facsimile of such.
4) Each Maintenance Summary may take as many pages as required.
5) Use only 8-1/2-inch by 11-inch size paper.
6) Complete using typewriter or electronic printing.
7) Provide in electronic media format.
8) Include detailed lubrication instructions and diagrams showing points to be greased or oiled; recommend type, grade, and temperature range of lubricants and frequency of lubrication.
9) Recommended Spare Parts:
10) Data to be consistent with manufacturer's Bill of Materials/Parts List furnished in O&M manuals.
11) "Unit" is the unit of measure for ordering the part.
12) "Quantity" is the number of units recommended.
13) "Unit Cost" is the current purchase price.

## 1.07 DATA FOR MATERIALS AND FINISHES

A. Content for Architectural Products, Applied Materials, and Finishes:

1. Manufacturer's data, giving full information on products:
2. Catalog number, size, and composition.
3. Color and texture designations.
4. Information required for reordering special-manufactured products.
5. Instructions for Care and Maintenance:
6. Manufacturer's recommendation for types of cleaning agents and methods.
7. Cautions against cleaning agents and methods that are detrimental to product.
8. Recommended schedule for cleaning and maintenance.

B. Content for Moisture Protection and Weather Exposed Products:

1. Manufacturer's data, giving full information on products:
2. Applicable standards.
3. Chemical composition.
4. Details of installation.
5. Instructions for inspection, maintenance, and repair.

**- END OF SECTION 01780**

## SECTION 02050 – DEMOLITION

## PART 1 -- GENERAL

A. WORK OF THIS SECTION

1. The CONTRACTOR shall demolish existing piping, valves, instrumentation, utilities, and related appurtenances such as anchors, supports, and hardware for complete or partial demolition as indicated, in accordance with the Contract Documents.

2. The WORK includes demolition, deconstruction, salvage of identified items and materials, and removal of resulting rubbish and debris. The WORK of this section is to be performed in a manner that maximizes salvage and recycling of materials. The CONTRACTOR shall remove rubbish and debris from the Site daily, unless otherwise directed and shall store materials that cannot be removed daily in areas specified by the OWNER'S REPRESENTATIVE.

3. **Sound Control Requirements:** The CONTRACTOR shall comply with all local sound control and noise level rules, regulations and ordinances which apply to any WORK performed pursuant to the Contract. Each combustion engine, used for any purpose on the job or related to the job, shall be equipped with a muffler of a type recommended by the manufacturer. No internal combustion engine shall be operated on the project without said muffler.

B. DEFINITIONS

1. The following definitions apply to the WORK of this section:

    a. Abandonment (Abandon): Leave in place as indicated on the Drawings and specified in this Section.

    b. Demolition (Demolish; Remove): Dismantling, of any existing piping, valves, instrumentation, utilities, and related appurtenances such as anchors, supports, and hardware and any part thereof as shown or specified. Unless otherwise specified, the title of items identified for demolition shall revert to the CONTRACTOR.

C. COORDINATION

1. The CONTRACTOR shall not begin demolition or deconstruction until authorization is received from the OWNER.

2. The CONTRACTOR shall carefully coordinate the WORK in areas where existing facilities are interconnected with new facilities and where existing facilities remain operational. The WORK as indicated is not all inclusive, and the CONTRACTOR shall be responsible for performing the reconstruction indicated plus that which can be reasonably inferred from the Contract Documents as necessary to complete the Project. The Specifications and Drawings identify the major facilities that shall be demolished and reconstructed, but auxiliary utilities such as water, air, chemicals,

drainage, lubrication, fluid power, electrical wiring, controls, and instrumentation are not necessarily shown.

3. Prior to bidding, the CONTRACTOR shall conduct a comprehensive survey at the Site to verify the correctness and exactness of the Drawings, the scope of Work, and the extent of auxiliary utilities. A complete set of record drawings is available for review at the OWNER's office.

4. While demolition and reconstruction are being performed, the CONTRACTOR shall provide adequate access for the continued operation and maintenance of equipment and treatment processes. The CONTRACTOR shall erect and maintain fences, warning signs, barricades, and other devices around the reconstruction as required for the protection of the CONTRACTOR's employees and the OWNER's personnel at the plant. The CONTRACTOR shall remove such protection when reconstruction activities are complete, or as work progresses, or when directed by the OWNER'S REPRESENTATIVE.

D. EXISTING CONDITIONS

1. Before beginning any demolition or deconstruction work, the CONTRACTOR shall survey the site and examine the drawings and specifications to determine the extent of the work and record existing conditions in the presence of the OWNER'S REPRESENTATIVE showing the condition of structures and other facilities adjacent to areas of alteration or removal.

2. Photographs sized 4-inch by 6-inch will be acceptable as a record of existing conditions. Include in the record the elevation of the top of foundation, walls, finish floor elevations, possible conflicting electrical conduits, plumbing lines, the location and extent of existing cracks and other damage and description of surface conditions that exist prior to before starting WORK. It is the CONTRACTOR's responsibility to verify and document all required outages which will be required during the course of work and to note these outages on the record document.

E. SUBMITTALS

1. Demolition plan and procedures, including operational sequence, shall be submitted to the OWNER'S REPRESENTATIVE for approval within 30 days from the date of the Notice-to-Proceed. The procedures shall provide for safe conduct of the Work, careful removal and disposition of materials and equipment, protection of existing facilities which are to remain undisturbed, coordination with existing facilities to remain in service, and timely disconnection and reconnection of utility services. The procedures shall include a detailed description and time schedule of the methods and equipment to be used for each operation and the sequence of operation. A storage plan for salvaged items, if required, shall be included.

2. The demolition plan shall include statements affirming CONTRACTOR inspection of the existing roof deck, floors, walls and framing members, and their suitability to perform as a safety working platform. If inspection reveals a safety hazard to workers, the CONTRACTOR shall state provisions for securing the safety of the workers throughout the performance of the WORK.

3. Any copies of any notifications, authorizations and permits required to perform the WORK.

F. DEMOLITION

1. Existing piping, valves, instrumentation, utilities, and related appurtenances such as anchors, supports, and hardware indicated or required to be demolished as part of the WORK shall be removed and disposed of unless otherwise indicated. Removal of buried structures, utilities, and appurtenances includes the related excavation and backfill as required. Removed items shall be disposed of offsite by the CONTRACTOR.

2. Items to be removed include:

| Item | Description |
|---|---|
| Piping and utilities | As indicated on Drawings. |

G. SALVAGE

1. Items of existing equipment, piping, valves, electrical gear, instrumentation, utilities, and appurtenances indicated to be salvaged shall be removed without any degradation in condition from that prior to removal. Salvaged items shall be delivered to and protected at a location in the treatment plant as directed by the OWNER'S REPRESENTATIVE. The CONTRACTOR shall be responsible to properly safeguard the salvaged items against damage and loss during removal and handling.

2. Items to be salvaged shall include the following: None.

H. DISPOSAL

1. CONTRACTOR shall be responsible for the offsite disposal of debris resulting from reconstruction in compliance with local, state, and federal codes and requirements.

**PART 2 -- PRODUCTS**

A. GENERAL

1. CONTRACTOR shall provide materials and equipment in suitable and adequate quantity as required to accomplish the WORK shown, specified herein and as required to complete the WORK.

**PART 3 -- EXECUTION**

A. GENERAL

1. The CONTRACTOR shall coordinate demolition and reconstruction work with the OWNER and the OWNER'S REPRESENTATIVE. Unless otherwise indicated, the

CONTRACTOR shall be responsible for the sequence of activities. Work shall be performed in accordance with applicable safety rules and regulations.

2. The CONTRACTOR shall verify that any utilities connected to structures, equipment, and facilities to be removed, relocated, salvaged, replaced, or abandoned are rendered inoperable, replaced with new utilities, or adequately bypassed with temporary utilities before proceeding with demolition and reconstruction.

3. The CONTRACTOR shall take precautions to avoid damage to adjacent facilities and to limit the WORK activities to the extent indicated. If reconstruction beyond the scope indicated is required, the CONTRACTOR shall obtain approval from the OWNER'S REPRESENTATIVE prior to commencing.

4. The CONTRACTOR shall notify the OWNER'S REPRESENTATIVE or appropriate utilities to turn off affected utility services at least three working days before starting demolition activities.

B. TITLE OF MATERIALS

1. All salvaged equipment and materials will remain the property of the OWNER.

2. All demolished equipment and materials will become the CONTRACTOR's property after OWNER's authorization to begin demolition.

C. PROTECTION OF EXISTING FACILITIES

1. Before beginning any reconstruction, the CONTRACTOR shall carefully survey the existing facilities and examine the Specifications and Drawings to determine the extent of reconstruction and coordination with the WORK. Existing facilities not subject to reconstruction shall be protected and maintained. Damaged existing facilities shall be repaired to the previous condition or replaced.

2. Protection of Personnel

    a. Persons shall be afforded safe passages around areas of demolition.

    b. During demolition, CONTRACTOR shall continuously evaluate the condition of the structure being demolished and take immediate action to protect all personnel working in and around the demolition site.

    c. CONTRACTOR shall provide temporary barricades and other forms of protection to protect OWNER's personnel and general public from injury due to the demolition work.

3. Structural elements shall not be overloaded. The CONTRACTOR shall be responsible for shoring, bracing, or adding new supports as may be required for adequate structural support as a result of work performed under this Section. The CONTRACTOR shall remove temporary protection when the work is complete or when so authorized by the OWNER'S REPRESENTATIVE.

4. The CONTRACTOR shall carefully consider bearing loads and capacities before placement of equipment and material on Site. In the event of any questions as to whether an area to be loaded has adequate bearing capacity, the CONTRACTOR shall consult with the OWNER'S REPRESENTATIVE prior to the placement of such equipment or material.

D. DEMOLITION, SALVAGE, AND RELOCATION

1. The Contract Documents indicate existing facilities to be demolished, salvaged, and/or relocated. Auxiliary utilities including such services as water, air, chemicals, drainage, lubrication, fluid power, electrical wiring, controls, and instrumentation are not necessarily indicated. The CONTRACTOR shall verify the scope of the work to remove the equipment indicated; coordinate its shutdown, removal, replacement, or relocation; and submit an outage plan in accordance with Section 01310 – Project Coordination. The removal of existing facilities for demolition, salvage, and relocation shall include the following requirements:

    a. Equipment supports, including concrete pads, baseplates, mounting bolts, and support hangers, shall be removed. Damage to the existing structure shall be repaired as indicated.

    b. Exposed piping including vents, drains, and valves shall be removed. Where exposed piping penetrates existing floors and walls, the piping, including wall thimbles, shall be removed to a minimum depth of 2 inches. Resultant openings in the structure shall be repaired as indicated.

    c. Auxiliary utility support systems shall be removed.

    d. The area shall be thoroughly cleaned such that little or no evidence of the previous equipment installation will remain.

    e. When existing pipe is removed, cut existing pipe, when necessary, to provide an end surface perpendicular to axis of pipe and suitable for plug to be installed. Remove piping material remaining outside of segment to be abandoned. The CONTRACTOR shall plug the resulting open ends whether or not so indicated. Where removed piping is exposed, the remaining piping shall be blind-flanged or fitted with a removable cap or plug.

    f. When existing piping is removed from existing structures, the CONTRACTOR shall fill resulting openings in the structures and repair any damage such that the finished rehabilitated structure shall appear as a new homogeneous unit with little or no indication of where the new and old materials join. The openings in water-bearing structures shall be filled with high early-strength concrete or non-shrink grout to be watertight and reinforced as required or indicated. In locations where the surface of the grout will be exposed to view, the grout shall be recessed approximately ½-inch and the recessed area filled with cement mortar grout.

2. The CONTRACTOR shall perform a functional test of existing equipment that is relocated and reinstalled to ensure the equipment functions in the manner

documented during the initial inspection. The CONTRACTOR shall inform the OWNER'S REPRESENTATIVE in writing a minimum of five (5) days prior to the functional testing in order for the OWNER'S REPRESENTATIVE to witness the test. If, in the opinion of the OWNER'S REPRESENTATIVE, the relocated equipment does not function in a satisfactory manner, the CONTRACTOR shall make repairs and modifications necessary to restore the equipment to its original operating condition at no additional cost to the OWNER.

E. DISPOSAL

1. Demolition and removal of debris shall minimize interference with roads, streets, walks, and other adjacent occupied or used facilities which shall not be closed or obstructed without permission from the OWNER. Alternate routes shall be provided around closed or obstructed traffic ways.

2. The CONTRACTOR shall legally remove and dispose of site debris, rubbish, and other materials resulting from reconstruction operations. Structures and equipment to be demolished shall be cleaned prior to demolition and the wash water properly disposed of. No trace of these structures shall remain prior to placing of backfill in the areas from which structures were removed.

3. Refuse, debris, and waste materials resulting from demolition and clearing operations shall not be burned.

4. The OWNER will not be responsible for the condition or loss of or damage to, property scheduled to become CONTRACTOR's property after the OWNER's authorization to begin demolition. Materials shall not be viewed by prospective purchasers or sold on the Site.

F. OCCUPANCY AND POLLUTION CONTROL

1. Water sprinkling, temporary enclosures, chutes, and other suitable methods shall be used to limit dust and dirt rising and scattering in the area. The CONTRACTOR shall comply with government regulations pertaining to environmental protection.

2. Water shall not be used if it creates hazardous or objectionable conditions such as ice, flooding, or pollution.

G. CLEANING

1. During and upon completion of Work, the CONTRACTOR shall promptly remove tools and equipment, surplus materials, rubbish, debris, and dust and shall leave areas affected by work in a clean, approved condition.

2. Adjacent structures shall be cleaned of dust, dirt, and debris caused by reconstruction, as directed by the OWNER'S REPRESENTATIVE or governing authorities, and adjacent areas shall be returned to condition existing prior to start of WORK.

**– END OF SECTION 02050 –**

## SECTION 02100 – SITE PREPARATION

### PART 1 -- GENERAL

A. WORK OF THIS SECTION

1. The CONTRACTOR shall furnish all labor, materials, and equipment required and shall perform all site preparation, complete, in accordance with the Contract Documents.

2. The CONTRACTOR shall clear, grub, and strip areas actually needed for waste disposal, borrow, or Site improvements within limits shown or specified. The areas to be cleared, grubbed, and stripped within public rights-of-way and utility easements shall be minimized to the extent possible for the WORK and in consideration of the actual means and methods of construction used. No unnecessary site preparation within these areas shall be performed.

3. Site preparation shall be conducted only after adequate erosion and sediment controls are in place. The CONTRACTOR shall limit areas exposed uncontrolled to erosion during installation of temporary erosion and sediment controls to maximum of 1 acre.

B. SITE INSPECTION

1. Prior to moving onto the Site, the CONTRACTOR shall inspect the Site conditions and review maps of the Site and facilities delineating the OWNER's and utility company's property and right-of-way lines.

C. PERMITS

1. The CONTRACTOR shall obtain all permits required for the site preparation work prior to proceeding with the WORK.

D. SUBMITTALS

1. Submittals shall be furnished in accordance with Whitebook Section 3.8.

2. Copies of all permits required prior to clearing, grubbing, and stripping work.

3. A complete site access, staging, and stockpiling plan using a copy of the basic site layout, identifying all areas to be used for access, staging, and stockpiling throughout various phases of the construction sequence.

### B. EXECUTION

A. SITE ACCESS WITHIN THE PLANT

1. The CONTRACTOR shall develop any necessary access to the Site following the route designated by the OWNER.

2. Utility Interference: Where existing utilities interfere with the Work, the CONTRACTOR shall notify the utility OWNER(s) and the OWNER’S REPRESENTATIVE before proceeding with the WORK.

B. REMOVAL

1. All removal shall include complete site restoration as directed by the OWNER'S REPRESENTATIVE.

C. DISPOSAL

1. Waste materials and debris from site preparation operations shall be disposed of legally.

2. Burning of rubbish, debris, cleared and grubbed materials or other fires for any reason will not be permitted.

**– END OF SECTION 02100-**

## SECTION 02612 - STEEL PIPE FABRICATED SPECIALS

## PART 1 -- GENERAL

1.01 WORK OF THIS SECTION

A. The CONTRACTOR shall provide steel pipe fabricated specials, including fittings, closure pieces, bends, reducers, wyes, tees, crosses, outlets, manifolds, other steel plate specials, and all piping above ground or in structures, complete in place, in accordance with the Contract Documents.

B. A single pipe manufacturer shall be made responsible for furnishing all the welded steel pipe, fittings, specials and appurtenances for the WORK.

1.02 REFERENCE SPECIFICATIONS, CODES AND STANDARDS

A. The publication listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

B. Commercial Standards

1. ASME International (ASME)

ASME Boiler and Pressure Vessel Code (BPVC)

| | |
|---|---|
| BPVC Section VIII Division 1 | Rules for Construction of Pressure Vessels |
| BPVC Section IX | Welding and Brazing Qualifications |

2. ASTM International (ASTM)

| | |
|---|---|
| ASTM A105 | Carbon Steel Forgings for Piping Applications |
| ASTM A181 | Carbon Steel Forgings, for General-Purpose Piping |
| ASTM A234 | Piping Fittings of Wrought Carbon Steel and Alloy Steel for Moderate and High Temperature Service |
| ASTM A578 | Straight-Beam Ultrasonic Examination of Rolled Steel Plates for Special Applications |

3. American Water Works Association (AWWA)

| | |
|---|---|
| ANSI/AWWA C200 | Steel Water Pipe 6 Inches and Larger |
| ANSI/AWWA C203 | Coal-Tar Protective Coatings and Linings for Steel Water Pipelines—Enamel and Tape—Hot Applied |
| ANSI/AWWA C205 | Cement-Mortar Protective Lining and Coating for Steel Water Pipe - 4 Inches and Larger - Shop Applied |
| ANSI/AWWA C208 | Dimensions for Fabricated Steel Water Pipe Fittings |

ANSI/AWWA C210 Liquid-Epoxy Coating Systems for the Interior and Exterior of Steel Water Pipelines

ANSI/AWWA C602 Cement-Mortar Lining of Water Pipelines in Place - 4 In. (100 mm) and Larger

AWWA M11 Steel Water Pipe - A Guide for Design and Installation

4. National Sanitation Foundation (NSF)

ANSI/NSF Standard 61 Drinking Water System Components -- Health Effects

5. American Welding Society (AWS)

ANSI/AWS D1.1 Structural Welding Code – Steel

6. State of California, Department of Transportation (Caltrans) - California Test Methods

Test 417 Method of Testing Soils and Waters for Sulfate Content

Test 422 Method of Testing Soils and Waters for Chloride Content

7. Society for Protective Coatings (SSPC)

SSPC-SP 10/NACE No. 2 Near-White Metal Blast Cleaning

1.03 SUBMITTALS

A. General: Submittals shall be furnished in accordance with Whitebook Section 3.8 and Section 15000 – Piping General Components.

B. Shop Drawings: The CONTRACTOR shall submit Shop Drawings and laying diagrams of pipe, joints, bends, reducers, wyes, tees, crosses, outlets, manifolds, and other steel plate specials.

C. Design calculations to ascertain conformance of pipe specials with the Specifications, including CONTRACTOR-developed details and component proportions. The calculations shall be submitted with the shop drawings showing these items.

D. Certifications:

1. A certified affidavit of compliance shall be furnished for all steel plate specials and other products or materials furnished under this Section.

E. Manufacturer's Qualifications: Furnish a copy of manufacturer's certification to ISO 9000, by SPFA or LRQA and documentation of manufacturer's experience in fabricating AWWA C200 pipe.

## 1.04 QUALITY ASSURANCE

A. Manufacturer Qualifications: The manufacturer shall be certified to ISO 9000, by the Steel Plate Fabricator's Association (SPFA), or by the Lloyd's Register Quality Assurance (LRQA) and shall be experienced in fabrication of AWWA C200 pipe of similar diameters, lengths, and wall thickness to the WORK. Experience shall be in the production facilities and personnel, not the name of the company that owns the production facility or employs the personnel.

B. Shop Testing of Steel Plate Specials

1. If any special has been fabricated from straight pipe not previously tested and is of the type listed below, the special shall be hydrostatically tested with a pressure equal to 1½ times the design working pressure: all bends, wyes, crosses, tees with side outlet diameter greater than 30 percent of the main pipe diameter, and manifolds.

2. All specials not required to be hydrostatically tested shall be tested by liquid dye penetrant inspection method in accordance with ASTM E 165 Method A or the magnetic particle method in ASME Section VIII, Division 1, Appendix VI.

3. Reinforcing plates shall be tested by the solution method using approximately 40 psi air pressure introduced between the plates through a threaded test hole. Test hole shall be properly plugged following successful testing.

4. Any weld defects, cracks, leaks, distortion, or signs of distress during testing shall require corrective measures. Weld defects shall be gouged out and rewelded. After corrections, the special shall be retested.

5. Where welded test heads or bulkheads are used, extra length shall be provided to each opening of the special. After removal of each test head, the special shall be trimmed back to the design points with all finished plate edges ground smooth, straight, and prepared for the field joint.

6. Testing shall be performed before joints have been coated or lined.

C. Ultrasonic Examination:

1. Steel plate that will be in welded joints or welded stiffener elements shall be examined ultrasonically for laminar discontinuities where both of the following conditions exist:

   a. Any plate in the welded joint has a thickness exceeding ½-inch.

   b. Any plate in the welded joint is subject to transverse tensile stress through its thickness during the welding or service.

2. Ultrasonic examination may be waived where joints are designated to minimize potential laminar tearing.

3. The ultrasonic examination shall be in accordance with ASTM A578 with a Level I acceptance standard.

4. Plates that are not in conformance with the acceptance criteria in ASTM A578 may be used in the Work if the areas that contain the discontinuities are a distance at least four times the greatest dimension of the discontinuity away from the weld joint.

D. Field Testing: Field testing shall conform to the requirements of Section 02762 - Pressure Pipe Testing and Disinfection.

E. Welding Requirements: Welding procedures used to fabricate pipe shall be prequalified under the provisions of ANSI/AWS D1.1 or ASME Pressure Vessel Code, Section 9. Welding procedures shall be required for longitudinal and girth or spiral welds for pipe cylinders, spigot and bell ring attachments, reinforcing plates and ring flange welds, and plates for lug connections.

F. Welder Qualifications: Welding shall be done by skilled welders, welding operators, and tackers who have had adequate experience in the methods and materials to be used. Welders shall be qualified under the provisions of ANSI/AWS D1.1 or ASME BPVC, Section IX by an independent local, approved testing agency not more than six months prior to commencing work on the pipeline. Machines and electrodes similar to those used in the Work shall be used in qualification tests. The CONTRACTOR shall be responsible for the expense of qualifying welders as part of the WORK.

## PART 2 -- PRODUCTS

2.01 GENERAL

A. Specials are defined as fittings, closure pieces, bends, reducers, wyes, tees, crosses, outlets, manifolds, and other steel plate specials wherever located, and all piping above ground or in structures.

2.02 DESIGN

A. Except as otherwise indicated, materials, fabrication and shop testing of straight pipe shall conform to the requirements of ANSI/AWWA C200 and shall conform to the dimensions of ANSI/AWWA C208.

B. The minimum thickness of plate for pipe from which specials are to be fabricated shall be the greatest of those determined by the following three (3) criteria:

1. Working and transient pressure design:

$$T = \frac{P_w D/2}{Y/S_w} \quad \text{or} \quad T = \frac{P_t D/2}{Y/S_t}$$

Where: T = Steel cylinder thickness in inches
D = Outside diameter of steel cylinder in inches
$P_w$ = Design working pressure in psi (= 100 psi, unless indicated otherwise)
$P_t$ = Design transient pressure in psi (= 1.33×$P_w$, unless indicated otherwise)

Y = Specified minimum yield point of steel in psi
$S_w$ = Safety factor of 2.5 at design working pressure
$S_t$ = Safety factor at design transient pressure; for elbows 1.875, and 2.0 for other specials

2. Minimum thickness based on pipe diameter:

| Nominal Pipe Diameter (in) | Pipe Manifolds, Piping above Ground, and Piping in Structures | Elbows, Bends and Reducers |
|---|---|---|
| 24 and under | $\frac{3}{16}$-in | 10-ga |

3. Mainline Pipe Thickness: Plate thickness for specials shall not be less than for the adjacent mainline pipe.

C. Specials installed on saddle supports shall be designed to limit the longitudinal bending stress to a maximum of 10,000 psi. Design shall be in accordance with the provisions of Chapter 9 of AWWA Manual M-11.

D. Reinforcement for wyes, tees, outlets, and nozzles shall be designed in accordance with AWWA Manual M-11. Reinforcement shall be designed for the design pressure indicated and shall be in accordance with the Drawings. Specials and fittings shall be equal in pressure design strength and shall have the same lining and coating as the adjoining pipe. Unless otherwise indicated, the minimum radius of elbows shall be 2.5 times the pipe diameter and the maximum miter angle on each section of the elbow shall not exceed 11¼ degrees.

## 2.03 FABRICATION AND MATERIALS

A. Mortar: Materials for mortar shall conform to the requirements of ANSI/AWWA C205; provided, that cement for mortar coating shall be Type II, and mortar lining shall be Type V. Cement in mortar lining and coating shall not originate from kilns that burn metal-rich hazardous waste fuel, nor shall a fly ash or Pozzolan be used as a cement replacement. Admixtures shall contain no calcium chloride.

B. Lining:

1. Unless otherwise indicated, liquid epoxy lining conforming to the requirements of ANSI/AWWA C210 and Section 09800 – Protective Coating shall be provided for lining of specials.

2. Where indicated, cement mortal conforming to the requirements of ANSI/AWWA C205, AWWA C602, and Section 09800 shall be provided for lining of specials.

C. Coating: All requirements pertaining to thickness and application of coating of adjacent straight pipe shall apply to specials. Unless otherwise indicated, the coating on the buried portion of a pipe section passing through a structure wall shall extend to the center of the wall, or to a wall flange, if one is indicated. Pipe above ground or in structures shall be field-painted in accordance with Section 09800 - Protective Coating.

D. Specials and fittings that cannot be mechanically lined and coated shall be lined and coated by hand-application using the same materials as used for the pipe and in accordance with the applicable AWWA or ASTM Standards, as modified by the applicable pipe section in these Specifications. Coating and lining applied in this manner shall provide protection equal to that for the pipe. Fittings may be fabricated from pipe that has been mechanically lined and/or coated. Areas of lining and coating that have been damaged by such fabrication shall be repaired by hand-applications.

E. Joints:

1. All joints and related work for field assembly of the pipe and specials shall conform to Section 15000 – Piping General Components. All shop joints shall be complete penetration butt-welds unless otherwise indicated.

2. When plate flanges or crotch plates are made from butt-welded segments, the joints between segments shall not be placed adjacent to longitudinal joints in adjoining steel plate sections. Joints in crotch plates shall be staggered so that the corners of four separate plates are separated by at least five times the thickness of the thickest of the plates considered.

3. Holdbacks for the coating and lining systems shall be abrasively blasted to near-while metal (SSPC-SP 10/NACE No. 2) as required for the adjacent straight pipe.

4. Carnegie-shape rubber gasket joints shall be provided for connections to reinforced concrete pipe where indicated.

F. Moderate deflections and long radius curves may be made by means of beveled joint rings, by pulling standard joints, by using short lengths or pipe, or a combination of these methods; provided that pulled joints shall not be used in combination with bevels.

1. The maximum total allowable angle for beveled joints shall be 5.0 degrees per pipe joint. Bevels shall be provided on the bell ends. Mitering of the spigot ends will not be permitted.

2. The maximum allowable angle for pulled joints shall be in accordance with the manufacturer's recommendations or the angle which results from a ¾-inch pull out from normal joint closure, whichever is less.

3. All horizontal deflections or fabricated angles shall fall on the alignment on congested locations where underground obstructions may be encountered; the chord produced by deflecting the pipe shall be no further than 6 inches from the alignment indicated.

G. Vertical deflections shall fall on the alignment and at locations adjacent to underground obstructions, points of minimum earth cover, and pipeline outlets and structures. The pipe angle points shall match the angle points indicated.

H. Outlets, Tees, Wyes, and Crosses: Where not shown on the drawings, details of wyes, tees, crotch plates, and opening reinforcement shall be developed in accordance with the applicable procedures of AWWA Manual M-11 and as specified herein.

1. Outlets 12 inches and smaller in diameter may be fabricated from Schedule 30 or heavier steel pipe in the standard outside diameters, i.e., 12¾-inch, 10¾-inch, 8⅝-inch, 6⅝-inch, and 4½-inch. Minimum plate thickness for reinforcements shall be 10-gauge.

2. The design of outlet reinforcement shall be in accordance with the procedures given in Chapter 7 of AWWA Manual M-11, and the design pressures and factors of safety above.

3. In lieu of saddle or wrapper reinforcement as provided by the design procedure in AWWA Manual M-11, pipe or specials with outlets may be fabricated in their entirety of steel plate having a thickness equal to the sum of the pipe wall plus the required reinforcement.

4. Where AWWA Manual M-11 requires the design procedure for crotch plate reinforcement, such reinforcement shall be provided.

5. Outlets shall be fabricated so that there is always at least a 12-inch distance between the outer edge of the reinforcing plate and any field welded joints. For outlets without reinforcing plates, outlets shall penetrate the steel cylinders so that there is at least a 12-inch clearance between the outlet and any field-welded joints.

6. Tees, wyes, crosses, elbows, and manifolds shall be fabricated so that the outlet clearances and reinforcing plates from any weld joints are a minimum of five (5) times cylinder thickness or 2 inches, whichever is greater. Longitudinal weld joints in adjacent cylinder sections shall be oriented so that there is a minimum offset of five (5) times cylinder thickness or 2 inches, whichever is greater.

7. Joints of fabricated specials shall be a minimum of 1 foot from the ends of encasements. If a pipe or fabricated specials joint falls within 1 foot of the end of an encasement, the encasement shall be extended to a minimum of 1 foot beyond the end of the joint. The end of the joint is the end of the pipe bell or the end of the butt strap closest to the end of the encasement.

I. Dished Heads: Dish heads or bumped heads shall be ellipsoidal, torispherical, hemispherical, conical or toriconical designed in accordance with ASME B&PV Code, Section VIII Division 1.

J. Steel Welding Fittings: Welding fittings shall be butt welded wrought carbon steel in accordance with ASTM A234, Grade WPB.

1. Where welding-type outlets are shown on the drawings, they shall have a mounting diameter the same as that of the surface upon which they are to be mounted except that where the mounting surface is curved to a diameter of 36 inches or more, the outlet bottom may be flat.

2. Welding-neck flanges and slip-on flanges shall be forged steel in accordance with ASTM A181, Class 60 or Class 70, or with ASTM A105. Welding-neck flanges shall be bored to match the inside diameter of the adjoining pipe. Welding-neck flanges shall be used for butt welding wrought carbon steel fittings.

3. Except where stainless steel is shown on the drawings, threaded outlets and plugs shall be forged steel in accordance with ASTM A105 or ASTM A181, Class 70.

4. Welding-type outlets shall be forged from steel conforming to the requirements specified for threaded outlets.

K. Ends for Mechanical Groove Couplings: Except as otherwise indicated, , the ends of pipe shall be banded with Type C collared ends using double fillet welds where mechanical groove couplings are indicated. Where pipe 12 inches in diameter and smaller is furnished in standard schedule thicknesses, and where the wall thickness equals or exceeds the coupling manufacturer's minimum wall thickness, the pipe ends may be grooved.

L. Marking: A mark indicating the true vertical axis of the special shall be placed on the top and bottom of the special.

M. Threaded outlets shall be forged steel suitable for 3,000 psi service, and shall be as manufactured by **Vogt** or equal.

## PART 3 -- EXECUTION

### 3.01 GENERAL

A. The CONTRACTOR shall provide all fittings, closure pieces, bends, reducers, wyes, tees, crosses, outlets, manifolds, and other steel plate specials, bolts, nuts, gaskets, jointing materials, and all other appurtenances as required to provide a complete and workable installation.

B. Where pipe support details are indicated, the supports shall conform thereto and shall be placed as indicated provided that the support for all exposed piping shall be complete and adequate regardless of whether or not supporting devices are specifically indicated.

C. Where indicated, concrete thrust blocks and welded joints shall be provided. At all times when the Work of installing pipe is not in progress, openings into the pipe and the ends of the pipe in trenches or structures shall be kept tightly closed to prevent entrance of animals and foreign materials.

D. The CONTRACTOR shall take all necessary precautions to prevent the pipe from floating due to water entering the trench from any source, shall assume full responsibility for any damage due to this cause, and shall at its own expense restore and replace the pipe to its required condition and grade if it is displaced due to floating.

E. The CONTRACTOR shall maintain the inside of the pipe free from foreign materials and in a clean and sanitary condition until acceptance by the OWNER.

### 3.02 LAYING

A. Trenches shall be in a reasonably dry condition when the pipe special is laid. Necessary facilities including slings shall be provided for lowering and properly placing the pipe sections in the trench without damage. The pipe and specials shall be laid to the line and grade indicated and shall be closely jointed to form a smooth flow line. Immediately before placing

each section of pipe in final position for jointing, the bedding shall be checked for firmness and uniformity of surface.

**– END OF SECTION 02612 –**

## SECTION 02762 - PRESSURE PIPELINE TESTING AND DISINFECTION

## PART 1 -- GENERAL

1.01 WORK OF THIS SECTION

A. The CONTRACTOR shall test all pressure pipelines and appurtenant piping in accordance with the Contract Documents. Pipelines and appurtenant piping for potable water and fresh water shall be disinfected in accordance with the Contract Documents.

B. The CONTRACTOR shall be responsible for obtaining permits for discharging excess testing and disinfection water and dechlorination of such water in accordance with federal, state, county, and city regulations governing disposal of wastes in the location of the Work and the disposal site if required to satisfy permit limits.

1.02 REFERENCE SPECIFICATIONS, CODES AND STANDARDS

A. The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

B. Commercial Standards

1. American Water Works Association (AWWA):

ANSI/AWWA B300 Hypochlorites

ANSI/AWWA B301 Liquid Chlorine

ANSI/AWWA C651 Disinfecting Water Mains

2. American Society of Mechanical Engineers (ASME):

ANSI/ASME B31.3 Process Piping

ANSI/ASME B31.8 Gas Transmission Distribution and Piping Systems

1.03 SUBMITTALS

A. Furnish submittals in accordance with Whitebook Section 3.8.

B. Furnish:

1. A testing plan and schedule, including method for water conveyance, control, disposal, and disinfection shall be submitted in writing for approval a minimum of 5 workdays before testing is to start.

2. Name of certified bacteriological testing laboratory.

3. Resume of an experienced technician for the Work, if liquid chlorine is proposed.

## PART 2 -- PRODUCTS

2.01 MATERIAL REQUIREMENTS

A. Potable water shall be used for testing of all potable water and fresh water pipelines.

B. Temporary valves, plugs, bulkheads, or other water control equipment and materials as required for isolation of the new pipe section for the performance of the tests shall be provided by the CONTRACTOR. No materials shall be used which would cause damage to the WORK. The use of existing valves as test plugs or bulkheads will be not allowed.

C. Chlorine for disinfection may be in the form of liquid chlorine, sodium hypochlorite solution, or calcium hypochlorite granules or tablets.

   1. Liquid chlorine shall be in accordance with the requirements of ANSI/AWWA B301, and shall be used only when each of the following conditions are satisfied:

      a. With appropriate gas flow chlorinators and ejectors.

      b. Under the direct supervision of an experienced technician.

      c. When appropriate safety practices are observed.

   2. Sodium and calcium hypochlorite shall be in accordance with ANSI/AWWA B300.

D. Dechlorination agents may be sodium bisulfate, sodium sulfite, or sodium thiosulfate.

## PART 3 -- EXECUTION

3.01 GENERAL

A. The CONTRACTOR shall be responsible for furnishing water for testing and disinfection and for transporting it to the points of use, unless otherwise indicated.

B. All pressure pipelines shall be tested; those for potable water shall be disinfected. All chlorinating and testing operations shall be performed in the presence of the OWNER'S REPRESENTATIVE.

C. When pipe installation is ready for testing and approved backfill operations completed, the CONTRACTOR shall notify the OWNER'S REPRESENTATIVE in writing 5 workdays in advance of test.

D. No pressure test will be required for overflow lines.

E. Test sections shall be selected to have the same piping material and test pressure. The maximum length of each pipeline section tested shall not exceed 2,000 feet.

F. Underground pressure piping may be tested before or after backfilling when not indicated or specified elsewhere.

G. The CONTRACTOR shall not use installed valves for shutoff when the specified test pressure exceeds the valve's maximum allowable seat differential pressure and shall provide blinds or other means to isolate test sections.

H. The CONTRACTOR shall test underground piping before encasing piping in concrete or covering piping with slab, structure or permanent improvements.

I. Disinfection operations shall be scheduled as late as possible during the Contract Time to maximize the degree of sterility of the facilities at the time the Work is accepted by the OWNER.

    1. Bacteriological testing shall be performed by a State certified testing laboratory. The OWNER will appoint, employ and pay for the services of the certified testing laboratory to perform the bacteriological tests. Such tests shall meet California Department of Public Health (CDPH) requirements for drinking water standards. Samples shall be taken in the field by a state certified laboratory technician and transported to the laboratory for testing. Results of the bacteriological testing shall be satisfactory with the CDPH or other appropriate regulatory agency.

    2. Retesting required because of non-conformance to the requirements shall be performed by the same laboratory on instructions by the OWNER'S REPRESENTATIVE. The CONTRACTOR shall bear all costs for such retesting.

J. Disposal of flushing water and water containing chlorine shall be in accordance with the requirements of the federal, state, county and city regulations governing disposal of wastes in the test location and the disposal site.

3.02 PIGGING

A. The CONTRACTOR shall clean the system thoroughly by pigging to remove sand, grit, gravel, stones, fluids, construction waste, and all material which would not be found in a properly cleaned pipeline. Pigging shall obtain a smooth interior pipe surface free from any material or fluid not used in cleaning.

B. Pigging shall be defined as passage of a sufficient number of pigs through the pipeline to achieve the clean conditions above. Flushing will not be acceptable as a substitute for pigging.

C. Provision for pig access and egress points and disposal of water and materials shall be the CONTRACTOR's responsibility.

D. Pigs shall be individually marked and their location shall be controlled and monitored so that no pigs remain in the system after cleaning.

E. Pigging may be done in conjunction with initial filling for the hydrostatic test.

3.03 HYDROSTATIC TESTING OF PIPELINES

A. Pipeline 30 inches in diameter and larger shall be visually inspected that all debris has been removed prior to flushing.

B. Prior to hydrostatic testing, pipelines shall be flushed or blown out as appropriate. The CONTRACTOR shall test pipelines either in sections or as a unit. No section of the pipeline shall be tested until all field-placed concrete or mortar has attained an age of 14 day.

1. The test shall be made by closing valves when available or by placing temporary bulkheads in the pipe and filling the line slowly with water.

2. The CONTRACTOR shall be responsible for ascertaining that all test bulkheads are suitably restrained to resist the thrust of the test pressure without damage to or movement of the adjacent pipe. Unharnessed sleeve-type couplings, expansion joints, or other sliding joints shall be restrained or suitably anchored prior to the test to avoid movement and damage to piping and equipment.

3. Remove or protect any pipeline-mounted devices that may be damaged by the test pressure.

4. The CONTRACTOR shall provide sufficient temporary tappings in the pipelines to allow for all entrapped air to exit. After completion of the tests, such taps shall be permanently plugged. Care shall be taken that all air release valves are open during filling.

C. The pipeline shall be filled slowly at a rate which will not cause any surges or exceed the rate at which the air can be released through the release valves at a reasonable velocity. All the air within the pipeline shall be allowed to escape. The differential pressure across the orifices in the air release valves shall not be allowed to exceed 5 psi at any time during filling.

D. **Visible Leaks Test**: After the pipeline or section thereof has been filled, it shall be allowed to stand under a slight pressure for at least 24 hours to allow the concrete or mortar lining, as applicable, to absorb water and to allow the escape of air from air pockets. During this period, bulkheads, valves, and connections shall be examined visually for leaks. Testing is considered complete when no visible leaks are observed. If leaks are found, corrective measures satisfactory to the OWNER'S REPRESENTATIVE shall be taken.

E. **Hydrostatic Test**: The hydrostatic test shall consist of holding the test pressure on the pipeline for a period of four (4) hours and shall be performed after completion of the visible leaks test.

1. The test pressure for pipelines shall be as indicated. The test pressure for yard piping shall be as indicated on the Piping Schedule measured at the lowest point of the pipeline section being tested. During the performance of the tests, test pressure shall not vary more than $\pm$ 5 psig with respect to the specified test pressure.

2. All visible leaks shall be repaired in a manner acceptable to the OWNER'S REPRESENTATIVE regardless of the allowance used for testing.

3. Add water to restore the test pressure if the pressure decreases 5 psi below test pressure and measure the volume of makeup water added to maintain the test pressure during the test period.

F. The amount of allowable leakage permitted depends on the type of joints used in the pipeline. The test is considered complete when makeup water added is equal to or less than the following maximum leakage allowance and no damage to piping and appurtenances has occurred.

1. Exposed piping shall show no visible leaks and no pressure loss during the test.

2. Pipe with flanged, National Pipe Thread (NPT) threaded, and welded joints shall have no leakage.

3. On pipeline jointed with O-ring rubber gaskets or joint designs other than flanged, threaded, or welded joints, the maximum allowable leakage for the pipelines shall be calculated by the following formula.

$$L = \frac{(N+1)D\sqrt{P}}{7{,}400}$$

Where: L is the allowable leakage in gallons/hour.

N is the number of joints in the section tested.

D is the nominal diameter of the pipe in inches.

P is the average test pressure in psig.

G. In the case of pipelines that fail to pass the leakage test, the CONTRACTOR shall determine the cause of the leakage, take corrective measures necessary to repair the leaks, and again test the pipelines.

H. When test results indicate failure of selected test sections, the CONTRACTOR shall limit tests to piping between valves or between a valve and the end of the piping. The length of pipeline tested shall not exceed 500 feet.

## 3.04 PNEUMATIC TESTING OF PIPELINES

A. Pneumatic testing of pressure piping shall not be performed on PVC or CPVC pipe, unless otherwise specified or indicated.

B. The CONTRACTOR shall test aeration air and digester gas piping by the pneumatic test method using clean oil-free dry air or, if not air, nonflammable and non-toxic gas, as test fluid.

C. Underground pressure piping shall be tested and inspected for visible leaks before backfilling. If any such piping is covered or concealed before such tests, it shall be exposed for testing and inspection at no additional cost to the OWNER.

D. **Test Pressure**: The test pressure shall be as indicated in the Piping Schedule or, if not indicated, per the applicable mechanical and plumbing code. Air test pressures shall not exceed 110 percent of the design pressure calculated in accordance with ASME B31.3 and B31.8, whichever is more stringent, or piping manufacturer's printed maximum pneumatic test pressure for said piping class.

E. **Allowable Leakage**: The piping system, exclusive of possible localized instances at pump or valve packing, shall show no visible evidence of leakage.

F. The CONTRACTOR shall provide a temporary pressure relief device for piping under testing, having a set pressure no higher than the test pressure plus the lesser of 50 psig or 10 percent of the test pressure.

G. A preliminary check test for leaks shall be performed when a gauge pressure of the lesser of one-half the test pressure or 25 psig is reached; at which time all joints and connections shall be inspected for leaks by a soap and water solution test.

H. The CONTRACTOR shall correct visible leaks and repeat the preliminary test until all visible leaks are corrected.

I. After completion of the preliminary check test, the pressure in the system shall be gradually increased to one-half of the specified test pressure and thereafter shall be increased in steps of approximately one-tenth of specified test pressure until the specified test pressure is reached.

J. Tests shall be held at final test pressure with no pressure loss for a minimum of 15 minutes and for such additional time as necessary to permit inspection of all joints and welds for leakage by means of soap suds containing water impregnated with soap or detergent.

K. In the case of pipelines that fail to pass the leakage test, the CONTRACTOR shall determine the cause of the leakage, take corrective measures necessary to repair the leaks, and again test the pipelines

L. Final approval of pneumatic testing shall be made by the OWNER'S REPRESENTATIVE after completion of all testing and receipt of all test reports.

M. After satisfactory completion of pneumatic testing, the piping system shall be restored to its normal operating configuration:

1. The pipe test section of those lines that will carry flammable gases shall be purged with nitrogen to assure not explosive mixtures will be present in the system during filling process.

2. All temporary blinds shall be removed.

3. All valves, orifice plates, expansion joints, short pieces of piping, and other equipment excluded from hydrostatic testing shall be installed.

4. Valves closed solely for pneumatic testing shall be opened.

5. Soap or other test solution residue shall be washed with potable water from the exterior of the piping system.

6. All piping disconnected for the purposes of pneumatic testing shall be reconnected.

## 3.05 DISINFECTING PIPELINES

A. **General:** All potable and fresh water pipelines except those appurtenant to hydraulic structures shall be disinfected in accordance with the requirements of ANSI/AWWA C651.

B. **Chlorination:** A chlorine-water mixture shall be uniformly introduced into the pipeline by means of a solution-feed chlorinating device. The chlorine solution shall be introduced at one end of the pipeline through a tap in such a manner that as the pipeline is filled with water, the dosage applied to the water entering the pipe shall be approximately 50 mg/l. Care shall be taken to prevent the strong chlorine solution in the line being disinfected from flowing back into the line supplying the water.

C. **Retention Period:** Chlorinated water shall be retained in the pipeline for at least 24 hours. After the chlorine-treated water has been retained for the required time, the free chlorine residual at the pipeline extremities and at other representative points shall be at least 25 mg/l. If testing does not demonstrate a residual of 25 mg/l or greater, the disinfection procedure above shall be repeated.

D. **Chlorinating Valves:** During the process of chlorinating the pipelines, valves and other appurtenances shall be operated from closed to full open to closed while the pipeline is filled with the heavily-chlorinated water.

E. **Sampling Ports:** The CONTRACTOR shall provide sampling ports along the pipeline as defined on AWWA C651. Taps may be made at manways and air valves to help facilitate the spacing requirement.

F. **Final Flushing:** After the applicable retention period, the heavily chlorinated water shall be flushed from the pipeline until chlorine measurements show that the concentration in the water leaving the pipeline is no higher than that generally prevailing in the system or is acceptable for domestic use. Any release of chlorinated water shall comply with federal, state, and local regulation and the permits for the project. Chlorine in excessive amounts shall be treated before discharge.

G. **Bacteriological Testing:** After final flushing and before the pipeline is placed in service, a sample, or samples shall be collected from the end of the line and shall be tested for bacteriological quality in accordance with the requirements of the State Department of Health or other appropriate regulatory agencies. For this purpose, the pipe shall be re-filled with fresh potable water and left for a period of 24 hours before any sample is collected. If testing does not demonstrate a free chlorine residual after the 24-hour period, the disinfection procedure above shall be repeated. If the initial disinfection treatment fails to produce satisfactory bacteriological test results, the disinfection procedure shall be repeated until acceptable results are obtained.

## 3.06 CONNECTIONS TO EXISTING SYSTEM

A. Where connections are to be made to an existing potable water system, the interior surfaces of all pipe and fittings used in making the connections shall be swabbed or sprayed with one percent (1%) hypochlorite solution before installation. Thorough flushing shall be started as soon as the connection is completed and shall be continued until discolored water is eliminated.

**– END OF SECTION 02762–**

**SECTION 05500**
**METAL FABRICATIONS**

## PART 1 GENERAL

### 1.01 REFERENCES

A. The following is a list of standards which may be referenced in this section:

1. The Aluminum Association, Inc. (AA): The Aluminum Design Manual.
2. American Galvanizers Association (AGA):
   a. Inspection of Hot-Dip Galvanized Steel Products.
   b. Quality Assurance Manual.
3. American Iron and Steel Institute (AISI): Stainless Steel Types.
4. American Ladder Institute (ALI): A14.3, Ladders - Fixed - Safety Requirements.
5. American National Standards Institute (ANSI).
6. American Society of Safety Engineers (ASSE): A10.11, Safety Requirements for Personnel and Debris Nets.
7. American Welding Society (AWS):
   a. D1.1/D1.1M, Structural Welding Code - Steel.
   b. D1.2/D1.2M, Structural Welding Code - Aluminum.
   c. D1.6/D1.6M, Structural Welding Code - Stainless Steel.
8. ASTM International (ASTM):
   a. A36/A36M, Standard Specification for Carbon Structural Steel.
   b. A48/A48M, Specification for Gray Iron Castings.
   c. A53/A53M, Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.
   d. A108, Standard Specification for Steel Bar, Carbon and Alloy, Cold-Finished.
   e. A123/A123M, Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
   f. A143/A143M, Standard for Safeguarding Against Embrittlement of Hot-Dip Galvanized Structural Steel Products and Procedure for Detecting Embrittlement.
   g. A153/A153M, Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
   h. A193/A193M, Standard Specification for Alloy-Steel and Stainless Steel Bolting for High Temperature or High Pressure Service and Other Special Purpose Applications.
   i. A194/A194M, Standard Specification for Carbon and Alloy Steel Nuts for Bolts for High Pressure or High Temperature Service, or Both.
   j. A240/A240M, Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for

Pressure Vessels and for General Applications.

k. A276, Standard Specification for Stainless Steel Bars and Shapes.

l. A283/A283M, Standard Specification for Low and Intermediate Tensile Strength Carbon Steel Plates.

m. A307, Standard Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength.

n. A325, Standard Specification for Structural Bolts, Steel, Heat Treated 120/105 ksi Minimum Tensile Strength.

o. A380, Standard Practice for Cleaning, Descaling, and Passivation of Stainless Steel Parts, Equipment, and Systems.

p. A384/A384M, Standard Practice for Safeguarding Against Warpage and Distortion During Hot-Dip Galvanizing of Steel Assemblies.

q. A385/A385M, Standard Practice for Providing High-Quality Zinc Coatings (Hot-Dip).

r. A489, Standard Specification for Carbon Steel Lifting Eyes.

s. A500/A500M, Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.

t. A501, Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing.

u. A563, Standard Specification for Carbon and Alloy Steel Nuts.

v. A653/A653M, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

w. A780/A780, Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings.

x. A786/A786M, Standard Specification for Hot-Rolled Carbon, Low-Alloy, High-Strength Low-Alloy, and Alloy Steel Floor Plates.

y. A793, Standard Specification for Rolled Floor Plate, Stainless Steel.

z. A967, Standard Specification for Chemical Passivation Treatments for Stainless Steel Parts.

aa. A992/A992M, Standard Specification for Structural Steel Shapes.

bb. A1085, Standard Specification for Cold-Formed Welded Carbon Steel Hollow Structural Sections (HSS).

cc. B209, Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.

dd. B308/B308M, Standard Specification for Aluminum-Alloy 6061-T6 Standard Structural Profiles.

ee. B429/B429M, Standard Specification for Aluminum-Alloy Extruded Structural Pipe and Tube.

ff. B632/B632M, Standard Specification for Aluminum-Alloy Rolled Tread Plate.

gg. C881/C881M, Standard Specification for Epoxy-Resin-Base

Bonding Systems for Concrete.

hh. D1056, Standard Specification for Flexible Cellular Materials - Sponge or Expanded Rubber.

ii. F436, Standard Specification for Hardened Steel Washers.

jj. F468, Standard Specification for Nonferrous Bolts, Hex Cap Screws, and Studs for General Use.

kk. F593, Standard Specification for Stainless Steel Bolts, Hex Cap Screws, and Studs.

ll. F594, Standard Specification for Stainless Steel Nuts.

mm. F844, Standard Specification for Washers, Steel, Plain (Flat), Unhardened for General Use.

nn. F1554, Standard Specification for Anchor Bolts, Steel, 36, 55, and 105-ksi Yield Strength.

9. Occupational Safety and Health Administration (OSHA):
   a. 29 CFR 1910.27, Fixed Ladders.
   b. 29 CFR 1926.105, Safety Nets.
   c. 29 CFR 1926.502, Fall Protection Systems Criteria and Practices.
10. Specialty Steel Industry of North America (SSINA):
   a. Specifications for Stainless Steel.
   b. Design Guidelines for the Selection and Use of Stainless Steel.
   c. Stainless Steel Fabrication.
   d. Stainless Steel Fasteners.

## 1.02 DEFINITIONS

A. Anchor Bolt: Cast-in-place anchor; concrete or masonry.

B. Corrosive Area: Containment area or area exposed to delivery, storage, transfer, or use of chemicals. Corrosive area includes areas exposed to corrosive atmosphere such as hydrogen sulfide from wastewater.

C. Exterior Area: Location not protected from weather by building or other enclosed structure.

D. Interior Dry Area: Location inside building or structure where floor is not subject to liquid spills or washdown, nor where wall or roof slab is common to a water-holding or earth-retaining structure.

E. Interior Wet Area: Location inside building or structure where floor is sloped to floor drains or gutters and is subject to liquid spills or washdown, or where wall, floor, or roof slab is common to a water-holding or earth-retaining structure.

## 1.03 SUBMITTALS

A. Action Submittals:

1. Shop Drawings: Metal fabrications, including welding and fastener information.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Insofar as practical, factory assemble specified items. Package assemblies, which have to be shipped unassembled to protect materials from damage and tag to facilitate identification and field assembly.

B. Package stainless steel items to provide protection from carbon impregnation.

C. Protect painted coatings and hot-dip galvanized finishes from damage as a result of metal banding and rough handling. Use padded slings and straps.

D. Store fabricated items in dry area, not in direct contact with ground.

E. Delivery: In accordance with Section 01 61 00, Common Product Requirements.

**PART 2 PRODUCTS**

2.01 GENERAL

A. For hot-dip galvanized steel that is exposed to view and does not receive paint, limit the combined phosphorus and silicon content to 0.04 percent. For steels that require a minimum of 0.15 percent silicon (such as plates over 1.5 inches thick for ASTM A36/A36M steel), limit maximum silicon content to 0.21 percent and phosphorous content to 0.03 percent.

B. All aluminum products are to be anodized.

C. Unless otherwise indicated, meet the following requirements:

| Item | ASTM Reference |
|---|---|
| Steel Wide Flange Shapes | A992/992M |
| Other Steel Shapes and Plates | A36/A36M or A572/A572M, Grade 50 or A992/A992M for other steel shapes |
| Steel Pipe | A500, Grade B |
| Hollow Structural Sections (HSS) | A500/A500M, Grade C |
| Aluminum: | |
| Aluminum Plates | B209, Alloy 6061-T6 |
| Aluminum Structural Shapes | B308/B308M, Alloy 6061-T6 |

| | |
|---|---|
| Stainless Steel: | |
| Bars and Angles | A276, AISI Type 316 (316L for welded connections) |
| Shapes | A276, AISI Type 304 (304L for welded connections) |
| Steel Plate, Sheet, and Strip | A240/A240M, AISI Type 316 (316L for welded connections) |
| Bolts, Threaded Rods, Anchor Bolts, and Anchor Studs | F593, AISI Type 316, Group 2, Condition SH |
| Nuts | F594, AISI Type 316, Condition CW |
| Steel Bolts and Nuts: | |
| Carbon Steel | A307 bolts, with A563 nuts |
| High-Strength | A325, Type 1 bolts, with A563 nuts |
| Anchor Bolts and Rods | F1554, Grade 36, with weldability supplement S1. |
| Eyebolts | A489 |
| Threaded Rods | A36/A36M |
| Flat Washers (Unhardened) | F844 |

| Item | ASTM Reference |
|---|---|
| Flat and Beveled Washers (Hardened) | F436 |
| Thrust Ties for Steel Pipe: | |
| Threaded Rods | A193/A193M, Grade B7 |
| Nuts | A194/A194M, Grade 2H |
| Plate | A283/A283M, Grade D |
| Welded Anchor Studs | A108, Grades C-1010 through C-1020 |

D. Bolts, Washers, and Nuts: Use stainless steel, hot-dip galvanized steel, zinc-plated steel, and aluminum material types as indicated in Fastener Schedule at end of this section.

## 2.02 POST-INSTALLED CONCRETE ANCHORS

A. See Section 05519, Post-Installed Anchors.

## 2.03 ACCESSORIES

A. Antiseizing Lubricant for Stainless Steel Threaded Connections:

1. Suitable for potable water supply.
2. Resists washout.
3. Manufacturers and Products:
   a. Bostik, Middleton, MA; Neverseez.
   b. Saf-T-Eze Div., STL Corp., Lombard, IL; Anti-Seize.
   c. Or approved equal.

## 2.04 FABRICATION

A. General:

1. Finish exposed surfaces smooth, sharp, and to well-defined lines.
2. Furnish necessary rabbets, lugs, and brackets so work can be assembled in neat, substantial manner.
3. Conceal fastenings where practical; where exposed, flush countersink.
4. Drill metalwork and countersink holes as required for attaching hardware or other materials.
5. Grind cut edges smooth and straight. Round sharp edges to small uniform radius. Grind burrs, jagged edges, and surface defects smooth.
6. Fit and assemble in largest practical sections for delivery to Site.

B. Materials:

1. Use steel shapes, unless otherwise noted.
2. Steel to be hot-dip galvanized: Limit silicon content to less than 0.04 percent or to between 0.15 percent and 0.25 percent.

C. Welding:

1. Weld connections and grind exposed welds smooth. When required to be watertight, make welds continuous.
2. Welded fabrications shall be free from twisting or distortion caused by improper welding techniques.
3. Steel: Meet fabrication requirements of AWS D1.1/D1.1M, Section 5.
4. Stainless Steel: Meet requirements of AWS D1.6/D1.6M.
5. Welded Anchor Studs: Prepare surface to be welded and weld with stud welding gun in accordance with AWS D1.1/D1.1M, Section 7, and manufacturer's instructions.
6. Complete welding before applying finish.

D. Painting:

1. Shop prime with rust-inhibitive primer as specified in Section 09 90 00, Painting and Coating, unless otherwise indicated.
2. Coat surfaces of galvanized steel and aluminum fabricated items to be in direct contact with concrete, grout, masonry, or dissimilar metals, as specified in Section 09800, Protective Coating, unless indicated otherwise.
3. Do not apply protective coating to galvanized steel anchor bolts or galvanized steel welded anchor studs, unless indicated otherwise.

E. Galvanizing:

1. Fabricate steel to be galvanized in accordance with ASTM A143/A143M, ASTM A384/A384M, and ASTM A385/A385M. Avoid fabrication techniques that could cause distortion or embrittlement of the steel.
2. Provide venting and drain holes for tubular members and fabricated assemblies in accordance with ASTM A385/A385M.
3. Remove welding slag, splatter, burrs, grease, oil, paint, lacquer, and other deleterious material prior to delivery for galvanizing.
4. Remove by blast cleaning or other methods surface contaminants and coatings not removable by normal chemical cleaning process in the galvanizing operation.
5. Hot-dip galvanize steel members, fabrications, and assemblies after fabrication in accordance with ASTM A123/A123M. Galvanized coating shall be G90.
6. Hot-dip galvanize bolts, nuts, washers, and hardware components in accordance with ASTM A153/A153M. Oversize holes to allow for zinc alloy growth. Shop assemble bolts and nuts.
7. Galvanized steel sheets in accordance with ASTM A653/A653M.
8. Galvanize components of bolted assemblies separately before assembly. Galvanizing of tapped holes is not required.

F. Electrolytic Protection: Coat surfaces of galvanized steel and aluminum fabricated items to be in direct contact with concrete, grout, masonry, or dissimilar metals, as specified in Section 09800, Protective Coating, unless indicated otherwise.

G. Fitting: Where movement of fabrications is required or shown, cut, fit, and align items for smooth operation. Make corners square and opposite sides parallel.

H. Accessories: Furnish as required for a complete installation. Fasten by welding or with stainless steel bolts or screws.

## 2.05 SOURCE QUALITY CONTROL

A. Visually inspect all fabrication welds and correct deficiencies.

1. Steel: AWS D1.1/D1.1M, Section 6 and Table 6.1, Visual Inspection Acceptance Criteria.
2. Stainless Steel: AWS D1.6/D1.6M.

B. Hot-Dip Galvanizing:

1. An independent testing agency will be retained by Owner in accordance with ASTM A123/A123M and ASTM A153/A153M.
2. Visually inspect and test for thickness and adhesion of zinc coating for minimum of three test samples from each lot in accordance with ASTM A123/A123M and ASTM A153/A153M.
3. Reject and retest nonconforming articles in accordance with ASTM A123/A123M and ASTM A153/A153M.

## PART 3 EXECUTION

### 3.01 INSTALLATION OF METAL FABRICATIONS

A. General:

1. Install metal fabrications plumb and level, accurately fitted, free from distortion or defects.
2. Install rigid, substantial, and neat in appearance.
3. Install manufactured products in accordance with manufacturer's recommendations.
4. Obtain Engineer approval prior to field cutting steel members or making adjustments not scheduled.

### 3.02 ELECTROLYTIC PROTECTION

A. Aluminum and Galvanized Steel:

1. Coat surfaces of galvanized steel and aluminum fabricated items to be in direct contact with concrete, grout, masonry, or dissimilar metals, as specified in Section 09800, Protective Coating, unless indicated otherwise.
2. Do not apply protective coating to galvanized steel anchor bolts or galvanized steel welded anchor studs, unless indicated otherwise.
3. Allow coating to dry before installation of the material.
4. Protect coated surfaces during installation.
5. Should coating become marred, prepare and touch up in accordance with paint manufacturer's written instructions.

B. Stainless Steel:

1. During handling and installation, take necessary precautions to prevent carbon impregnation of stainless steel members.

2. After installation, visually inspect stainless steel surfaces for evidence of iron rust, oil, paint, and other forms of contamination.
3. Remove contamination using cleaning and passivation methods in accordance with requirements of ASTM A380 and ASTM A967.
4. Brushes used to remove foreign substances shall utilize only stainless steel or nonmetallic bristles.
5. After treatment, visually inspect surfaces for compliance.

3.03 PAINTING

A. Painted Galvanized Surfaces: Prepare as specified in Section 09800, Painting and Coating.

B. Repair of Damaged Hot-Dip Galvanized Coating:

1. Conform to ASTM A780/A780M.
2. For minor repairs at abraded areas, use sprayed zinc conforming to ASTM A780/A780M.
3. For flame cut or welded areas, use zinc-based solder, or zinc sticks, conforming to ASTM A780/A780M.
4. Use magnetic gauge to determine thickness is equal to or greater than base galvanized coating.

3.04 FIELD QUALITY ASSURANCE AND QUALITY CONTROL

A. Owner-Furnished Quality Assurance:

1. In accordance with IBC Chapter 17 requirements, is provided in the Statement of Special Inspections Plan.

B. Contractor-Furnished Quality Control:

1. Inspection and testing required in Section 01450, Contractor Quality Control.
2. Manufacturer's Certificate of Compliance per Section 01 61 00, Common Product Requirements, for test results, or calculations, or drawings that ensure material and equipment design and design criteria meet requirements of Section 01610, Common Product Requirements.
3. Special inspection shall be provided by Owner where indicated in Statement of Special Inspections Plan.

3.05 FASTENER SCHEDULE

A. Unless indicated otherwise on Drawings, provide fasteners as follows:

| Service Use and Location | Product | Remarks |
|---|---|---|

| 1. Anchor Bolts Cast Into Concrete for Structural Steel, Metal Fabrications and Castings | | |
|---|---|---|
| Interior Dry Areas | Hot-dip galvanized steel headed anchor bolts, unless indicated otherwise | |

| Service Use and Location | Product | Remarks |
|---|---|---|
| 3. Post-Installed Anchors: See Section 05500, Post-Installed Anchors | | |
| 4. Connections for Structural Steel Framing | | |
| Exterior and Interior Wet and Dry Areas | High-strength steel bolted connections | Use hot-dipped galvanized high-strength bolted connections for galvanized steel framing members. |

B. Antiseizing Lubricant: Use on stainless steel threads.

**END OF SECTION**

**SECTION 05519**
**POST-INSTALLED ANCHORS**

## PART 1 GENERAL

### 1.01 REFERENCES

A. The following is a list of standards which may be referenced in this section:

1. American Concrete Institute (ACI):
    a. 318, Building Code Requirements for Structural Concrete.
    b. 355.2, Qualification of Post-Installed Mechanical Anchors in Concrete.
    c. 355.4, Qualification of Post-Installed Adhesive Anchors in Concrete.
2. American Iron and Steel Institute (AISI): Stainless Steel Type 316.
3. ASTM International (ASTM):
    a. A123/A123M, Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
    b. A143, Practice for Safeguarding Against Embrittlement of Hot-Dip Galvanized Structural Steel Products and Procedure for Detecting Embrittlement.
    c. A153/A153M, Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
    d. A193/A193M, Specification for Alloy-Steel and Stainless Steel Bolting Materials for High-Temperature Service.
    e. A194/A194M, Specification for Carbon and Alloy Steel Nuts for Bolts for High-Pressure or High-Temperature Service, or Both.
    f. A380, Practice for Cleaning, Descaling, and Passivation of Stainless Steel Parts, Equipment, and Systems.
    g. A385, Practice for Providing High-Quality Zinc Coatings (Hot-Dip).
    h. A563, Specification for Carbon and Alloy Steel Nuts.
    i. A780, Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings.
    j. A967, Specification for Chemical Passivation Treatments for Stainless Steel Parts.
    k. E488, Standard Test Methods for Strength of Anchors in Concrete Elements.
    l. F436, Specification for Hardened Steel Washers.
    m. F468, Specification for Nonferrous Bolts, Hex Cap Screws, and Studs for General Use.
    n. F568M, Specification for Carbon and Alloy Steel Externally Threaded Metric Fasteners.
    o. F593, Specification for Stainless Steel Bolts, Hex Cap Screws, and Studs.

p. F594, Specification for Stainless Steel Nuts.
q. F1554, Specification for Anchor Bolts, Steel, 36, 55, and 105-ksi Yield Strength.

4. American National Standards Institute (ANSI).
5. International Association of Plumbing and Mechanical Officials Uniform ES (IAPMO-UES): Evaluation Reports for Concrete and Masonry Anchors.
6. International Code Council Evaluation Service (ICC-ES):
   a. Evaluation Reports for Concrete and Masonry Anchors.
   b. AC01, Acceptance Criteria for Expansion Anchors in Masonry Elements.
   c. AC70, Acceptance Criteria for Fasteners Power-driven into Concrete, Steel and Masonry Elements.
   d. AC106, Acceptance Criteria for Predrilled Fasteners (Screw Anchors) in Masonry Elements.
   e. AC193, Acceptance Criteria for Mechanical Anchors in Concrete Elements.
   f. AC308, Acceptance Criteria for Post-Installed Adhesive Anchors in Concrete Elements. Evaluation Reports for Concrete and Masonry Anchors.
7. Specialty Steel Industry of North America (SSINA):
   a. Specifications for Stainless Steel.
   b. Design Guidelines for the Selection and Use of Stainless Steel.
   c. Stainless Steel Fabrication.
   d. Stainless Steel Fasteners.

## 1.02 DEFINITIONS

A. Corrosive Area: Containment area or area exposed to delivery, storage, transfer, or use of chemicals.

B. Exterior Area: Location not protected from weather by a building or other enclosed structure to include buried roof structures.

C. Interior Dry Area: Location inside building or structure where floor is not subject to liquid spills or wash down, and where wall or roof slab is not common to a water-holding or earth-retaining structure.

## 1.03 SUBMITTALS

A. Action Submittals:

1. Shop Drawings: Specific instructions for concrete anchor installation, including drilled hole size and depth, preparation, placement, procedures, and instructions for safe handling of anchoring systems.

B. Informational Submittals:

1. Concrete Anchors:
    a. Manufacturer's product description and installation instructions.
    b. Current ICC-ES or IAPMO-UES Report for each type of post-installed anchor to be used.
    c. Adhesive Anchor Installer Certification.
2. Passivation method for stainless steel members.
3. Hot-Dip Galvanizing: Certificate of compliance signed by galvanizer, with description of material processed and ASTM standard used for coating.

1.04 QUALITY ASSURANCE

A. Qualifications:

1. Installers of adhesive anchors horizontally or upwardly inclined to support sustained tension loads shall be certified by an applicable certification program. Certification shall include written and performance tests in accordance with the ACI/CRSI Adhesive Installer Certification Program or equivalent.
2. Galvanized Coating Applicator: Company specializing in hot-dip galvanizing after fabrication and following procedures of Quality Assurance Manual of the American Galvanizers Association.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Package stainless steel items in a manner to provide protection from carbon impregnation.

B. Protect hot-dip galvanized finishes from damage as a result of metal banding and rough handling.

**PART 2 PRODUCTS**

2.01 GENERAL

A. Unless otherwise indicated, meet the following requirements:

| Item | ASTM Reference |
|---|---|
| Stainless Steel: | |
| Threaded Rods | F593, AISI Type 316, Condition CW |
| Nuts* | F594, AISI Type 316, Condition CW |
| Carbon Steel: | |
| Threaded Rods | F1554, Grade 36 or F568M Class 5.8<br>A193/A193M, Grade B7 |

| | |
|---|---|
| Flat and Beveled Washers (Hardened) | F436 |
| Nuts* | A194/A194M, Grade 2H |
| Galvanized Steel: | |
| All | A153/A153M |
| *Nuts of other grades and styles having specified proof load stresses greater than specified grade and style are also suitable. Nuts must have specified proof load stresses equal to or greater than minimum tensile strength of specified threaded rod. | |

B. Bolts, Washers, and Nuts: Use stainless steel, hot-dip galvanized steel, and zinc-plated steel material types as indicated in Fastener Schedule at end of this section.

2.02 POST-INSTALLED CONCRETE ANCHORS

A. General:

1. AISI Type 316 stainless or hot-dip galvanized as shown in Fastener Schedule at end of this section.
2. Post-installed anchor systems used in concrete shall be approved by ICC Evaluation Services Report or equivalent for use in cracked concrete and for short-term and long-term loads including wind and earthquake.
3. Mechanical Anchors: Comply with the requirements of ICC-ES AC193 or ACI 355.2.
4. Adhesive Anchors: Comply with the requirements of ICC-ES AC308 or ACI 355.4.

B. Torque-Controlled Expansion Anchors (Wedge Anchors):

1. Manufacturers and Products:
   a. Hilti, Inc., Tulsa, OK; Kwik-Bolt –TZ (KB-TZ) Anchors (ESR-1917).
   b. Powers Fasteners, Brewster, NY; Power-Stud +SD1, +SD2, +SD4, or +SD6 Anchors (ESR-2502 and ESR-2818).
   c. Simpson Strong-Tie Co., Inc., Pleasanton, CA; Strong-Bolt 2 Anchors (ESR-1771 and ESR-3037).
   d. Or approved equal.

C. Undercut Anchors:

1. Manufacturers and Products:
   a. USP Structural Connectors, Burnsville, MN; DUC Undercut Anchor (ESR-1970).
   b. Hilti, Inc., Tulsa, OK; HDA Undercut Anchor (ESR-1546).
   c. Simpson Strong-Tie Co., Inc., Pleasanton, CA; TORQ-CUT

Self-Undercutting Anchor (ESR-2705).

d. Powers Fasteners, Brewster, NY; Atomic+ Undercut Anchor (ESR-3067).
e. Or approved equal.

D. Self-Tapping Concrete Screw Anchors:

1. Manufacturers and Products:
   a. Powers Fasteners, Brewster, NY; Wedge-Bolt+ (ESR-2526).
   b. Powers Fasteners, Brewster, NY; Vertigo+ Rod Hanger Screw Anchor (ESR-2989).
   c. Powers Fasteners, Brewster, NY; Snake+ Flush Mount Screw Anchor (ESR-2272).
   d. Hilti, Inc., Tulsa, OK; HUS-EZ Screw Anchor (ESR-3027).
   e. Simpson Strong-Tie Co., Inc., Pleasanton, CA; Titen HD Screw Anchor (ESR-2713).
   f. Or approved equal.

E. Adhesive Anchors:

1. Threaded Rod:
   a. Diameter as shown on Drawings.
   b. Length as required to provide minimum depth of embedment indicated and thread projection required.
   c. Clean and free of grease, oil, or other deleterious material.
2. Adhesive:
   a. Two-component, insensitive to moisture, designed to be used in adverse freeze/thaw environments.
   b. Cure Temperature, Pot Life, and Workability: Compatible for intended use and anticipated environmental conditions.
3. Packaging and Storage:
   a. Disposable, self-contained system capable of dispensing both components in proper mixing ratio and fitting into a manually or pneumatically operated caulking gun.
   b. Store adhesive on pallets or shelving in a covered storage area.
   c. Package Markings: Include manufacturer's name, product name, batch number, product expiration date, ANSI hazard classification, and appropriate ANSI handling precautions.
   d. Dispose of When:
      1) Shelf life has expired.
      2) Stored other than in accordance with manufacturer's instructions.
4. Manufacturers and Products:
   a. Hilti, Inc., Tulsa, OK; HIT Doweling Anchor System, HIT RE 500 SD (ESR-2322), or HIT-HY 200 (ESR-3187).
   b. Simpson Strong-Tie Co., Inc., Pleasanton, CA; SET-XP Epoxy Adhesive Anchors (ESR-2508), or AT-XP Adhesive Anchors

(IAPMO UES-263).
c. Powers Fasteners, Brewster NY; Pure 110+ Epoxy adhesive anchor system (ESR-3298).
d. Or approved equal.

F. Adhesive Threaded Inserts:

1. Type 316 stainless steel, internally threaded inserts.
2. Manufacturer and Product: Hilti, Inc., Tulsa, OK; HIS-RN Insert with HIT-RE 500-SD or HIT-HY 200 adhesive.

## PART 3 EXECUTION

### 3.01 CONCRETE ANCHORS

A. Begin installation only after concrete to receive anchors has attained its full compressive strength.

B. Locate existing reinforcing with Ground Penetrating Radar or other method approved by Engineer prior to drilling. Coordinate with Engineer to adjust anchor locations where installation would result in hitting reinforcing.

C. Install in accordance with approved manufacturer's written instructions.

D. Provide minimum embedment, edge distance, and spacing as indicated on Drawings.

E. Use only drill type and bit type and diameter recommended by approved anchor manufacturer.

F. Properly clean cored hold per approved manufacturer's requirements.

G. When unidentified embedded steel, rebar, or other obstruction is encountered in drill path, slant drill to clear obstruction. If drill must be slanted more than indicated in approved manufacturer's installation instructions to clear obstruction, notify Engineer for direction on how to proceed.

H. Adhesive Anchors:

1. Unless otherwise approved by Engineer and approved adhesive manufacturer:
   a. Do not install adhesive anchors when temperature of concrete is below 40 degrees F or above 100 degrees F.
   b. Do not install prior to concrete attaining an age of 28 days.
   c. Remove any standing water from hole with oil-free compressed air. Inside surface of hole shall be dry.
   d. Do not disturb anchor during recommended curing time.
   e. Do not exceed maximum torque as specified in approved

manufacturer's instructions.

3.02 FIELD QUALITY ASSURANCE AND QUALITY CONTROL

A. Owner-Furnished Quality Assurance, in accordance with CBC Chapter 17 requirements, is provided in the Statement of Special Inspections Plan on Drawings.

3.03 FASTENER SCHEDULE

A. Unless indicated otherwise on Drawings, provide fasteners as follows:

| Service Use and Location | Product | Remarks |
|---|---|---|
| 1. Post Installed Anchors for Metal Components to Cast-in-Place Concrete (such as, Ladders, Handrail Posts, Electrical Panels, Platforms, and Equipment) | | |
| Interior Dry Areas | Anchor material type to match material being anchored (for example, stainless steel anchors to anchor stainless steel equipment, galvanized anchors to anchor galvanized equipment). | Verify product acceptability and approved manufacturer's requirements if anchor installation will occur in an overhead application |

B. Antiseizing Lubricant: Use on all stainless steel threads.

C. Do not use adhesive anchors to support fire-resistive construction or where ambient temperature will exceed 120 degrees F.

**END OF SECTION**

# SECTION 09800 - PROTECTIVE COATING

## PART 1 -- GENERAL

1.01 THE REQUIREMENT

A. The CONTRACTOR shall furnish all tools, equipment, materials, and supplies and shall perform all labor required to complete the protective coating including all surface preparation, pretreatment, coating application, touch-up of factory-coated surfaces, protection of surfaces not to be coated, cleanup, and appurtenant WORK, all in accordance with the requirements of the Contract Documents.

B. The coating system schedules, paragraphs 3.23; 3.24; 3.25 & 3.26 this Section, summarize the surfaces to be coated, the required surface preparation, and the coating systems to be applied. Coating notes on the drawings are used to show exceptions to the schedules, to show or extend the limits of coating systems, or to clarify or show details for application of the coating systems.

1.02 SUMMARY

A. This Section includes surface preparation and shop application of a high-performance polyamine ceramic epoxy lining for use in the interior steel pipes and fittings for wastewater and a Zinc/Epoxy/Polyurethane coating system for the exterior of the steel piping applications.

B. The ceramic epoxy lining material shall be an amine-cured epoxy containing at least 20% by volume of ceramic hollow microspheres.

1.03 REFERENCES

A. ASTM International, (ASTM)

1. ASTM B 117-99(2007) – Standard Practice for Operating Salt Spray (Fog) Apparatus

2. ASTM C 413-01(2006) – Standard Test Method for Absorption of Chemical-Resistant Mortars, Grouts, Monolithic Surfacings, and Polymer Concretes

3. ASTM C 868-02(2008) – Standard Test Method for Chemical Resistance of Protective Linings

4. ASTM D 149-09 – Standard Test Method for Dielectric Breakdown Voltage and Dielectric Strength of Solid Electrical Insulating Materials at Commercial Power Frequencies

5. ASTM D 870-09 – Standard Practice for Testing Water Resistance of Coatings Using Water Immersion

6. ASTM D 1653-03(2008) – Standard Test Methods for Water Vapor Transmission of Organic Coating Films

7. ASTM D 2370-98(2002) – Standard Test Method for Tensile Properties of Organic Coatings

8. ASTM D 2240-05 – Standard Test Method for Rubber Property—Durometer Hardness

9. ASTM D2583-07 – Standard Test Method for Indentation Hardness of Rigid Plastics by Means of a Barcol Impressor

10. ASTM D 2794-93(2004) – Standard Test Method for Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact)

11. ASTM D 4400-99(2007) – Standard Test Method for Sag Resistance of Paints Using a Multinotch Applicator

12. ASTM D 4060-14 – Standard Test Method for Abrasion Resistance of Organic Coatings by the Taber Abraser

13. ASTM D 4541-09 – Standard Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Testers

14. ASTM G 8-96(2003)e1 – Standard Test Methods for Cathodic Disbonding of Pipeline Coatings

15. ASTM G 210-13 – Standard Practice for Operating the Severe Wastewater Analysis Testing Apparatus (S.W.A.T.)

B. NACE International, (NACE)

1. NACE SP0188-2006 – Standard Practice for Discontinuity (Holiday) Testing of New Protective Coatings on Conductive Substrates

2. NACE TM0174-2002 – Laboratory Methods for the Evaluation of Protective Coatings and Lining Materials in Immersion Service

C. SSPC: The Society for Protective Coatings, (SSPC)

1. SSPC-PA2 – Paint Application Specification No. 2: Measurement of Dry Coating Thickness with Magnetic Gages.

D. Unless otherwise specified, references to documents shall mean the documents in effect at the time of receipt of Bids. If referenced documents have been discontinued by the issuing organization references to those documents shall mean the replacement documents or the last version of the document before it was discontinued.

1.04 QUALITY ASSURANCE

A. Manufacturer's Qualifications: Provide products from a company specializing in manufacture of high-performance epoxy coatings.

1. Materials shall be products of a single manufacturer or items standard with manufacture of specified coating materials.

2. Submit manufacturer's certification that coatings comply with specified requirements and are suitable for intended application.

B. Applicator's Qualifications: Engage a single installer approved by the manufacturer with experience performing this type of lining installation and with documented skill and successful experience in the installation of ceramic epoxy lining to interior of steel piping

and fittings.

1. Submit name and qualifications to Engineer.

2. Submit proof of acceptability of applicator by manufacturer to Engineer.

1.05 SUBMITTALS

A. In accordance with the procedures and requirements set forth in the General Conditions and Whitebook Section 3.8, the applicator shall submit all required information as specified herein.

B. Shop Drawings: Submit for approval prior to commencing any Work:

1. Product Data Sheet

2. Material Safety Data Sheet

3. Performance Testing Reports: Copies of test data for the entire physical, chemical, and permeation properties listed herein and as outlined within this Section.

4. Instillation Instructions: Manufacturer's written installation instructions for the materials specified in this Section.

5. Copies of specifications, technical information, and general recommendations from the coating manufacturer for the specified material.

6. Qualifications Data: Submit qualifications in accordance with Article 1.3, above:

- Manufacturer
- Applicator

7. Samples: Color samples of all coating materials to match each color selected by the OWNER from the manufacturer's standard color sheets. For custom mixed colors, the color samples shall be made using color formulations prepared to match the color samples furnished by the OWNER.

- The color formula shall be shown on the back of each color sample. Paint or coating samples shall be submitted on 8-1/2-inch by 11-inch sheet metal. Each sample shall be completely coated over its entire surface with one protective coating material, type, and color.

C. Application Reports: Submit at the completion of Work

1. Daily Reports: Include surface preparation, substrate conditions, ambient conditions application procedures, lining materials applied, material quantities, and material batch number(s).

1.06 PRODUCT STORAGE, HANDLING AND APPLICATION

A. Coating materials shall be handled, stored and applied in accordance with the manufacturer's recommendations.

1.07 WARRANTY

A. Protective Lining Manufacturer shall warranty its products as free from material defects for a minimum period of three (3) years. Provide associated Warranty Certificate.

1.08 INSPECTION

A. All materials furnished and all WORK accomplished under the contract shall be subject to inspection by the OWNER.

B. The ENGINEER may perform inspection on all phases of the surface preparation, abrasive blast cleaning, and application of the coating and painting systems.

C. Inspection equipment will be provided by the CONTRACTOR and may be operated by the ENGINEER assigned to the project except where specifically stated otherwise in this specification. The OWNER's INSPECTOR may elect to use its own equipment.

D. Quality assurance procedures and practices shall be utilized to monitor all phases of surface preparation, application and inspection throughout the duration of the project.

E. The CONTRACTOR shall be held strictly to the true intent of the Specifications in regard to quality of materials, workmanship, and diligent execution of the contract. The use of a consultant to inspect the WORK in no way reduces or alters the quality control and quality assurance responsibilities of the CONTRACTOR or reduces or alters the CONTRACTOR's compliance with all requirements of the contract.

F. WORK accomplished in the absence of prescribed OWNER inspection may, upon written notice from the OWNER, be removed and replaced to the extent required, under the proper inspection. The entire cost of removal and replacement, including the cost of all materials which may be furnished by the OWNER and used in the WORK thus removed, shall be borne by the CONTRACTOR, regardless of whether the WORK removed is found to be defective or not.

G. When natural lighting is not sufficient, as directed by the INSPECTOR, the CONTRACTOR shall provide, as a minimum, 200-foot candles of illumination for all inspection. Comply with SSPC – Guide 12.

H. If the CONTRACTOR's personnel fail to act in a professional manner in accordance with all aspects of the coatings WORK, the CONTRACTOR shall replace that person.

1.09 SAFETY AND HEALTH REQUIREMENT

A. The CONTRACTOR shall use extreme caution working in the vicinity of pipelines containing digester gas and nature gas. The CONTRACTOR shall provide continuous methane gas monitoring.

B. The CONTRACTOR shall comply with the applicable health and safety requirements of CAL/OSHA, State of California Construction Safety Orders, and the recommendations of the manufacturer of the products employed in the WORK. The CONTRACTOR shall provide and require the use of proper personal protective and lifesaving equipment for all persons visiting or working in or about the project site.

C. All pipes installed by this work shall be shop coated and lined. Should the CONTRACTOR be required to apply the coating in-field, the following provisions shall apply:

1. The CONTRACTOR shall conduct all operations so as to confine blasting debris and paint over spray to within the bounds of the Pipeway in all directions. The

CONTRACTOR shall take all precautions necessary to prevent adverse off bound consequences from the blasting, coating operations. Any complaints received by the OWNER relating to any such potential off-site problems will be immediately referred to the CONTRACTOR for resolution. The CONTRACTOR shall immediately halt work and shall take whatever corrective action is required to mitigate any such problems. All costs associated with protection of offsite properties and/or correction of damage to property as a result of CONTRACTOR operations shall be borne directly by the CONTRACTOR, at no additional cost to the OWNER.

2. CONTRACTOR supplied equipment shall include approved air supplied protective abrasive blasting hoods. All personnel shall wear protective hoods while in the immediate vicinity of the blasting WORK. During abrasive blasting operations, the nozzle person(s) shall wear U.S. Bureau of Mines approved blasting hoods at all times. Other personnel in the vicinity of the blasting WORK, who may be exposed to blasting dust, shall wear approved renewable cartridge filter-type respirators and plastic safety goggles. Paper dust masks or standard glasses shall not be considered adequate personnel protection. When coatings are applied in confined areas, all personnel directly exposed to coating vapors shall wear OSHA approved air supplied hoods.

D. Spark proof artificial lighting shall be provided for all WORK in confined spaces. Light bulbs shall be guarded with a protective cage to prevent breakage. Lighting fixtures and bulbs shall comply with the requirements of Section 70 of the National Fire Protection Association (NFPA), "National Electric Code", for the atmosphere in which they are used. All lighting and other electrical systems used on the project shall be of the ground fault type, as detailed in NFPA 70. Whenever required by the ENGINEER, the CONTRACTOR shall provide additional illumination to fully illuminate all areas to be inspected. The level of illumination required for inspection purposes shall be solely determined by the ENGINEER and as called out in this specification.

E. All blasting, spray and air hoses shall be properly grounded to prevent accumulation of static electric charges. All electrical cords shall be heavy duty industrial insulated type cords with twist lock type connectors.

F. Abrasive blasting nozzles shall be equipped with "deadman" emergency shut off switches. These switches shall be properly maintained and in working order whenever abrasive blasting is in progress. All abrasive blast hose connections shall be taped with duct tape prior to pressurizing. All taped connections shall be visually inspected for leaks within the start and at the conclusion of blast cleaning operations. Leaking connections shall be immediately repaired to prevent further damage to the equipment or injury topersonnel.

G. The solvents used with the specified protective coatings are explosive at low concentrations and are highly toxic to humans. Because of toxicity, the maximum allowable concentration of vapor shall be kept below the maximum safe concentration level as defined by CAL/OSHA. In addition, at no time shall the Lower Explosive Limit be exceeded in the confined space. All regulations, manufacturer's recommendations, and directives from the ENGINEER, related to safety of personnel and the handling of the coating materials, shall be strictly adhered to.

H. A minimum of two (2) 10-pound (lb) ABC type fire extinguishers shall be present in the WORK area whenever WORK is proceeding. All personnel shall be trained in the use of

this type of fire extinguisher.

I. Whenever the occupational noise exposure exceeds the maximum allowable sound level as set forth by CAL/OSHA regulations or the regional Air Pollution Control District, the CONTRACTOR shall provide and require the use of approved ear protection devices.

J. General maximum sound levels for the project shall be those which will not affect routine facility or neighborhood activities. Whenever levels are objectionable, or exceed these limits, they shall be adjusted as directed by the ENGINEER or the local agency of jurisdiction.

K. During the mixing and application of coatings and paints, all flames, welding and smoking shall be prohibited within fifty (50) feet of the WORK area. "No Smoking" signs shall be posted in appropriate places to warn visitors and CONTRACTOR personnel of the no smoking area.

L. All ladders, scaffolding and rigging shall be designed for their intended use and shall conform to all requirements of CAL/OSHA regulations. They shall be erected where requested by the ENGINEER to facilitate inspection and moved by the CONTRACTOR to the locations requested by the ENGINEER. All scaffolding shall have proper "outriggers", cross bracing, handrails, ladders, and CAL/OSHA approved and tested planking.

M. The CONTRACTOR shall accord particular attention to the manufacturer's recommendations, precautions, and warnings regarding the handling and use of cleaning, coating materials specified herein. Coating materials may be irritating to the skin and eyes, and may cause an allergic reaction in certain persons. When handling and mixing coatings and paints, workers shall wear proper protective clothing and equipment, including gloves, respirators and eye protection. Flammability, toxicity, allergenic properties, and any other characteristic requiring field precautions shall be identified and specific safety practices shall be followed.

N. Spent abrasives and other debris shall be removed at the CONTRACTOR's expense. Waste disposal by the CONTRACTOR shall meet the requirements of all regulatory agencies for handling and disposing of such wastes.

1.10 COATING HAZARDS

A. The CONTRACTOR shall ensure that employees are trained in all aspects of the safety plan. Specified coatings may have potential health hazards if ingested or improperly handled. The coating manufacturer's written safety precautions shall be followed throughout mixing, application, and curing of the coatings. During all cleaning, cleanup, surface preparation, and paint application phases, ensure that employees are protected from toxic and hazardous chemical agents which exceed concentrations in 29 CFR 1910.1000. Comply with respiratory protection requirements in 29 CFR 1910.134.

## PART 2 -- PRODUCTS

2.01 GENERAL

A. Definitions: The term "paint", "coatings", or "finishes" as used herein, shall include surface treatments, emulsions, enamels, paints, epoxy resins, and all other protective coatings, excepting galvanizing or anodizing, whether used as a pretreatment, primer, intermediate coat, or finish coat. The term "DFT" means minimum dry film thickness.

B. General: Coating materials shall be sealed in containers that plainly show the designated name, formula or specification number, batch number, color, date of manufacture, manufacturer's directions, and name of manufacturer, all of which shall be plainly legible at the time of use.

C. The CONTRACTOR shall use coating materials suitable for the intended use and recommended by their manufacturer for the intended service.

D. Compatibility: In any coating system only compatible materials from a single manufacturer shall be used in the WORK. Particular attention shall be directed to compatibility of primers and finish coats. If necessary, subject to the approval of the ENGINEER, a barrier coat shall be applied between existing prime coat and subsequent field coats to ensure compatibility.

E. Colors: All colors and shades of colors of all coats of paint shall be as selected or specified by the ENGINEER. Each coat shall be of a slightly different shade, to facilitate inspection of surface coverage of each coat. Finish colors shall be as selected from the manufacturer's standard color samples by the ENGINEER. [Finish colors shall be custom mixed to match color samples furnished by the ENGINEER.

F. Protective Coating Materials: Products shall be standard products produced by recognized manufacturers who are regularly engaged in production of such materials for essentially identical service conditions. Where requested, the CONTRACTOR shall provide the ENGINEER with the names of not less than 10 successful applications of the proposed manufacturer's products demonstrating compliance with this specification requirement.

G. Substitute or "Or-Equal" Submittals: Unless otherwise specified, materials are from the catalogs of the companies listed herein. Materials by other manufacturers are acceptable provide that they are established as being compatible with and of equal quality to the coatings of the companies listed. The CONTRACTOR shall provide satisfactory documentation from the firm manufacturing the proposed substitute or "or-equal" material that said material meets the specified requirements and is equivalent or better than the listed materials in the following properties:

1. Quality
2. Durability
3. Resistance to abrasion and physical damage
4. Life expectancy
5. Ability to recoat in future
6. Solids content by volume
7. Dry film thickness per coat
8. Compatibility with other coatings
9. Suitability for the intended service
10. Resistance to chemical attack

11. Temperature limitations in service and during application

12. Type and quality of recommended undercoats and topcoats

13. Ease of application

14. Ease of repairing damaged areas

15. Stability of colors

H. The cost of all testing and analyzing of the proposed substitute materials that may be required by the ENGINEER shall be paid by the CONTRACTOR. If the proposed substitution requires changes in the contract WORK, the CONTRACTOR shall bear all such costs involved and the costs of allied trades affected by the substitution.

2.02 INDUSTRIAL COATING SYSTEM

A. Material Sources: Each of the following manufacturers is capable of supplying many of the industrial coating materials specified herein. Where manufacturers and paint numbers are listed, it is to show the type and quality of coatings that are required. Proposed substitute materials must be shown to satisfy the material descriptions and to equal or exceed the properties of the listed materials as required in the paragraph entitled "Substitute or `Or-Equal' Submittals" herein.

1. Carboline.

2. Dudick, Inc.

3. Global EcoTechnologies.

4. International Paint – Devoe Coatings; Ceilcote Coatings; Enviroline Linings.

5. Sika

6. PPG-Protective & Marine Coatings.

7. Prime Coatings Inc. – Jotun Paints Inc.

8. Tnemec Company.

9. The Sherwin Williams Co.

B. Interior Pipe Lining (System 1):

1. Polyamine ceramic epoxy lining

   a. Dry Film Thickness: 40 mils (nominal)

2. Generic Type: Polyamine Ceramic Epoxy

3. Properties:

   a. Solids by Volume: 100 percent

   b. Hazardous Air Pollutants: Zero

   c. Ceramic Hollow Microspheres: 20 percent by volume (no silica fume, fly ash, or alumina dust)

d. Pigment Volume Concentration: Less than 22 percent

e. Coal-Tar Content: Zero

4. Performance Criteria:

a. Abrasion: (ASTM D4060-07, CS-17 wheel, 1,000 grams) – 41 mg loss. (BS EN 598:2007+A1:2009, 50,000 cycles) – 0.6 mils loss

b. Adhesion: (ASTM D 4541) – Not less than 3,000 psi, DIP.

c. Severe Wastewater Analysis Test: (ASTM G 210-13) – Initial electrochemical impedance of 11.8 log-Z at 0.001 Hz (ohms•cm2). No blistering, cracking, checking or loss of adhesion. Not less than 88% retained impedance and no more than 1.26 ohms•cm2 reduction in log-Z following 28 days exposure.

d. Cathodic Disbondment: ASTM G 8 (1.5 V) Classification Group A. No more than 0.00 inch (0.00 mm) disbonded equivalent circle diameter.

e. Chemical Resistance: (ASTM C 868-02, 25 percent sulfuric acid, 100 degrees F, 100 days – (NACE TM0174-2002, 6 months continuous immersion, 50 percent sulfuric acid, 13 percent sodium hypochlorite, 5 percent sodium hydroxide, 75 degrees F – No effect.

f. Dielectric Strength: (ASTM D 149-09) – greater than 600 volts per mil

g. Hardness: (ASTM D 2240): Shore D hardness of 79.

h. Immersion: 140°F (60°C) De-ionized Water Immersion. No blistering, cracking or delamination of film after 5,000 hours continuous immersion.

i. Impact: (ASTM D 2794-04) – No visible cracking or delamination after 160 inch-pounds (18.0 J) direct impact.

j. Salt Spray (ASTM B 117-09): No blistering, cracking, rusting or delamination of film. No rust creepage at scribe after 1,000 hrs.

k. Water Absorption (ASTM C 413-01(2006) – 0.0 percent water absorption

l. Water Vapor Transmission (ASTM D 1653-03(2008) Method B, Wet Cup, Condition C) – 1.25 g/m2 per 24 h water vapor transmission and 0.09 perms water vapor permeance.

C. Exterior Pipe Coating (System 2, Shop Applied option):

1. Zinc/Epoxy/Polyurethane. The inorganic zinc primer shall be a water or solvent based, self-curing, zinc silicate 2 or 3 component inorganic coating which contains at least 83 percent of metallic zinc by weight in the dried film, and is recommended by the coating manufacturer as a primer for this system. Organic zinc primers shall be a minimum of 60 percent volume solids and substituted for shop application and field touch up of shop applied inorganic zinc rich primers. The intermediate coat shall be a high-build two component epoxy with a solids content of at least 70 percent by volume. Finish coats shall be a 2-component aliphatic acrylic or polyester polyurethane coating material that provides superior color and gloss retention, resistance to chemical fumes and severe weathering, and a minimum

solids content of 58 percent by volume. This system is suitable for ferrous metal substrates and Class B constructed ferrous metal structures.

1. Prime coat (DFT = 2.5 – 3.5 mils),
    a. PPG Dimetcote Series or Amercoat 68HS Series,
    b. Carboline Carbozinc 11 HS or Carbozinc 859 VOC,
    c. Devoe CathaCote 302H,
    d. Sherwin Williams Zinc Clad III HS B69-100, Zinc Clad II Plus,
    e. Tnemec 94-H20 Hydro-Zinc, or equal.
2. Intermediate coat (DFT = 6-8 mils),
    a. PPG Amercoat 385 or Amerlock2VOC
    b. Carboline Carboguard 890 VOC,
    c. Devoe Bar-Rust 231,
    d. Sherwin Williams Macropoxy 646-100 B58-620,
    e. Tnemec V69 Epoxoline, or equal.
3. Finish coats (one or more, DFT = 3 - 5 mils),
    a. PPG Amercoat 450 H or Amershield VOC
    b. Carboline Carbothane 134 MC,
    c. Sherwin Williams Hi Solids Polyurethane-100 B65-625,
    d. Tnemec 1095 Endura-Shield, or equal.
4. Total system DFT = 11.5 – 16.5 mils.
5. Intermediate coat shall be applied in excess of 6 mils DFT or in more than one coat as necessary to completely cover the inorganic zinc primer and prevent application bubbling of the polyurethane finish coat.
6. More than one finish coat shall be applied as necessary to produce a finish with uniform color and texture.

D. Galvanized Metal in contact with concrete (System 3): Epoxy primer, high-build, as recommended by coating manufacturer for specific galvanized metal to be coated.

1. Min coats as recommended by coating manufacturer. Remaining coats as required for exposure.
    a. Carboline
    b. Sherwin Williams
    c. Tnemec

d. Sika

e. Approved equal.

## PART 3 – EXECUTION

3.01 SURFACE PREPARATION

A. All steel piping and fittings shall be delivered to the application facility without asphalt, cement lining, or any other coating on the interior and exterior surfaces.

B. Interior Surfaces: All surfaces shall be inspected and pre-cleaned with suitable solvent to remove all traces of grease, oil, asphalt and other soluble contaminants. Abrasive blast interior surfaces according to SSPC-SP5/NACE 1 White Metal Blast. Any dust or other contaminants remaining after blasting shall be removed with dry, oil free compressed air or by vacuum cleaning. A surface profile depth (anchor pattern) of at least 3.0 mils (76.2 microns) is required (Reference ASTM D 4417, Method C).

C. Exterior Surfaces: Remove visible oil, grease, dirt, dust, mill scale, rust, paint, oxides, corrosion products, and other foreign matter in accordance with SSPC-SP 6/NACE 3, unless otherwise specified.

D. The surface shall be coated within eight hours of surface preparation.

E. Galvanized Metal surface preparation:

1. Remove soil, cement spatter, and other surface dirt with appropriate hand or power tools.

2. Brush blast in accordance with SSPC SP 16.

3. Obtain and follow coating manufacturer's recommendations for additional preparation that may be required.

3.02 APPLICATION

A. The lining shall be applied by an approved applicator with successful history of applying ceramic epoxy linings to the interior of steel piping and fittings.

B. The interior shall be ceramic epoxy coated with the following dry film thicknesses (DFT).

1. Pipe & Fittings Interior: 40 mils

C. The exterior shall be coated with the following dry film thickness (DFT):

1. Pipe & Fitting Exterior: 2.5-3.5 mils of zinc primer, 6-8 mils of epoxy intermediate and 3-5 mils of polyurethane finish to match existing colors.

3.03 CUTTING PIPE

A. Cutting shall be done in a neat manner, without damage to the pipe or the lining. Use wheel cutters when practicable. Cuts shall be smooth, straight, and at right angles to the pipe axis. After cutting, the ends of the pipe shall be dressed with a power grinder to remove all sharp edges. The cut ends of push on joint pipe shall be suitably beveled.

3.04 HANDLING

A. Lined pipe and fittings must be handled only from the outside of the pipe and fittings. No forks, chains, straps, hooks, cables or other devices shall be placed inside the pie and fittings for lifting, positioning, or laying. The pipe shall not be dropped or unloaded by rolling. Care should be taken not to let the pipe strike sharp objects while swinging or being off loaded. Steel pipe should never be placed on grade by use of hydraulic pressure from an excavator bucket or by banging with heavy hammers. Only nylon straps or similar lifting devices are to be used.

3.05 INSPECTION

A. Inspection:

a. All ceramic epoxy lined pipe and fittings visual examined for film defects, including any runs, sags, and debris in the film. Repairs shall be made in accordance with the manufacturer's instructions.

b. All steel pipe and fitting linings shall be checked for thickness using a magnetic dry film thickness gauge. The thickness testing shall be in according with SSPC-PA2 film thickness rating.

c. The interior and exterior lining of all pipe and fittings shall be tested for holidays, pinholes, and discontinuities in accordance with NACE SP0188. All holidays shall be properly repaired in accordance with the manufacturer's instructions and retested at no additional cost to the Owner.

d. Each pipe joint and fitting shall be marked with the date of application of the ceramic epoxy lining system and with its numerical sequent of application on that date.

B. Certification: The pipe or fitting manufacturer shall supply a certificate attesting to the fact that the applicator met the requirements of this Specification, and that the material was applied as required by the Specification.

3.06 COATING REPAIR

A. Repairs and touch-up shall be performed in accordance with the manufacturer's recommended repair and touch-up procedures.

B. All field cut ends shall be repaired and sealed prior to the installation.

3.07 STORAGE, MIXING, AND THINNING OF MATERIALS

A. Manufacturer's Recommendations: Unless otherwise specified herein, the coating manufacturer's printed recommendations and instructions for thinning, mixing, handling, applying, and protecting its coating materials, for preparation of surfaces for coating, and for all other procedures relative to coating shall be strictly observed. The CONTRACTOR shall supply the ENGINEER with copies of each manufacturer's instructions in accordance with the GENERAL REQUIREMENTS.

B. All protective coating materials shall be used within the manufacturer's recommended shelf life.

C. Storage and Mixing: Coating materials shall be protected from exposure to cold weather, and shall be thoroughly stirred, strained, and kept at a uniform consistency during application. Coatings of different manufacturers shall not be mixed together.

## 3.08 PROTECTION OF THE WORK

A. Protective coverings or drop cloths shall be used to protect floors, piping, valves, concrete, equipment, appurtenances, prepared surfaces and applied coatings or paints. Personnel entering WORK area or walking on the Pipeway shall take precautions to prevent damage or contamination of coated or painted surfaces. Care shall be exercised to prevent coating from being spattered onto surfaces that are not to be coated or painted. Surfaces from which such material cannot be removed satisfactorily shall be repainted or recoated as required to produce a finish satisfactory to the OWNER.

B. Where protection is required or provided for coated surfaces, such protection shall be maintained until the coating film has properly dried. Areas that have been coated shall not be handled, worked on or otherwise disturbed until the coating has cured to “dry to handle”.

## 3.09 LIMITATIONS ON THE APPLICATION OF COATING

A. No coating shall be applied outside the limits recommended by the manufacturer without written approval by the ENGINEER. The following weather condition restrictions shall apply.

1. The surface temperature must be a minimum of 5 °F above the dew point during surface preparation, application, and cure of the coating.

2. No coating shall be applied when the surrounding air temperature or the temperature of the surface to be painted is below 45 °F or in excess of 120 °F.

3. No coating shall be applied when the temperature of the material to be applied is less than 50 °F or more than 100 °F.

4. No coating shall be applied to wet, moist, or damp surfaces, or during rainy, foggy, or misty conditions, or when the relative humidity exceeds 85 percent, or when the ambient air temperature is less than 5 °F above the dew point.

5. No coating shall be applied when it is expected that the relative humidity will exceed 85 percent or that the ambient air temperature will drop below 45 °F within eight (8) hours after the application of the coating.

6. No coating shall be applied when the surface temperature is expected to drop to less than 5 °F above the dew point within eight hours after application of coating.

7. No coating shall be applied when wind speed exceeds 15 miles per hour in the immediate coating area.

8. The ENGINEER may require the CONTRACTOR to roll the coatings if high winds or damage to surrounding property by airborne paint particles exists. This will in no way reduce the CONTRACTOR’s responsibility for any contaminated property that occurs from the blast cleaning or painting operations.

B. If above conditions are prevalent, the coating application WORK shall be delayed or postponed until conditions are favorable. Dew or moisture condensation should be anticipated and if such conditions are prevalent, coating WORK shall be delayed until midmorning to be certain that the surfaces are dry. The day's coating application shall be completed in time to permit the film sufficient drying time prior to damage by climatic conditions.

C. The ENGINEER utilizing psychrometers and other measuring gauges at the WORK site may monitor climatic conditions. If a change in climatic conditions damages a coating application, repair the damaged coatings to their specified condition as directed by the ENGINEER at no cost to the OWNER.

3.10 WORKMANSHIP

A. Skilled craftsmen and experienced supervision shall be used on all WORK.

B. Clean drop cloths shall be used. All damage to surfaces resulting from the WORK hereunder shall be cleaned, repaired, and refinished to their original condition.

C. All coatings shall be applied under dry and dust-free conditions. Coating shall be done in a workmanlike manner so as to produce an even film of uniform thickness. Edges, corners, crevices, and joints shall receive special attention to ensure that they have been thoroughly cleaned and that they receive an adequate thickness of coating material. The finished surfaces shall be free from runs, drops, ridges, waves, laps, brush marks, and variations in color, texture, and finish. The hiding shall be so complete that the addition of another coat would not increase the hiding. Special attention shall be given to ensure that edges, corners, crevices, welds, and similar areas receive a film thickness equivalent to adjacent areas, and installations shall be protected by the use of drop cloths or other approved precautionary measures.

3.11 SHOP COATING REQUIREMENTS

A. All items of equipment, or parts of equipment which are not submerged in service, shall be shop primed and then finish coated in the field after installation with the specified or approved color. The methods, materials, application equipment and all other details of shop painting shall comply with this section. If the shop primer requires topcoating within a specified period of time, the equipment shall be finish coated in the shop and then touch-up painted after installation.

B. All items of equipment, or parts and surfaces of equipment which are submerged or inside an enclosed hydraulic structure when in service, with the exception of pumps and valves, shall have all surface preparation and coating WORK performed in the field.

C. The interior surfaces of steel reservoirs shall have all surface preparation and coating WORK performed in the field.

D. For certain pieces of equipment, it may be undesirable or impractical to apply finish coatings in the field. Such equipment may include engine generator sets, equipment such as electrical control panels, switchgear or main control boards, submerged parts of pumps, ferrous metal passages in valves, or other items where it is not possible to obtain the specified quality in the field. Such equipment shall be shop primed and finish coated and touched up in the field with the identical material after installation. The CONTRACTOR shall require the manufacturer of each such piece of equipment to certify as part of its shop drawings that the surface preparation is in accordance with these specifications. The coating material data sheet shall be submitted with the shop drawings for the equipment.

E. For certain small pieces of equipment, the manufacturer may have a standard coating system which is suitable for the intended service conditions. In such cases, the final determination of suitability will be made during review of the shop drawing submittals. Equipment of this type generally includes only indoor equipment such as instruments,

small compressors, and chemical metering pumps.

F. Shop painted surfaces shall be protected during shipment and handling by suitable provisions including padding, blocking, and the use of canvas or nylon slings. Primed surfaces shall not be exposed to the weather for more than 6 months before topcoated, or less time if recommended by the coating manufacturer.

G. Damage to shop-applied coatings shall be repaired in accordance with this Section and the coating manufacturers printed instructions.

H. The CONTRACTOR shall make certain that the shop primers and field topcoats are compatible and meet the requirements of this Section. Copies of applicable coating manufacturer's data sheets shall be submitted with equipment shop drawings.

3.12 APPLICATION OF COATINGS

A. The application of protective coatings to steel substrates shall be in accordance with "Paint Specification No. 1, (SSPC-PA-1)", The Society for Protective Coatings.

B. Cleaned surfaces and all coats shall be inspected prior to each succeeding coat. The CONTRACTOR shall schedule such inspection with the ENGINEER in advance.

C. Blast cleaned ferrous metal surfaces shall be painted before any rusting or other deterioration of the surface occurs. Blast cleaning shall be limited to only those surfaces that can be coated in the same working day.

D. Coatings shall be applied in accordance with the manufacturer's instructions and recommendations, and this Section, whichever has the most stringent requirements.

E. Special attention shall be given to edges, angles, weld seams, flanges, nuts and bolts, and other places where insufficient film thicknesses are likely to be present. Use stripe painting for these areas.

F. Special attention shall be given to materials which will be joined so closely that proper surface preparation and application are not possible. Such contact surfaces shall be coated prior to assembly or installation.

G. Finish coats, including touch-up and damage repair coats shall be applied in a manner which will present a uniform texture and color matched appearance.

H. Coatings shall not be applied under the following conditions:

1. Temperature exceeding the manufacturer's recommended maximum and minimum allowable.

2. Dust or smoke laden atmosphere.

3. Damp or humid weather.

4. When the substrate or air temperature is less than 5 degrees F above dewpoint.

5. When air temperature is expected to drop below 40 degrees F or less than 5 degrees F above the dewpoint within 8 hours after application of coating.

I. Dewpoint shall be determined by use of a sling psychrometer in conjunction with U.S. Dept. of Commerce, Weather Bureau psychrometric tables.

J. Steel piping shall be abrasive blast cleaned and primed before installation.

K. The finish coat on all WORK shall be applied after all concrete, masonry, and equipment installation is complete and the WORK areas are clean and dust free.

3.13 CURING OF COATINGS

A. The CONTRACTOR shall provide curing conditions in accordance with the conditions recommended by the coating material manufacturer or by this Section, whichever is the highest requirement, prior to placing the completed coating system into service.

B. In the case of enclosed areas, forced air ventilation, using heated air if necessary, may be required until the coatings have fully cured.

C. Forced Air Ventilation of Steel Reservoirs and Enclosed Hydraulic Structures: Forced air ventilation is required for the application and curing of coatings on the interior surfaces of steel reservoirs and enclosed hydraulic structures. During curing periods continuously exhaust air from a maintenance hole in the lowest shell ring, or in the case of an enclosed hydraulic structure, from the lowest level of the structure using portable ducting. After all interior coating operations have been completed provide a final curing period for a minimum of 10 days, during which the forced ventilation system shall operate continuously. For additional requirements, refer to the specific coating system being used in the paragraph entitled "Submerged and Severe Service Coating Systems" herein.

3.14 FINAL CLEANUP

A. Upon completion of the WORK as specified herein, all areas shall be left in a neat and presentable condition. Areas shall be free of rubbish, construction debris and waste, surplus construction materials, scaffolding, tools, equipment, and coating, and thinner containers, and excess coating, and thinners, and other objectionable materials. All such removed materials shall be disposed of by the CONTRACTOR away from the site of WORK and in conformance with all applicable codes, ordinances and regulations. Coating spots upon adjacent surfaces shall be removed and the entire job site cleaned. All damage to surfaces resulting from the WORK of this section shall be cleaned, repaired or refinished to the complete satisfaction of the ENGINEER.

3.15 WARRANTY INSPECTION

A. CONTRACTOR shall warrant workmanship for a period of two (2) years. Warranty inspection of all coating and painting WORK shall be conducted between the period of eleventh ($11^{th}$) month through eighteenth ($18^{th}$) month following final acceptance of the Contract WORK.

B. The OWNER will establish the date for the inspection and will notify the CONTRACTOR at least 30 days in advance. The OWNER may, by written notice to the CONTRACTOR, reschedule the warranty inspection to another date within the $11^{th}$ through $18^{th}$ month inspection period, or may cancel the warranty period altogether.

C. The CONTRACTOR shall attend this inspection. The CONTRACTOR shall be responsible for notifying all directly involved parties of the date and time of the inspection. The OWNER suggests all personnel present at the pre-construction conference be present at this inspection.

D. The entire exterior coating systems shall be visually inspected to determine whether any repair WORK is necessary or if a more detailed inspection will be needed.

E. The OWNER will prepare and deliver to the CONTRACTOR an Inspection Report covering the warranty inspection, setting forth the number and types of failures observed, the percentage of the surface area where failure has occurred, and the names of the persons making the inspections. Color photographs illustrating each type of failure will be included in the report. Where coatings have peeled off, bubbled, or cracked, and any location where rusting is evident shall be considered to be a failure of the coating system. Upon completion of inspection and receipt of Inspection Report, the OWNER shall establish a date for the CONTRACTOR to proceed with remedial WORK.

F. Repairs shall be commenced on a date established by OWNER and shall be completed within 30 days. At locations where the warranty inspection of the coatings have shown evidence of peeling, bubbling, rusting or cracking coats, it shall be considered to be a failure of the coating system. The CONTRACTOR shall make repairs at all locations where failures are observed by removing the deteriorated coating, cleaning the surface and recoating with the same coating system in strict accordance with this Specification and manufacturer's recommendations to satisfaction of the OWNER. If the area of failures exceeds 25 percent of the area of a portion of the structural members or piping surface, then for that portion, the entire coating system shall be removed and recoated. For purposes of determining the need for complete recoating, specific areas are defined as follows:

1. Exterior Pipeway structures
2. Exterior piping surfaces
3. Exterior attachments, accessories, and appurtenances

G. All costs for the CONTRACTOR’s attendance of the initial inspection shall be paid for by the CONTRACTOR. Additional inspection and all costs for repair shall be borne by the CONTRACTOR.

H. Should the CONTRACTOR fail to complete the remedial WORK to the complete satisfaction of the OWNER, the OWNER may at its option perform the remedial WORK, and the CONTRACTOR shall be liable for actual cost of all such remedial WORK, plus 20 percent for OWNER’s administrative cost.

I. The CONTRACTOR shall perform final cleanup in accordance with this Section.

**- END OF SECTION 09800 -**

# SECTION 15000 – PIPING – GENERAL AND COMPONENTS

## PART 1 – GENERAL

1.01 WORK OF THIS SECTION

A. The WORK of this Section includes providing small steel pipe, pipe fittings, hangers, supports, anchors, expansion joints, flexible connectors, insulation, testing, disinfection, and accessories.

1.02 REFERENCE SPECIFICATIONS, CODES AND STANDARDS

A. The WORK of this Section shall comply with the current edition of the following code:

1. CBC 2022

B. Except as otherwise indicated, the current editions of the following applies to the WORK of this Section:

| | |
|---|---|
| ANSI/AWWA C200 | Steel Water Pipe 6 Inches and Larger |
| ANSI/MSS SP 58 | Pipe Hangers and Supports – Material, Design, Manufacture, Selection, Application, and Installation. |
| ANSI Z358.1 | Standard for Plumbed and Portable Eyewash Stations. |
| ASME B1.1 | Unified Inch Screw Threads (UN and UNR Thread Form). |
| ASME B1.20.1 | NPT-National Pipe Thread Taper. |
| ANSI/AWWA C203 | Coal-Tar Protective Coatings and Linings for Steel Water Pipelines—Enamel and Tape—Hot Applied |
| ANSI/AWWA C205 | Cement-Mortar Protective Lining and Coating for Steel Water Pipe - 4 Inches and Larger - Shop Applied |
| ANSI/AWWA C208 | Dimensions for Fabricated Steel Water Pipe Fittings |
| ASME B16.11 | Forged Steel Fittings, Socket-Welding and Threaded. |
| ASME B31.3 | Process Piping. |
| ASME B31.9 | Building Services Piping. |
| ASTM A53 | Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless. |
| ASTM A105 | Specification for Forgings for Piping Components. |
| ASTM A108 | Standard Specification for Steel Bar, Carbon and Alloy, Cold-Finished. |

| | |
|---|---|
| ASTM A325 | Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength. |
| ASTM A563 | Standard Specification for Carbons and Alloy Steel Nuts. |
| ASTM F1476 | Standard Specification for Performance of Gasketed Mechanical Couplings for Use in Piping Applications. |
| AWS D10.9 | Specification for Qualification of Welding Procedures and Welders for Piping and Tubing. |
| AWS D10.10/D10.10M | Recommended Practices for Local Heating of Welds in Piping and Tubing. |
| AWS D10.11M/D10.11 | Guide for Root Pass Welding of Pipe Without Backing. |
| AWS D10.12M/D10.12 | Guide for Welding Mild Steel Pipe |
| AWS D10.14M/D10.14 | Guide for Multipass Orbital Machine Pipe Groove Welding. |
| AWS D10.18M/D10.18 | Guide for Welding Ferritic/Austenitic Duplex Stainless Steel Piping and Tubing. |
| AWWA C207 | Steel Pipe Flanges for Water Works Service, Sizes 4 inch through 144 inch. |
| AWWA C213 | Fusion Bonded Epoxy Coating for the Interior and Exterior of Steel Water Pipelines. |
| AWWA C228 | Stainless Steel Pipe Flange Joints for Water Service, Sizes 2 inch through 72 inch. |
| AWWA C606 | Grooved and Shouldered Joints. |
| AWWA M11 | Steel Pipe - A Guide for Design and Installation. |

1.03 SUBMITTALS

A. The following shall be submitted in compliance with Whitebook Section 3.8:

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.

1.04 OWNER'S MANUAL

A. The following shall be included in the Owner's Manual in compliance with Section 01310 – Project Coordination:

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.

1.05 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.

C. Welding Requirements: Welding procedures used to fabricate pipe shall be prequalified under the provisions of AWS D10.9. Welding procedures shall be required for longitudinal and girth or spiral welds for pipe cylinders, spigot and bell ring attachments, reinforcing plates and ring flange welds, and plates for lug connections.

D. Welder Qualifications: Welding shall be performed by skilled operators who have had adequate experience in the methods and materials to be used and have been qualified under the provisions of AWS D10.9 by an independent approved testing agency not more than 6 months prior to commencing WORK on the pipeline. Machines and electrodes similar to those used in the WORK shall be used in qualification tests.

1.06 FACTORY TESTING

A. Product Testing: Products shall be tested at the factory for compliance with the indicated requirements.

B. Witnesses: The OWNER reserve the right to witness factory tests.

1.07 MANUFACTURER'S SERVICE REPRESENTATIVE

A. Where the assistance of a Manufacturer's service representative is advisable, to obtain perfect pipe joints, supports, or special connections, the CONTRACTOR shall furnish such assistance at no additional cost to the OWNER.

1.08 CLEANUP

A. After completion of the WORK, all remaining pipe cuttings, joining and wrapping materials, and other scattered debris, shall be removed from the site. The entire piping system shall be handed over in a clean and functional condition.

## PART 2 – PRODUCTS

2.01 GENERAL

A. All pipes, fittings, and appurtenances shall be furnished in accordance with the requirements of the applicable Sections of Divisions 2 and 15 and as specified herein. All seamless, welded and cast elbows shall be long radius tyle unless otherwise specified in drawings. All fabricated elbows dimensions shall comply with Section 02612 requirements.

B. All pipes' layouts shown in the Contract Documents are diagrammatic, not for fabrication, the CONTRACTOR shall design/provided expansion/dismantling joint/ grooved couplings and flanges/ Van Stone flanges strategically placed to allow for easy installation/maintenance dismantling of pipe sections and associated valves and equipment. The Contractor shall design the pipes to compensate for thermal expansion/contraction due to service operating temperature and/or environment-induced heat. When possible, provide loops or change in direction. Where such design is not feasible, the Contractor shall provide axial restrained expansion/contraction joints. Proposed expansion/dismantling joints shall comply with Contract Document requirements and shall be approved by the OWNER/ENGINEER. See Section 15020 requirements.

C. Miscellaneous Small Pipes: Miscellaneous small pipes and fittings shall comply with Section 15000.

D. Pipe Supports: Pipes shall be properly supported in accordance with Section 15020.

E. Lining: All requirements pertaining to thickness, application, and curing of pipe lining are in accordance with the requirements in Division 02 of these Specifications, unless otherwise specified.

F. Coating: All requirements pertaining to thickness, application, and curing of pipe coating, shall be in compliance with Section 09800, type of coating shall be in compliance with Section 09800, Coating System Schedule.

G. Pressure Rating: Except as otherwise indicated, piping systems shall be designed for 150 percent of the maximum indicated pressure.

H. Grooved Piping Systems: Piping systems with grooved joints and fittings may be provided in lieu of screwed, flanged, welded, or mechanical joint systems for steel and ductile iron piping, subject to approval of the ENGINEER. (Applicable to all piping above ground within the property limits of treatment plants, pump stations, and similar installations). To assure uniform and compatible piping components, all grooved fittings, couplings, and valves shall be from the same Manufacturer.

I. Fasteners: All bolts dimensions shall comply with ASME B 18.2.1 and bolts' material (316 stainless steel) shall comply with ASTM F593G for sizes 1/4 to 5/8 inch, ASTM F593H for sizes 3/4 to 1 1/2 inch, ASTM A193 B8M class 1 for larger sizes; all nuts' dimensions shall comply with ASME B 18.2.2 and nuts' material (316 stainless steel) shall comply with ASTM F594G for sizes 1/4 to 5/8 inch, ASTM F594H for sizes 3/4 to 1 1/2 inch, ASTM A194 8M for larger sizes; all washers shall comply with ASME B 18.22.1 and washer material shall be 316 stainless steel On flange connections bolts shall be of such length that after installation, bolts will project 1/8 to 3/8 inch beyond the fact of the nut. No "all-thread" studs on flange connection will be allowed.

2.02 PIPE FLANGES

A. Flanges:

1. Steel pipe flanges shall conform to ASME B16.5 Class 150 and/or AWWA C207 Class B or Class D or Class E or Class F for max. working pressure as specified in the table below. Flanges shall be attached to the pipe in accordance with AWWA C207.

| | Pipe Size (inch) | Max. Working Pressure (PSIG) at Ambient Temperature |
|---|---|---|
| ASME B16.5 Class 150 | 1/4 - 24 | 300 |
| ASME B16.5 Class 300 | 1/4 - 24 | 750 |
| ASME B 16.5 Class 400 | 1/4 - 24 | 1000 |
| AWWA C207 Class B | 4 - 144 | 86 |
| AWWA C207 Class D | 4 - 12 | 175 |
| | 14 - 144 | 150 |
| AWWA C207 Class E | 4 - 144 | 275 |
| AAAW C207 Class F | 4 - 144 | 300 |

B. Blind Flanges: Blind flanges shall comply with AWWA C207/C228, or with the standards for miscellaneous small pipes. 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: See paragraph 2.01. J. of this section.

E. Flange Gaskets: Gaskets shall be full-face, 1/8 inch thick compressed sheets of aramid fiber base with binder suitable (be inert/resistant) for the fluid conveyed,, and nonstick coating, suitable for temperatures to 700 degrees F, a pH of one to eleven, and pressures to 1000 psig. Rubber gaskets suitable for the fluid conveyed may also be used with the OWNER/Engineer approval. Blind flanges shall have gaskets covering the entire inside face of the blind flange and shall be cemented to the blind flange. Ring gaskets shall not be permitted, unless otherwise indicated.

1. Gaskets for water/wastewater including raw sewer, sludge, centrate, food waste (fluid temperature ≤180°F) shall be aramid fiber with nitrile binder (Garlock style 3000), nitrile (NBR) rubber (Garlock style 9122), or equal.

2.03 MECHANICAL JOINT ANCHOR GLAND FOLLOWER

A. Ductile iron anchor type, wedge action, with break-off tightening bolts

B. Thrust rated to 250 psi minimum

C. Rated operating deflection not less than:

1. 3 degrees for sizes through 12 inches

D. UL and FM approved.

2.04 GROOVED PIPING SYSTEM

A. General: Grooved mechanical pipe couplings, fittings, valves, and other grooved components shall be provided as an option to welding, threading or flanged methods, where shown or as approved by the ENGINEER. All grooved components shall be of one Manufacturer and conform to local code. Grooving tools shall be of the same Manufacturer as the grooved components. Grooved product Manufacturer to be ISO-9001 certified. Grooved couplings shall meet the requirements of ASTM F1476.

B. IPS System

1. Pipe/Grooved (Standard/Light wall): Carbon Steel, ASTM A53B/A106B - Roll or cut grooved-ends as appropriate to pipe material, wall thickness, pressures, size, and method of joining. Pipe ends to be grooved in compliance with AWWA C606.

2. Grooved Couplings: Couplings shall be fusion bonded epoxy coated cast of ductile iron conforming to ASTM A395, grade 65-45-15, and/or ASTM A536, Grade 65-45- 12

   a. Mechanical Couplings through 12" (DN300): Mechanical couplings shall consist of two housing segments, pressure responsive elastomer gasket, grade suited to the intended service.

3. Gaskets: Gaskets shall conform to ASTM D2000.

   a. Water and Oil Free Air Service: Grade "E" EPDM compound, green color coded. Operating temperature range -30 degrees F to +230 degrees F. Note: Air systems without hydrocarbons. Grade "L" Silicone compound, red color coded, for dry air service up to +350 degrees F.

   b. Oil and Air Service with Oil Vapors: Grade "T" Nitrile compound, orange color coded, operating temperature range 20 degrees F to +180 degrees F. Grade "O" Fluoroelastomer compound, blue color coded, for operating temperatures above +180 degrees F up to +300 degrees F.

   c. Vacuum, Dry Freezer, Slurry Systems: Grade "E", "L" or "T" FlushSeal® gaskets. Vacuum service may also use standard gaskets with internal metal liner.

   d. Chemical Service: Refer to latest published Manufacturer Gasket Selection Guide for gasket type recommendations on various chemical services.

4. Fittings: Shall be cast of ductile iron conforming to ASTM A395, grade 65-45-15, and ASTM A536, Grade 65-45-12, wrought steel conforming to ASTM A234, Grade WPB 0.375" wall (9,53 mm wall), or factory fabricated from Std, Wt. C.S. pipe conforming to ASTM A53, Type F, E or S, Grade B.

C. AWWA Grooved Piping System

1 Pipe Materials: Grooved end cast or ductile iron pipe shall be grooved in accordance with AWWA Standard C606. Rigid radius groove dimensions shall be utilized where flexibility is neither required nor desired. Flexible grooves shall be provided as necessary for settlement or expansion as determined and approved by the ENGINEER.

2 AWWA Mechanical Couplings: Mechanical couplings shall be of ductile iron conforming to ASTM395, Grade 65-45-15 and/or ASTM A536, Grade 65-45-12, fusion bonded epoxy coated (unless specified otherwise) with a FlushSeal® synthetic rubber gasket.

3 Gaskets: Gaskets shall be FlushSeal® design molded of synthetic rubber specially compounded to conform to ductile pipe surfaces with a short center leg which shall bridge the pipe ends offering an initial seal on the leading edge of the pipe ends. Elastomers shall have properties as designated in ASTM D2000. Reference shall always be made to the latest published Selection Guide for

Victaulic gaskets for proper gasket selection for the intended service.

a. Water and Oil Free Air Service: Grade “M” halogenated butyl, with brown color code, within specified temperature range. Not recommended for petroleum services.

b. Oil and Air Service Service/Ductile Iron Pipe: Grade “S” nitrile gasket, with red color code, operating temperature range –20 degrees F to +180 degrees F. Not for use with hot dry air over +140 degrees F and water over +150 degrees F.

c. Lubricants: Lubricate gaskets in accordance with the Manufacturer’s recommendations with lubricant supplied by the coupling Manufacturer.

4. Fittings: Fittings shall be ductile iron conforming to ASTM A395, Grade 65-45-15 and/or ASTM A536, Grade 65-45-12, or cast iron, ASTM A48, Class 30-A, conforming to the requirements of AWWA C110/A21.10 or AWWA C153/A21.53 for center to end dimensions and AWWA C153 or AWWA C110 for wall thickness and AWWA C606 rigid radius grooving dimensions for end preparation

D. Fasteners: See paragraph 2.01. I. of this section

E. Coating: All grooved couplings shall be factory fusion bonded epoxy coated in compliance with AWWA C 213 and Section 09800, system 106, unless otherwise specified on the contract drawings.

2.05 SLEEVE TYPE COUPLINGS

A. Construction: Sleeve-type couplings shall be of steel or stainless steel construction, (as indicated in the drawings, where coupling material of construction is not indicated in the drawings the Contractor shall provide couplings as shown in the table below) without pipe stop, and shall be sized to fit the pipe and fittings indicated.

| | | | |
|---|---|---|---|
| Sleeve Type Coupling Material of Construction | Carbon Steel, Fusion Bonded Epoxy Coated | 304 Stainless Steel | 316 Stainless Steel |
| Connecting Pipes Material of Construction | Carbon Steel, Ductile Iron, Asbestos Cement, PVC, CPVC, HDPE, Copper | 304 Stainless Steel | 316 Stainless Steel |

B. The middle ring thickness shall be at minimum equal with the connecting pipes thickness and shall be 7 inches long for sizes up to 30 inch and 10 inch long for sizes greater than 30 inch for standard steel couplings, and 16 inches long for long-sleeve 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.

C. Pipe Preparation: Plain ends for use with couplings shall be smooth and round for a distance of 12 inches from the ends of the pipe, with outside diameter not more than 1/64 inch smaller than the nominal outside diameter of the pipe. The middle ring shall be tested by cold-expanding a minimum of one percent beyond the yield point, to proof-test the weld to the strength of the parent metal. The weld of the middle ring shall be subjected to air test for porosity.

D. Gaskets: 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.

| Service | Sewage/Wastewater, Operating Temperature ≤ 180°F | Water/Air, Operating Temperature > 180°F | Chemical |
|---|---|---|---|
| Gasket Material | Buna-N, Grade 60 | EPDM | Viton |

E. The gaskets shall be resist deterioration caused by impurities normally found in water or wastewater. 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.

F. Insulating Couplings: Where insulating couplings are indicated, both ends of the coupling shall have a wedge-shaped gasket which assembles over a rubber sleeve of an insulating compound in order to insulate coupling metal parts from the pipe.

G. Restrained Joints:

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

2 Restraint glands shall be of ductile iron conforming to ASTM A536. Dimensions of the glands shall be compatible with standard mechanical joint bell and tee head bolts conforming to AWWA C111 and C153, respectively.

H. Fasteners: See paragraph 2.01. I. of this section.

I. Coating: Sleeve-type couplings shall be factory fusion bonded epoxy-coated in compliance with Section 09800, system 106 & AWWA C213 most stringent requirements.

2.06 EXPANSION JOINTS

A. Linear Expansion Only: Use expansion loops, bellows-type expansion joints, or sliding type expansion joints of ductile iron, stainless steel, monel, or rubber. 316L stainless steel liners shall be provided for digester gas applications.

B. Linear, Angular, and Lateral Movement: Use flexible expansion joints consisting of expansion sleeve and ball-and-socket joints in a single unit. Each unit shall be capable of minimum 15 degrees angular motion in any direction, and the expansion sleeve shall be capable of minimum 4 inches of linear travel. Joints shall be suitable for the pressure and temperature application and be ductile iron conforming to AWWA C153. All surfaces containing pressure and sealing surfaces shall be coated with minimum 15 mils of fusion bonded epoxy conforming to AWWA C213.

C. Fasteners: See paragraph 2.01. I. of this section.

2.09 OUTLET/TAPPING SADDLES

A. Materials:

1 Straps: Alloy steel with 3/4-inch threaded ends.

2 Seal: O-Ring SBR rubber gasket.

3 Compatible with ductile iron pipe.

B. Connection: AWWA C110/A21.10 flange or Mechanical joint outlet as shown.

C. Pressure Rating: Capable of withstanding 250 psi internal pressure without leakage over stressing.

2.10 PIPE THREADS

A. Pipe threads shall comply with ASTM B1.20.

2.11 PIPE SLEEVES

A. Where specified or as indicated on the contract drawings, pipe sleeves shall be provided for piping passing through concrete or masonry walls. Pipe sleeves shall be fabricated of 316(L) stainless steel Sch. 40 or Sch Std.

B. Modular Mechanical Seal:

1. Type: Interconnected synthetic rubber links shaped and sized to continuously fill annular space between pipe and wall sleeve opening.

2. Fabrication:

a. Assemble interconnected rubber links with ASTM A276, Type 316 stainless steel bolts and nuts.

b. Pressure plates shall be reinforced nylon polymer.

3. Size: According to manufacturer's instructions for size of pipes shown to provide a watertight seal between pipe and wall sleeve opening and to withstand a hydrostatic head of 40 feet of water.

2.12 EQUIPMENT CONNECTION FITTINGS

A. Equipment connection fittings shall provide both lateral and angular misalignment adjustment between equipment connection flanges and the connection to field piping systems by providing individually adjustable flexible joints at each connection. In addition, equipment connection fittings shall provide full pressure thrust restraint between the field piping connection and equipment connection flanges.

B. Equipment connection fittings shall consist of two flanged coupling adapters, a plain end section of pipe and thrust restraint rods and associated fittings designed to transmit thrust without transmitting shear to the thrust restraint rods and without compromising provisions for accommodating angular and parallel misalignment. Materials and features shall conform to the requirements established in this paragraph. Standard "dismantling joints" incorporate only one flanged coupling adapter and are not acceptable substitutes. Equipment connection fittings shall be Romac ECF Series, or Baker Coupling Company, Los Angeles or equal, modified as specified to provide the required features.

C. Equipment connection fittings shall each consist of a single sleeve of plain end piping conforming to the requirements of the specified piping system of sufficient length to span the gap between the connection at the equipment and the connection at the field

piping with gasketed flange adapters at each end. Thrust restraint shall be provided by means of all threaded rod spanning between flanges and male rod nuts and female washers that are rounded to provide a ball-joint type self-aligning feature. All threaded restraint rod shall project through flange and mating flange coupling adapter bolt holes or through holes in restraint lug plates that extend above the flanges and are secured to the flanges with a minimum of two flange bolts. Where all threaded rods project through flange bolt holes, ball joint type nut and washer combinations and lock washers shall be provided at each face, each end. Where restraint lug plates are employed, ball joint type nuts and washers shall be provided only on the outside faces of the plates and the nuts shall have a self locking feature that prevents nut movement due to vibration or other operational or environmental causes. Double nutting with non-locking nuts shall not be an acceptable method of providing the self locking feature. Thrust rod diameter and material shall be selected to provide sufficient freedom of movement through all bolt holes to allow unrestricted maximum adjustment of equipment connection fittings to accommodate piping misalignment without transmitting any shear to the thrust rods and to permit full

development of thrust restraint at all thrust rod tension take-ups. Design of equipment connection fittings shall conform to AWWA C219.

D. Thrust rods, restraint lug plates, nuts, washers, and lock washers shall be Type 316 stainless steel, all selected to develop full rated piping system pressure thrust forces. Equipment connection fittings for pump applications shall have thrust rod number and diameter selected such that thrust rod stretch under piping system operating pressure does not exceed 2 mils. Calculations shall be submitted. Dry film molybdenum di-sulfide anti-galling compound shall be factory applied to ends of thrust rods, covering all threads subject to nut travel and tightening. Gaskets shall be as specified in paragraph 15085-
2.03. Flange gaskets shall be full face type. Follower gaskets shall be compression wedge type.

E. Sleeves shall be carbon steel or as specified for the specific piping system. Pressure rating of flange adapters shall equal or exceed the pressure rating of mating flanges. All metal portions of equipment connection fittings, except for 316 stainless steel components, shall be coated and lined with fusion bonded epoxy conforming to AWWA C550 and NSF 61.

2.13 ACCEPTABLE MANUFACTURERS, or equal

4. FLANGE GASKETS

   a. John Crane

   b. Garlock

5. STEEL/DUCTILE IRON & PVC PIPE GROOVED COUPLINGS

   a. Anvil

   b. Grinnell

   c. Spears

   d. Victaulic

6. SLEEVE-TYPE COUPLINGS
    a. Baker Coupling Co.
    b. EBAA Iron, Inc.
    c. Ford Meter Box Co., Inc.
    d. Romac Industries, Inc.
    e. Smith-Blair
7. BOLTED, SPLIT SLEEVE MECHANICAL COUPLING
    a. Straub-Coupling
    b. Teekay-Coupling
    c. Victaulic-Depend-O-Lok Coupling
8. FLEXIBLE CONNECTORS/EXPANSION JOINTS
    a. General Rubber
    b. Holz Rubber
    c. Mercer Rubber
    d. Proco
    e. Spears
9. MODULAR MECHANICAL SEAL
    a. Thunderline Corp., Link-Seal Division
    b. Or approved equal
10. OUTLETS/TAPPING SADDLES
    a. American Ductile Iron; Outlet/Tapping Saddle.
    b. Or approved equal.

## PART 3 – EXECUTION

3.01 GENERAL

A. General: Miscellaneous piping shall be installed in accordance with the manufacturer's installation instructions.

B. All piping and appurtenances shall be installed in accordance with the requirements of all applicable and related Divisions of these specifications.

C. Small Steel Pipe: Buried galvanized or black steel pipe shall be coated in accordance with Section 09800 or with an extruded high density polyethylene coating with minimum thickness of 35 mils.

D. Any deviation from lines, grades, or elevations shown on the Contract Drawings must be approved in writing by the ENGINEER.

E. Where core drilling is required for pipes passing through existing concrete, all core drilling locations shall be determined by radiograph of the concrete construction to avoid damage to embedded raceways, conduits, and reinforcing steel.

F. Prior to any core drilling of existing concrete, the CONTRACTOR shall obtain approval of all locations, in writing, from the ENGINEER.

3.02 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. All pipe, fittings, and related appurtenances shall be handled in a manner that will insure installation in sound, undamaged, like new condition.

2. Pipe and fittings with cement mortar or epoxy lining or special coatings shall be handled with rubber covered hooks, or other type of equipment to prevent damage. Bare fork lift arms, hooks, cables, or chains shall not be used for handling pipe with special lining or coating.

3. Pipe and fittings in which the lining or coating has been damaged shall be immediately removed from the job site and replaced.

a. In instances where damage is minimal, the CONTRACTOR may, with approval from the ENGINEER, have the damage repaired by a qualified representative of the pipe Manufacturer or fabricator.

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. All pipes shall be stored off the ground at all times, even during installation.

2. Store coated pipe on "extra wide" skids to protect the coating.

3. PVC pipe shall be stored out of direct sunlight to prevent damage and premature deterioration.

4. Pipe with special coatings shall be stored out of direct sunlight to prevent damage to coating.

5. Copper and galvanized pipe shall be covered or stored indoors.

6. Threaded ends of pipe shall be covered to protect the threads.

7. Flanged pipe shall have the flange faces protected.

8. Pipe that has become damaged or unidentifiable due to improper storage shall be rejected and immediately removed from the job site.

3.03 CUTTING PIPE

A. Cutting of pipe shall be done in a neat manner, without damage to the pipe, pipe lining, or pipe coating. Cuts shall be smooth, straight, and at right angles to the pipe axis. Pipe shall be cut using a portable guillotine saw, abrasive wheel "cut-off" saw, or milling

cutter only. Use of gas torches for cutting pipe will not be permitted.

1. Where it becomes necessary to cut steel pipe larger than 6" in diameter, the CONTRACTOR may, with written permission of the ENGINEER, use gas torch to cut the pipe.

2. Only a qualified pipe fitter or boiler-maker shall make any approved torch cuts of pipe.

B. Field cut holes for saddles shall be made utilizing a hole saw or other mechanical means. Gas torch cutting of holes will not be permitted.

C. After cutting, the end of the pipe shall be dressed with a file or power grinder to remove all internal and external burrs and sharp edges.

D. All damaged or removed lining or coating shall be repaired by a qualified representative of the pipe Manufacturer or fabricator.

3.04 CLEANING

A. The interior of all pipe and fittings shall be thoroughly cleaned of all foreign matter prior to installation, and shall be kept clean until the WORK has been accepted.

B. Before jointing, all joint contact surfaces shall be wire brushed, wiped clean, and kept clean until the jointing is completed.

C. Flange faces shall be wire brushed and cleaned to remove all oil, grease, loose primer, mill scale, or any other foreign matter which could affect the proper seating of the gasket.

D. Prior to testing, pipe shall be thoroughly cleaned and/or purged in accordance with these specifications.

3.05 PIPE SLEEVES

A. Unless otherwise specified or indicated on the contract drawings, pipes passing through concrete or masonry shall be installed through sleeves installed before concrete is placed or masonry is laid.

B. The CONTRACTOR shall be responsible for coordinating the installation of sleeves for all piping.

C. Pipe sleeves installed through floors provided with a special finish, such as ceramic tile, resilient tile, or seamless flooring, shall be flush with the finished floor surface, and shall be provided with nickel or chromium plated floor plates.

D. In all other locations where pipes pass through floors, pipe sleeves shall project 2" above the finished floor surface, with the projection uniform throughout each floor area.

E. In the case of insulated pipes, the insulation shall be carried through the pipe sleeve.

F. Where it is indicated on the contract drawings to provide for future installation of pipe, sleeves shall be provided, and the ends sealed with an approved plastic cap/plug.

G. For piping passing through existing concrete or masonry floors or walls, core drilled holes will be accepted when approved in writing by the ENGINEER.

1. Any reinforcement which is cut while drilling holes in existing concrete or masonry must be coated with an approved epoxy coating prior to pipe being installed.

H. All pipes passing through interior concrete or masonry walls, or slabs shall be caulked on both sides with approved caulking.

1. Caulking in fire-rated walls must be approved fire caulking of a color approved by the ENGINEER.

I. All pipes passing through walls or slabs which have one side exposed to the outside, have one side in contact with earth, or have one side exposed to a water bearing or water

conveying structure, shall be sealed watertight using modular casing seals ("link-seals") and be caulked on both sides of the wall or slab.

3.06 PIPE INSTALLATION

3.07 INSTALLATION—EXPOSED PIPING

A. Piping Runs:

1. Parallel to building or column lines and perpendicular to floor, unless shown otherwise.

2. Piping upstream and downstream of flow measuring devices shall provide straight lengths as required for accurate flow measurement.

B. Supports: As specified in Section 15020, Piping Support Systems.

C. Group piping wherever practical at common elevations; install to conserve building space and not interfere with use of space and other work.

D. Unions or Flanges: Provide at each piping connection to equipment or instrumentation on equipment side of each block valve to facilitate installation and removal.

E. Install piping so that no load or movement in excess of that stipulated by equipment manufacturer will be imposed upon equipment connection; install to allow for contraction and expansion without stressing pipe, joints, or connected equipment.

F. Piping clearance, unless otherwise shown:

1. Over Walkway and Stairs: Minimum of 7 feet 6 inches, measured from walking surface or stair tread to lowest extremity of piping system including flanges, valve bodies or mechanisms, insulation, or hanger/support systems.

2. Between Equipment or Equipment Piping and Adjacent Piping:

a. Minimum 3 feet, measured from equipment extremity and extremity of piping system including flanges, valve bodies or mechanisms, insulation, or hanger/support systems.

3. From Adjacent Work: Minimum 1 inch(es) from nearest extremity of completed piping system including flanges, valve bodies or mechanisms, insulation, or hanger/support systems.

4. Do not route piping in front of or to interfere with access ways, ladders, stairs,

platforms, walkways, openings, doors, or windows.

5. Headroom in front of openings, doors, and windows shall not be less than the top of the opening.

6. Do not install piping containing liquids or liquid vapors in transformer vaults or electrical equipment rooms.

7. Do not route piping over, around, in front of, in back of, or below electrical equipment including controls, panels, switches, terminals, boxes, or other similar electrical work.

G. All piping shall be installed as specified, as indicated on the contract drawings and in a manner acceptable to the Inspector.

H. The CONTRACTOR shall provide pipe cut from measurements made at the job site, and not from the contract drawings.

I. Provisions shall be made in laying out all piping throughout to provide for expansion and contraction.

J. Expansion joints or fittings shall be provided on all piping as specified or otherwise as indicated on the contract drawings.

K. Piping shall not obstruct openings or passageways.

L. Piping shall be held free of any contact with building construction so as not to transmit noise.

M. All water, gas, and air supply piping at each fixture, or unit of equipment, shall be provided with an approved shutoff valve and union - WHETHER INDICATED ON THE CONTRACT DRAWINGS OR NOT - which will permit isolation and disconnection of each item without disturbing the rest of the system.

N. A union shall be provided within 2 feet of every threaded-end valve installed, unless there are other acceptable connections which will permit easy removal of the valve.

O. Unions shall also be provided in piping at locations adjacent to all devices or equipment which may require removal in the future, and at all locations specified or indicated on the contract drawings.

P. Pressure piping shall not be installed above electrical panels or cabinets.

Q. Water supply piping within structures shall be arranged, and facilities provided, for complete drainage.

R. All piping serving metering equipment shall be uniformly graded so that air traps are eliminated and complete venting is provided.

S. Taps for pressure gage connections on the suction and discharge sides of pumping units shall be provided with a nipple and an approved shutoff valve.

1. Drilling and tapping of pipe walls for installation of pressure gages or switches will not be permitted.

2. Taps shall be provided by factory threaded taps or a factory welded boss.

T. In all piping, insulating fittings shall be provided to prevent contact of dissimilar metals wherever copper pipe, tubing, or fittings are connected to iron or steel pipe or fittings.

3.08 PIPE JOINTS

A. Pipe joints shall be provided as specified or as indicated on the contract drawings.

B. Flanged Joints:

1. Flange bolts shall be tightened sufficiently to slightly compress the gasket and effect a seal, but not so tight as to fracture or distort the flange.

2. A plain washer shall be installed under the head and nut of bolts connecting plastic pipe flanges.

3. Anti-seize thread lubricant shall be applied to the threaded portion of all stainless steel bolts during assembly.

4. Connecting flanges shall have similar facings (i.e., flat or raised face).

C. Welded Joints:

1. Welding shall conform to these specifications and recommendations contained in the applicable "Code for Pressure Piping".

D. Grooved Couplings:

1. Grooves cut in steel pipe shall conform to AWWA C606.

3.10 ALIGNMENT

A. All piping shall be installed to lines, grades, and elevations indicated on the contract drawings.

B. All deviations from the line, grade, or elevation as indicated on the contract drawings shall be approved in writing by the ENGINEER.

C. The CONTRACTOR is responsible for coordinating all other WORK to insure that piping is installed as indicated on the contract drawings.

D. Piping intended to be straight shall be straight. Deflections from a straight line or grade shall be approved in writing by the ENGINEER and shall be accomplished by the use of approved fittings.

E. If laser equipment is used for piping installation, periodic elevation measurements shall be made with survey equipment to verify the accuracy of grade or elevation. If such measurements indicate thermal deflection of the laser due to differences between ground or atmospheric temperature and the air temperature within the pipe, steps shall be taken to prevent further thermal deflections.

3.11 COATING INSPECTION

A. All shop-applied coatings on pipe or fittings shall be inspected for holidays and other defects after receipt of the pipe or fittings on the job site, and again after installation if it is determined by the Inspector that the coating may have been damaged.

1. Inspection shall be made using an electrical holiday detector. The detector used, and inspection procedures, shall be in conformance with the requirements of Section 4.4 of AWWA C209.

B. All field-applied tape wrap on pipe, pipe joints, fittings and valves shall be inspected for holidays and other defects following completion of wrapping and again following installation if it is determined by the Inspector that the wrapping may have been damaged.

C. Holidays and other defects detected during inspection shall be repaired in accordance with the recommendations of the coating or tape wrap Manufacturer, as applicable.

1. At the discretion of the Inspector, major areas of defects in pipe coatings may result in rejection of the pipe and its immediate removal from the job-site.

2. At the discretion of the Inspector, major areas of defects in pipe coatings may be repaired on site by a qualified representative of the Manufacturer or supplier.

## 3.12 PIPE IDENTIFICATION

A. Pipe Labels:

1. Locate at connections to equipment, valves, or branching fittings at wall boundaries.

2. At intervals along piping not greater than 18 feet on center with at least one label applied to each exposed horizontal and vertical run of pipe.

3. At exposed piping not normally in view, such as above suspended ceilings and in closets and cabinets.

4. Supplementary Labels: Provide to Owner those listed on Piping Schedule that do not receive arrows.

5. Apply to pipe after painting in vicinity is complete, or as approved by Engineer.

6. Install in accordance with manufacturer's instructions.

7. Sanp-on, reversible type with lettering and directional arrows, sized for outside diameter of pipe and insulation.

8. Provided with ties or straps for pipes of 6 inches and over diameter.

9. Designed to firmly grip pipe so labels remain fixed in vertical pipe runs.

10. Materials: Heavy-duty vinyl or polyester, suitable for exterior use, long lasting, and resistance to moisture, grease, and oils.

11. Letters and arrows: Black on OSHA safety yellow background.

## 3.13 AS-BUILT DRAWINGS

A. The CONTRACTOR shall provide surveyed "as-built" drawings for all piping installed.

B. "As-built" drawings shall be provided for buried pipe installations as well as pipe

installed in tunnels, galleries, inside buildings, and above-grade outdoor.

C. For buried pipe installations, surveyed "as-builts" shall include the elevation and location of pipe, valves, and all other pertinent information of the installation, as well as all existing piping or structures in the immediate area.

D. For buried installations, survey shall be taken of location and elevations of all piping installed prior to any encasement or backfill.

E. For buried, encased piping, survey shall be taken both prior to encasement and after the encasement is in place.

3.14 TESTING & DISINFECTION

A. Testing of all pipes shall be done in conformance with Section 02762.

**– END OF SECTION 15000 –**

# SECTION 15020 - PIPING SUPPORT SYSTEMS

## PART 1 GENERAL

### 1.01 REFERENCES

A. The following is a list of standards which may be referenced in this section:

1. American Society of Civil Engineers (ASCE): 7, Minimum Design Loads for Buildings and Other Structures.
2. ASTM International (ASTM):
   a. A123/A123M, Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
   b. A653/A653M, Standard Specification for Steel Sheet, Zinc- Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
   c. E84, Standard Test Method for Surface Burning Characteristics of Building Materials.
3. International Building Code (IBC).
4. International Code Council (ICC):
5. International Mechanical Code (IMC).
6. Manufacturers' Standardization Society (MSS):
   a. SP 58, Pipe Hangers and Supports—Materials, Design and Manufacture.
   b. SP 127, Bracing for Piping Systems Seismic-Wind-Dynamic Design, Selection, and Application.

### 1.02 SUBMITTALS

A. Action Submittals:

1. Catalog information and drawings of piping support system, locating each support, sway brace, seismic brace, hanger, guide, component, and anchor for all piping. Identify support, hanger, guide, and anchor type by catalog number and Shop Drawing detail number.
2. Revisions to support systems resulting from changes in related piping system layout or addition of flexible joints.

3. Seismic anchorage and bracing drawings and cut sheets, as required by Sections 15000 Piping – General and Components.

1.03 QUALIFICATIONS

A. Shop Drawings prepared and sealed by a Registered Professional Engineer in the State of California.

## PART 2 PRODUCTS

2.01 GENERAL

A. When specified items are not available, fabricate pipe supports of correct material and to general configuration indicated.

B. Special support and hanger details may be required for cases where standard catalog supports are not applicable.

C. Materials: In accordance with Table 1 and Table 2, attached as Supplements at end of section.

D. Noise Reduction: To reduce transmission of noise in piping systems, all pipes shall be wrapped with a 2-inch-wide strip of rubber fabric at each pipe support, bracket, clip, and hanger.

2.02 HANGERS

A. Clevis: MSS SP 58, Type 1:

1. Anvil; Figure 260 for steel pipe
2. B-Line; Figure B3100
3. Or approved equal.

B. Adjustable Swivel Split-Ring Pipe Clamp: MSS SP 58, Type 6:

1. Anvil; Figure 104, sizes 3/4 inch through 8 inches.
2. B-Line; Figure B3171, sizes 3/4 inch through 8 inches.
3. Or approved equal.

2.03 WALL BRACKETS, SUPPORTS, AND GUIDES

A. Welded Steel Wall Bracket: MSS SP 58, Type 33 (heavy-duty):

1. Anvil; Figure 199, 3,000-pound rating.
2. B-Line; Figure B3067, 3,000-pound rating.
3. Or approved equal.

B. Adjustable “J” hanger MSS SP 58, Type 5:

1. Anvil; Figure 67, sizes 1/2 inch through 8 inches.

2. B-Line; Figure B3690, sizes 1/2 inch through 8 inches.
3. Or approved equal.

C. Offset Pipe Clamp:

1. Anvil; Figure 103, sizes 3/4 inch through 8 inches.
2. Or approved equal.

D. Channel Type:

1. Unistrut.
2. Anvil; Power-Strut.
3. B-Line; Strut System.
4. Aickinstrut (FRP).
5. Or approved equal.

## 2.04 PIPE SADDLES

A. Provide 90-degree to 120-degree pipe saddle for pipe 6 inches and larger with baseplates drilled for anchors bolts.

1. In accordance with Standard Details.
2. Sizes 20 inches though 60 inches, Piping Technology & Products, Inc.; Figure 2000.

B. Saddle Supports, Pedestal Type:

1. Minimum standard weight pipe stanchion, saddle, and anchoring flange.
2. Nonadjustable Saddle: MSS SP, Type 37 with U-bolt.
   a. Anvil; Figure 259, sizes 4 inches through 36 inches with Figure 63C base.
   b. B-Line; Figure B3095, sizes 1 inch through 36 inches with Figure B3088S base.
   c. Or approved equal.
3. Adjustable Saddle: MSS SP 58, Type 38 without clamp.
   a. Anvil; Figure 264, sizes 2-1/2 inches through 36 inches with Figure 62C base.
   b. B-Line; Figure B3092, sizes 3/4 inch through 36 inches with Figure B3088S base.
   c. Or approved equal.

## 2.05 CHANNEL TYPE SUPPORT SYSTEMS

A. Channel Size: 12-gauge, 1-5/8-inch wide minimum steel.

B. Fasteners: Encapsulated steel fasteners.

C. Manufacturers and Products:

1. Unistrut.
2. Anvil Strut.
3. Or approved equal.

D. Clevis Hangers:

1. Factor of Safety: 5 to 1.
    a. Anvil, Fig 260
    b. Or approved equal.

2.06 PIPE CLAMPS

A. Riser Clamp: MSS SP 58, Type 8.

1. Anvil; Figure 261, sizes 3/4 inch through 24 inches.
2. B-Line; Figure B3373, sizes 1/2 inch through 30 inches.
3. Or approved equal.

2.07 ELBOW AND FLANGE SUPPORTS

A. Elbow with Adjustable Stanchion: Sizes 2 inches through 18 inches, Anvil; Figure 62C base.

B. Elbow with Nonadjustable Stanchion: Sizes 2-1/2 inches through 42 inches, Anvil; Figure 63A or Figure 63B base.

C. Flange Support with Adjustable Base: Sizes 2 inches through 24 inches, Standon; Model S89.

D. Or approved equal.

2.08 INTERMEDIATE PIPE GUIDES

A. Type: Hold down pipe guide.

1. Manufacturer and Product:
    a. B-Line; Figure B3552, 1-1/2 inches through 30 inches.
    b. Or approved equal.

B. Type: U-bolts with double nuts to provide nominal 1/8-inch to 1/4-inch clearance around pipe; MSS SP 58, Type 24.

1. Anvil; Figure 137 and Figure 137S.
2. B-Line; Figure B3188 and Figure B3188NS.
3. Or approved equal.

2.10 PIPE ALIGNMENT GUIDES

A. Type: Spider.

B. Manufacturers and Products:

1. Anvil; Figure 255, sizes 1/2 inch through 24 inches.
2. B-Line; Figure B3281 through Figure B3287, sizes 1/2 inch through 24 inches.
3. Or approved equal.

## 2.11 PIPE ANCHORS

A. Type: Anchor chair with U-bolt strap.

B. Manufacturers and Products:

1. B-Line; Figure B3147A or Figure B3147B.
2. Or approved equal.

## 2.12 SEISMIC RESTRAINTS

A. Solid pipe bracing attachment to pipe clevis with clevis cross brace and angle rod reinforcement.

B. Manufacturers:

1. Mason Industries.
2. B-Line.
3. Anvil.
4. Or approved equal.

## 2.13 ACCESSORIES

A. Anchor Bolts:

1. Size and Material: Sized by Contractor for required loads, 1/2-inch minimum diameter, and as specified in Section 15020.

2. Bolt Length (Extension Above Top of Nut):
   a. Minimum Length: Flush with top of nut preferred. If not flush, shall be no more than one thread recessed below top of nut.
   b. Maximum Length: No more than a full nut depth above top of nut.

B. Dielectric Barriers:

1. Plastic coated hangers, isolation cushion, or tape.
2. Manufacturer and Products:

a. B-Line; B1999 Vibra Cushion.
b. B-Line; Iso Pipe, Isolation Tape.
c. Or approved equal.

C. Insulation Shields:

1. Type: Galvanized steel or stainless steel, MSS SP 58, Type 40.
2. Manufacturers and Products:
   a. Anvil; Figure 167, sizes 1/2 inch through 24 inches.
   b. B-Line; Figure B3151, sizes 1/2 inch through 24 inches.
   c. Or approved equal.

D. Welding Insulation Saddles:

1. Type: MSS SP 58, Type 39.
2. Manufacturers and Products:
   a. Anvil; Figure Series 160, sizes 1 inch through 36 inches.
   b. B-Line; Figure Series B3160, sizes 1/2 inch through 24 inches.
   c. Or approved equal.

E. Hanger Rods, Clevises, Nuts, Sockets, and Turnbuckles: In accordance with MSS SP 58.

F. Attachments:

1. I-Beam Clamp: Concentric loading type, MSS SP 58, Type 21, Type 28, Type 29, or Type 30, which engage both sides of flange.
2. Concrete Insert: MSS SP 58, Type 18, continuous channel insert with load rating not less than that of hanger rod it supports.
3. Welded Beam Attachment: MSS SP 58, Type 22.
   a. Anvil; Figure 66.
   b. B-Line; Figure B3083.
   c. Or approved equal.
4. Concrete Attachment Plates:
   a. Anvil; Figure 47, Figure 49, or Figure 52.
   b. B-Line; Figure B3084, Figure B3085, or Figure B3086.
   c. Or approved equal.

## PART 3 EXECUTION

### 3.01 INSTALLATION

A. General:

1. Contractor shall utilize ground penetrating radar to locate existing reinforcing and potential utility conflicts with Ground

Penetrating Radar or other method approved by Engineer prior to drilling. Coordinate with Engineer to adjust anchor locations where installation would result in hitting reinforcing.

2. Install support systems in accordance with MSS SP 58, unless shown otherwise.
3. Install pipe hanger rods plumb, within 4 degrees of vertical during shut down, start up or operations.
4. Support piping connections to equipment by pipe support and not by equipment.
5. Support large or heavy valves, fittings, and appurtenances independently of connected piping.
6. Support no pipe from pipe above it.
7. Support pipe at changes in direction or in elevation, adjacent to flexible joints and couplings, and where shown.
8. Do not use adhesive anchors for attachment of supports to ceiling or walls.
9. Do not install pipe supports and hangers in equipment access areas or bridge crane runs.
10. Brace hanging pipes against horizontal movement by both longitudinal and lateral sway bracing and to reduce movement after startup.
11. Install lateral supports for seismic loads at changes in direction.
12. Install pipe anchors where required to withstand expansion thrust loads and to direct and control thermal expansion.
13. Repair mounting surfaces to original condition after attachments are completed.

B. Standard Pipe Supports:

1. Horizontal Suspended Piping:
   a. Single Pipes: Clevis hangers or adjustable swivel split-ring.
   b. Grouped Pipes: Trapeze hanger system.
2. Horizontal Piping Supported from Walls:
   a. Single Pipes: Wall brackets, or attached to wall, or to wall mounted framing with anchors.
   b. Stacked Piping: Wall mounted framing system and “J” hangers acceptable for pipe smaller than 3-inch.
   c. Pipe clamp that resists axial movement of pipe through support is not acceptable. Use pipe rollers supported from wall bracket.
3. Horizontal Piping Supported from Floors:
   a. Saddle Supports:
      1) Pedestal Type, elbow and flange.
      2) Provide minimum 1-1/2-inch grout beneath baseplate.
   b. Floor Mounted Channel Supports:
      1) Use for pipe smaller than 3-inch running along floors and in trenches at pipe elevations lower than can be

accommodated using pedestal pipe supports.

2) Attach channel framing to floors with baseplate on minimum 1-1/2-inch nonshrink grout and with anchor bolts.

3) Attach pipe to channel with clips or pipe clamps.

c. Concrete Cradles: Use for pipe larger than 3 inches along floor and in trenches at pipe elevations lower than can be accommodated using stanchion type.

4. Insulated Pipe:
   a. Pipe hanger and support shall be on outside of insulation. Do not enclose within insulation.
   b. Provide precut 120-degree sections of rigid insulation (minimum length same as shield), shields and oversized hangers or insulated saddle system (ISS).
   c. Wall-mounted pipe clips not acceptable for insulated piping.
5. Vertical Pipe: Support with wall bracket and elbow support, or riser clamp on floor penetration.

C. Standard Attachments:

1. New Concrete Ceilings: Concrete inserts, concrete attachment plates, or concrete anchors as limited below:
   a. Single point attachment to ceiling allowed only for 3/4-inch rod and smaller (8 inches and smaller pipe).
   b. Where there is vibration or bending considerations, do not connect a single pipe support hanger rod directly to a drilled concrete anchor (single point attachment) regardless of size.

      1) These lines include air operated diagram pumps and other lines, if any, as identified below:

2. Existing Concrete Ceilings: Channel type support with minimum of two anchor points, concrete attachment plates or concrete anchors as limited below:
   a. Single point attachment to ceiling is allowed only for 3/4-inch rod and smaller (8 inches and smaller pipe).
   b. Where there is vibration or bending considerations do not connect a single pipe support hanger rod directly to a drilled concrete anchor (single point attachment) regardless of size.

      1) These lines include air operated diagram pumps and other lines, if any, as identified below:

3. Steel Beams: I-beam clamp or welded attachments.
4. Wooden Beams: Lag screws and angle clips to members not less than 2-1/2 inches thick.
5. Concrete Walls: Concrete inserts or brackets or clip angles with concrete anchors.

6. Concrete Beams: Concrete inserts, or if inserts are not used attach to vertical surface similar to concrete wall. Do not drill into beam bottom.

D. Saddles for Steel or Concrete Pipe: Provide 90-degree to 120-degree pipe saddle for pipe sizes 6 inches and larger when installed on top of steel or concrete beam or structure, pipe rack, trapeze, or where similar concentrated point supports would be encountered.

E. Intermediate and Pipe Alignment Guides:

1. Provide pipe alignment guides, or pipe supports that provide same function, at expansion joints and loops.
2. Guide pipe on each side of expansion joint or loop at four-pipe and 14-pipe diameters from each joint or loop.
3. Install intermediate guides on metal framing support systems not carrying pipe anchor or alignment guide.

F. Accessories:

1. Insulation Shield: Install on insulated piping with oversize rollers and supports.
2. Welding Insulation Saddle: Install on insulated steel pipe with oversize rollers and supports.
3. Dielectric Barrier:
    a. Provide between painted or galvanized carbon steel members and copper or stainless-steel pipe or between stainless steel supports and non-stainless steel ferrous metal piping.
    b. Install rubber wrap between submerged metal pipe and oversized clamps.

## 3.02 FIELD FINISHING

A. Paint atmospheric exposed surfaces hot-dip galvanized steel components as specified in Section 09800, Painting and Coating.

**END OF SECTION 15020**

# SECTION 15031 – STRAINERS

## PART 1 – GENERAL

1.01 WORK OF THIS SECTION

A. The WORK of this Section includes providing strainers as indicated, complete and operable.

1.02 REFERENCE CODES AND STANDARDS

A. Reference Specification, Codes and Standards shall be in compliance with Section 15000.

1.03 SUBMITTALS

A. Submittals shall comply with the requirements of Whitebook Section 3.8 and Section 15000. In addition, the following shall be submitted:

1. Manufacturer's product data including catalog cuts.

2. Shop drawings showing details and dimensions.

## PART 2 – PRODUCTS

2.01 GENERAL

A. General: Only products certified as complying with the indicated requirements shall be provided. Strainers shall be of the Y-pattern type with flush connections, have cast iron or bronze bodies, stainless steel or Monel screens, and screwed ends for sizes 3 inches and smaller and flanged ends for sizes greater than 3 inches. They shall be designed for not less than 250 psi working pressure in sizes 3 inches and smaller, and 125 psi working pressure in sizes over 3 inches.

B. Equipment Requirements: Unless otherwise indicated, the strainers shall be provided with the components as follows:

1. Air and Gas Strainers: Air and gas line strainers shall have a cast-iron body, with 40 mesh Monel screens packed with Everdur wool. Bronze bodies shall be provided with copper piping. Airline strainers shall be fitted with a brass blowoff cock.

2. Steam and Water Strainers: Steam strainers shall have carbon steel body; water strainers shall have cast iron, bronze, or stainless steel body. Bronze bodies shall be provided with copper piping. Strainers shall have 304 stainless steel screens and tapped and plugged blowoff connections. Screen perforations shall be 0.020 inch for steam service and 0.045 inch for water service.

3. Spare Parts: Two sets of O-rings, screens, gaskets, and all other applicable material, shall be furnished with each component, as applicable.

C. PVC & CPVC STRAINERS

1. Y-Strainers: Sediment strainers shall be Y-type constructed from PVC or CPVC,

O- rings shall be EPDM or Viton® Y-strainers shall have replaceable PVC, CPVC or type 316 stainless steel screens and O-ring sealed drain plugs with magnetic drain plug option. Threaded Y-Strainers shall have special reinforced (SR) threads.Y-strainers, sizes 1/2"- 2" shall be pressure rated for 150 psig, sizes 3" – 4" shall be rated for 90 psig for water at 73°F.

2. Basket Strainers: Thermoplastic Basket Strainers shall be fabricated from PVC or CPVC, O-rings shall be EPDM or Viton®. Strainer baskets shall be perforated PVC, CPVC, or type 316 stainless steel perforated or wire mesh screen. Standard strainer perforations shall be 1/8" or 3/32" with a minimum open area ratio of 6:1, or specified perforation/mesh opening. Basket strainer sizes 2" – 8" shall have quick release clamp retained bonnet, sizes 10" - 12" shall have bolt on bonnet. Basket strainers shall be furnished with pressure release valve and safety pressure gauge. Unit shall be equipped with O-ring sealed drain plug at lower end. Basket strainer sizes 2" - 8" shall be pressure rated at 150 psig, sizes 10" – 12" to 50 psig for water at 73° F.

2.02 HOSE BIBBS AND HOSE VALVES

A. Hose bibbs (HB) shall be 1 inch in diameter unless otherwise indicated for all connections using secondary effluent and 3/4 inch in diameter for all connections using potable water, and shall be of multi-turn type angle globe valve with manual handwheel consisting of brass or stainless steel body with female NPT threaded end connection. The valve shall be mounted so that the hose nipple is in the horizontal or 45 degrees slanting downward position. All hose bibbs shall be furnished with an isolation stainless steel ball valve (BV2) installed upstream of the hose bibb. All HBs on reclaimed water shall be color coded red and shall have a warning sign prohibiting drinking.

B. Valves and hose connections called out on the Drawings to be quick disconnects shall consist of cam and groove male with female NPT threaded connection. All hose bibbs connected to potable water supply shall be equipped with a vacuum breaker

2.02 ACCEPTABLE MANUFACTURERS, OR EQUAL

1. Armstrong
2. Asahi America
3. Crane Co
4. G F Plastic Systems, Inc
5. Spears
6. Sureflow Equipment, Inc.

**PART 3 – EXECUTION**

3.01 INSTALLATION

A. General: Strainers shall be installed in accordance with the Manufacturer's written installation instructions.

B. Unless otherwise indicated, strainers shall be provided ahead of any control valves,

regulators, steam and condensate traps, and where indicated, and they shall be preceded by shutoff valves.

**– END OF SECTION 15031 –**

# SECTION 15032 – PRESSURE TRANSMITTERS AND GAUGES

## PART 1 – GENERAL

1.01 WORK OF THIS SECTION

A. The WORK of this Section includes providing strainers as indicated, complete and operable.

1.02 REFERENCE CODES AND STANDARDS

A. Reference Specification, Codes and Standards shall be in compliance with Section 15000.

1.03 SUBMITTALS

A. Submittals shall comply with the requirements of Whitebook Section 3.8 and Section 15000. In addition, the following shall be submitted:

1. Manufacturer's product data including catalog cuts.

2. Shop drawings showing details and dimensions.

## PART 2 – PRODUCTS

2.01 GENERAL

A. Pressure gauges

1. General: Only products certified as complying with the indicated requirements shall be provided. Pressure gauges shall match the existing type and function. They shall be designed for not less than 250 psi working pressure.

B. Pressure transmitters

1. General: Only products certified as complying with the indicated requirements shall be provided. Pressure gauges shall match the existing type and function. They shall be designed for not less than 250 psi working pressure.

C. Spare Parts: Two sets of all available spare parts shall be provided for both pressure gauges and transmitters.

2.02 ACCEPTABLE MANUFACTURERS, OR EQUAL

1. Pressure gauges:

a. Ashcroft

b. Or approved equal

2. Pressure gauges:

a. Endress + Hauser

b. Rosemount

c. Or approved equal

## PART 3 – EXECUTION

3.01 INSTALLATION

A. General: Pressure gauges and transmitters shall be installed in accordance with the Manufacturer's written installation instructions, as well as in accordance with direction provided by Plant staff.

**– END OF SECTION 15032 –**

# SECTION 15100 – VALVES, GENERAL

## PART 1 – GENERAL

1.01 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.

1.02 REFERENCE CODES AND STANDARDS

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

| | | |
|---|---|---|
| 1. | ASME B1.20.1 | General Purpose Pipe Threads (Inch) |
| 2. | ASTM B31.3 | Process Piping |
| 3. | ASTM B31.9 | Building Services Piping |
| 4. | AWWA | American Water Works Association |
| 5. | AWWA C504 | Rubber-Seated Butterfly Valves |
| 6. | AWWA C506 | Backflow Prevention Devices – Reduced Pressure Principle and Double Check Valve Types |
| 7. | AWWA C550 | Protective Interior Coatings for Valves and Hydrants |
| 8. | MSS | Manufacturers Standardization Society of the Valve and Fittings Industry |

1.03 SUBMITTALS

A. Furnish submittals in accordance with Special Provisions. Shop Drawings of all actuators shall be submitted together with the valve and gate submittals as a complete package. Shop Drawings shall contain the following information:

1. Valve name, size, Cv factor, pressure rating, identification number (if any), and specification section number.

2. Complete information on valve actuator, including size, manufacturer, number, limit switches, and mounting.

3. Cavitation limits for control valves.

4. Assembly drawings showing part nomenclature, materials, dimensions, weights, and relationships of valve handles, handwheels, position indicators, limit switches, integral control systems, needle valves, and control systems.

5. Complete wiring diagrams and control system schematics.

6. Valve Labeling: A schedule of valves to be furnished with stainless steel tags, indicating in each case the valve location and the proposed wording for the label.

7. Certification that products being used meet requirements of standards referenced.

B The following shall be submitted in compliance with Whitebook Section 3.8 and Section 15000:

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.
7. Spare Parts List: A Spare Parts List shall contain the required information for each valve assembly, where indicated.

1.04 OWNER'S MANUAL

A. Owner's Manual shall be provided in accordance with Whitebook Section 3.8, and the following:

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.

1.05 FACTORY TESTING

A. Factory testing shall be provided in accordance with Section 01610. Where indicated, signed, dated, and certified factory test data for each valve requiring certification shall be submitted before shipment of the valve. The data shall also include certification of quality and test results for factory-applied coatings.

B. General: Valves shall be tested in compliance with the AWWA and MSS Standards as applicable and indicated. Except as otherwise indicated, each valve body shall be tested under a test pressure equal to twice its design water working pressure.

## PART 2 – PRODUCTS

2.01 VALVES

A. General: All valves shall be provided as shown on the Drawings, valve schedules, and as specified herein. All valves shall be designed for drip-tight shutoff. Unless otherwise shown or specified, exposed valves shall be flanged or screwed, rising stem, handwheel or lever operated, and buried valves shall be non-rising stem, wrench operated restrained, mechanical or push-on joint, or flanged. The valve assemblies shall be furnished complete and adequate for the specified or shown purpose, and shall include all essential components of equipment, together with all mountings and other

appurtenances normal and necessary for proper installation. All process valves shall be rated for a working pressure equal to or more than the pressure rating of the connecting piping unless specifically shown otherwise on the Drawing. Valves of the same type shall be all by one manufacturer.

B. All bronze parts of valves shall be constructed of high-strength material containing not more than seven percent zinc and not more than two percent aluminum.

C. Exposed shutoff valves, 6 inch and larger, shall have operators with position indicators. Where buried, these valves shall be provided with valve boxes and covers, and valve extensions with position indicators. Valves mounted higher than 6 feet above working level shall be provided with chain operators.

D. All bronze valves Class 125 psi and 150 psi shall comply with ASTM B62. All stems shall be silicon bronze 80,000 psi tensile strength.

E. Iron body valves shall comply with ASTM A126 Class B.

F. Valve Flanges: The flanges of valves shall comply with Section 15000.

G. Valve Stems: Where disinfection is indicated, valve stems shall be fabricated with bronze conforming to ASTM B62, containing not more than 5 percent of zinc nor more than 2 percent of aluminum. Valve stems shall be designed for minimum tensile strength of 60,000 psi, a 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 disinfection is not indicated, bronze conforming to ASTM B584 may be used.

H. Resilient Seal/Seat: Resilient seal/seat shall be inert/resistant to fluid conveyed.

I. Protective Coating: Except where otherwise indicated, ferrous surfaces, exclusive of stainless steel surfaces, in the water passages of all valves 4 inches and larger, and exterior surfaces shall be epoxy coated conforming to Section 09800. Flange faces of valves shall not be epoxy coated.

J. Valve Actuators: Where indicated, valves shall be provided with electric actuators in compliance with this section. Valve actuators, shall be sized, installed, adjusted, and tested by the valve manufacturer at the manufacturing plant. Operators of valves 8 inches and larger shall be worm- or spur-gear type.

K. Fasteners: Valve internal and external nuts & bolts shall comply with Section 15000, paragraph 2.01 H requirements, except all brass/bronze valve which shall be provided with brass/bronze fasteners.

2.02 NAMEPLATES, TOOLS, AND SPARE PARTS

A. Nameplates: Except as otherwise indicated, identification labels or tags shall be provided on all valves, except for hose bibbs. The labels on 2 inch and larger valves shall be 1/16- inch thick plastic or stainless steel, minimum 2 inches by 4 inches in size, and shall be permanently attached to the valve. Similar labels shall be attached to valves smaller than 2 inch by means of self-locking plastic or nylon ties. Each tag shall be numbered with the unique valve number in accordance with this section, or, for smaller valves not numbered, with the valve specification number.

B. Spare Parts: Two sets of packing, O-rings, gaskets, discs, seats, and bushings shall be furnished with each valve, as applicable.

## PART 3 – EXECUTION

3.01 GENERAL

A. Unless otherwise indicated, execution of the WORK, including but not necessarily limited to fabrication, equipment protection, installation, field testing, protective coatings, lubricants, and cleaning, shall comply with Section 01610.

3.02 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.

3.03 FIELD TESTING

A. Field testing shall be provided in accordance with Section 01610.

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

**– END OF SECTION 15100 –**

# SECTION 15103 – GLOBE VALVES

## PART 1 – GENERAL

1.01 WORK OF THIS SECTION

A. The WORK of this Section includes providing globe valves and appurtenances, complete and operable, in accordance with the Contract Documents.

1.02 REFERENCE CODES AND STANDARDS

A. The WORK of this Section shall comply with the codes and standards indicated in Section 15100.

1.03 SUBMITTALS

A. The following shall be submitted in compliance with Whitebook Section 3.8 and 15100:

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 certifications that epoxy coatings have been factory tested and comply with the indicated requirements.

1.04 OWNER'S MANUAL

A. The Owner's Manual shall be provided in accordance with Section 15100.

1.05 FACTORY TESTING

A. Factory testing of the valves shall be in accordance with Section 15100 and MSS SP 82.

## PART 2 – PRODUCTS

2.01 GENERAL

A. Globe valves for isolating and throttling service shall have screwed ends for sizes up to and including 2 inches, and ANSI B16.1 Class 125 lb flanged ends for larger sizes. Unless otherwise indicated, all globe valves shall have manual handwheel actuators.

2.02 GLOBE VALVES 3 INCH & LARGER-GLV2

A. Globe valves with flanged ends shall have cast iron bodies with flanged ends to ANSI B16.1 Class 125 and bolted bonnet to the following material specifications or equal:

| | |
|---|---|
| Body: | Cast iron, ASTM A126 Class B |
| Bolts and nuts: | Steel, ASTM A307 and ASTM A563, respectively |
| Disc: | Bronze, ASTM B584 |
| Seat ring: | Bronze, ASTM B62 |
| Disc nut: | Bronze, ASTM B584 |
| Handwheel: | Cast iron, ASTM A126 Class B above 4 inches |
| Packing: | Non-asbestos fiber with Teflon |
| Packing gland: | Bronze, ASTM B584 |
| Packing gland flange: | Malleable iron, ASTM A197 |
| Stem: | Copper-silicon bronze, ASTM B584 |
| Yoke bonnet: | Cast iron, ASTM A126, Class B |
| Yoke bushing: | Bronze, ASTM B584 |
| Fasteners | 316 Stainless Steel |

2.05 ACCEPTABLE MANUFACTURERS, OR EQUAL

A. Steel Globe Valves:

1. Jenkins
2. Stockham
3. Walworth

**PART 3 – EXECUTION**

3.01 INSTALLATION

A. General installation requirements shall be as indicated in Section 15100.

3.02 FIELD TESTING

A. Field testing shall be performed in accordance with Section 15100.

**– END OF SECTION 15103 –**

# SECTION 15104 – BUTTERFLY VALVES

## PART 1 - GENERAL

1.01 WORK OF THIS SECTION

A. The WORK of this Section includes providing butterfly valves and appurtenances, complete and operable, in accordance with the Contract Documents.

1.02 REFERENCE CODES AND STANDARDS

A. The WORK of this Section shall comply with the codes and standards indicated in Section 15100.

1.03 SUBMITTALS

A. The following shall be submitted in compliance with Whitebook Section 3.8 and 15100:

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 certifications that epoxy coatings have been factory tested and comply with the indicated requirements.

1.04 OWNER'S MANUAL

A. The Owner's Manual shall be provided in accordance with Section 15100.

1.05 FACTORY TESTING

A. Valves shall be tested in compliance with AWWA C504 and Section 15100.

B. Proof-of-design tests reports shall be submitted in compliance with Section 15100 and AWWA C504.

## PART 2 - PRODUCTS

2.01 BUTTERFLY VALVES (AWWA) – BFV1

A. General: Butterfly valves shall conform to AWWA C504 & C516, shall be of Offset disc design. Valves shall have corrosion-resistant shaft, stainless steel disc edge, and self-compensating shaft seals. Molded-in body seat with disc locators provides positive sealing and longer seat life on sizes 3" - 20" (80 - 500mm). Large AWWA butterfly valves, 24" and

larger shall feature adjustable, replaceable seat, non-hollow disc structure and rubber seat retained within a dovetail groove in the valve body and locked in place by an epoxy wedge.

1. Valves shall have flanged or grooved ends to ANSI B16.1 Class 125#, or Class 250# where so 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 rubber seat shall be mounted in the valve body. Seats shall be mechanically retained without being penetrated by fasteners and shall be field adjustable and field replaceable for valves 24" and larger. The seat material shall be Buna-N except as noted on the Contract Drawings.

2. On valves 30 inches and larger, the valve port diameter shall not be reduced less than 1-1/2 inches of the nominal pipe diameter. Shaft shall be sealing shall be adjustable stuffing box with actuator bracket mounted.

3. On valve 60" and larger support bases shall be provided on two sides such the valve can be installed in either position. The support bases shall extend below all other valve parts such as the body flanges and body ribs. The support brackets shall be cast integrally with the valve body to support the valve on a foundation base plate. The support brackets shall be ribbed and shall have a mounting base for bolting to a base plate. The support bracket shall be designed and constructed to provide a base which properly distributes the stresses due to the weight of the valve assembly and contents.

B. Material of Construction

| Description | Sizes 3" to 20" |
|---|---|
| Body | Cast Iron, ASTM A126 Class B/ Ductile Iron., ASTM A536. |
| Disc | Cast Iron, ASTM A48 Class 40C/Ductile Iron, ASTM A536/316 Stainless Steel |
| Seat | NBR/EPDM permanently bonded to the body. Elastomer shall be suitable for fluid type flowing through the valve. The CONTRACTOR shall submit proof of elastomer chemical compatibility. |
| Disc seating edge | 316 Stainless Steel |
| Shaft | 316 Stainless Steel |
| Bearings | Nylon with Buna seat & Teflon with EPDM seat |
| Packing | NBR/EPDM |
| Lower shaft | 316 Stainless Steel |
| Gland | N/A |
| O-ring | N/A |
| Fasteners | 316 Stainless Steel/18-8 Stainless Steel |

C. Coating: Exterior and wetted internal surfaces of valves, 4 inch and larger, (exclusive of flange faces) shall be epoxy-coated with two part epoxy, min 80% solids content in

compliance with Section 09800.

D. Manual Operators:

1. Operators shall conform to AWWA C504 & C516. Except as otherwise indicated, manually operated, exposed butterfly valves shall be equipped with a hand wheel and position indicators. Buried, manually operated butterfly valves shall be equipped with 2-inch square operating nuts, valve neck extension and valve boxes and covers where specified only.

2. Valves 30 inches and larger, and all submerged or buried butterfly valves, shall be equipped with worm-gear operators installed above grade and neck extension. Where buried operators are specified, the operator shall be lubricated and sealed to prevent entry of dirt or water into the operator at a water pressure of 20 feet of head. Screw-type operators shall not be installed for valves 30 inches in diameter and larger.

2.02 ACCEPTABLE MANUFACTURERS, OR EQUAL

1. AWWA butterfly valves:

a. Dezurik Corporation

b. Henry Pratt Company

## PART 3 - EXECUTION

3.01 INSTALLATION

A. Exposed butterfly valves shall be installed to permit removal of valve assembly without dismantling the valve or operator.

B. General installation requirements shall be as indicated in Section 15100.

3.02 FIELD TESTING

A. Field testing shall be performed in accordance with Section 15100.

**– END OF SECTION 15104 -**

# SECTION 15106 – BALL VALVES

## PART 1 – GENERAL

1.01 WORK OF THIS SECTION

A. The WORK of this Section includes providing manually operated ball valves with operators, accessories and appurtenances, complete and operable, in accordance with the Contract Documents.

1.02 REFERENCE CODES, AND STANDARDS

A. The WORK of this Section shall comply with the codes and standards indicated in Section 15100.

1.03 SUBMITTALS

A. The following shall be submitted in compliance with Whitebook Section 3.8 and 15100:

1. Manufacturer's product data including catalog 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 coating have been factory tested and comply with the indicated requirements.

1.04 OWNER'S MANUAL

A. The Owner's Manual shall be provided in accordance with Section 15100.

1.05 FACTORY TESTING

A. Valves shall be tested in compliance with AWWA C507 and Section 15100.

B. Proof-of-design tests shall be submitted in compliance with Section 15100 for all ball valves size 10 inches and larger.

## PART 2 – PRODUCTS

2.02 BALL VALVES (4 INCH AND SMALLER) – BV2

A. General Requirements: Except as otherwise indicated, ball valves 4 inches and smaller shall be provided with lever or handwheel operator. Valve material of construction and trim shall be suitable for the service; on corrosive applications or where the connecting pipes are stainless steel, the valve shall be 316 stainless steel construction with Teflon seat. Valve actuators shall comply with the requirements of

Section 15100.

1. Body: Ball valves up to 1½ inches in size shall have 316 stainless steel, bronze or forged brass 2 or 3 piece bodies with ends threaded and shall be designed for a pressure rating of no less than 300 psi. Valves 2 to 4 inches in size shall have 316 stainless steel, bronze forged brass 2 or 3 piece bodies with flanged ends and shall be designed for a pressure rating of 150 psi.
2. Balls: The balls shall be fabricated of solid 316 stainless steel, brass or chrome plated bronze, to match valve body material, with full openings.
3. Stems: The valve stems shall be of the blow-out proof design, and fabricated of 316 stainless steel, brass or bronze, same as valve body material.
4. Seals: Viton or Teflon.
5. Seats: The valve seats shall be of Teflon or Buna-N.
6. Fasteners: All fasteners shall be 316 stainless steel or bronze, same as valve body material.

2.03 ACCEPTABLE MANUFACTURERS, OR EQUAL

A. Ball valves (6 inches and larger):

1. Apollo Valves
2. Bray
3. Emerson
4. Nibco

B. Ball valves (4 inches and smaller):

1. Bray
2. Jamesbury Corporation
3. Jenkins Bros
4. Lunkenheimer Flow Control
5. Nibco
6. Sharpe Valves
7. Wm. Powell Company
8. Worcester Controls

## PART 3 – EXECUTION

3.01 INSTALLATION

A. General installation requirements shall be as indicated in Section 15100.

3.02 FIELD TESTING

A. Field testing shall be performed in accordance with Section 15100.

**– END OF SECTION 15106 –**

# SECTION 15113 – AIR RELEASE AND VACUUM VALVES

## PART 1 – GENERAL

1.01 WORK OF THIS SECTION

A. The Work of this Section includes providing air release and vacuum valves as indicated, complete and operable, including accessories and drain connections.

1.02 REFERENCE CODES AND STANDARDS

A. The Work of this Section shall comply with the codes and standards indicated in Section 15000.

1.03 SUBMITTALS

A. The following shall be submitted in compliance with Whitebook Section 3.8 and 15100:

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.

1.04 OWNER'S MANUAL

A. The Owner's Manual shall be provided in accordance with Section 15100.

1.05 FACTORY TESTING

A. Valves shall be tested in compliance with AWWA C512 & Sections 15100.

## PART 2 – PRODUCTS

2.01. GENERAL

A. Air Vacuum Release valves shall be fully automatic float operated valves designed to exhaust large quantities of air during the filling of a piping system and close upon liquid entry. The valve shall re-open during draining or if a negative pressure occurs.

B. Air Vacuum Release valves, in sizes 1/2 inch through 20 inch with short valve body shall be used on clean water and long body on raw water and wastewater service.

C. Air Vacuum Release, Air Release and Combination valves shall be manufactured and tested in accordance with AWWA C512. Valves used in potable water service shall be

certified to NSF 61.

D. Air Release valves shall be automatic float operated valves designed to release accumulated air from a piping system while the system is in operation and under pressure. The capacity and pressure rating of the valve is dependent on the diameter of the precision orifice in the cover. A large inlet connection is required for proper air and water exchange.

E. Air Release valves, in sizes 1/2 inch through 6 inch with short valve body shall be used on clean water and long body on raw water and wastewater service. Air Release valves shall be rated up to 740 psig pressure.

F. Valve sizes 3 inch and smaller shall have full size NPT inlets and outlets equal to the nominal valve size. The body inlet connection shall be hexagonal for a wrench connection. For wastewater service the body shall have 2 inch NPT cleanout and 1 inch NPT drain connection on the side of the casting.

G. Valve sizes 4 inch and larger shall have bolted flange inlets with threaded or plain outlets and protective hoods to prevent debris from entering the valve.

H. The valve shall have two (one when backflush attachments are supplied on sewage / wastewater type valves, 4” and larger) additional NPT connections for the addition of Air Release Valves, gauges, testing, and draining.

2.02 AIR VACUUM RELEASE VALVES (AVRV1-CLEAN WATER; AVRV2-RAW, WASTEWATER, SLUDGE)

A. Material

| Pressure Class | | 150 | 250 | 300 |
|---|---|---|---|---|
| Body and Cover | | Ductile Iron ASTM A536 65-45-12 | | Cast Steel ASTM A216 Gr. WCB |
| Float, Guide Shaft & Bushing | | 316 Stainless Steel | | |
| Seat | | Buna-N | | |
| Internal Trim | | 316 Stainless Steel | | |
| Fasteners | | 316 Stainless Steel | | |
| End Connection | Threaded 3 inch and smaller | NPT | | |
| | Flanged 4 inch and larger | ASME B16.1 Class 125# | | ASME B16.5 Class 150# |
| Coating (internal/external surfaces) | | Fusion Bonded in compliance with AWWA C213 and Section 09800, System 106. | | |

B. Construction

1. The valve body (long body for wastewater service) shall provide a through flow area equal to the nominal valve size. A bolted cover with alloy screws and flat gasketshall be provided to allow for maintenance and repair.

2. Float: Float shall be unconditionally guaranteed against failure including pressure surges. The float shall have a hexagonal guide shaft supported in the body by circular bushings to prevent binding from debris. The float shall be protected against direct water impact by an internal baffle.

3. The resilient seat shall provide drop tight shut off to the full valve pressure rating. The seat shall be a minimum of 0.5 inch thick on 2 inch and larger valves and secured in such a manner as to prevent distortion.

4. On valve sizes 4 inch and larger, the cover shall be fitted to the valve body by means of a machined register to maintain concentricity between the top and bottom guide bushings at all times. The float shall be double guided with a guide shaft extending through the float to prevent any contact with the body. A resilient bumper shall be provided to cushion the float during sudden opening conditions.

5. Isolation valve shall be furnished under the Air/Vacuum Release valve.

    a. Clean water: For sizes with threaded inlets, the isolation valve shall be a fully ported brass ball valve. For sizes with flanged inlets, the isolation valve shall be AWWA butterfly Valve with quarter-turn gear actuator and handwheel.

    b. Wastewater: For sizes with threaded inlets, the isolation valve shall be a fully ported 316 stainless steel ball valve. For sizes with flanged inlets, the isolation valve shall be plug valve with quarter-turn gear actuator and handwheel.

6. Air/Vacuum Release valves shall be provided with the following options, when specified:

    a. Regulated Exhaust Device to reduce pressure surges due to column separation or rapid changes in velocity and pressure in the pipeline. The regulated Exhaust Device, Surge Check Valve, shall be on the outlet of ½"-3" sizes. The Regulated Exhaust Device shall be mounted on the inlet of the Air/Vacuum Valve, 4" size and larger to allow free air flow in and out of the valve, close upon rapid air exhaust, and control the air exhaust rate to reduce pressure surges. Surge check valves are only for clean water application.

    b. The device shall have a flanged globe-style body with a center guided disc and seat assembly. The disc shall have threaded holes to provide adjustment of the air exhaust rate through the valve. The holes shall provide for a flow area of 5% of the nominal valve size.

    c. The material of the body shall be consistent with the Air/Vacuum Valve. The seat and disc shall be bronze for clean water service and ASTM A351 Grade CF8M stainless steel for wastewater service.

    d. A flanged or screwed outlet connection shall be provided when specified for vault piping. A stainless steel screened outlet shall be provided for outdoor installations.

2.03 CROSS CONTAMINATION AND SECURITY PROTECTION FOR DRINKING WATER SERVICE.

A. All Air (Release, Vacuum, etc.) Valves installed in vaults or flood prone locations shall include an inflow preventer to prevent the introduction of contaminated water through the air valve outlet. The inflow preventer shall allow the admittance and

exhausting of air while preventing contaminated water from entering during normal operating conditions. The inflow preventer shall be flow tested by an independent third party to certify performance. The third party shall be an approved testing lab of the American Society of Sanitary Engineers.

2.04 ACCEPTABLE MANUFACTURERS, OR EQUAL

A. Air Vacuum Release/Air Release/Combination & Vacuum Relief Valves

1. A.R.I
2. Crispin Valves
3. Dezurik/APCO
4. Pratt
5. Val-Matic
6. Vent-O Mat

**PART 3 – EXECUTION**

3.01 INSTALLATION

A. General installation requirements shall be as indicated in Section 15100.

B. Air release and vacuum valves shall be installed at high points in piping systems and where indicated.

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

3.02 FIELD TESTING

A. Field testing shall be performed in accordance with Section 15100.

**– END OF SECTION 15113 –**

# SECTION 15114 – PRESSURE REGULATING VALVES

## PART 1 – GENERAL

1.01 WORK OF THIS SECTION

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

1.02 REFERENCE CODES, AND STANDARDS

A. The WORK of this Section shall comply with the codes and standards indicated in Section 15100.

1.03 SUBMITTALS

A. The following shall be submitted in compliance with Whitebook Section 3.8 and 15100:

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 coating have been factory tested and comply with the indicated requirements.

1.04 OWNER'S MANUAL

A. Owner's Manual shall be provided in accordance with Section 15100.

1.05 FACTORY TESTING

A. All valves 3 inches and larger shall be factory tested with a hydrostatic test and a functional test and a test certificate shall be submitted to the OWNER prior to delivery of the valve.

## PART 2 – PRODUCTS

2.01 PRESSURE REGULATING VALVES (1-1/2 INCHES AND SMALLER)-PRV2

A. General: Small air and water pressure regulating valves shall be of the spring-loaded diaphragm type with a minimum pressure rating of 250 psig, with bronze ASTM B62 body, nickel alloy or stainless steel seat, and threaded ends. Each valve shall be furnished with built-in or separate Type 316 stainless steel strainer and union ends. All fasteners shall be 316 stainless steel.

2.02 WATER PRESSURE CONTROL VALVES-PRV5

A. General: Water pressure control valves shall be globe type, ductile iron ASTM A536 body and ASME B16.42 Class 150/300# end flanges, bronze ASTM B62 trim including pilot

control, copper and bronze pilot tubing and fittings, Buna N rubber disc, nylon-reinforced Buna N rubber diaphragm, and type 316 stainless pilot trim, steel stem, nut, and spring. The valves shall be set to relieve instantaneous over pressurization in manifold and to maintain a minimum pressure for the system setpoint. The pressure control valve shall open when the system demand falls below minimum pump operating flow as recommended by the pump manufacturer. The exact setting will be determined after approval of the pumping units. All fasteners shall be 316 stainless steel.

2.03 ACCEPTABLE MANUFACTURERS, OR EQUAL

A. Water Pressure Control Valves:

1. Cla-Val Company
2. Golden-Anderson Valve Division (G A Industries, Inc.)
3. Watter Regulator Company

## PART 3 – EXECUTION

3.01 INSTALLATION

A. General installation requirements shall be as indicated in Section 15100.

B. Outlets shall be plumbed to nearest acceptable drain, firmly supported, and installed in such a way as to avoid splashing and wetting of floors.

3.02 FIELD TESTING

A. Field testing shall be performed in accordance with Section 15100.

**– END OF SECTION 15114 –**

# SECTION 15115 – ELECTROMAGNETIC FLOW METERS

## PART 1 – GENERAL

1.01 WORK OF THIS SECTION

A. The WORK of this Section includes electromagnetic flow meters as indicated, complete and operable, with all accessories.

1.02 REFERENCE CODES, AND STANDARDS

A. The WORK of this Section shall comply with the codes and standards indicated in Section 15100.

1.03 SUBMITTALS

A. The following shall be submitted in compliance with Whitebook Section 3.8 and 15100:

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.

1.04 OWNER'S MANUAL

A. Owner's Manual shall be provided in accordance with Section 15100.

1.05 FACTORY TESTING

A. All electromagnetic flow meters shall be factory tested with a hydrostatic test and a functional test and a test certificate shall be submitted to the OWNER prior to delivery of the valve.

## PART 2 – PRODUCTS

2.01 ELECTROMAGNETIC FLOW METER

A. General: Electromagnetic flow meters shall be suitable for water service and shall match the size of the line being measured. Power supply shall be battery powered or 120V AC. The calibrated range of the flow meter shall be 0-1500 gpm with an accuracy of +/- 0.5% of flowrate, with a velocity range of 0-40 ft/sec. Minimum measurable velocity shall be 0.033 feet/sec, minimum conductivity shall be 5 microS/cm, range shall be 0-40 ft/sec, ambient temperature limits shall be -5 degF to 140 degF, process temperature limits shall be 32 degF to 180 degF.

2.02 ACCEPTABLE MANUFACTURERS, OR EQUAL

A. Endress + Hauser

B. Krohne

C. Or approved equal

## PART 3 – EXECUTION

3.01 INSTALLATION

A. General installation requirements shall be as indicated in Section 15100 and per manufacturer's requirements and recommendations.

B. Electromagnetic flow meters shall be integrated into to Plant DCS per Plant requirements. Contractor to coordinate with Plant staff for integration.

3.02 FIELD TESTING

A. Field testing shall be performed in accordance with Section 15100.

**– END OF SECTION 15115 –**

## SUPPLEMENTARY SPECIAL PROVISIONS

## APPENDICES

# APPENDIX A

# NOTICE OF EXEMPTION

**NOTICE OF EXEMPTION**

*(Check one or both)*

TO: __X__ Recorder/County Clerk
P.O. Box 1750, MS A-33
1600 Pacific Hwy, Room 260
San Diego, CA 92101-2400

_____ Office of Planning and Research
1400 Tenth Street, Room 121
Sacramento, CA 95814

FROM: City of San Diego
Engineering & Capital Projects Department
525 B Street, Suite 750, MS 908A
San Diego, CA 92101

**Project Name:** Metro Biosolids Center Gallery Pipeline Replacement **WBS No.:** B-24118

**Project Location-Specific:** The project is located within the Metro Biosolids Center on 5240 Convoy Street, San Diego, CA 92111 within the Marine Corps Air Station (MCAS) Miramar Military Facility (Council District 6).

**Project Location-City/County:** San Diego/San Diego

**Description of nature and purpose of the Project:** The project proposes to replace in-place approximately 2,705 linear feet of waterlines on an existing pipe gallery with epoxy-lined steel pipes and install new pressure reducing manifolds and isolation valves.

**Name of Public Agency Approving Project:** City of San Diego

**Name of Person or Agency Carrying Out Project:** City of San Diego
Engineering and Capital Projects Department
Contact: Thomas Park
Email/Phone No.: TPark@sandiego.gov / 619-533-4612
525 B Street, Suite 750 (MS 908A), San Diego, CA 92101

Exempt Status:

( ) Ministerial (Sec. 21080(b)(1); 15268);
( ) Declared Emergency (Sec. 21080(b)(3); 15269(a));
( ) Emergency Project (Sec. 21080(b)(4); 15269 (b)(c))
(X) Categorical Exemption: Sec. 15301(a) [Existing Facilities]; 15302(c) [Replacement or Reconstruction]; 15303 [New Construction or Conversion of Small Structures]
( ) Statutory Exemptions:

**Reasons why project is exempt:** The City of San Diego conducted an environmental review which determined that the project meets the categorical exemption criteria set forth in CEQA State Guidelines, Section 15301(a) [Existing Facilities]; which allows for the maintenance or minor alteration of existing public facilities, such as the replacement of existing plumbing within the interior of a building; 15302(c) [Replacement or Reconstruction]; which allows for the replacement of existing facilities where the new structure will be located on the same site as the structure replaced and will have substantially the same purpose and capacity as the structure replaced, such as the replacement of existing waterlines with new pipes within the same site with negligible expansion of capacity; 15303 [New Construction or Conversion of Small Structures]; which allows for the installation of small, new equipment in small structures, such as the installation of pressure reducing manifolds and isolation valves; and where the exceptions listed in Section 15300.2 would not apply.

Lead Agency Contact Person: Thomas Park Telephone: (619) 533-4612

If filed by applicant:

1. Attach certified document of exemption finding.
2. Has a notice of exemption been filed by the public agency approving the project? ( ) Yes ( ) No

It is hereby certified that the City of San Diego has determined the above activity to be exempt from CEQA.

James Arnhart

James Arnhart, Program Manager

March 26, 2024

Date

Check One:

(X) Signed By Lead Agency

( ) Signed by Applicant

Date Received for Filing with County Clerk or OPR:

# APPENDIX B

# FIRE HYDRANT METER PROGRAM

| CITY OF SAN DIEGO CALIFORNIA DEPARTMENT INSTRUCTIONS | NUMBER **DI** 55.27 | DEPARTMENT Water Department |
|---|---|---|
| **SUBJECT**<br><br>**FIRE HYDRANT METER PROGRAM (FORMERLY: CONSTRUCTION METER PROGRAM)** | **PAGE** 1**OF** 10 | **EFFECTIVE DATE**<br><br>October 15, 2002 |
| | **SUPERSEDES** **DI** 55.27 | **DATED** April 21, 2000 |

1. **PURPOSE**

1.1 To establish a Departmental policy and procedure for issuance, proper usage and charges for fire hydrant meters.

2. **AUTHORITY**

2.1 All authorities and references shall be current versions and revisions.

2.2 San Diego Municipal Code (NC) Chapter VI, Article 7, Sections 67.14 and 67.15

2.3 Code of Federal Regulations, Safe Drinking Water Act of 1986

2.4 California Code of Regulations, Titles 17 and 22

2.5 California State Penal Code, Section 498B.0

2.6 State of California Water Code, Section 110, 500-6, and 520-23

2.7 Water Department Director

**Reference**

2.8 State of California Guidance Manual for Cross Connection Programs

2.9 American Water Works Association Manual M-14, Recommended Practice for Backflow Prevention

2.10 American Water Works Association Standards for Water Meters

2.11 U.S.C. Foundation for Cross Connection Control and Hydraulic Research Manual

3. **DEFINITIONS**

3.1 **Fire Hydrant Meter:** A portable water meter which is connected to a fire hydrant for the purpose of temporary use. (These meters are sometimes referred to as Construction Meters.)

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.

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.

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.

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

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

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

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.

## 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. Theses 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.

8.5 If damage occurs to Water Department property (i.e. fire hydrant meter, backflow, various appurtenances), the cost of repairs or replacements will be charged to the customer of record (applicant).

**Water Department Director**

Tabs: 1. Fire Hydrant Meter Application
2. Construction & Maintenance Related Activities With No Return To Sewer
3. Notice of Discontinuation of Service

## APPENDIX

**Administering Division:** Customer Support Division

**Subject Index:**
Construction Meters
Fire Hydrant
Fire Hydrant Meter Program
Meters, Floating or Vehicle Mounted
Mobile Meter
Program, Fire Hydrant Meter

**Distribution:** DI Manual Holders

# Application for Fire Hydrant Meter (EXHIBIT A)

City of San Diego PUBLIC UTILITIES Water & Wastewater

(For Office Use Only)

| NS REQ | FAC# |
|---|---|
| DATE | BY |

METER SHOP (619) 527-7449

| Application Date | Requested Install Date: |
|---|---|
| | |

## Meter Information

| Fire Hydrant Location: (Attach Detailed Map//Thomas Bros. Map Location or Construction drawing.) Zip: | T.B. | G.B. (CITY USE) |
|---|---|---|
| Specific Use of Water: | | |
| Any Return to Sewer or Storm Drain, If so , explain: | | |
| Estimated Duration of Meter Use: | ☐ | Check Box if Reclaimed Water |

## Company Information

| Company Name: | | | |
|---|---|---|---|
| Mailing Address: | | | |
| City: | State: | Zip: | Phone: ( ) |
| *Business license# | *Contractor license# | | |
| A Copy of the Contractor's license OR Business License is required at the time of meter issuance. | | | |
| Name and Title of Billing Agent: (PERSON IN ACCOUNTS PAYABLE) | | | 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

| ☐ Fire Hydrant Meter Removal Request | Requested Removal Date: | |
|---|---|---|
| Provide Current Meter Location if Different from Above: | | |
| Signature: | Title: | Date: |
| Phone: ( ) | Pager: ( ) | |

| ☐ City Meter | ☐ Private Meter | |
|---|---|---|
| Contract Acct #: | Deposit Amount: $ 936.00 | Fees Amount: $ 62.00 |
| Meter Serial # | Meter Size: 05 | Meter Make and Style: 6-7 |
| Backflow # | Backflow Size: | Backflow Make and Style: |
| Name: | Signature: | Date: |

## WATER USES WITHOUT ANTICIPATED CHARGES FOR RETURN TO SEWER

Auto Detailing
Backfilling
Combination Cleaners (Vactors)
Compaction
Concrete Cutters
Construction Trailers
Cross Connection Testing
Dust Control
Flushing Water Mains
Hydro Blasting
Hydro Seeing
Irrigation (for establishing irrigation only; not continuing irrigation)
Mixing Concrete
Mobile Car Washing
Special Events
Street Sweeping
Water Tanks
Water Trucks
Window Washing

**Note**:

1. If there is any return to sewer or storm drain, then sewer and/or storm drain fees will be charges.

Date

Name of Responsible Party
Company Name and Address
Account Number:_____

Subject: Discontinuation of Fire Hydrant Meter Service

Dear Water Department Customer:

The authorization for use of Fire Hydrant Meter #_____, located at *(Meter Location Address)* ends in 60 days and will be removed on or after *(Date Authorization Expires)*. Extension requests for an additional 90 days must be submitted in writing for consideration 30 days prior to the discontinuation date. If you require an extension, please contact the Water Department, or mail your request for an extension to:

City of San Diego
Water Department
Attention: Meter Services
2797 Caminito Chollas
San Diego, CA 92105-5097

Should you have any questions regarding this matter, please call the Fire Hydrant Hotline at (619)_____-_____.

Sincerely,

Water Department

# APPENDIX C

## MATERIALS TYPICALLY ACCEPTED BY CERTIFICATE OF COMPLIANCE

## MATERIALS TYPICALLY ACCEPTED BY CERTIFICATE OF COMPLIANCE

1. Soil amendment
2. Fiber mulch
3. PVC or PE pipe up to 16 inch diameter
4. Stabilizing emulsion
5. Lime
6. Preformed elastomeric joint seal
7. Plain and fabric reinforced elastomeric bearing pads
8. Steel reinforced elastomeric bearing pads
9. Waterstops (Special Condition)
10. Epoxy coated bar reinforcement
11. Plain and reinforcing steel
12. Structural steel
13. Structural timber and lumber
14. Treated timber and lumber
15. Lumber and timber
16. Aluminum pipe and aluminum pipe arch
17. Corrugated steel pipe and corrugated steel pipe arch
18. Structural metal plate pipe arches and pipe arches
19. Perforated steel pipe
20. Aluminum underdrain pipe
21. Aluminum or steel entrance tapers, pipe downdrains, reducers, coupling bands and slip joints
22. Metal target plates
23. Paint (traffic striping)
24. Conductors
25. Painting of electrical equipment
26. Electrical components
27. Engineering fabric
28. Portland Cement
29. PCC admixtures
30. Minor concrete, asphalt
31. Asphalt (oil)
32. Liquid asphalt emulsion
33. Epoxy

# APPENDIX D

# SAMPLE CITY INVOICE

City of San Diego, CM&FE Div., 9573 Chesapeake Drive, SD CA 92123
**Project Name:**
Work Order No or Job Order No.
City Purchase Order No.
Resident Engineer (RE):
RE Phone#: Fax#:

**Contractor's Name:**
Contractor's Address:
Contractor's Phone #:
Contractor's fax #:
Contact Name:

**Invoice No.**
**Invoice Date:**
Billing Period: ( To )

| Trigger Asset | Item # | Item Description | Contract Authorization | | | | Previous Totals To Date | | This Estimate | | Totals to Date | | Amount Remaining |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Unit | Price | Qty | Extension | %/QTY | Amount | % / QTY | Amount | % / QTY | Amount | |
| | 1 | | | | 1.00 | $ - | | $0.00 | | $0.00 | 0.00 | $0.00 | $ - |
| | 2 | | | | 1.00 | $ - | | $0.00 | | $0.00 | 0.00% | $0.00 | $ - |
| | 3 | | | | 1.00 | $ - | | $0.00 | | $0.00 | 0.00% | $0.00 | $ - |
| | 4 | | | | 1.00 | $ - | | $0.00 | | $0.00 | 0.00% | $0.00 | $ - |
| | 5 | | | | 1.00 | $ - | | $0.00 | | $0.00 | 0.00% | $0.00 | $ - |
| | 6 | | | | 1.00 | $ - | | $0.00 | | $0.00 | 0.00% | $0.00 | $ - |
| | 7 | | | | 1.00 | $ - | | $0.00 | | $0.00 | 0.00% | $0.00 | $ - |
| | 8 | | | | 1.00 | $ - | | $0.00 | | $0.00 | 0.00% | $0.00 | $ - |
| | 5 | | | | 1.00 | $ - | | $0.00 | | $0.00 | 0.00% | $0.00 | $ - |
| | 6 | | | | | $ - | | $0.00 | | $0.00 | 0.00% | $0.00 | $ - |
| | 7 | | | | | $ - | | $0.00 | | $0.00 | 0.00% | $0.00 | $ - |
| | 8 | | | | | $ - | | $0.00 | | $0.00 | 0.00% | $0.00 | $ - |
| | 9 | | | | | $ - | | $0.00 | | $0.00 | 0.00% | $0.00 | $ - |
| | 10 | | | | | $ - | | $0.00 | | $0.00 | 0.00% | $0.00 | $ - |
| | 11 | | | | | $ - | | $0.00 | | $0.00 | 0.00% | $0.00 | $ - |
| | 12 | | | | | $ - | | $0.00 | | $0.00 | 0.00% | $0.00 | $ - |
| | 13 | | | | | $ - | | $0.00 | | $0.00 | 0.00% | $0.00 | $ - |
| | 14 | | | | | $ - | | $0.00 | | $0.00 | 0.00% | $0.00 | $ - |
| | 15 | | | | | $ - | | $0.00 | | $0.00 | 0.00% | $0.00 | $ - |
| | 16 | | | | | $ - | | $0.00 | | $0.00 | 0.00% | $0.00 | $ - |
| | 17 | | | | | $ - | | $0.00 | | $0.00 | 0.00% | $0.00 | $ - |
| | | | | | | $ - | | $0.00 | | $0.00 | 0.00% | $0.00 | $ - |
| | | **CHANGE ORDER No.** | | | | $ - | | $0.00 | | $0.00 | 0.00% | $0.00 | $ - |
| | | | | | | $ - | | $0.00 | | $0.00 | 0.00% | $0.00 | $ - |
| | | Total Auhtorized Amount (Original) | | | | $ - | | $0.00 | | $0.00 | | $0.00 | $ - |
| | | Total Authorized Amount (including approved Change Order) | | | | **$ -** | | $0.00 | | $0.00 | **Total Billed** | $0.00 | Total Amount Remaining |
| | | | | | | | | | | | | | $ - |



**SUMMARY**

| | |
|---|---|
| A. Original Contract Amount | $0.00 |
| B. Approved Change Order #00 Thru #00 | $0.00 |
| C. Total Authorized Amount (A+B) | $0.00 |
| D. Total Billed to Date | $0.00 |
| E. Less Total Retention (5% of D ) | $0.00 |
| F. Less Total Previous Payments | $0.00 |
| **G. Payment Due Less Retention** | **$0.00** |
| H. Remaining Authorized Amount | $0.00 |

**I certify that the materials have been received by me, or services have been rendered, in the quality and quantity specified per the approved contracted amounts, and is approved for payment**

_____
**Resident Engineer** **Date**

_____
**Construction Engineer** **Date**

**Retention and/or Escrow Payment Schedule**

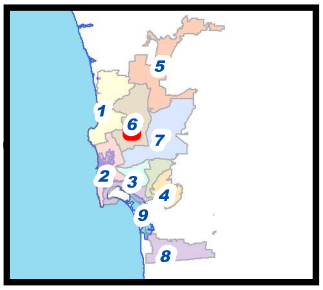
| | |
|---|---|
| Total Retention Required as of this billing (Item E) | $0.00 |
| Previous Retention Withheld in PO or in Escrow | $0.00 |
| **Add'l Amt to Withhold in PO/Transfer in Escrow:** | ***$0.00*** |
| **Amt to Release to Contractor from PO/Escrow:** | $0.00 |

Contractor Signature and Date: _____

1/10/2024 Rev

# APPENDIX E

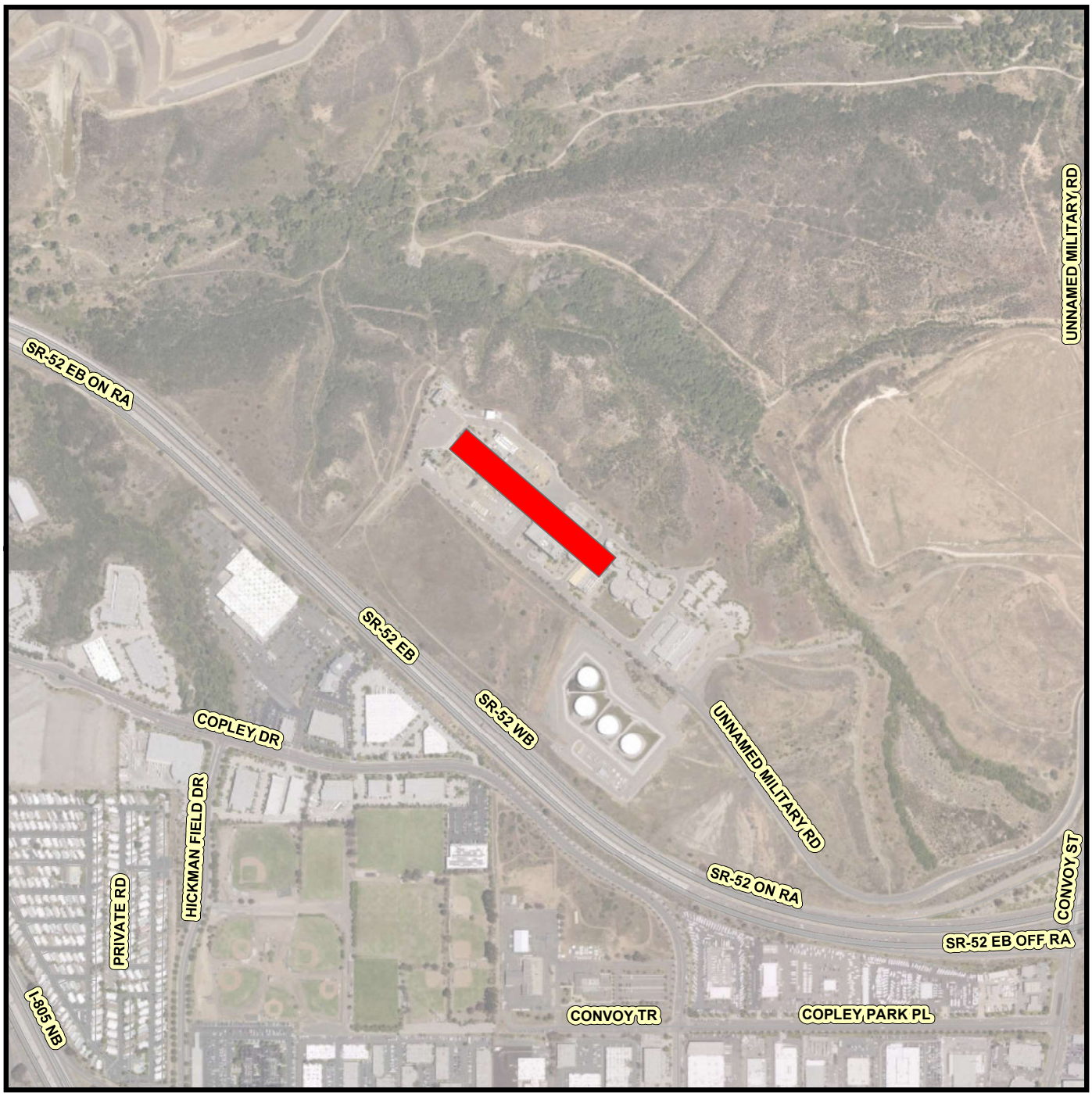
# LOCATION MAP




Engineering & Capital Projects

# MBC GALLERY PIPELINE REPLACEMENT

## LOCATION MAP




**Legend**

MBC Gallery Pipeline Replacement

N
W
E
S

No Scale

Document Path: \\ad\dfs\PWD-Shared\PITS\PITS-CIP-Preliminary-Engineering-and-Program-Coordination\PUD PE Active\B21148 MBC Gallery Pipeline Replacement\02 GIS\CIP Tracking\Location Map\Location Map.mxd

Community Name: MILITARY FACILITIES  Council District: 6  SAP ID# B21148

Date: 11/20/2024

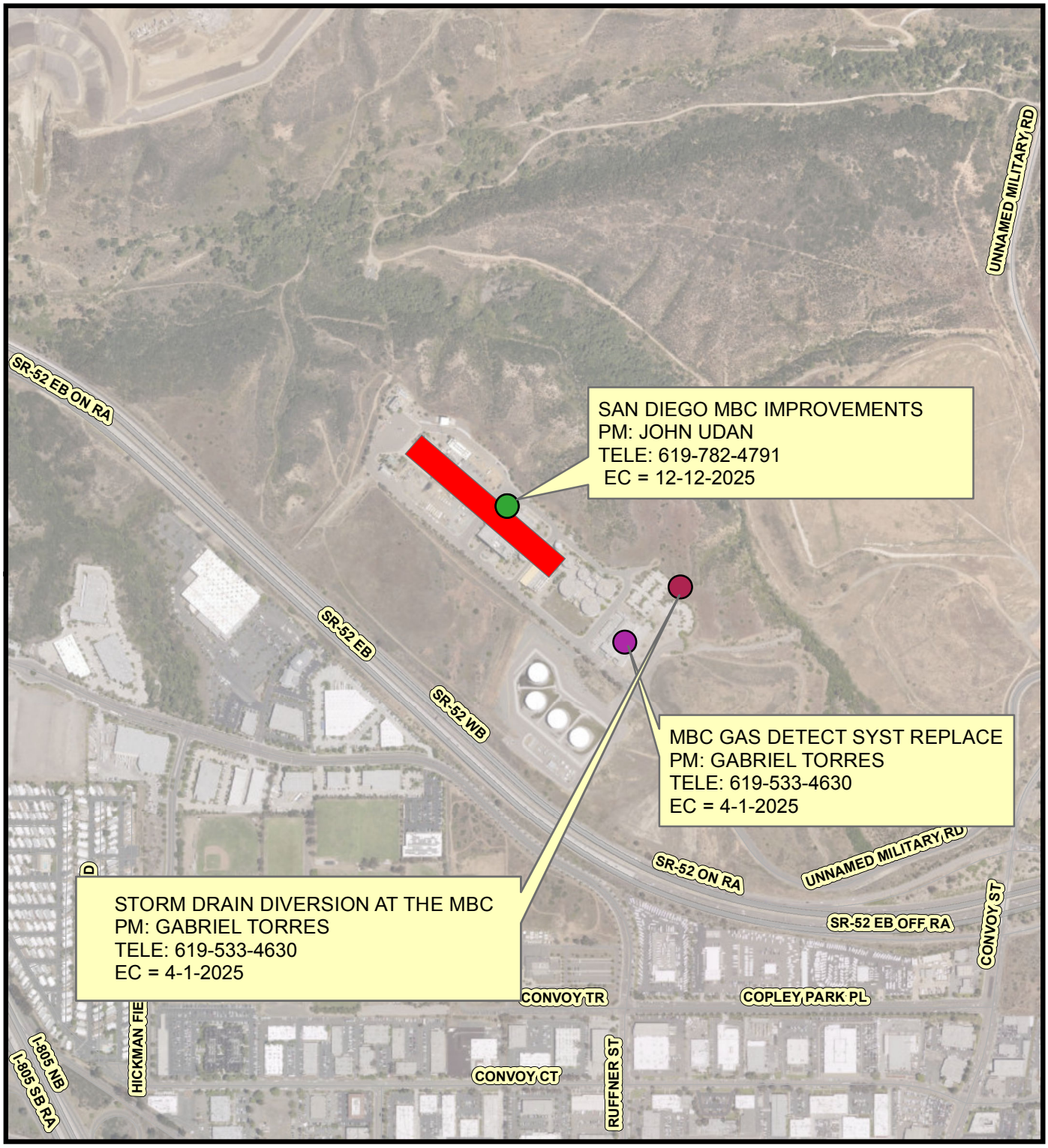
# APPENDIX F

# COORDINATION MAP

Engineering & Capital Projects

# MBC GALLERY PIPELINE REPLACEMENT

COORDINATION MAP




## Legend

MBC Gallery Pipeline Replacement

SC = START CONSTRUCTION
EC = END CONSTRUCTION

No Scale

Date: 11/20/2024

# APPENDIX G

# SAMPLE OF PUBLIC NOTICE

The City of SAN DIEGO

# CONSTRUCTION NOTICE

## PROJECT TITLE

Work on your street will begin within one week to replace the existing water mains servicing your community.

**The work will consist of:**

- Saw-cutting and trench work on Ingulf Street from Morena Boulevard to Galveston Street to install new water mains, water laterals and fire hydrants.
- Streets where trenching takes place will be resurfaced and curb ramps will be upgraded to facilitate access for persons with disabilities where required.
- This work is anticipated to be complete in your community by December 2016.

**How your neighborhood may be impacted:**

- Water service to some properties during construction will be provided by a two-inch highline pipe that will run along the curb. To report a highline leak call 619-515-3525.
- Temporary water service disruptions are planned. If planned disruptions impact your property, you will receive advance notice.
- Parking restrictions will exist because of the presence of construction equipment and materials.
- "No Parking" signs will be displayed 72 hours in advance of the work.
- Cars parked in violation of signs will be TOWED.

**Hours and Days of Operation:**
Monday through Friday X:XX AM to X:XX PM.

**City of San Diego Contractor:**
Company Name, XXX-XXX-XXXX

To contact the City of San Diego: SD Public Works
619-533-4207 | engineering@sandiego.gov | sandiego.gov/CIP

This information is available in alternative formats upon request.

The City of SAN DIEGO

CONSTRUCTION NOTICE

PROJECT TITLE

Work on your street will begin within one week to replace the existing water mains servicing your community.

The work will consist of:

- Saw-cutting and trench work on Ingulf Street from Morena Boulevard to Galveston Street to install new water mains, water laterals and fire hydrants.
- Streets where trenching takes place will be resurfaced and curb ramps will be upgraded to facilitate access for persons with disabilities where required.
- This work is anticipated to be complete in your community by December 2016.

How your neighborhood may be impacted:

- Water service to some properties during construction will be provided by a two-inch highline pipe that will run along the curb. To report a highline leak call 619-515-3525.
- Temporary water service disruptions are planned. If planned disruptions impact your property, you will receive advance notice.
- Parking restrictions will exist because of the presence of construction equipment and materials.
- "No Parking" signs will be displayed 72 hours in advance of the work.
- Cars parked in violation of signs will be TOWED.

Hours and Days of Operation:
Monday through Friday X:XX AM to X:XX PM.

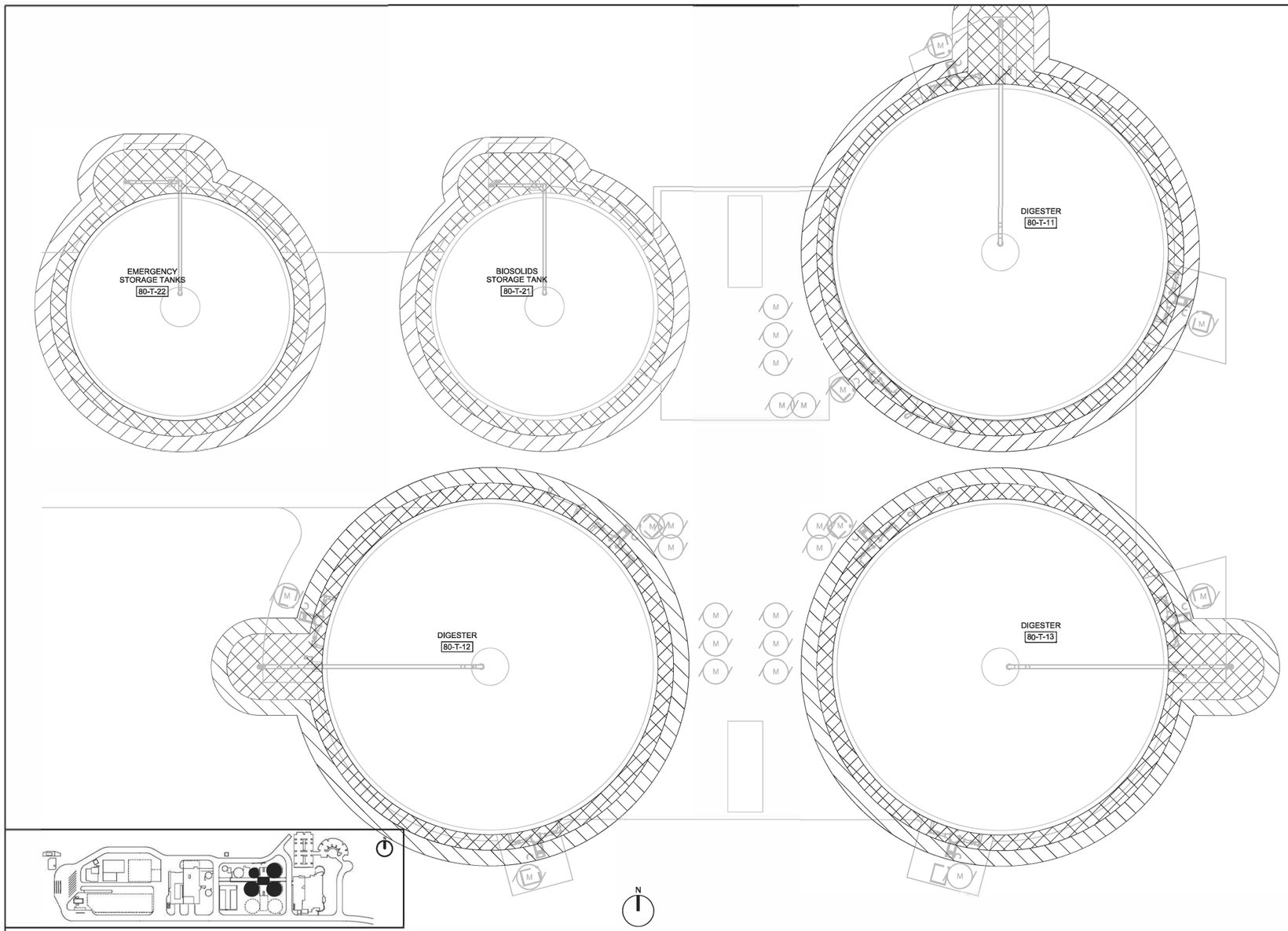
City of San Diego Contractor:
Company Name, XXX-XXX-XXXX

To contact the City of San Diego: SD Public Works
619-533-4207 | engineering@sandiego.gov | sandiego.gov/CIP

This information is available in alternative formats upon request.

# APPENDIX H

# MBC DIGESTER AREA CLASSIFICATION




NOTES:

1. FOR DIGESTERS, BIOSOLIDS STORAGE TANK AND EMERGENCY STORAGE TANK:
   CLASS 1, DIV 1 FOR ENVELOPE 10 FEET ABOVE THE HIGHEST POINT OF COVER; AND CLASS 1 DIV 2 FOR 15 FEET ABOVE DIV 1 AREA OVER COVER.

CLASS I, DIV. I
5' BEYOND DIGESTER WALL
10' BEYOND GAS PIPING

CLASS I, DIV. II
5'-10' BEYOND DIGESTER WALL
10-15' BEYOND GAS PIPING

SAN DIEGO METROPOLITAN BIOSOLIDS CENTER

# APPENDIX H

DIGESTERS AREA CLASSIFICATION

## ATTACHMENT F

## IN-USE OFF-ROAD DIESEL FUELED FLEET REGULATION (OFF-ROAD REGULATION) COMPLIANCE (CARB)

## ATTACHMENT F

### IN-USE OFF-ROAD DIESEL FUELED FLEET REGULATION (OFF-ROAD REGULATION) COMPLIANCE

The California Air Resources Board (CARB) approved amendments to the Off-Road Regulations which can be found at 13 California Code of Regulations (CCR) sections 2449, 2449.1, and 2449.2. These amendments apply to any person, business, or government agency who owns or operates within California any vehicles with a diesel-fueled or alternative diesel fueled off-road compression-ignition engine with maximum power (max hp) of 25 horsepower (hp) or greater provided that the vehicle cannot be registered and driven safely on-road or was not designed to be driven on-road, even if it has been modified so that it can be driven safely on-road. See 13 CCR section 2449 (b) for the full list of vehicles covered by these Off-Road Regulations.

Beginning **January 1, 2024**, Contractor shall be subject to the requirements below. No Contractor or public works awarding body, as applicable, shall enter into a contract with a fleet for which it does not have a valid Certificate of Reported Compliance for the fleet and its listed subcontractors, if applicable, prior to entering into a new or renewed contract with that fleet. Contractor shall comply with the following requirements:

(1) For a project involving the use of vehicles subject to the Off-Road Regulation, Contractor must obtain copies of the valid Certificates of Reported Compliance, as described in 13 CCR section 2449(n), for the fleet selected for this Contract and their listed subcontractors, if applicable, prior to entering into a new or renewed contract with that fleet and provide copies of such Certificates of Reported Compliance to the City within 10 days of issuance of the Notice of Intent to Award letter. Contractor shall enter into a contract with a fleet for which it does not have a valid Certificates of Reported Compliance for the fleet and its listed subcontractors. City shall not enter into a contract with Contractor until all current Certificates of Reported Compliance for the fleet to be used on this Project are provided by Contractor.

(2) The Certificates of Reported Compliance received by Contractor for this Project must be retained by Contractor for three years after the Project's completion. Upon request by CARB, these records must be provided to CARB within five business days of the request. Additionally, upon request by City, these records must be produced to City within five business days of the request.

(3) For emergency contracts that meet the definition of “emergency operations” as defined in 13 CCR section 2449(c)(18), they are exempt from the requirements in 13 CCR section 2449(i)(1)-(3) and sections (1) and (2) above, but must still retain records verifying vehicles subject to the regulation that are operating on the “emergency operations” project are actually being operated on the project for “emergency operations” only. These records, as described in more detail below in section (B) must be retained by Contractor for three years after completion of the Project and upon request from either CARB or the City, Contractor shall provide those records to the requesting party within five business days. All other emergency contracts that do not meet the definition of “emergency operations” must comply with the requirements above and 13 CCR section 2449(i)(1) – (3).

A. "Emergency Operations" is defined as:

1. Any activity for a project conducted during emergency, life threatening situations, where a sudden, unexpected occurrence that poses a clear and imminent danger, requiring immediate action to prevent or mitigate the loss or impairment of life, health, property, or an essential public service; or in conjunction with any officially declared disaster or state of emergency, as declared by an authorized health officer, agricultural commissioner, fire protection officer, or other authorized health officer;

2. Any activity for a project conducted by essential service utilities to provide electricity, natural gas, telephone, water, or sewer during periods of service outages and emergency; or

3. Operations including_repairing or preventing damage to roads, buildings, terrain, and infrastructure as a result of an earthquake, flood, storm, fire, other infrequent act of nature, or terrorism. Routine maintenance or construction to prevent public health risks does not constitute emergency operations under the Off-Road Regulations.

B. The records retained by Contractor for "emergency operations" projects must include:

1. A description of the emergency;

2. The address or a description of the specific location of the emergency;

3. The dates on which the emergency operations were performed; and

4. An attestation by the fleet that the vehicles are operated on the Project for "emergency operations" only.

Beginning **January 1, 2024,** Contractor is also subject to the requirements described in 13 CCR section 2449(j).

(1) Between March 1 and June 1 of each year, Contractor must collect new valid Certificates of Reported Compliance for the current compliance year, as defined in 13 CCR section 2449(n), from all fleets that have an ongoing contract with Contractor as of March 1 of that year. Contractors shall not write contracts to evade this requirement.

(2) Contractor shall only allow fleets with valid Certificates of Reported Compliance on the Contractor's job sites.

(3) If Contractor discovers that any fleet intending to operate vehicles subject to this regulation for Contractor does not have a valid Certificate of Reported Compliance, as defined in 13 CCR section 2449(n), or if Contractor observes any noncompliant vehicles subject to the regulation on Contractor's job site, then Contractor must report the that to CARB at https://calepacomplaints.secure.force.com/complaints/Complaint, or email **dieselcomplaints@arb.ca.gov**, for each fleet without a valid Certificate of Reported Compliance or each noncompliant vehicle,

as applicable, within five business days of such discovery. See 13 CCR 2449(n) for the information required to be disclosed to CARB when reporting non-compliance.

(4) Upon request by CARB, Contractor must immediately disclose to CARB the name and contact information of each responsible party for all vehicles subject to this regulation operating at the job site or for Contractor.

(5) Contractor shall prominently display signage for any project where vehicles subject to this Off-Road Regulation will operate for 8 calendar days or more. The signage must be posted by the eighth calendar day from which the first vehicle operates. The signage will be in lettering larger than size 14-point type and displayed in a conspicuous place where notices to employees are customarily posted at the job site or where there is employee foot traffic. If one of the above locations is also viewable by the public, it should be posted at that location. An exemption to this posting requirement is permitted if the operational time of a project is 7 calendar days or less. The signage must include the following language, verbatim:

(A) Who does the In-Use Off-Road Regulation Apply to?

The In-Use Off-Road Diesel-Fueled Fleets Regulation (Off-Road Regulation) applies to all self-propelled off-road diesel vehicles 25 horsepower or greater and most two-engine vehicles (except on-road two-engine sweepers) owned or operated in California. This includes vehicles that are rented or leased (rental or leased fleets)."

(B) "In-Use Off-Road Regulation Requirements

Idling Limit: Vehicles cannot idle longer than five minutes. There are exceptions for vehicles that need to idle to perform work.

Labeling: Vehicles must be labeled with a CARB assigned equipment identification number (EIN). The EIN shall be white on a red background, unless the vehicle is part of a captive attainment area fleet, in which case the EIN shall be white on a green background.

The EIN shall be located in clear view on both sides of the outside of the vehicle."

# ATTACHMENT G

# CONTRACT AGREEMENT

**ATTACHMENT G**

**CONTRACT AGREEMENT**

---

**CONSTRUCTION CONTRACT**

This contract is made and entered into between THE CITY OF SAN DIEGO, a municipal corporation, herein called "City", and Ahrens Mechanical, herein called "Contractor" for construction of **MBC Pipe Gallery Replacement**; Bid No. **K-25-2380-DBB-3**; in the total amount of **Three Million Two Hundred Forty Thousand Eight Hundred Dollars and Zero Cents ($3,240,800.00)**.

IN CONSIDERATION of the payments to be made hereunder and the mutual undertakings of the parties hereto, City and Contractor agree as follows:

1. The following are incorporated into this contract as though fully set forth herein:

   (a) The attached Faithful Performance and Payment Bonds.

   (b) The attached Proposal included in the Bid documents by the Contractor.

   (c) Reference Standards listed in the Instruction to Bidders and the Supplementary Special Provisions (SSP).

   (e) That certain documents entitled **MBC Pipe Gallery Replacement**, on file in the office of the Purchasing & Contracting Department as Document No. **B-21148**, 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 **MBC Pipe Gallery Replacement**, Bid Number **K-25-2380-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 (See WHITEBOOK, Section 7-3.10, Phased Funding Compensation).

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 and is approved by the City Attorney in accordance with San Diego Charter Section 40.

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

**CONTRACTOR**

By_____

Print Name: Gregory S. Ahrens

Title: President

Date: 5/23/2025

City of San Diego License No.: B2010037845

State Contractor's License No.: 957287

DEPARTMENT OF INDUSTRIAL RELATIONS (DIR) REGISTRATION NUMBER: 1000000554

**THE CITY OF SAN DIEGO**

By: _____

Print Name: Stephen Samara
Principal Contract Specialist
Purchasing & Contracting Department

Date: 6/25/2025

**APPROVED AS TO FORM**

**Heather Ferbert, City Attorney**

By: _____

Print Name: Bonny Hsu
Deputy City Attorney

Date: 6/27/25

## CERTIFICATIONS AND FORMS

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

## BIDDER'S GENERAL INFORMATION

To the City of San Diego:

Pursuant to "Notice Inviting Bids", specifications, and requirements on file with the City Clerk, and subject to all provisions of the Charter and Ordinances of the City of San Diego and applicable laws and regulations of the United States and the State of California, the undersigned hereby proposes to furnish to the City of San Diego, complete at the prices stated herein, the items or services hereinafter mentioned. The undersigned further warrants that this bid is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization, or corporation; that the bid is genuine and not collusive or sham; that the bidder has not directly or indirectly induced or solicited any other bidder to put in a false or sham bid, and has not directly or indirectly colluded, conspired, connived, or agreed with any bidder or anyone else to put in a sham bid, or that anyone shall refrain from bidding; that the bidder has not in any manner, directly or indirectly, sought by agreement, communication, or conference with anyone to fix the bid price of the bidder or any other bidder, or to fix any overhead, profit, or cost element of the bid price, or of that of any other bidder, or to secure any advantage against the public body awarding the contract of anyone interested in the proposed contract; that all statements contained in the bid are true; and, further, that the bidder has not, directly or indirectly, submitted his or her bid price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, or paid, and will not pay, any fee to any corporation, partnership, company, association, organization, bid depository, or to any member or agent thereof to effectuate a collusive or sham bid.

The undersigned bidder(s) further warrants that bidder(s) has thoroughly examined and understands the entire Contract Documents (plans and specifications) and the Bidding Documents therefore, and that by submitting said Bidding Documents as its bid proposal, bidder(s) acknowledges and is bound by the entire Contract Documents, including any addenda issued thereto, as such Contract Documents incorporated by reference in the Bidding Documents.

**NON-COLLUSION AFFIDAVIT TO BE EXECUTED BY BIDDER AND SUBMITTED WITH BID UNDER 23 UNITED STATES CODE 112 AND PUBLIC CONTRACT CODE 7106**

State of California

County of San Diego

The bidder, being first duly sworn, deposes and says that he or she is authorized by the party making the foregoing bid that the bid is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization, or corporation; that the bid is genuine and not collusive or sham; that the bidder has not directly or indirectly induced or solicited any other bidder to put in a false or sham bid, and has not directly or indirectly colluded, conspired, connived, or agreed with any bidder or anyone else to put in a sham bid, or that anyone shall refrain from bidding; that the bidder has not in any manner, directly or indirectly, sought by agreement, communication, or conference with anyone to fix the bid price of the bidder or any other bidder, or to fix any overhead, profit, or cost element of the bid price, or of that of any other bidder, or to secure any advantage against the public body awarding the contract of anyone interested in the proposed contract; that all statements contained in the bid are true; and further, that the bidder has not, directly or indirectly, submitted his or her bid price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, or paid, and will not pay, any fee to any corporation, partnership, company association, organization, bid depository, or to any member or agent thereof to effectuate a collusive or sham bid.

## CONTRACTOR CERTIFICATION

---

## DRUG-FREE WORKPLACE

I hereby certify that I am familiar with the requirements of San Diego City Council Policy No. 100-17 regarding Drug-Free Workplace as outlined in the WHITEBOOK, Section 5-1.3, "Drug-Free Workplace", of the project specifications, and that;

This company has in place a drug-free workplace program that complies with said policy. I further certify that each subcontract agreement for this project contains language which indicates the subcontractor's agreement to abide by the provisions of subdivisions a) through c) of the policy as outlined.

## CONTRACTOR CERTIFICATION

---

### AMERICANS WITH DISABILITIES ACT (ADA) COMPLIANCE CERTIFICATION

I hereby certify that I am familiar with the requirements of San Diego City Council Policy No. 100-4 regarding the Americans With Disabilities Act (ADA) outlined in the WHITEBOOK, Section 5-1.2, "California Building Code, California Code of Regulations Title 24 and Americans with Disabilities Act". of the project specifications, and that:

This company has in place workplace program that complies with said policy. I further certify that each subcontract agreement for this project contains language which indicates the subcontractor's agreement to abide by the provisions of the policy as outlined.

## CONTRACTOR CERTIFICATION

---

### CONTRACTOR STANDARDS – PLEDGE OF COMPLIANCE

I declare under penalty of perjury that I am authorized to make this certification on behalf of the company submitting this bid/proposal, that as Contractor, I am familiar with the requirements of City of San Diego Municipal Code § 22.3004 regarding Contractor Standards as outlined in the WHITEBOOK, Section 5-1.4, ("Contractor Standards and Pledge of Compliance"), of the project specifications, and that Contractor has complied with those requirements.

I further certify that each of the Contractor's subcontractors has completed a Pledge of Compliance attesting under penalty of perjury of having complied with City of San Diego Municipal Code § 22.3004.

## CONTRACTOR CERTIFICATION

---

## EQUAL BENEFITS ORDINANCE CERTIFICATION

I declare under penalty of perjury that I am familiar with the requirements of and in compliance with the City of San Diego Municipal Code § 22.4300 regarding Equal Benefits Ordinance.

## CONTRACTOR CERTIFICATION

---

## EQUAL PAY ORDINANCE CERTIFICATION

Contractor shall comply with the Equal Pay Ordinance (EPO) codified in the San Diego Municipal Code (SDMC) at section 22.4801 through 22.4809, unless compliance is not required based on an exception listed in SDMC section 22.4804.

Contractor shall require all of its subcontractors to certify compliance with the EPO in their written subcontracts.

Contractor must post a notice informing its employees of their rights under the EPO in the workplace or job site.

By signing this Contract with the City of San Diego, Contractor acknowledges the EPO requirements and pledges ongoing compliance with the requirements of SDMC Division 48, section 22.4801 et seq., throughout the duration of this Contract.

**CONTRACTOR CERTIFICATION**

---

**IN-USE OFF-ROAD DIESEL FUELED FLEET REGULATION (OFF-ROAD REGULATION) COMPLIANCE**

I hereby certify that Contractor is familiar with the requirements 13 CCR 2449, 2449.1, and 2449.2, as well as Attachment F, In-Use Off-Road Diesel Fueled Fleet Regulation (Off-Road Regulation) Compliance (CARB), and that Contractor shall comply with these requirements.

I further certify that each of the Contractor's listed subcontractors is familiar with these requirements and shall also comply.

## CONTRACTOR CERTIFICATION

---

## PRODUCT ENDORSEMENT

I declare under penalty of perjury that I acknowledge and agree to comply with the provisions of City of San Diego Administrative Regulation 95.65, concerning product endorsement. Any advertisement identifying or referring to the City as the user of a product or service requires the prior written approval of the City.

# AFFIDAVIT OF DISPOSAL

**(To be submitted upon completion of Construction pursuant to the contracts Certificate of Completion)**

**WHEREAS**, on the _____ DAY OF _____, 2_____ the undersigned entered into and executed a contract with the City of San Diego, a municipal corporation, for:

**MBC Pipe Gallery Replacement**
(Project Title)

as particularly described in said contract and identified as Bid No. **K-25-2380-DBB-3**; SAP No. (WBS) **B-21148**; and **WHEREAS**, the specification of said contract requires the Contractor to affirm that "all brush, trash, debris, and surplus materials resulting from this project have been disposed of in a legal manner"; and **WHEREAS**, said contract has been completed and all surplus materials disposed of:

_____

_____

**NOW, THEREFORE**, in consideration of the final payment by the City of San Diego to said Contractor under the terms of said contract, the undersigned Contractor, does hereby affirm that all surplus materials as described in said contract have been disposed of at the following location(s)

_____

_____

and that they have been disposed of according to all applicable laws and regulations.

Dated this _____ DAY OF _____, _____.

By:_____
Contractor

**ATTEST**:

State of _____ County of _____

On this_____ DAY OF _____, 2_____, before the undersigned, a Notary Public in and for said County and State, duly commissioned and sworn, personally appeared_____ known to me to be the _____ Contractor named in the foregoing Release, and whose name is subscribed thereto, and acknowledged to me that said Contractor executed the said Release.

Notary Public in and for said County and State

# ELECTRONICALLY SUBMITTED FORMS

**FAILURE TO FULLY COMPLETE AND SUBMIT ANY OF THE FOLLOWING FORMS WILL DEEM YOUR BID NON-RESPONSIVE.**

**PLANETBIDS WILL NOT ALLOW FOR BID SUBMISSIONS WITHOUT THE ATTACHMENT OF THESE FORMS**

The following forms are to be completed by the bidder and submitted (uploaded) electronically with the bid in PlanetBids.

A. **BID BOND – See Instructions to Bidders, Bidders Guarantee of Good Faith (Bid Security) for further instructions**

B. **CONTRACTOR'S CERTIFICATION OF PENDING ACTIONS**

C. **MANDATORY DISCLOSURE OF BUSINESS INTERESTS FORM**

D. **DEBARMENT AND SUSPENSION CERTIFICATION FOR PRIME CONTRACTOR**

E. **DEBARMENT AND SUSPENSION CERTIFICATION FOR SUBCONTRACTORS, SUPPLIERS AND MANUFACTURERS**

## BID BOND

**See Instructions to Bidders, Bidder Guarantee of Good Faith (Bid Security)**

KNOW ALL MEN BY THESE PRESENTS,

That Ahrens Mechanical as Principal, and Swiss Re Corporate Solutions America Insurance Corporation as Surety, are held and firmly bound unto The City of San Diego hereinafter called "OWNER," in the sum of **10% OF THE TOTAL BID AMOUNT** for the payment of which sum, well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

WHEREAS, said Principal has submitted a Bid to said OWNER to perform the WORK required under the bidding schedule(s) of the OWNER's Contract Documents entitled

MBC Pipe Gallery Replacement

NOW THEREFORE, if said Principal is awarded a contract by said OWNER and, within the time and in the manner required in the "Notice Inviting Bids" enters into a written Agreement on the form of agreement bound with said Contract Documents, furnishes the required certificates of insurance, and furnishes the required Performance Bond and Payment Bond, then this obligation shall be null and void, otherwise it shall remain in full force and effect. In the event suit is brought upon this bond by said OWNER and OWNER prevails, said Surety shall pay all costs incurred by said OWNER in such suit, including a reasonable attorney's fee to be fixed by the court.

SIGNED AND SEALED, this 10th day of March, 2025

Ahrens Mechanical (SEAL)
(Principal)

By: _____
(Signature)
GREGORY S. AHRENS, PRESIDENT

Swiss Re Corporate Solutions America Insurance Corporation (SEAL)
(Surety)

By: _____
(Signature)
Andy Roberts, Attorney-in-Fact

(SEAL AND NOTARIAL ACKNOWLEDGEMENT OF SURETY)

## SWISS RE CORPORATE SOLUTIONS

SWISS RE CORPORATE SOLUTIONS AMERICA INSURANCE CORPORATION ("SRCSAIC")
SWISS RE CORPORATE SOLUTIONS PREMIER INSURANCE CORPORATION ("SRCSPIC")
WESTPORT INSURANCE CORPORATION ("WIC")

## GENERAL POWER OF ATTORNEY

KNOW ALL MEN BY THESE PRESENTS, THAT SRCSAIC, a corporation duly organized and existing under laws of the State of Missouri, and having its principal office in the City of Kansas City, Missouri, and SRCSPIC, a corporation organized and existing under the laws of the State of Missouri and having its principal office in the City of Kansas City, Missouri, and WIC, organized under the laws of the State of Missouri, and having its principal office in the City of Kansas City, Missouri, each does hereby make, constitute and appoint:

MATTHEW C. GAYNOR, ANDY ROBERTS, and ANNE WRIGHT

JOINTLY OR SEVERALLY

Its true and lawful Attorney(s)-in-Fact, to make, execute, seal and deliver, for and on its behalf and as its act and deed, bonds or other writings obligatory in the nature of a bond on behalf of each of said Companies, as surety, on contracts of suretyship as are or may be required or permitted by law, regulation, contract or otherwise, provided that no bond or undertaking or contract or suretyship executed under this authority shall exceed the amount of:

FIFTY MILLION ($50,000,000.00) DOLLARS

This Power of Attorney is granted and is signed by facsimile under and by the authority of the following Resolutions adopted by the Boards of Directors of both SRCSAIC and SRCSPIC at meetings duly called and held on the 18th of November 2021 and WIC by written consent of its Executive Committee dated July 18, 2011.

"RESOLVED, that any two of the President, any Managing Director, any Senior Vice President, any Vice President, the Secretary or any Assistant Secretary be, and each or any of them hereby is, authorized to execute a Power of Attorney qualifying the attorney named in the given Power of Attorney to execute on behalf of the Corporation bonds, undertakings and all contracts of surety, and that each or any of them hereby is authorized to attest to the execution of any such Power of Attorney and to attach therein the seal of the Corporation; and it is

FURTHER RESOLVED, that the signature of such officers and the seal of the Corporation may be affixed to any such Power of Attorney or to any certificate relating thereto by facsimile, and any such Power of Attorney or certificate bearing such facsimile signatures or facsimile seal shall be binding upon the Corporation when so affixed and in the future with regard to any bond, undertaking or contract of surety to which it is attached."

SWISS RE CORPORATE SOLUTIONS AMERICA INSURANCE CORPORATION CORPORATE SEAL 1973 MISSOURI

SWISS RE CORPORATE SOLUTIONS PREMIER INSURANCE CORPORATION CORPORATE SEAL MISSOURI

By_____
Erik Janssens, Senior Vice President of SRCSAIC & Senior Vice President of SRCSPIC & Senior Vice President of WIC

By_____
Gerald Jagrowski, Vice President of SRCSAIC & Vice President of SRCSPIC & Vice President of WIC

WESTPORT INSURANCE CORPORATION CORPORATE SEAL MISSOURI

IN WITNESS WHEREOF, SRCSAIC, SRCSPIC, and WIC have caused their official seals to be hereunto affixed, and these presents to be signed by their authorized officers

this 10 day of NOVEMBER, 20 22

State of Illinois
County of Cook ss

**Swiss Re Corporate Solutions America Insurance Corporation**
**Swiss Re Corporate Solutions Premier Insurance Corporation**
**Westport Insurance Corporation**

On this 10 day of NOVEMBER, 20 22, before me, a Notary Public personally appeared Erik Janssens, Senior Vice President of SRCSAIC and Senior Vice President of SRCSPIC and Senior Vice President of WIC and Gerald Jagrowski, Vice President of SRCSAIC and Vice President of SPCSPIC and Vice President of WIC, personally known to me, who being by me duly sworn, acknowledged that they signed the above Power of Attorney as officers of and acknowledged said instrument to be the voluntary act and deed of their respective companies.

OFFICIAL SEAL
CHRISTINA MANISCO
NOTARY PUBLIC, STATE OF ILLINOIS
My Commission Expires March 28, 2026

Christina Manisco, Notary

I, Jeffrey Goldberg, the duly elected Senior Vice President and Assistant Secretary of SRCSAIC and SRCSPIC and WIC, do hereby certify that the above and foregoing is a true and correct copy of a Power of Attorney given by said SRCSAIC and SRCSPIC and WIC, which is still in full force and effect.
IN WITNESS WHEREOF, I have set my hand and affixed the seals of the Companies this 10th day of March, 20 25.

SEAL

Jeffrey Goldberg, Senior Vice President & Assistant Secretary of SRCSAIC and SRCSPIC and WIC

# ACKNOWLEDGMENT

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

State of California
County of San Diego )

On March 10, 2025 before me, Brittney Thompson, Notary Public
(insert name and title of the officer)

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

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

WITNESS my hand and official seal.

Signature _____ **(Seal)**

BRITTNEY THOMPSON
Notary Public - California
San Diego County
Commission # 2499180
My Comm. Expires Sep 7, 2028

# CALIFORNIA ALL- PURPOSE CERTIFICATE OF ACKNOWLEDGMENT

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

State of California }

County of San Diego }

On March 10, 2025 before me, Nancy J. Doerring, Notary Public
(Here insert name and title of the officer),

personally appeared GREGORY S. Ahrens,

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.

Nancy J. Doerring
Notary Public Signature (Notary Public Seal)

ANP1 NANCY J. DOERRING ANP1
Commission No. 2431228
NOTARY PUBLIC - CALIFORNIA
SAN DIEGO COUNTY
Commission Expires January 13, 2027

## ADDITIONAL OPTIONAL INFORMATION

DESCRIPTION OF THE ATTACHED DOCUMENT

(Title or description of attached document)

(Title or description of attached document continued)

Number of Pages ____ Document Date____

CAPACITY CLAIMED BY THE SIGNER

- ☐ Individual (s)
- ☐ Corporate Officer
  ____ (Title)
- ☐ Partner(s)
- ☐ Attorney-in-Fact
- ☐ Trustee(s)
- ☐ Other ____

## INSTRUCTIONS FOR COMPLETING THIS FORM

*This form complies with current California statutes regarding notary wording and, if needed, should be completed and attached to the document. Acknowledgments from other states may be completed for documents being sent to that state so long as the wording does not require the California notary to violate California notary law.*

- State and County information must be the State and County where the document signer(s) personally appeared before the notary public for acknowledgment.
- Date of notarization must be the date that the signer(s) personally appeared which must also be the same date the acknowledgment is completed.
- The notary public must print his or her name as it appears within his or her commission followed by a comma and then your title (notary public).
- Print the name(s) of document signer(s) who personally appear at the time of notarization.
- Indicate the correct singular or plural forms by crossing off incorrect forms (i.e. ~~he/she/they,~~ is /~~are~~ ) or circling the correct forms. Failure to correctly indicate this information may lead to rejection of document recording.
- The notary seal impression must be clear and photographically reproducible. Impression must not cover text or lines. If seal impression smudges, re-seal if a sufficient area permits, otherwise complete a different acknowledgment form.
- Signature of the notary public must match the signature on file with the office of the county clerk.
  - Additional information is not required but could help to ensure this acknowledgment is not misused or attached to a different document.
  - Indicate title or type of attached document, number of pages and date.
  - Indicate the capacity claimed by the signer. If the claimed capacity is a corporate officer, indicate the title (i.e. CEO, CFO, Secretary).
- Securely attach this document to the signed document with a staple.

## CONTRACTOR'S CERTIFICATION OF PENDING ACTIONS

As part of its bid or proposal (Non-Price Proposal in the case of Design-Build contracts), the Bidder shall provide to the City a list of all instances within the past 10 years where a complaint was filed or pending against the Bidder in a legal or administrative proceeding alleging that Bidder discriminated against its employees, subcontractors, vendors or suppliers, and a description of the status or resolution of that complaint, including any remedial action taken.

CHECK ONE BOX ONLY.

☒ The undersigned certifies that within the past 10 years the Bidder has NOT been the subject of a complaint or pending action in a legal administrative proceeding alleging that Bidder discriminated against its employees, subcontractors, vendors or suppliers.

☐ The undersigned certifies that within the past 10 years the Bidder has been the subject of a complaint or pending action in a legal administrative proceeding alleging that Bidder discriminated against its employees, subcontractors, vendors or suppliers. A description of the status or resolution of that complaint, including any remedial action taken and the applicable dates is as follows:

| DATE OF CLAIM | LOCATION | DESCRIPTION OF CLAIM | LITIGATION (Y/N) | STATUS | RESOLUTION/REMEDIAL ACTION TAKEN |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

Contractor Name: Ahrens Mechanical

Certified By Gregory S. Ahrens Title President

Name

Signature Date 04/15/2025

**USE ADDITIONAL FORMS AS NECESSARY**

## Mandatory Disclosure of Business Interests Form

### BIDDER/PROPOSER INFORMATION

| Legal Name | | DBA | |
|---|---|---|---|
| Ahrens Mechanical | | | |
| **Street Address** | **City** | **State** | **Zip** |
| 10975 San Diego Mission Road | San Diego | CA | 92108 |
| **Contact Person, Title** | | **Phone** | **Fax** |
| Gregory S. Ahrens | | 619-487-9036 | 619-487-9195 |

Provide the name, identity, and precise nature of the interest* of all persons who are directly or indirectly involved** in this proposed transaction (SDMC § 21.0103).

* The precise nature of the interest includes:

- the percentage ownership interest in a party to the transaction,
- the percentage ownership interest in any firm, corporation, or partnership that will receive funds from the
- transaction, the value of any financial interest in the transaction,
- any contingent interest in the transaction and the value of such interest should the contingency be satisfied, and any
- philanthropic, scientific, artistic, or property interest in the transaction.

** Directly or indirectly involved means pursuing the transaction by:

- communicating or negotiating with City officers or employees,
- submitting or preparing applications, bids, proposals or other documents for purposes of contracting with the City,
- or directing or supervising the actions of persons engaged in the above activity.

| Name | Title/Position |
|---|---|
| Gregory S. Ahrens | President |
| **City and State of Residence** | **Employer (if different than Bidder/Proposer)** |
| San Diego, CA | |
| **Interest in the transaction** | |
| 100% | |

| Name | Title/Position |
|---|---|
| | |
| **City and State of Residence** | **Employer (if different than Bidder/Proposer)** |
| | |
| **Interest in the transaction** | |
| | |

### * Use Additional Pages if Necessary *

Under penalty of perjury under the laws of the State of California, I certify that I am responsible for the completeness and accuracy of the responses contained herein, and that all information provided is true, full and complete to the best of my knowledge and belief. I agree to provide written notice to the Mayor or Designee within five (5) business days if, at any time, I learn that any portion of this Mandatory Disclosure of Business Interests Form requires an updated response. Failure to timely provide the Mayor or Designee with written notice is grounds for Contract termination.

| Gregory S. Ahrens | | 04/15/2025 |
|---|---|---|
| Print Name, Title | Signature | Date |

**Failure to sign and submit this form with the bid/proposal shall make the bid/proposal non-responsive. In the case of an informal solicitation, the contract will not be awarded unless a signed and completed Mandatory Disclosure of Business Interests Form is submitted.**

**DEBARMENT AND SUSPENSION CERTIFICATION**

**PRIME CONTRACTOR**

**FAILURE TO COMPLETE AND SUBMIT AT TIME OF BID SHALL RENDER BID NON-RESPONSIVE**

| EFFECT OF DEBARMENT OR SUSPENSION |
|---|
| To promote integrity in the City's contracting processes and to protect the public interest, the City shall only enter into contracts with responsible- bidders and contractors. In accordance with San Diego Municipal Code §22.0814 (a): *Bidders* and c*ontractors* who have been *debarred* or *suspended* are excluded from submitting bids, submitting responses to requests for proposal or qualifications, receiving *contract* awards, executing *contracts*, participating as a *subcontractor*, employee, agent or representative of another *person* contracting with the City. |

As part of its bid or proposal (Non-Price Proposal in the case of Design-Build contracts), the Bidder shall provide to the City a list of Names of the Principal Individual owner(s).

The names of all persons interested in the foregoing proposal as Principals are as follows:

| NAME | TITLE |
|---|---|
| Gregory S. Ahrens | 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.

The Bidder, under penalty of perjury, certifies that, except as noted below, he/she or any person associated therewith in the capacity of owner, partner, director, officer, manager:

- Is not currently under suspension, debarment, voluntary exclusion, or determination of ineligibility by any Federal, State or local agency;
- has not been suspended, debarred, voluntarily excluded or determined ineligible by any Federal, State or local agency within the past 3 years;
- does not have a proposed debarment pending; and
- has not been indicted, convicted, or had a civil judgment rendered against it by a court of competent jurisdiction in any matter involving fraud or official misconduct within the past 3 years.

If there are any exceptions to this certification, insert the exceptions in the following space.

| |
|---|
| |

Exceptions will be considered in determining bidder responsibility. For any exception noted above, indicate below to whom it applies, initiating agency, and dates of action.

Contractor Name: Ahrens Mechanical

Certified By Gregory S. Ahrens Title President

Name

Signature

Date 04/15/2025

**NOTE**: Providing false information may result in criminal prosecution or administrative sanctions.

**DEBARMENT AND SUSPENSION CERTIFICATION**

**SUBCONTRACTORS, SUPPLIERS AND MANUFACTURERS**

***TO BE COMPLETED BY BIDDER***

**FAILURE TO COMPLETE AND SUBMIT AT TIME OF BID SHALL RENDER BID NON-RESPONSIVE**

Names of the Principal individual owner(s)

As part of its bid or proposal (Non-Price Proposal in the case of Design-Build contracts), the Bidder shall provide to the City a list of Names of the Principal Individual owner(s) for their subcontractor/supplier/manufacturers.

Please indicate if principal owner is serving in the capacity of **subcontractor**, **supplier,** and/or **manufacturer**:

☒ SUBCONTRACTOR ☐ SUPPLIER ☐ MANUFACTURER

| NAME | TITLE |
|---|---|
| Danny J. Barnett | President |
| Dan Barnett | Principal |
| | |
| | |

☐ SUBCONTRACTOR ☐ SUPPLIER ☐ MANUFACTURER

| NAME | TITLE |
|---|---|
| | |
| | |
| | |
| | |

☐ SUBCONTRACTOR ☐ SUPPLIER ☐ MANUFACTURER

| NAME | TITLE |
|---|---|
| | |
| | |
| | |
| | |

☐ SUBCONTRACTOR ☐ SUPPLIER ☐ MANUFACTURER

| NAME | TITLE |
|---|---|
| | |
| | |
| | |
| | |

Contractor Name: Barnett Quality Control Services, Inc. dba NOVA Services, Inc.

Certified By Danny J. Barnett Title President

Name

Date 4.11.25

Signature

***USE ADDITIONAL FORMS AS NECESSARY****

# City of San Diego

**CITY CONTACT:** Rosa I. Riego, Senior Contract Specialist, Email: RRiego@sandiego.gov
Phone No. (619) 533-3426

# ADDENDUM A

e - Bidding

## FOR

## MBC PIPE GALLERY REPLACEMENT

BID NO.: **K-25-2380-DBB-3**
SAP NO. (WBS/IO/CC): **B-21148**
CLIENT DEPARTMENT: **2000**
COUNCIL DISTRICT: **6**
PROJECT TYPE: **BO**

---

**BID DUE DATE:**
**2:00 PM**
**APRIL 16, 2025**

**CITY OF SAN DIEGO'S ELECTRONIC BIDDING SITE, PLANETBIDS**

http://www.sandiego.gov/cip/bidopps/

## A. CHANGES TO CONTRACT DOCUMENTS

The following changes to the Contract Documents are hereby made effective as though originally issued with the bid package. Bidders are reminded that all previous requirements to this solicitation remain in full force and effect.

THE SUBMITTAL DATE FOR THIS PROJECT HAS BEEN **EXTENDED AS STATED ON THE COVER PAGE.**

Rania Amen, Director
Engineering & Capital Projects Department

Dated: *March 21, 2025*
San Diego, California

RA/MJN/na

# Bid Results

## Bidder Details

| | |
|---|---|
| **Vendor Name** | Ahrens Mechanical |
| **Address** | 10975 San Diego Mission Road<br>San Diego, California 92108-2431<br>United States |
| **Respondee** | Greg Ahrens |
| **Respondee Title** | Estimator |
| **Phone** | 619-487-9036 |
| **Email** | estimating@ahrensmech.com |
| **Vendor Type** | DVBE, CADIR, SDVSB, SLBE |
| **License #** | 957287 |
| **CADIR** | 1000000554 |

## Bid Detail

| | |
|---|---|
| **Bid Format** | Electronic |
| **Submitted** | 04/16/2025 12:50 PM (PDT) |
| **Delivery Method** | |
| **Bid Responsive** | |
| **Bid Status** | Submitted |
| **Confirmation #** | 424697 |

## Respondee Comment

## Buyer Comment

## Attachments

| File Title | File Name | File Type |
|---|---|---|
| B. Contractor's Certification of Pending Actions.pdf | B. Contractor's Certification of Pending Actions.pdf | Contractor's Certification of Pending Actions |
| C. Mandatory Disclosure of Business Interests Form.pdf | C. Mandatory Disclosure of Business Interests Form.pdf | Mandatory Disclosure of Business Interests Form |
| D. Debarment and Suspension Certification - Prime Contractor.pdf | D. Debarment and Suspension Certification - Prime Contractor.pdf | Prime Contractor - Debarment and Suspension |
| NOVA_Sub's_Debarment and Suspension Certification.pdf | NOVA_Sub's_Debarment and Suspension Certification.pdf | Subcontractor - Debarment and Suspension |
| A. Bid Bond.pdf | A. Bid Bond.pdf | Bid Bond |

# Subcontractors

*Showing 1 Subcontractor*

| Name & Address | Desc | License Num | CADIR | Amount | Type |
|---|---|---|---|---|---|
| **NOVA Services, Inc. DVBE/SLBE**<br>4373 Viewridge Avenue<br>Suite B<br>San Diego, California 92123 | Specialty Inspections | 000000 | 1000007909 | $200,000.00 | DVBE, CADIR, SLBE, SDVSB, Local |

# Line Items

Discount Terms No Discount

| Item # | Item Code | Type | Item Description | UOM | QTY | Unit Price | Line Total | Response | Comment |
|---|---|---|---|---|---|---|---|---|---|
| Main Bid | | | | | | | $3,240,800.00 | | |
| 1 | 524126 | | Bonds (Payment and Performance) | LS | 1 | $39,000.00 | $39,000.00 | Yes | |
| 2 | 236220 | | Building Permits (EOC Type I) | AL | 1 | $25,000.00 | $25,000.00 | Yes | |
| 3 | 237110 | | Mobilization | LS | 1 | $100,000.00 | $100,000.00 | Yes | |
| 4 | | | Field Orders (EOC Type II) | AL | 1 | $200,000.00 | $200,000.00 | Yes | |
| 5 | 237110 | | Specialty Inspection Paid for By the Contractor ( EOC Type I) | AL | 1 | $150,000.00 | $150,000.00 | Yes | |
| 6 | 237110 | | New 3-Inch Piping | LF | 347 | $370.00 | $128,390.00 | Yes | |
| 7 | 237110 | | New 4-Inch Piping | LF | 791 | $375.00 | $296,625.00 | Yes | |
| 8 | 237110 | | New 6-Inch Piping | LF | 1859 | $410.00 | $762,190.00 | Yes | |
| 9 | 237110 | | New 8-Inch Piping | LF | 1113 | $500.00 | $556,500.00 | Yes | |
| 10 | 237110 | | Demolish Existing 3-Inch Piping | LF | 347 | $20.00 | $6,940.00 | Yes | |
| 11 | 237110 | | Demolish Existing 4-Inch Piping | LF | 843 | $21.00 | $17,703.00 | Yes | |
| 12 | 237110 | | Demolish Existing 6-Inch Piping | LF | 1888 | $24.00 | $45,312.00 | Yes | |
| 13 | 237110 | | Demolish Existing 8-Inch Piping | LF | 1113 | $30.00 | $33,390.00 | Yes | |
| 14 | 237110 | | Pressure Reducing Manifold System | EA | 2 | $135,000.00 | $270,000.00 | Yes | |
| 15 | 237110 | | Demolish Existing Pressure Reducing Manifold System | EA | 2 | $12,800.00 | $25,600.00 | Yes | |
| 16 | 237110 | | High-lining/ Bypass System | LS | 1 | $260,000.00 | $260,000.00 | Yes | |
| 17 | 237110 | | Connection to Existing Copper Pipe (0.5-Inch to 1 Inch) | EA | 20 | $1,400.00 | $28,000.00 | Yes | |
| 18 | 237110 | | Connection to Existing Copper Pipe (1.5-Inch) | EA | 15 | $1,800.00 | $27,000.00 | Yes | |
| 19 | 237110 | | Connection to Existing Copper Pipe (2-Inch) | EA | 12 | $2,200.00 | $26,400.00 | Yes | |
| 20 | 237110 | | Flush Port (1.5-Inch) | EA | 11 | $1,500.00 | $16,500.00 | Yes | |
| 21 | 237110 | | 3-Inch Butterfly Valves, Class 250 | EA | 3 | $4,700.00 | $14,100.00 | Yes | |
| 22 | 237110 | | 4-Inch Butterfly Valves, Class 250 | EA | 13 | $4,750.00 | $61,750.00 | Yes | |
| 23 | 237110 | | 6- Inch Butterfly Valves, Class 250 | EA | 11 | $5,500.00 | $60,500.00 | Yes | |
| 24 | 237110 | | 8-Inch Butterfly Valves, Class 250 | EA | 7 | $6,700.00 | $46,900.00 | Yes | |
| 25 | 237110 | | 6-Inch Electromagnetic Flow Meter | EA | 1 | $17,000.00 | $17,000.00 | Yes | |
| 26 | 237110 | | 8-Inch Electromagnetic Flow Meter | EA | 1 | $18,500.00 | $18,500.00 | Yes | |
| 27 | 237310 | | Minor WPCP Development and Implementation | LS | 1 | $7,500.00 | $7,500.00 | Yes | |

# Line Item Subtotals

| Section Title | Line Total |
|---|---|
| **Main Bid** | **$3,240,800.00** |
| **Grand Total** | **$3,240,800.00** |

## SUBCONTRACTOR LISTING (OTHER THAN FIRST TIER)

Pursuant to California Senate Bill 96 and in accordance with the requirements of Labor Code sections 1771.1 and 1725.5, by submitting a bid or proposal to the City, Contractor is certifying that he or she has verified that all subcontractors used on this public work project are registered with the California Department of Industrial Relations (DIR**). The Bidder is to list below the name, address, license number, DIR registration number of any (known tiered subcontractor) -** who will perform work, labor, render services or specially fabricate and install a portion [type] of the work or improvement pursuant to the contract. **If none are known at this time, mark the table below with non-applicable (N/A)**.

Prime Contractor Name: AHRENS MECHANICAL

First Tier Subcontractor: Nova Services Inc.

| NAME, ADDRESS AND TELEPHONE NUMBER OF SUBCONTRACTOR | CONSTRUCTOR OR DESIGNER | DIR REGISTRATION NUMBER | SUBCONTRACTOR LICENSE NUMBER | TYPE OF WORK |
|---|---|---|---|---|
| Name:<br>Address:<br>City:<br>State:<br>Zip:<br>Phone:<br>Email: | N/A | N/A | N/A | N/A |
| Name:<br>Address:<br>City:<br>State:<br>Zip:<br>Phone:<br>Email: | N/A | N/A | N/A | N/A |
| Name:<br>Address:<br>City:<br>State:<br>Zip:<br>Phone:<br>Email: | N/A | N/A | N/A | N/A |
| Name:<br>Address:<br>City:<br>State:<br>Zip:<br>Phone:<br>Email: | N/A | N/A | N/A | N/A |

**** USE ADDITIONAL FORMS AS NECESSARY ****